



PROFESSIONAL MEASUREMENT Measuring | Controlling | Regulating



Product catalog

2016

COMPANY

Greisinger was founded on 01/01/1980 in Regenstauf near Regensburg and has been a prominent supplier of measurement technology for more than 35 years. Greisinger is a specialist in measurement and regulation technology for laboratory and industrial applications with a focus on in-house developments. We work with the development and production of measuring and regulating devices and the corresponding sensors systems. The company's total production area is about 2250 m². More than 50 employees develop and produce high-quality products at affordable prices with the latest development, production and testing equipment.

For instance, GHM Greisinger has an air-conditioned calibration room with an area of over 60 m² in which factory and production calibrations of temperature, pressure, humidity, etc. are carried out.

For many applications, particularly in the scope of ISO 9000 ff., documented measurements are required. Our reference standards are based on national standards and are continuously monitored.

For fulfilment of the quality standard in accordance with ISO 9000 ff. for the customer, most devices produced there are also supplied with a factory calibration certificate or DAkkS certificate.

The company's equipment has recently been expanded to include a fully shielded measuring cabinet for the EMC testing that accompanies development and for EMC final testing.



company building

QUALITY STANDARD AND CERTIFICATION

High-quality technical products at a fair price have made use a permanent fixture in the measuring device market. We have been on a continuously upward trend for more than 35 years. The use of state of the art machinery and devices with efficient, high-performance production processes enables the high 'Made in Germany' product quality at competitive prices.

All our products are developed and produced in Germany - that is one reason for the high-quality standard of our products. Our quality management system is certified according to ISO 9001:2008 and additionally for potentially explosive atmospheres according to DIN EN 13980:2003.

Conformity with Directive 94/9/EC ('ATEX Directive') has been mandatory for Ex products in the Member States of the EC since 01/07/2003. Our development, manufacturing and sales have been certified in accordance with Directive 94/9/EC since 01/05/2003. Several products have already been tested and approved in accordance with this standard.



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FURTHER INFORMATION



ENGLISH



FRENCH



CZECH



GHM-RING BINDER

LEGEND



Made in Germany



Calibration certificate
available at surcharge



HACCP (Hazard Analysis and Critical Control Points-Konzept)
suitable for food applications according to HACCP



Min-/Max-Alarm
continuous checking of adjustable alarm boundaries (deactivate-able)
3 alarm settings:
off: alarm inactive
on: alarm via display, internal buzzer and interface
no Sound: alarm only via display and interface
Switching function:
External devices can be switched (on/off) or monitored for alarm in combination with switching module GAM3000 (optionally available)



Auto-Hold
Automatic freezing of a constant measuring value



Automatic Power-Off-Function
- 1 ... 120 min (or deactivated)
- adjustable between 1 ... 120 min or continuous operation
- If Auto-Off-Function is activated, device is automatically switched off after a selected period (0 ... 120 min) if it is meanwhile not used.



AutoRange
The conductivity measurement gets automatically switched to the optimal measuring range. Can be deactivated in the menu.



Battery Change Indicator



Background illumination



Horn



Holdfunktion
Auf Tastendruck wird der aktuelle Wert „eingefroren“.



Logger function
manual: fetch data via buttons or interface
cyclic: fetch data via interface
adjustable cycle time: 1 s ... 1 h
The logger is started or stopped by keypad or interface.
The software GSOFT3050 (see accessories) is available for comfortable read-out of logger data.



Alarm Freely adjustable alarm boundaries, pulsating alarm sound (depends on measured value)



Min / max value memory
Highest and lowest measured values are saved.



Offset correction (zero point)
The characteristic can be shifted parallel by an adjustable offset value.



Offset and slope correction
A digital offset and slope correction can be adjusted.



Tare function
Displayed value as well as min- and max-values are set to zero.



Real-time clock
Clock with day, month and year

POSSIBLE CONNECTORS



Miniature DIN-type plug
used in:
GMH 3710/50, GMH 3611/51,
GMH 3692/95, GMH 3111/51/56



Cinch connector
used in:
discontinued products, e. g.
GPH 014, GPRT 1400



BNC-connector
used in:
GMH 285-BNC, GMH 3830/51, GMH
3511/31/51, GMH 5530/50, GPH 114



7-pol. bajonett connector
used in:
GMH 5130/50/55, GMH 5430/50,
GMH 5630/50/90/95



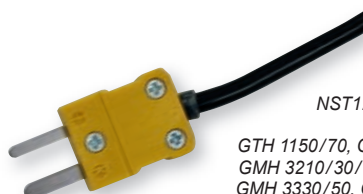
Banana-jack connection
used in:
GMH 3511/31/51,
GMH 5530/50, GPHU 014 MP



S7-connector
used in:
GE 171, GE 108,
GE 173, GR 175



4-pol. bajonett connector
used in:
5000er Geräteserie



NST1200-connector
used in:
GTH 1150/70, GMH 1150/70,
GMH 3210/30/50, GIM 3590,
GMH 3330/50, GMH 3830/51



7-pole diode connector
used in:
GLMU 200/400



Jack connector 2,5
used in:
discontinued products,
e. g. GDH ... AN Serie, GPRT 1400



Jack connector 3,5 mm
used in:
GMH 175, GMH 285,
GFTB 200, GFTH 200



power supply 5,5 x 1,5
used in:
3000er device serie

PRODUCT OVERVIEW

SERVICE

OEM- / customer-specific designs 006
 Calibration and certificates 007

MOBILE MEASUREMENT**HANDHELD INSTRUMENTS (with sensors and accessories)**

Temperature / Infrared 008-025
 Air humidity / Flow rate 026-030
 Material humidity 031-038
 Water analysis 039-052
 Gas 053-058
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 Miscellaneous 070-071
 Zubehör / Software 072-078

STATIONARY MEASUREMENT / INDUSTRY**DISPLAY / CONTROLLER**

Display instruments for control panel mounting 079
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You have not found a device fulfilling all your requirements completely?
No problem, we can modify the devices to your specific needs.



I.) Optical customization

• Colours of housing according to your wishes

In corresponding numbers you can order our device with a housing in another color.

• Modified label

Do you want your logo on the device or the type designation matching to your name policy? Even photo-quality images can be applied by digital printing process.

**PLEASE CONTACT US, WE'LL DO OUR BEST
TO FULFIL YOUR WISHES!**

II.) Hardware and software modifications

To a certain extend the hardware or software can be modified to your requirements. For example this are realized modifications to customer's specifications:

- Modifying the hardware to another probe characteristic
- Creating an additional material characteristic for the GMH 38xx-series
- Other connectors
- Faster pressure measurement
- ...

III.) Customer-specific developments

If there is no device in our standard product proposal fulfilling your individual requirements, there is the possibility to develop a device according to your specifications.

Please note that the customer versions are associated with a little extra costs or depending on the amount of ordered pieces.



CALIBRATION AND CERTIFICATE - ALL FROM ONE SOURCE

Which certificate will be required ?

Factory Calibration Certificate: could be deemed to be sufficient, if the devices act as measuring and test equipment within quality management systems according to DIN EN ISO 9000ff or similar, as long as they are not used as a standard. Furthermore there are some measurement categories, without possibility to get a DAkkS accreditation. DAkkS-Calibration Certificate will be recommended for the recalibration of testing equipment which itself is used as a standard for the monitoring of other measuring and test equipment. It is also possible that internal demands of the particular companies makes a DAkkS Calibration Certificate necessary.



1. Readjustment

After a longer period of use, it's recommendable to send in the devices (e.g. humidity) for readjustment. At this, the device will be fully checked up and new adjusted, if required.

for return to national standards

2. Factory Calibration Certificate

DIN EN ISO 9000ff demands a traceable calibration of measuring and test equipment. This calibration certificate is a low-priced alternative to the DAkkS Calibration Certificate.

3. DAkkS Calibration Certificate

The DAkkS Calibration Certificate always conforms to form, structure and procedures the standards and requirements of the German Calibration Service according DIN EN ISO 17025.

1. READJUSTMENT

(without certificate of calibration) Readjustment of the device

2. FACTORY CALIBRATION CERTIFICATE

Calibration certificates are available for all handheld instruments marked with the symbol . Also possible for measuring transmitters resp. combinations of display instruments and sensors/transmitters.

Temperature  ISO WPT incl. 1 measurement point (Please specify an inspection point) additional measurement point (from -30 ... +500 °C) (Please specify an inspection point) additional measurement point (-90 ... -30 and +500 ... +1300 °C) (Please specify an inspection point) additional measurement point -196 °C ISO-WPT2A Product-ID: 602583 Certificate of calibration with standard values: 0 °C / +70 °C ISO-WPT2B Product-ID: 602584 Certificate of calibration with standard values: 0 °C / +37 °C ISO-WPT3 Product-ID: 602596 Certificate of calibration with standard values: -20 °C / 0 °C / +70 °C	Pressure  ISO-WPD5 Product-ID: 602514 Certificate of calibration: 5 points ascending, 5 points descending ISO-WPD10 Product-ID: 602565 Certificate of calibration: 10 points ascending, 10 points descending Humidity  ISO-WPF4 Product-ID: 602543 Certificate of calibration incl. standard-measuring values (approx. 20 % / 40 % / 60 % / 80 % RH increasing and decreasing; measurement point Temperature: approx. +23 °C) Atmospheric Oxygen  ISO-WPO3 Product-ID: 602816 Certificate of calibration with 3 points: 0 / 20.9 / 100 % O₂ <i>Note: a replacement of the sensor, before issue the WPO3, is recommended for sensors with an age of one year!</i>	Conductivity  ISO-WPL3 Product-ID: 602622 Certificate of calibration with 3 points: ~147 µS/cm, ~1412 µS/cm, ~12,90 mS/cm ISO-WPL10 Product-ID: 602623 Certificate of calibration with 10 points from 0.9 µS/cm to ~192 mS/cm Ultrapure Water ISO-WPL3-RW Product-ID: 602624 Certificate of calibration with 3 points: ~2,50 µS/cm, ~7,00 µS/cm, ~15,00 µS/cm pH  ISO-WPP3 Product-ID: 602767 Certificate of calibration with 3 points: 4.00 pH, 6.87 pH, 9.18 pH ISO-WPP10 Product-ID: 602768 Certificate of calibration with 10 points from 1.09 pH ... 12.75 pH
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3. DAKKS CALIBRATION CERTIFICATES

Temperature  DAkkS-certificate (incl. 1 measurement point) (Please specify an inspection point) additional measurement points (from -80 ... +1400 °C) (Please specify an inspection point) additional measurement point -196 °C	Pressure  DAkkS-P Product-ID: 602731 Over pressure -1 ... 100 bar (incl. 9 points increase and decrease) DAkkS-PA Product-ID: 602758 Absolute pressure 0 ... 70 bar (incl. 9 points increase and decrease)	Humidity (incl. 1 temperature value)  DAkkS-FE Product-ID: 602871 for devices with external sensor (Testing points: 15 % RH and 70 % RH / at 23 °C) DAkkS-F Product-ID: 602870 for devices with fixed attached sensor (Testing points: 20 % RH, 50 % RH and 80 % RH / at 23 °C)
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For the storage of the devices, we recommend the use of a safe-keeping case.

Background knowledge in temperature measurement

Resistance: Pt100, Pt1000, NTC, PTC

The sensor element's ohmic resistance changes with temperature. This can be evaluated by the displaying device and afterwards converted to the corresponding temperature. Especially for Pt100 one distinguishes between 2-, 3- and 4-wire connection. The 3- and 4-wire connection allows for automatic compensation of measuring error caused by the serial cable resistance.

Features:

- Highest accuracies possible
- High reproducibility of results with exchanged sensors, especially for Pt100 and Pt1000
- Standard measuring method for reference measurements

CONCLUSION: a little slower, but highly precise



Application:

	GMH 3710	GMH 3750	GMH 2710-T / -E	GMH 2710-K / -G	GMH 2710-F / -I	GTH 175 PT-T / -E	GTH 175 PT-K / -G	GMH 285 / -BNC	GMH 175
Reference- / precision measurement	●	●							
Quality management	●	●	●	●	●	●	●	●	●
Difference measurement									
Surface measurement									
Core temperature measurement	●	●		●	●		●	●	●
High-temperature measurement	●	●							
Food, HACCP	●	●	●	●	●	●	●		
Water-proof			●	●	●				
Handling with one hand					●				

Equipment:

Sensor element	Pt100	Pt100	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000
(max.) Meas. range [°C]	-200 ... +850	-200 ... +850	-200 ... +200	-200 ... +250	-70 ... +250	-199 ... +199	-199 ... +199	-200 ... +400	-199 ... +199
Resolution [°C]	0,01	0,01	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Plug-in probe	●	●						●	●
Measurement inputs	1	1	1	1	1	1	1	1	1
Min/Max, Hold, Auto-Off	●	●	●	●	●			●	
Alarm (buzzer) / Data logger		●						● / -	

Device information:

Catalogue page	10	10	14	14	14	15	15	12	12
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TEMPERATURE

Thermocouple: type K, type N, type S, ...

The contact of two different metal compositions (e.g. NiCr and Ni) results in a voltage between contact spot (probe) and the displaying device. This voltage is almost proportional to the temperature difference and gets evaluated and converted to a temperature by the displaying device.

Features:

- Very small sensors are possible, therefore:
 - Very short response times possible
 - Highly suitable for surface measurements
- Temperatures up to 1750 °C can be measured (depending on design of probe and type of used thermocouple)

CONCLUSION: very fast, very flexible and wide measuring range



Application:

	GTH 200 air	GMH 3210	GMH 3230	GMH 3250	GTH 1150	GMH 1150	GTH 1170	GMH 1170
Reference- / precision measurement								
Quality management		•	•	•			•	•
Difference measurement			•	•				
Surface measurement		•	•	•	•	•	•	•
Core temperature measurement		•	•	•	•	•	•	•
High-temperature measurement		•	•	•	•	•	•	•
Food, HACCP		•	•	•				
Water-proof								
Handling with one hand	•				•		•	

Equipment:

Sensor element	Pt1000	J, K, N, S, T	J, K, N, S, T	J, K, N, S, T	K	K	K	K
(max.) Meas. range [°C]	-25 ... +70	-220 ... +1750	-220 ... +1750	-220 ... +1750	-50 ... +1150	-50 ... +1150	-65 ... +1150	-65 ... +1150
Resolution [°C]	0,1	0,1	0,1	0,1	1	1	1	1
Plug-in probe		•	•	•	•	•	•	•
Measurement inputs	1	1	2	2	1	1	1	1
Min/Max, Hold, Auto-Off	•	•	•	•			•	•
Alarm (buzzer) / Data logger				•				

Device information:

Catalogue page	16	17	17	17	18	18	18	18
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STANDARD
FUNCTIONS:



REFERENCE METER
FOR ANY CALIBRATION REQUIREMENT

HIGHEST ACCURACY AND
RESOLUTION (0.01 °C)

ADDITIONAL FUNCTIONS AT GMH 3750:



GMH 3710

Product-ID: 600332

Pt100 - High-Precision Thermometer,
Accessories not incl., 4-wire

GMH 3750

Product-ID: 600335

Pt100 - High-Precision Thermometer,
Accessories not incl., 4-wire, Data logger

Application:

Reference measuring device in liquids, soft media, air/
gases.

Specifications:

Measuring range:	-199.99 ... +199.99 °C resp. -200.0 ... + 850.0 °C -199.99 ... +199.99 °F resp. -328.0 ... +1562.0 °F
Resolution:	0.01 °C resp. 0.1 °C; 0.01 °F resp. 0.1 °F
Linearisation:	Curve according to DIN EN 60751. GMH 3750 add. supports an userdefined curve.
Accuracy: (±1 digit) (at nominal temperature = 25 °C)	≤ 0.03 °C / 0.06 °F at resolution 0.01° ≤ 0.1 °C / 0.2 °F at resolution 0.1°
Temperature drift:	≤ 0.002 °C / K
Input:	probe connection via 4-pin miniature DIN-plug, Pt100, 4-wire, in acc. to DIN EN 60751
Nominal temperature:	25 °C
Working temperature:	-25 ... +50 °C
Relative humidity:	0 ... +95 % RH (non-condensing)
Storage temperature:	-25 ... +70 °C
Display:	two 4½ digit LCDs (12.4 mm or 7 mm high), as well as additional arrows.
Pushbuttons:	6 membrane keys
Output:	3-pin jack connector Ø 3.5 mm, choice between serial interface or analog output
serial interface:	direct connection to RS232 or USB interface of a PC via electri- cally isolated interface adapter GRS 3100 or GRS 3105 resp. USB 3100 N (p.r.t. accessories).
analog output:	0 - 1 V, freely adjustable (resolution 13 bit, accuracy 0.05 % at nominal temperature)

Power supply: 9 V-battery, as well as additional
d.c. connector for external
10.5-12 V voltage supply.

Power consumption: approx. 1 mA

Housing: Impact-resistant ABS plastic
housing, membrane keyboard,
transparent panel. Front side
IP65, integrated pop-up clip

Dimensions: 142 x 71 x 26 mm (H x W x D)

Weight: approx. 155 g

Scope of supply: Device, battery, manual

additional at GMH 3750:

Userdefined sensor curve (50 interpolation points)

Logger function

- manual: 99 data sets
(fetch data via buttons or interface)
- cyclic: 16.384 data sets
(fetch data via interface)
adjustable cycle time: 1 s ... 1 h
The logger is started or stopped by keypad or interface.
The software GSOF3050 (see accessories) is available
for comfortable read-out of logger data.

Accessories and spare parts:

USB 3100 N

Product-ID: 601092
interface converter

GSOFT 3050

Product-ID: 601336
operating software (p.r.t. page 77)

GNG 10 / 3000

Product-ID: 600273
power supply

ST-R1

Product-ID: 601066
device protection bag (p.r.t. page 73)

GKK 1100

Product-ID: 601060
case (340 x 275 x 83 mm) with foam lining for universal
use

GMHKonfig

(visit our homepage: Download → Software)

Software description:

Comfortable software to edit the user defined sensor curve
of the GMH 3750.
(e.g. for calibration laboratories etc.)

Note:

please note that for the interface communication with the
device a interface converter (USB 3100 N) is necessary
(p.r.t. page 74).



Scope of supply:

Measuring device GMH 3750 or GMH 3710, temperature
probe GTF 401 1/3 DIN, plastic case GKK 3500 and
certificate of calibration with 3 calibration points.

General:

The overall error of a measuring consists of the sum of
the instrument error and the probe error. To minimize the
overall error, we offer calibrated and optimized systems
below.
Due to their excellent system accuracy they are especial-
ly suitable for quality assurance according to ISO9000ff,
as reference instruments in manufacturing processes,
laboratory, service and maintenance, etc.
The system optimization is done via a special character-
istic curve which is determined for each temperature
probe separately and stored in the instrument (GMH
3750) or with probe adjusting via offset and slope input
(GMH 3710).

GMH 3750/SET1

Product-ID: 602690

Measuring set incl. certificate of calibration

Specifications:

optimized measuring range: -20 ... +70 °C
Temperature probe: GTF 401 1/3 DIN, Pt100, 4-wire
System accuracy: better than 0.07 °C
(at opt. range)
Calibration points: -20 °C / 0 °C / 70 °C

GMH 3750/SET2

Product-ID: 602691

Measuring set incl. certificate of calibration

Specifications:

optimized measuring range: 0 ... +250 °C
Temperature probe: GTF 401 1/3 DIN, Pt100, 4-wire
System accuracy: better than 0.3 °C
(at opt. range)
Calibration points: 0 °C / 100 °C / 250 °C

GMH 3710/SET1

Product-ID: 602687

Measuring set incl. certificate of calibration

Specifications:

optimized measuring range: -20 ... +70 °C
Temperature probe: GTF 401 1/3 DIN, Pt100, 4-wire
System accuracy: better than 0.1 °C
(at opt. range)
Calibration points: -20 °C / 0 °C / 70 °C

GMH 3710/DKD1

Product-ID: 602689

Measuring set incl. DKD calibration certificate DIN
17025

Specifications:

optimized measuring range: -20 ... +70 °C
Temperature probe: GTF 401 1/3 DIN, Pt100, 4-wire
System accuracy: better than 0.1 °C
(at opt. range)
Calibration points: -20 °C / 0 °C / 70 °C

SUITABLE PT100 MEASURING PROBE (4-WIRE)

IMMERSION PROBE FOR LIQUIDS / GASES

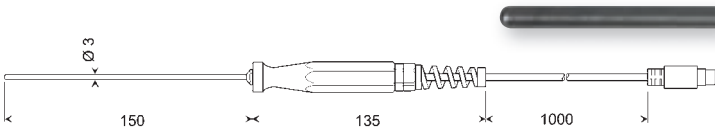
GTF 401

Product-ID: 600377

-50 ... +400 °C, DIN class B

GTF 401 1/3 DIN *

Product-ID: 600378

-50 ... +400 °C, 1/3 DIN class B (± 0.1 °C at 0 °C)

non-corrosive stainless steel tube (V4A) Ø 3 mm, plastic handle, anti-buckling glanding, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

Response time T_{90} water 0.4 m/s approx. 10 s, air 1 m/s approx. 40 s**GTF 35**

Product-ID: 600391

-50 ... +400 °C, DIN class B



non-corrosive stainless steel tube (V4A) Ø 3 mm, shrink sleeving, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

Response time T_{90} water 0.4 m/s approx. 10 s, air 1 m/s approx. 40 s

IMMERSION PROBE WITH SHEATH ELEMENT PT100

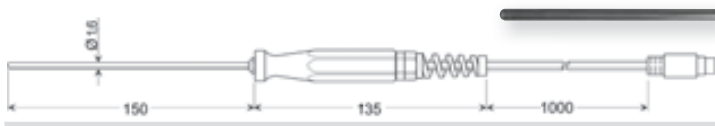
Advantages of sheath element Pt100:

- high temperature resistance
- sheath cable is bendable
- high shock resistance
- high service life

GTF 401 / 1.6

Product-ID: 602066

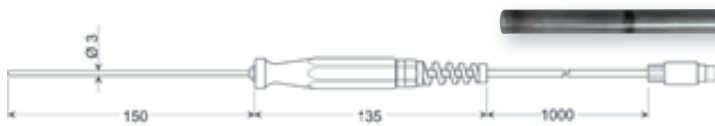
-50 ... +400 °C, DIN class B



V4A sheath tube bendable, Ø 1.6 mm, plastic handle, antikink connection, approx. 1 m 4-pole cable, mini-DIN plug

Response time T_{90} water 0.4 m/s < 2 s, air 1 m/s approx. 25 s**GTF 401 1/10 DIN ***

Product-ID: 600379

-50 ... +400 °C, 1/10 DIN class B (± 0.03 °C at 0 °C)

stainless steel tube (V4A) Ø 3 mm, plastic handle, anti-buckling glanding, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

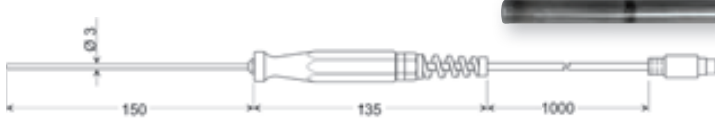
Response time T_{90} water 0.4 m/s < 5 s, air 1 m/s approx. 60 s**GTF 601**

Product-ID: 600387

-200 ... +600 °C, DIN class B

GTF 601 1/3 DIN *

Product-ID: 600388

-200 ... +600 °C, 1/3 DIN class B (± 0.1 °C at 0 °C))

V4A-flexible jacket tube, Ø 3 mm, plastic handle, anti-buckling glanding, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

Response time T_{90} water 0.4 m/s < 5 s, air 1 m/s approx. 60 s

INSERTION PROBE FOR SOFT MEDIA

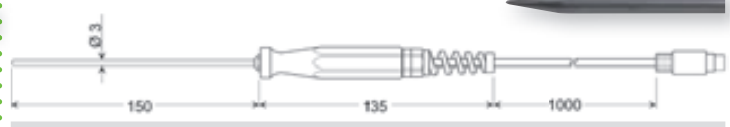
GES 401

Product-ID: 600384

-50 ... +400 °C, DIN class B

GES 401 1/3 DIN *

Product-ID: 600385

-50 ... +400 °C, 1/3 DIN class B (± 0.1 °C at 0 °C)

stainless steel tube (V4A) Ø 3 mm with needle type prod, plastic handle, anti-buckling glanding, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

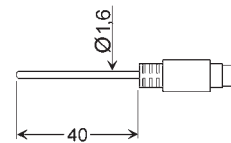
Response time T_{90} water 0.4 m/s approx. 10 s, air 1 m/s approx. 40 s

AMBIENT AIR PROBE

GLF 401 Mini

Product-ID: 600395

-25 ... +70 °C, DIN class A



V4A tube Ø 1.6 mm, FL = approx. 40 mm, 4-pin mini DIN-type plug

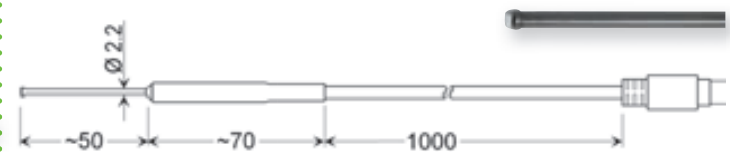
Response time T_{90} air 1 m/s approx. 25 s

SURFACE PROBE FOR SOLID SURFACES

GOF 401 Mini

Product-ID: 600396

-50 ... +200 °C, DIN class B



Frontal Pt100 ceramic plate 2 x 2.3 mm, V4A tube Ø 2.2 mm, approx. 1 m 4-wire PVC cable, 4-pin miniature DIN-type plug

Response time T_{90} approx. 15 s

ACCURACY

Pt100 / Pt1000:

sensor accuracy acc. to DIN EN 60751

DIN class B: (area of validity: -50 ... +500 °C) ± 0.3 °C at 0 °C**DIN class A:** (area of validity: -30 ... +300 °C) ± 0.15 °C at 0 °C**DIN class AA = 1/3 DIN class B:** (0 ... +150 °C) ± 0.1 °C at 0 °C**1/10 DIN class B:** ± 0.03 °C at 0 °C

SPECIAL DESIGNS

Upcharges:**longer probe tube**

upcharge per further starting 100 mm

longer cable (silicone)

upcharge per further starting meter

other cable material

upcharge per meter, please refer to cable pricing page 159

teflon covered probe tube

(for probes up to 200 mm)

(for probes used in acids and salt water, upper temperature range 250 °C)

waterproof probe handle

(casted, only possible with PVC cable -20 ... +105 °C)

higher sensor accuracy:

1/3 DIN class B, for Pt100 and Pt1000, tolerances: 0.1 °C at 0 °C

higher sensor accuracy:

1/10 DIN class B, for Pt100-probes, tolerances: 0.03 °C at 0 °C

basic fee for custom made probe

PRECISION THERMOMETER PT1000



FUNCTIONS:



GMH 175

Product-ID: 600054

Precision Thermometer with 3.5 mm jack connector
Battery/mains operation, for plug-in probes, Pt1000 2-wire

Application:

high-precision measurements in liquids, soft media, air/gases

Specifications:

Measuring range:	-199.9 ... +199.9 °C
Resolution:	0.1 °C
Accuracy: (at nominal temperature = 25 °C)	
Device:	0.1 °C ± 1 digit (within range of: -70.0 ... +199.9 °C)
Display:	3½ digit, LCD display approx. 13 mm high
Working temperature:	-30 ... +45 °C (low temperature - for use in cold storage rooms!)
Storage temperature:	-30 ... +70 °C
Power supply:	9 V-Battery (included) as well as additional d.c. connector for external 10.5 - 12 V direct voltage supply. (suitable power supply: GNG10/3000)
Battery service life:	approx. 200 operating hours
Housing:	impact resistant ABS plastic case, membrane keyboard, transparent panel, front side IP65, integrated pop-up clip
Dimensions:	approx. 142 x 71 x 26 mm (H x W x D)
Weight:	approx. 160 g (incl. battery)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

GB 9 V

Product-ID: 601115
spare battery

ST-R1

Product-ID: 601066
device protection bag with cut-out for probe connection

RESISTANCE TEMPERATURE MEASUREMENT PT1000



FUNCTIONS:



GHM 285-KB



BACKLIGHT

GMH 285-KB

Product-ID: 605506

Alarm thermometer with 3.5 mm jack socket, without accessories

GMH 285-BNC

Product-ID: 605507

Alarm thermometer with BNC socket, without accessories

General:

High precision, alarm, backlight and many other features characterize this device as a true all-rounder. The alarm function additionally allows for acoustic monitoring of the set temperature boundaries. The serial interface in combination with GAM 3000 can be used for switching additional alarm devices or realizing basic control processes.

Application:

Highly accurate measurements over a large measuring range in liquids, soft media, air/gases. Used for e.g. measurement in agriculture, quality control, laboratory, food production, etc.

Specifications:

Measuring range:	-200.0 °C ... +400.0 °C or -200.0 °F ... +752.0 °F
Resolution:	0.1 °C or 0.1 °F
Accuracy: (at nominal temperature = 25 °C)	
Device:	±0.1 °C ±1 digit (at range from -100.0 ... +200.0 °C) else ±0.1 % of m.v. ±1 digit
Probe:	Pt1000 sensor, 2-wire, probe connection via jack plug 3.5 mm Ø or BNC (GMH 285-BNC) (see next page).
Measuring frequency:	2 measurements/s
Display:	4½ digit LCD display (13 mm) with additional segments, wide-area backlight, duration can be adjusted
Working temperature:	-25 ... +50 °C
Storage temperature:	-25 ... +70 °C
Power supply:	9 V battery (included) or additionally supply socket for external 10.5-12 V DC supply. (suitable power adapter: GNG10/3000)
Battery lifetime:	
Current measurement:	< 0.2 m (battery lifetime with alkaline battery more than 1500 hours!)
Backlight:	<5 mA, if „BAT“-warning is active it gets automatically switched off
EMC:	The device corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member countries regarding electromagnetic compatibility (2004/108/EG). Additional fault: <1 %.
Housing:	impact-resistant ABS, membrane keypad, transparent panel, front side IP65, integrated pop-up clip for table top or suspended use
Dimensions:	without BNC socket: 142 x 71 x 26 mm (H x W x D) BNC socket: approx. 13 mm long
Weight:	approx. 170 g (incl. battery)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

GAM 3000

Product-ID: 601132

Switching module for devices of the GMH3xxx series with alarm output

ST-R1

Product-ID: 601066

device protection bag with cut-out for probe connection

SUITABLE PT1000 - MEASURING PROBES, 2-WIRE

ALL PROBES AVAILABLE
ALSO WITH BNC-CONNECTOR

IMMERSION FOR LIQUIDS / GASES

GTF 175

Product-ID: 600423

-70 ... +200 °C, Pt1000 class B



non-corrosive V4A tube, Ø 3 mm, plastic handle, anti-buckling glanding, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

Response time T_{90} : water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

IMMERSION PROBE WITH SHEATH ELEMENT PT1000

Advantages of sheath element Pt1000:

- high temperature resistance
- sheath cable is bendable
- high shock resistance
- high service life

GTF 175 / 1.6

Product-ID: 600424

-70 ... +200 °C, Pt1000 class B



stainless steel tube (V4A), flexible, Ø 1,6 mm, plastic handle, anti-buckling glanding, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

Response time T_{90} : water 0.4 m/s < 2 s, air 2 m/s approx. 25 s

INSERTION PROBE FOR SOFT MEDIA

GES 20

Product-ID: 606787

-70 ... +250 °C, Pt1000 class B



V4A tube with Ø 1.5 mm slim insertion tip, small teflon handle, stainless steel kink protection, 1 m Teflon cable, Ø 3.5 mm gold-plated jack plug

Response time T_{90} : water 0.4 m/s < 1 s, air 2 m/s approx. 12 s

GES 175

Product-ID: 600431

-70 ... +200 °C, Pt1000 class B



V4A tube Ø 3 mm with slim insertion tip, plastic handle, anti-buckling glanding, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

Response time T_{90} : water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

AIR/GAS PROBE FOR CLEAN MEDIA

GLF 175

Product-ID: 600438

-70 ... +200 °C, Pt1000 class B



(for dirty measurands use GTF 175), punched V4A protection tube, fast miniaturized Pt1000 mounted freely in tube, resulting in fast response, plastic handle, anti-buckling glanding, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

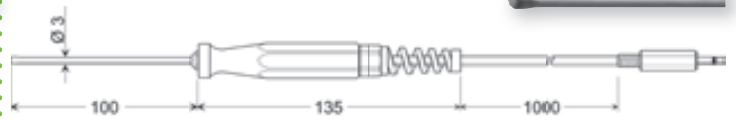
Response time T_{90} : air 2 m/s approx. 15 s

SURFACE PROBE FOR SOLID SURFACES

GOF 175

Product-ID: 600433

-70 ... +200 °C, Pt1000 class B



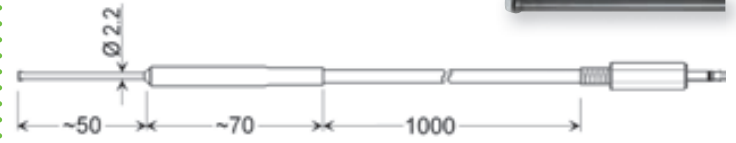
S2 x 2.3 mm ceramic Pt1000 sensor mounted at the tip, V4A tube, quadratic 3 x 3 mm at the tip, plastic handle, anti-buckling glanding, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

Response time T_{90} : approx. 15 s

GOF 175 Mini

Product-ID: 600436

-70 ... +200 °C, Pt1000 class B



S2 x 2.3 mm ceramic Pt1000 sensor mounted at the tip, V4A tube Ø 2.2 mm, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

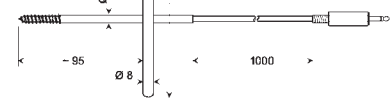
Response time T_{90} : approx. 15 s

PROBE FOR DEEP-FROZEN PRODUCTS

GGF 175

Product-ID: 601341

-70 ... +200 °C, Pt1000 class B



to screw into deep-frozen products, etc. no predrilling required. V4A tube, 6 mm Ø with screw prod, 1 m highly flexible silicone cable, 3.5 mm gold plated jack connector

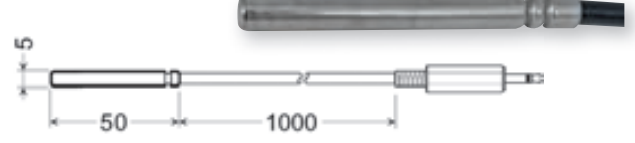
Response time T_{90} : approx. 15 s

AIR- / TUBE MOUNTING PROBE

GTF 2000

Product-ID: 604659

-50 ... +200 °C, Pt1000 class B



V4A-sensor sleeve Ø 5 mm, 3.5 mm gold plated jack connector, 1 m highly flexible silicone cable, each beginning meter upcharge

Response time T_{90} : water 0.4 m/s < 10 s, air 2 m/s approx. 60 s

Variant:

GTF 2000-WD

Product-ID: 602362

water proof type, construction like described before, but cable of PVC and tube enclosed water proof. Max. 105 °C!

ACCURACY

Pt100 / Pt1000:

sensor accuracy acc. to DIN EN 60751

DIN class B: (area of validity: -50 ... +500 °C)

±0.3 °C at 0 °C

DIN class A: (area of validity: -30 ... +300 °C)

±0.15 °C at 0 °C

DIN class AA = 1/3 DIN class B: (0 ... +150 °C)

±0.1 °C at 0 °C

1/10 DIN class B:

±0.03 °C at 0 °C

basic fee for custom made probe

All types of probes also available for Pt100 2- / 3- or 4-wire connection
We manufacture all types of probes according to your special desires -
low priced and fast. Please contact us.



FUNCTIONS:



**WATER-PROOF
AND VERY ROBUST
DEVICE AND PROBE**

HIGHLIGHTS:

- Easy handling
- Battery life time > 6000 hours

GMH 2710-T

Product-ID: 602034

Temperature measuring device incl. universal probe

GMH 2710-E

Product-ID: 602036

Temperature measuring device incl. insertion probe

GMH 2710-K

Product-ID: 602038

Temperature measuring device incl. Teflon insertion probe

GMH 2710-G

Product-ID: 602040

Temperature measuring device incl. mini Teflon probe

GMH 2710-F

Product-ID: 604035

Single-hand temperature measurement device with integrated immersion probe

GMH 2710-I

Product-ID: 604611

Single-hand temperature measurement device with integrated insertion probe

Application:

Accurate measurements for laboratories, quality management, and monitoring of production processes

Area of application:

Food (HACCP), medical / pharmaceutical science, chemistry, aquaristics, fish farming, aquaculture, etc.

GMH 2710-F/-I:

Optimal for measurements at places difficult to access, e.g.

- storage temperature control (especially food)
- temperature control for food measurements (HACCP)
- incoming inspection
- temperature measurements as part of legionellae tests

These measurements may cause problems with ordinary thermometers.

Specifications:

Measuring range:

GMH 2710-T / -E -199.9 ... +200.0 °C

GMH 2710-K / -G -199.9 ... +250.0 °C

GMH 2710-F / -I -70 ... +250 °C

Resolution: 0.1 °C

GMH 2710-F
GMH 2710-I

LIQUIDS

AIR / GAS

BENDABLE

SOFT MEDIA

CORE TEMPERATURE

Ø 3 MM

CORE TEMPERATURE

Ø 1.5 MM

GMH 2710-T

GMH 2710-E

GMH 2710-K

GMH 2710-G



RECOMMENDED FOR
„SOUS-VIDE-COOKING“

Accuracy:

at -20.0 ... +100.0 °C ±0.1 °C ±1 digit
at -70.0 ... +200.0 °C ±0.1 % of meas. value ±2 digit, sensor calibrated with device

Probe:

Pt1000, 2-wire, isolated water- and steam-proof, permanently connected to device

GMH 2710-T plastic handle 135 mm long
1 m PVC cable (max 100 °C) Ø 3 mm / length: 100 mm

GMH 2710-E plastic handle 135 mm long, additionally with slim insertion tip for all soft media. 1 m PVC cable (max 100 °C) Ø 3 mm / length: 100 mm

GMH 2710-K design type with big Teflon handle and 1 m Teflon cable, with slim insertion tip, handle and cable are resistant to temperatures up to 250 °C air temperature. Stainless steel kink protection, Ø 3 mm / length: 100 mm

GMH 2710-G design type with small Teflon handle and 1 m Teflon cable, with slim insertion tip, handle and cable are suitable for permanent application at temperatures up to 250 °C. Stainless steel kink protection, Ø 1.5 mm / length: 100 mm

GMH 2710-F V4A mantle tube, bendable, Ø 3 mm, length 150 mm

GMH 2710-I V4A mantle tube with needle-shaped insertion tip, bendable, Ø 3 mm, length 150 mm

Response time T_{90} : approx. 10 s

Display: two 4-digit LCD (12.4 mm and 7 mm)

Nominal temperature: +25 °C

Working temperature: -25 ... +50 °C

Storage temperature: -30 ... +70 °C

Power supply: 2 x AAA batteries

Battery life time: > 6000 hours

Protection class: IP65 / IP67

Housing: Housing made of impact-resistant ABS

Dimensions: 154 x 81 x 31 mm (H x W x D)

Weight: 215 g (incl. battery and probe)

Scope of supply: device incl. probe, battery, manual

Accessories and spare parts:

K 50 BL

Product-ID: 601352

Silicone protection cover blue

K 50 RE

Product-ID: 607456

Silicone protection cover red



PRECISION POCKET THERMOMETER WITH PT1000 PROBE



FUNCTIONS:



HIGHLIGHTS:

- Easy handling
- High accuracy and precision



GTH 175 PT-T

LIQUIDS

AIR/GAS

SOFT MEDIA

CORE TEMPERATURE

Ø 3 MM

CORE TEMPERATURE

Ø 1.5 MM



GTH 175 PT-T

GTH 175 PT-E

GTH 175 PT-K

GTH 175 PT-G

GTH 175 PT-T

Product-ID: 600051

Temperature measuring device incl. universal probe

GTH 175 PT-E

Product-ID: 600052

Temperature measuring device incl. insertion probe

GTH 175 PT-K

Product-ID: 600053

Temperature measuring device incl. Teflon insertion probe

GTH 175 PT-G

Product-ID: 601836

Temperature measuring device incl. mini Teflon probe

Application:

Accurate measurements in liquids, as core measuring device (with insertion probe) or for air/gas measurements. Handle and cable of -T and -E are resistant to temperatures up to 100 °C, -K and -G up to 250 °C.

Specifications:

Measuring range:	-199.9 ... +199.9 °C
Resolution:	0.1 °C
Accuracy: (at nominal temperature)	0.1 % of meas. value ±2 digit (at range: -70.0 ... +199.9 °C), Probe and device are calibrated together, resulting in an error of about 0.1 °C ±1 digit in range 0 ... 100 °C.
Probe:	All probes are permanently connected to device.
GTH 175 PT-T	Pt1000, 2-wire, isolated in V4A tube 3 mm Ø and approx. 100 mm long, plastic handle approx. 135 mm long, kink protection and approx. 1 m highly flexible silicone cable
GTH 175 PT-E	Probe (V4A, Ø 3 mm x 100 mm) as above, but additional slim insertion tip for all soft media. Handle and cable are resistant to temperatures up to 100 °C.

GTH 175 PT-K	Probe (V4A, Ø 3 mm x 100 mm) as above, but with Teflon handle and 1 m Teflon cable. Handle and cable are resistant to air temperatures up to 250 °C.
GTH 175 PT-G	Probe (V4A, Ø 1.5 mm x 100 mm) as above, but with Teflon handle and 1 m Teflon cable. Handle and cable are resistant to air temperatures up to 250 °C.
Display:	3½-stellige, 13 mm high LCD display
Nominal temperature:	+25 °C
Working temperature:	-30 ... +45 °C
Storage temperature:	-30 ... +70 °C
Power supply:	9 V battery (included)
Battery life time:	approx. 200 operating hours
Housing:	Housing made of impact-resistant ABS
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 190 g (incl. battery and probe)
Scope of supply:	device incl. probe, battery, manual

Options:

GTH 175 PT-T - WD	Product-ID: 600242
GTH 175 PT-E - WD	Product-ID: 602307
Probe design: water-proof	
Probe as for GTH 175 PT-T and GTH 175 PT-E, but with PVC cable and sealed handle (max. 100 °C).	
(Not possible for GTH 175 PT-K and GTH 175 PT-G.)	
Special designs upon request:	e.g. longer cable or probe tube.

Accessories and spare parts:

GB 9 V	Product-ID: 601115
Spare battery	
ST-KR	Product-ID: 601082
Device protection bag with round cut-out (central)	
GKK 1100	Product-ID: 601060
Case (340 x 275 x 83 mm) with foam lining	

COMPLETE SOLUTIONS

**GTH 175 PT-T-WPT2**

Product-ID: 602670

Complete solution incl. immersion probe and certificate of calibration WPT2 A (0 °C / 70 °C) and case GKK 252.

GTH 175 PT-T-WPT3

Product-ID: 602673

Complete solution incl. immersion probe and certificate of calibration WPT 3 (-20 / 0 / +70 °C) and case GKK 252.

GTH 175 PT-E-WPT3

Product-ID: 602674

Complete solution incl. insertion probe and certificate of calibration WPT 3 (-20 / 0 / +70 °C) and case GKK 252.

PRECISION ROOM THERMOMETER



**COMFORTABLE
HANDLING WITH ONLY ONE HAND**

GTH 200 air

Product-ID: 600251
Precision room thermometer

General:

The exposed but yet protected temperature sensor provides fast and precise measurements of $\pm 0.2^\circ\text{C}$ (at 20°C). The device has undergone a streamlining process and is optimized to its key features, ensuring a comfortable and efficient handling with only one hand.

Application:

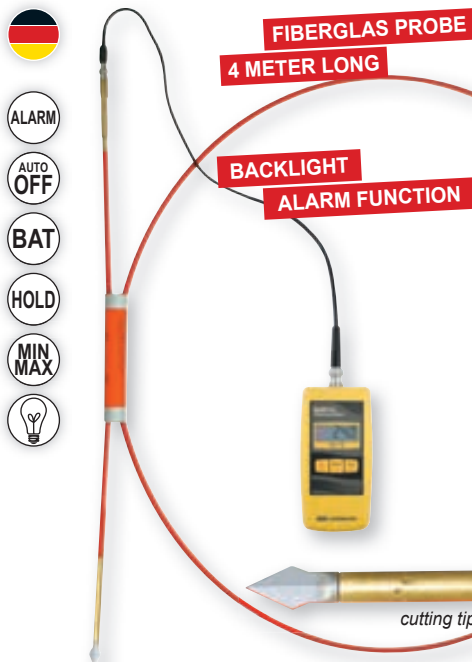
The room thermometer GTH 200 air is an essential tool for fast and precise temperature measurements in

- calibration rooms
- production / computer rooms
- living space
- laboratories, etc.

Specifications:

Measuring range:	-25.0 ... +70.0 $^\circ\text{C}$
Resolution:	0.1 $^\circ\text{C}$
Accuracy:	(± 1 digit) (at nominal temperature) $\pm 0.5\%$ of meas. value $\pm 0.1^\circ\text{C}$
Sensor:	Pt 1000, 1/3 DIN class B
Response time:	T_{90} = approx. 5 s
Display:	4½ digit, 11 mm high LCD-display
Nominal temperature:	25 $^\circ\text{C}$
Working temperature:	-20 ... +70 $^\circ\text{C}$
Working humidity:	0 ... 95 % RH (non condensing)
Storage temperature:	-25 ... +70 $^\circ\text{C}$
Power supply:	9 V battery
Current consumption:	max. 0.1 mA
Battery service time:	approx. 6000 operating hours with alkaline battery
Housing:	impact-resistant ABS housing
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), additionally the sensor head at the front side, 35 mm long, $\varnothing$ 14 mm, resulting total length 141 mm
Weight:	approx. 135 g incl. battery
Scope of supply:	device, battery, manual

HAY THERMOMETER



HayTemp 285

Product-ID: 605848
Hay thermometer

General:

Stored hay or straw, etc. is prone to overheating (depreciation) or even self-ignition, because of biological processes. This problem is even emphasized with higher moisture contents. Therefore a regular temperature check is crucial. The HayTemp 285 optimally supports farmers as well as firefighters in silo check.

Application:

Measurements at depth up to 4 m. The alarm function additionally allows for acoustic monitoring of the selected temperature boundaries. The serial interface in combination with GAM 3000 can be used for switching additional alarm devices or realizing basic control processes. The device is also supplied by the GAM 3000: continuous operation possible.

Specifications:

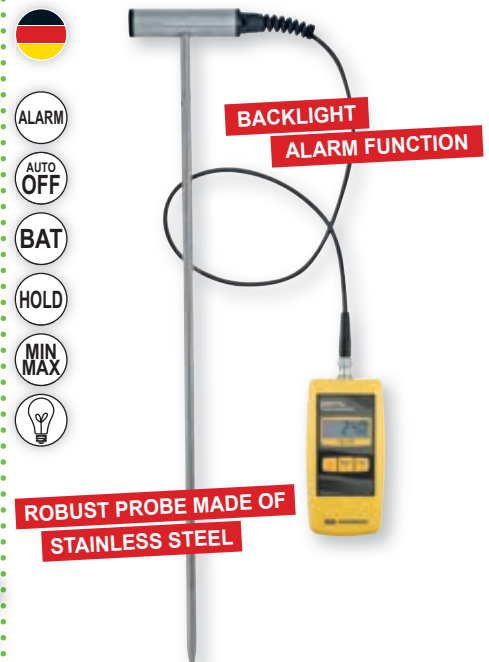
Device:	GMH 285-BNC, see page 12
Probe connection:	BNC, Pt1000, 2-wire
Measuring rod:	Fiberglass probe, approx. 4 m long, approx. 10 mm $\varnothing$, 1 measuring point at probe tip
Cutting tip:	screwable, double-edged tip with integrated temperature sensor
Weight:	Measuring rod with cutting tip approx. 600 g
Scope of supply:	Device, fiberglass rod, probe tip Pt1000, BNC cable (1.5 m), battery, manual

Accessories and spare parts:

GMH 285-BNC Product-ID: 605507 Alarm thermometer with BNC socket
Fiberglasrohr Product-ID: 604407 4 m, without probe and without tip
Sondenspitze Product-ID: 604537 with integrated temperature sensor
Cable BNC/BNC Product-ID: 602855 Connection cable with 1.5 m length
ST-R1-US Product-ID: 605929 Device protection bag with cut-outs for sensor connector and strap

Instruments for hay and straw humidity measurements: see BaleCheck Seite 38!

SOIL THERMOMETER



SoilTemp 285

Product-ID: 605849
Soil thermometer

General:

The universal display device combined with an extremely robust, but yet ergonomic T-handle probe made of stainless steel allows for multiple measurements in soils or bulk materials.

Application:

Silo checking, measurements in soils, waste dumps, silages, compost, etc. The alarm function additionally allows for acoustic monitoring of the selected temperature boundaries. The serial interface in combination with GAM 3000 can be used for switching additional alarm devices or realizing basic control processes. The device is also supplied by the GAM 3000: continuous operation possible.

Specifications:

Device:	GMH 285-BNC, see page 12
Probe connection:	BNC, Pt1000, 2-wire
Measuring range:	-50.0 ... +250.0 $^\circ\text{C}$
Measuring rod:	Stainless steel, 1000 mm x $\varnothing$ 10 mm, 1 m connection cable with BNC plug, 350 g, probe handle designed for comfortable use
Scope of supply:	Device, GTF 40 T, battery, manual

Accessories and spare parts:

GMH 285-BNC Product-ID: 605507 Alarm thermometer with BNC socket
GTF40T-620 Product-ID: 606803 Stainless steel insertion probe, FL 620 mm, with 1 m cable and BNC plug
GTF 40 T-1000 Product-ID: 606791 Stainless steel insertion probe, FL 1000 mm, with 1 m cable and BNC plug
GTF 40 T-1500 Product-ID: 606792 Stainless steel insertion probe, FL 1500 mm, with 1 m cable and BNC plug
GAM 3000 Product-ID: 601132 Switching module for devices of GMH3xxx series with alarm output
ST-R1-US Product-ID: 605929 Device protection bag with cut-outs for sensor connector and strap

PRECISION QUICK-RESPONSE THERMOMETER FOR THERMOCOUPLES

STANDARD-
FUNCTIONS:VERY QUICK
RESPONSE TIME**GMH 3210**

Product-ID: 600337

GMH 3210-B

Product-ID: 605131

precision quick-response thermometer,
accessories not included, 1 plug-in probe input

Specifications:	
Thermocouples:	
GMH 3210:	J, K, N, S, T
GMH 3210-B:	B, K, N, S, T
Resolution:	0.1 °C or 1 °C
Measuring range (depending on thermocouples):	
GMH 3210:	-220 °C ... +1750 °C
GMH 3210-B:	+300 ... +1750 °C
Measuring ranges: (extract)	
Type K:	(MB1) -65.0 ... +300.0 °C (MB2) -220 ... +1372 °C
Accuracy: (extract)	
Type K:	(for MB1) ±0.03 % of m.v. ±0.05 % f.s. (for MB2) ±0.08 % v. MW. ±0.1 % f.s.
Working temperature:	-25 ... +50 °C
Probe connections:	1
Display:	two 4-digit LCDs (12.4 mm and 7 mm high)
Output:	3-pin jack connector Ø 3.5 mm, configurable
Serial interface:	direct connection to RS232 or USB interface of a PC via electri- cally isolated interface adapter GRS 3100 or GRS 3105 resp. USB 3100 N (p.r.t. accessories).
Analog output:	0 - 1 V, freely adjustable, reso- lution 13 bit, accuracy 0.05 % at nominal temperature
Compensation value for surface measurements:	can be set and switched on/off if required
Power supply:	9 V-battery as well as additional d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)
Power consumption:	approx. 0.3 mA
Housing:	impact resistant ABS plastic case, membrane keyboard, transparent panel, front side IP65, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 155 g
Scope of supply:	device, battery, manual

HIGHLIGHTS:

- Serial interface
- Correction factor for surface measuring can be switched on / off
- Analog output 0 - 1 V at GMH 3210

GMH 3230 AND GMH 3250:

- 2 plug-in probes can be connected and read simultaneously
- Temperature differences

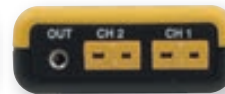
ADDITIONAL FUNCTIONS

GMH 3230:



GMH 3210 connection

GMH 3250:



GMH 3250 connection

suitable probes p.r.t. p. 20-22!

GMH 3230

Product-ID: 600339

precision quick-response thermometer, accessories
not included, 2 plug-in probe inputs**GMH 3250**

Product-ID: 600341

precision quick-response thermometer, accessories
not included, 2 plug-in probe inputs, Data logger

Specifications:	
Thermocouples:	
GMH 3230:	J, K, N, S, T
Resolution:	0.1 °C or 1 °C
Measuring range:	-220 °C ... +1750 °C (depending on thermocouples)
Measuring ranges: (extract)	
Type K:	(MB1) -199.9 ... +999.9 °C (MB2) -220 ... +1372 °C
Accuracy: (extract)	
Type K:	(für MB1) ±0.03 % of m.v. ±0.05 % f.s. (T ≥ -60 °C) ±0.2 % of m.v. ±0.05 % f.s. (T < -60 °C) (für MB2) ±0.08 % of m.v. ±0.1 % f.s. (T ≥ -100 °C) ±1 °C ±0.1 % f.s. (T < -100 °C)
Working temperature:	-25 ... +50 °C
Probe connections:	2
Display:	two 4-digit LCD displays (12.4 mm and 7 mm high)
Serial interface:	3-pole jack socket Ø 3.5 mm, direct connection to RS232 or USB interface of a PC via electri- cally isolated interface adapter GRS 3100 or GRS 3105 resp. USB 3100 N (p.r.t. accessories).
Compensation value for surface measurements:	can be set and switched on/off if required
Difference measurements:	Temperature difference probe 1 - probe 2 can be displayed if 2 probes are connected.
Logger function:	manual: 99 data sets (fetch data via buttons or interface) cyclic: 9.999 data sets (fetch data via interface) adjustable cycle time: 1 s ... 1 h The logger is started or stopped by keypad or interface. The software GSOF3050 (see acces- sories) is available for comfortable read-out of logger data.

Power supply:	9 V-battery as well as additional d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)
Power consumption:	approx. 1.6 mA
Housing:	impact resistant ABS plastic case, membrane keyboard, transparent panel, front side IP65, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 155 g
Scope of supply:	device, battery, manual

Accessories and spare parts:

GB 9 V Product-ID: 601115 Spare battery 9 V
GNG 10/3000 Product-ID: 600273 Plug-in power supply (220 / 240 V, 50 / 60 Hz), output voltage: 10.5 V / 10 mA, suitable for devices with power supply socket
ST-N1 Product-ID: 601070 Nappa leathern device protection bag with 1 rectangular cut-out for sensor connection suitable for: GMH 3210
ST-N2 Product-ID: 601072 Nappa leathern device protection bag with 2 rectangular cut-outs for sensor connection suitable for: GMH 3230, GMH 3250
GKK 3500 Product-ID: 601052 with punched lining for 1 device (394 x 294 x 106 mm)

QUICK RESPONSE THERMOMETER TYPE K



GMH 1150

GTH 1150

Product-ID: 600047

Quick response thermometer, accessories not included, for plug-in probes

GMH 1150

Product-ID: 600045

Quick response thermometer, accessories not included, for plug-in probes

Application:

quick response measurements on surfaces, in liquids, soft media, air/gases, at the smallest objects etc. For all applications where a resolution of 1 °C is sufficient.

Specifications:

Measuring range:	-50 ... +1150 °C
Resolution:	1 °C
Accuracy: (at nominal temperature = 25 °C)	≤ 1 % ± 1 digit (from -20 ... +550 and 920 ... 1150 °C) ≤ 1.5 % ± 1 digit (from 550 ... 920 °C) from -20 ... -50 °C according to attached correction table
Probe connection:	flat-pin plug (free of thermo-voltage) suitable for all NiCr-Ni probes (type K)
Display:	3½ digit, approx. 13 mm high
Working temperature:	0 ... 45 °C
Storage temperature:	-20 ... +70 °C
Power supply:	9 V battery (included). Additional at GMH 1150: d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)
Power consumption:	approx. 0.4 mA
Battery service life:	approx. 700 operating hours
Dimensions:	GTH ...: approx. 106 x 67 x 30 mm (H x W x D). impact resistant ABS plastic housing. GMH ...: approx. 142 x 71 x 26 mm (H x W x D). impact resistant ABS plastic housing, front side IP65, integrated pop-up clip
Weight:	approx. 150 g (GTH 1150), approx. 160 g (GMH 1150)
Scope of supply:	device, battery, manual

Accessories and spare parts:

GTF 300 Product-ID: 600072 wire probe	
additional NiCr-Ni probes (type K)	p.r.t. page 20 - 22
GB 9 V Product-ID: 601115 spare battery	
GNG 10 / 3000 Product-ID: 600273 power supply	
ST-KN Product-ID: 601080 device protection bag, suitable for GTH 1150	
ST-N1 Product-ID: 601070 device protection bag, suitable for GMH 1170	

PRECISION QUICK RESPONSE THERMOMETER TYPE K



GTH 1170

GMH 1170

FUNCTIONS:



GTH 1170

Product-ID: 600000

Precision quick response thermometer, accessories not included, for plug-in probes

GMH 1170

Product-ID: 600113

Precision quick response thermometer, accessories not included, for plug-in probes

Application:

quick response measurements on surfaces, in liquids, air/gases etc.

Specifications:

Measuring ranges:	-65.0 ... +199.9 °C or -65 ... +1150 °C (-85.0 ... +199.9 °F or -85 ... +1999 °F)
Resolution:	0.1 °C or 1 °C (0.1 °F or 1 °F)
Accuracy: ± 1 digit (at nom. temperature)	-65.0 ... +199.9 °C: ±0.05 % of m.v ±0.2 % FS -65 ... +1150 °C: ±0.1 % of m.v ±0.2 % FS
Temperature drift:	0.01 %/K
Point of comparison:	±0.3 °C
Probe connection:	standard flat-pin plug (free of thermo-voltage) suitable for all NiCr-Ni (type K) - probes
Display:	3½ digit, LCD display approx. 13 mm high
Working temperature:	-25 ... +50 °C
Storage temperature:	-25 ... +70 °C
Power supply:	9 V battery
Measuring interval:	approx. 3 meas. / s
Power consumption:	approx. 0.15 mA
Battery service life:	approx. 2000 operating hours
Dimensions:	GTH ...: approx. 106 x 67 x 30 mm (H x W x D). impact resistant ABS plastic housing. GMH ...: approx. 142 x 71 x 26 mm (H x W x D). impact resistant ABS plastic housing, front side IP65, integrated pop-up clip
Weight:	approx. 135 g (GTH 1170), approx. 150 g (GMH 1170)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

NiCr-Ni (type K) probes	p.r.t. page 20 - 22
GB 9 V Product-ID: 601115 spare battery	
ST-KN Product-ID: 601080 device protection bag, suitable for GTH 1150	
ST-N1 Product-ID: 601070 device protection bag, suitable for GMH 1170	
GTH 1170-GTF 900-WPT Product-ID: 602675 Complete Solution incl. immersion probe GTF 900 and certificate of calibration WPT (with meas. points: 0 / 100 / 250 / 500 °C) and case GKK 1100.	



UNIVERSAL MEASURING SET



FOR MANY
MEASURING TASKS

**GMH 3210-
Universal-SET**

Product-ID: 607061

Universal temperature measuring set

Application:

Ready-to-use universal temperature measuring set with 3 different type K temperature sensors. Perfectly suitable for measurements in liquids, air and gases as well as surfaces.

Specifications:

GMH 3210:	see page 17
GTF 300:	see page 22
GTF 400:	see page 20
GOF 500:	see page 20

Scope of supply: GMH 3210 – temperature measuring device, GTF 300 – wire probe, GTF 400 – immersion probe for gases and liquids, GOF 500 – surface probe, GKK1105 – plastic case, battery, manual

Accessories and spare parts:**ISO-WPT**

Product-ID: 604652

according to DIN ISO 9000

Test points -20 °C, +70 °C, +200 °C depending on probe

GMH 3210

Product-ID: 600337

Precision quick-response thermometer

GTF 300

Product-ID: 600072

Wire probe

GTF 400

Product-ID: 600502

Immersion probe

GOF 500

Product-ID: 600488

Surface probe

GKK 1105

Product-ID: 601050

Case with cut-outs for 1 device of GMH 3xxx series

BASIC MEASURING SET



STARTER-SET

**GMH 1170-
Basic-SET**

Product-ID: 605414

Universal temperature measuring set

Application:

Ready-to-use temperature measuring set with a universal insertion probe plus a wire probe in a case

Specifications:

GMH 1170:	see page 19
GTF 300:	see page 22
GES 900:	see page 21
Scope of supply:	Device, wire probe, insertion probe, plastic case, battery, manual

Accessories and spare parts:**GMH 1170**

Product-ID: 600113

Precision quick-response thermometer

GTF 300

Product-ID: 600072

Wire probe

GES 900

Product-ID: 600518

Insertion probe

GKK 1105

Product-ID: 601050

Case with cut-outs for 1 device of GMH 3xxx or 5xxx series

For calibration certificates see page 7.

TEMPERATURE MEASURING SET

**GTH 1150-
Gourmet-SET**

Product-ID: 605415

Temperature measuring set

Application:

This combination often used by top chefs is recommended for measuring the core temperature of meat, cooking oil, etc. The thin needle will barely damage the meat. The core temperature measurement range of -65 ... +400 °C can be determined very quickly.

Specifications:

GTH 1150:	see page 18
GTE 130-OK:	see page 22
Scope of supply:	Device, probe, battery, manual

Accessories and spare parts:**GTH 1150**

Product-ID: 600047

Quick-response thermometer

GTE 130-OK

Product-ID: 601483

Insertion probe

ST-KN

Product-ID: 601080

Device protection bag with rectangular cut-out for sensor connection

GKK 252

Product-ID: 601056

Case with foam lining for universal use (235 x 185 x 48 mm)

For calibration certificates see page 7.

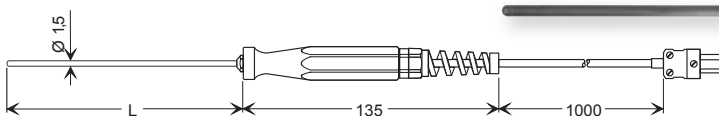
TYPE K - MEASURING PROBE (NICR-NI) WITH DIN-TYPE FLAT-PIN PLUG

IMMERSION PROBE

GTF 400

Product-ID: 600502
-65 ... +550 °C

VERY FAST

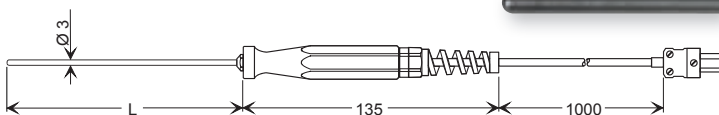


inexpensive, fast, elastic (rigid)
non-corrosive V4A tube Ø 1.5 mm, L=130 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 3 s

GTF 900

Product-ID: 600505
-65 ... +1000 °C



inexpensive, elastic (rigid)
non-corrosive V4A tube Ø 3 mm, L=130 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

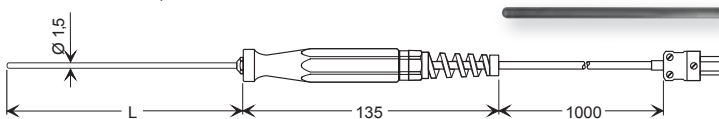
Response time T_{90} : water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

IMMERSION PROBE WITH SHEATHED THERMOCOUPLE

GTF 1200

Product-ID: 600507
-200 ... +1150 °C,

BENDABLE



Inconel 600 jacket tube Ø 1.5 mm, flexible, L=150 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

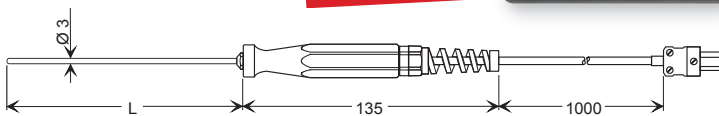
Response time T_{90} : water 0.4 m/s approx. 3 s

GTF 1200/300

Product-ID: 600510
-200 ... +1150 °C

BENDABLE

POTENTIAL FREE



Inconel 600 jacket tube Ø 3 mm, flexible, L = 300 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 5 s

GTF 1000 AL

Product-ID: 600512
-200 ... +1000 °C

VERY ROBUST



for aluminium melt, non-ferrous metal, etc.
V4A tube Ø 6 x 1.4 mm, L=1000 mm rigid, additional internal mantle thermocouple, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 30 s

ACCURACY

Thermocouples:

sensor accuracy acc. to DIN EN 60584-2

class 1 for Type K: ±1.5 °C at range -40 ... +375 °C

class 1 for Type N: ±1.5 °C at range -40 ... +375 °C

class 1 for Type S: ±1 °C at range 0 ... 1100 °C

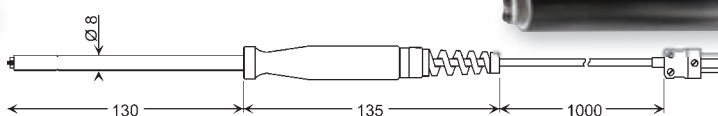
basic fee for custom made probe

SURFACE PROBE

GOF 130

Product-ID: 600490
-65 ... +900 °C

VERY FAST

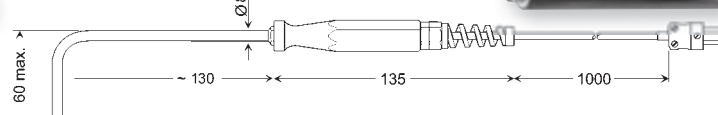


for any solid surface
2 laser welded NiCr-Ni resilient springs, V4A-tube Ø 8 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 2 s

GOF 900 HO

Product-ID: 600500
-65 ... +900 °C



for any solid surface
2 laser welded NiCr-Ni resilient springs, V4A tube gebogen, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 2 s

GOF 200 HO

Product-ID: 600492
-65 ... +400 °C

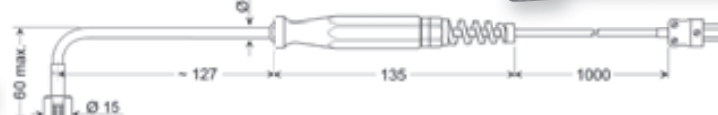


for fastest measurements in small gaps
Small elbow-type, flexible thermocouple tapes, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 2 s

GOF 400 HO

Product-ID: 600494
-65 ... +400 °C



for fastest measurements
Small elbow-type, flexible thermocouple tapes, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 2 s

GOF 400 VE

Product-ID: 600496
-65 ... +400 °C



for fastest measurements
Flexible thermocouple tapes, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 2 s

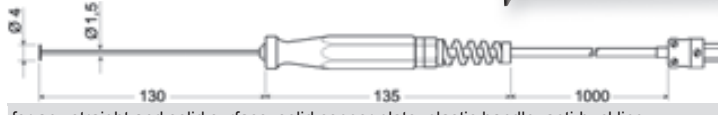
MH 400VE

Product-ID: 607502

magnet holder, heat resistant up to 100 °C

GOF 500

Product-ID: 600488
-65 ... +500 °C



for any straight and solid surface; solid copper plate, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

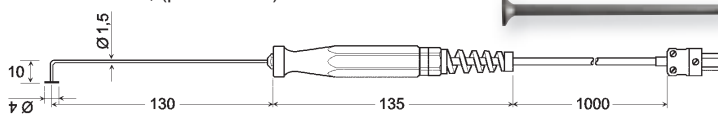
Response time T_{90} : water 0.4 m/s approx. 5 s

TYPE K - MEASURING PROBE (NICR-NI) WITH DIN-TYPE FLAT-PIN PLUG

GOF 500 HO

Product-ID: 600498

-200 ... +500 °C, (potentialfrei)



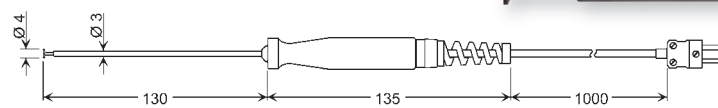
for any straight and solid surface

Small elbow-type, solid copper plate, Ø 1,5 MTE (K) Inconel 600 bendable, plastic handle, anti-buckling glanding, 1 m silicone cable, Miniature flat plug

Response time T_{90} : approx. 5 s**GOF 130 CU**

Product-ID: 600486

-65 ... +500 °C



for any straight and solid surface

Spring-loaded copper plate, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : approx. 5 s

CORE TEMPERATURE- / FOOD PROBE

GES 20K

Product-ID: 602591

-65 ... +550 °C

VERY THIN

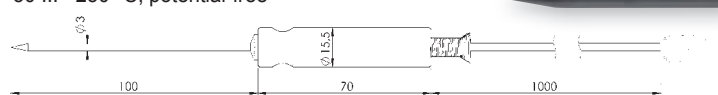
Use for canteen kitchen, bakeries, butcher's shops, etc.

V4A tube with Ø 1.5 mm slim insertion tip, small Teflon handle, stainless steel kink protection, 1 m Teflon cable, miniature flat plug

Response time T_{90} : water 0.4 m/s < 1 s, air 2 m/s approx. 12 s**GES 21K**

Product-ID: 600074

-50 ... +250 °C, potential-free



Use for canteen kitchen, bakeries, butcher's shops, etc.

V4A tube Ø 3 mm with needle-shaped insertion tip, big white Teflon handle, stainless steel kink protection, 1 m Teflon cable, miniature flat plug

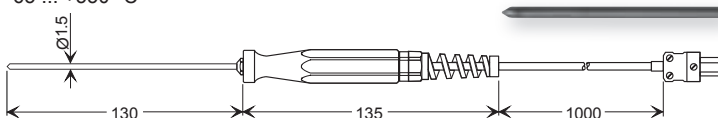
Response time T_{90} : water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

INSERTION PROBE FOR SOFT MEDIA

GES 130

Product-ID: 600514

-65 ... +550 °C

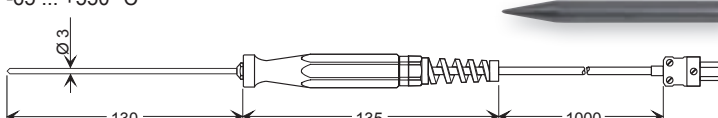


V4A tube with Ø 1.5 mm slim insertion tip, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 3 s**GES 500**

Product-ID: 600516

-65 ... +550 °C

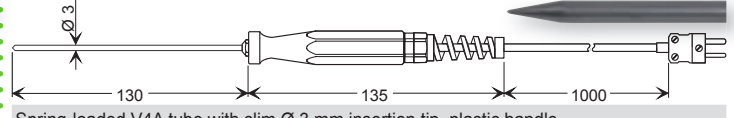


V4A tube with Ø 3 mm with needle-shaped insertion tip, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

Response time T_{90} : water 0.4 m/s approx. 5 s**GES 900**

Product-ID: 600518

-65 ... +1000 °C



Spring-loaded V4A tube with slim Ø 3 mm insertion tip, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

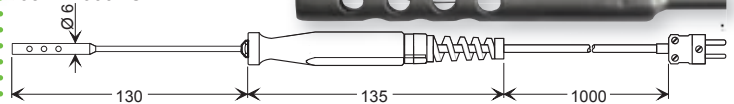
Response time T_{90} : water 0.4 m/s approx. 5 s

AIR/GAS PROBE

GTL 130

Product-ID: 602304

-65 ... +600 °C

VERY FAST

for room temperature, flue gases, etc.

perforated V4A protective tube, fused thermocouple wires arranged behind, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

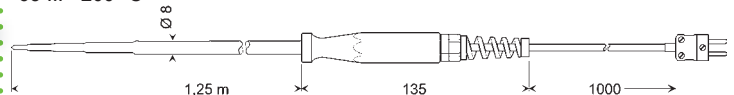
Response time T_{90} : air 2 m/s approx. 1.5 s

PROBE FOR COMPOST, GRAIN, ETC.

GKF 125

Product-ID: 600520

-65 ... +200 °C

VERY ROBUST

split-second response time, yet highly resilient

V4A tube Ø 8 mm reduced to Ø 3 mm at the front, plastic handle, anti-buckling glanding, 1 m silicone cable, miniature flat plug

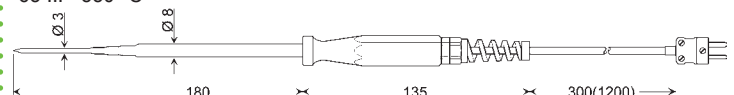
Response time T_{90} : water 0.4 m/s approx. 6 s

ASPHALT PROBE

GAF 200

Product-ID: 600522

-65 ... +550 °C



for liquid or soft media etc.

V4A tube 8 mm dia. reduced to 3 mm, plastic handle, anti-buckling glanding, spiral cable stretchable to 1.2 m, DIN-type flat-pin plug

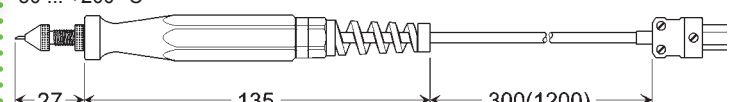
Response time T_{90} : water 0.4 m/s approx. 6 s

TIRE PROBE

GRF 200

Product-ID: 604663

-50 ... +200 °C



fast response insertion probe with stop screw (needle adjustable 0 ... approx. 14 mm). Suitable for measuring temperature of tires and other soft media. plastic handle, anti-buckling glanding, spiral cable (approx. 1.2 m drawn out), miniature flat plug

Response time T_{90} : approx. 5 s

CLIP-ON PROBE

GTZ 300

Product-ID: 603287

-65 ... +150 °C



for temperature measurements at tube surfaces

for tubes up to approx. 25 mm Ø, 1 m silicone cable, miniature flat plug

Response time T_{90} : approx. 3 s

WIRE PROBE FOR QUICK-RESPONSE MEASUREMENTS

GTF 300

Product-ID: 600072

Measuring tip twisted/fused

GTF 300-UV

Product-ID: 600081

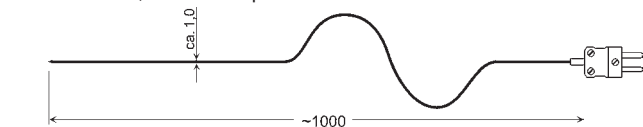
Measuring tip non-twisted/fused

GTF 300-SP

Product-ID: 605973

Measuring tip with weld bead

-65 ... +300 °C, insulation up to +250 °C



for air, gases, diminutive surfaces
Teflon-insulated twisted Ø 0.2 mm thermocouple wires, fused measuring tip, very flexibel, miniature flat plug

Response time T_{90} : water 0,4 m/s approx. 0.3 s

GTF 300 GS

Product-ID: 602554

twisted measuring tip

GTF 300 GS-UV

Product-ID: 607893

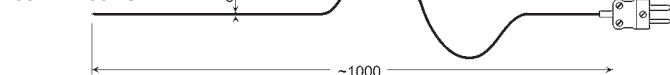
Measuring tip non-twisted/fused

GTF 300 GS-SP

Product-ID: 606208

Measuring tip with weld bead

-65 ... +400 °C



for air, gases, diminutive surfaces (not for liquids)
glass filament insulated Ø 0.2 mm thermocouple wires, miniature flat plug

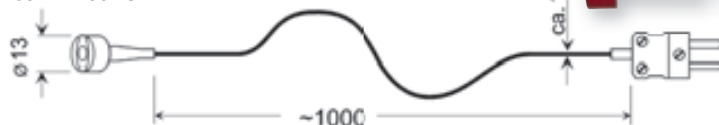
Response time T_{90} : water 0.4 m/s approx. 0.3 s
Additional charge for any length per m

MAGNETIC SURFACE PROBE

GMF 250

Product-ID: 600071

-65 ... +250 °C



self-adhesive on magnetic materials, spring-loaded CU plate Ø 5 mm, 1 m, Teflon-insulated twisted cable, miniature flat plug

Response time T_{90} : approx. 5 s

GMF 200

Product-ID: 601377

-65 ... +200 °C



self-adhesive on magnetic materials (higher magnetic holding force), spring-loaded CU plate Ø 5 mm, resilient 2 m long silicone cable, miniature flat plug

Response time T_{90} : approx. 5 s

PROBE FOR DEEP-FROZEN PRODUCTS

GGF 200

Product-ID: 603418

-65 ... +200 °C



to screw into deep-frozen products, etc. no predrilling required, V4A-tube, 6 mm Ø with screw prod, spiral cable (approx. 1.2 m drawn out), DIN-type flat-pin plug

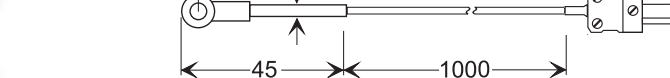
Response time T_{90} : approx. 15 s

CABLE LUG PROBE

GKF 250

Product-ID: 60014

-50 ... +250 °C



For tightening with suitable screw, 1 m Teflon cable, miniature flat plug

Response time T_{90} : approx. 10 s

SOLDERING TIP PROBE

GLS 500

Product-ID: 602962

-50 ... +500 °C

for direct connection to instrument
2 laser-fused spring-loaded spiral springs made of NiCr-Ni, ceramic tube approx. 6 mm in diameter, miniature flat plug

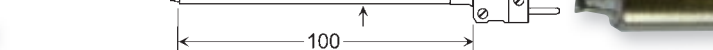
Response time T_{90} : approx. 2 s

AIR-/GAS PROBE

GTO 130 OK

Product-ID: 600134

-65 ... +400 °C



(changeable probe without cable) limited suitable also for surfaces
NiCr-Ni-wire Ø 0.5 mm, welded and grinded flat, V4A-tube Ø 3 mm, DIN-type flat-pin plug, rigid connection

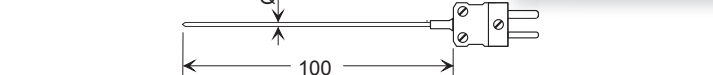
Response time T_{90} : approx. 2 s

INSERTION PROBE

GTE 130 OK

Product-ID: 601483

-65 ... +400 °C



(interchangeable probe without cable) for soft media
Spring-loaded V4A tube with slim Ø 1.5 mm insertion tip, miniature flat plug with a rigid connection

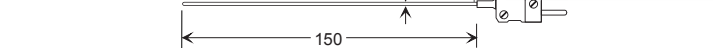
Response time T_{90} : approx. 3 s

IMMERSION PROBE

GTT-15-150

Product-ID: 607552

-200 ... +1150 °C



for air, gases, and liquids
Sheathed thermocouple with Inconel 600 jacket tube Ø 1.5 mm, bendable, miniature flat plug with a rigid connection

Response time T_{90} : water 0.4 m/s approx. 3 s

BUNSEN BURNER PROBE - TYPE S

GBF 1550

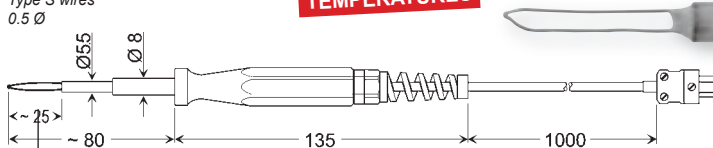
Product-ID: 603037

+50 ... +1550 °C

Type S wires
0.5 Ø

FOR HIGHEST TEMPERATURES

Inquire about current price



Probe tip must not be held directly into the flame
V4A tube Ø 8 mm, with reduced Ø 5.5 mm ceramic tube, plastic handle, silicone cable, miniature flat plug

Response time T_{90} : approx. 2 s

Infrared measurement

Infrared measurements can be used to measure the temperature of a surface on a device under test without the need to come into contact with that surface (except objects with a shiny metal surface; glass suitable under certain conditions). The IR sensor measures the infrared radiation emitted by the device under test. The measurement is supported by a laser which designates the surface measured by the optical measuring system.

Properties:

- Ultrafast and contactless surface measurement
- For measurement tasks that cannot be accomplished using PT100 or type K devices (e.g. abrasive chemicals, small components, ...)

INFRARED**MT 400****GIM 530 MS****ST 512****GIM 3590****Application:**

	MT 400	GIM 530 MS	ST 512	GIM 3590
Precision measurement		•		•
Fast scanning of surfaces	•	•	•	•
Food	•	•	•	•
Quality management	•	•	•	•

Equipment:

Measuring range [°C]	-20 ... +343	-32 ... +530	-50 ... +1000	-35 ... +900
Laser	single	single	dual	cross
Additional probe connection				Type K
Optical resolution (Distance / Spot size)	8:1	20:1	30:1	75:1
Emissivity	0.95 fix	0.100 .. 1.000	0.10 .. 1.00	0.100 .. 1.100
General functions	Min/Max, Hold	Min/Max, Hold, Offset	Min/Max, Hold	Min/Max, DIF, Hold, AVG
Alarm		optical, acoustical		optical, acoustical
Data storage and visualisation / Interface				100 measuring protocols, software for visualisation / •

Device information:

Catalogue page	24	24	25	25
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INFRARED THERMOMETER

INFRARED THERMOMETER WITH PRECISION GLASS OPTIC

FUNCTIONS:



MT 400

Product-ID: 601438

Infrared thermometer with laser

General:

The MT 400 is small, lightweight and easy-to-use. Just aim, trigger and read the temperature from the display... and that's it.

Anyone, who searches for fast and reliable temperature measurement, should take a closer look on the MT 400 infrared thermometer.

Application:

- **Electrics** – locating overheated cables and contacts
- **Heating / ventilation / air-conditioning** – monitoring of heat exchanger
- **Food** – Checking food temperature during keeping warm or storing

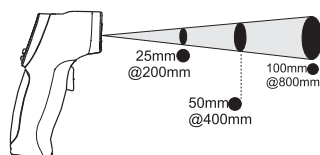
Specifications:

Measuring range:	-20 °C ... +343 °C
Resolution:	0.1 °C, 0.1 °F
Accuracy: (@ 18 °C ... 28 °C and < 80 % RH)	
< -7 °C:	±4 °C
≥ -7 °C:	±2% of meas. value + 2 °C
Optical resolution (D:S):	approx. 8:1
Response time (t₉₅):	< 1 s
Spectral range:	8 - 14 μm
Emission rate:	permanently set to 0.95
Sight:	single laser
Working temperature:	0 ... 50 °C
Storage temperature:	-20 ... +60 °C
Power supply:	9 V battery
Features:	°F, background illumination
Dimensions:	82 x 41,5 x 160 mm
Weight:	180 g
Scope of supply:	Device, battery, manual

Accessories and spare parts:

GB 9 V
Product-ID: 601115
spare battery

GKK 3100
Product-ID: 601058
case with foam lining (275 x 229 x 83 mm)



MT 400

FUNCTIONS:



GIM 530 MS

Product-ID: 601229

Infrared thermometer with laser

General:

User-friendly industrial design combined to state of the art technology are setting a new standard in professional and all day non-contact temperature measuring.

The large temperature range of -32 ... +530 °C, the targeting laser and the optical resolution of 20:1 allow very precise measuring of surfaces in a variety of applications. Simply aim at the target with the laser, push the trigger and the value is displayed within 0.3 seconds plus several other informations.

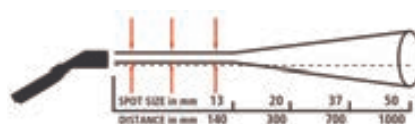
Application:

- Electrical and mechanical service and maintenance
- Heating, ventilation, air-conditioning - finding thermal bridges etc.
- Motor vehicle diagnosis, electricity, home improvement
- Checking food temperature during keeping warm or storing



Display

- current temperature value
- MIN-/MAX-value: current and last
- HIGH-/LOW-alarm
- HOLD-function
- emission rate
- symbol for display illumination and laser



optical diagram:
ratio: spot size / distance

HIGHLIGHTS:

- Adjustable visible and audible alarm
- Constant measuring area in between the distance of 13 to 140 mm
- Targeting laser for exact aiming of the object to be measured
- Fast scanning of hot and cold spots within 0.3 s

Specifications:

Measuring range:	-32 ... +530 °C (-20 ... +980 °F)
Resolution:	0.1 °C (0.1 °F)
Temperature display:	°C or °F selectable
System accuracy:	(at ambient temperature = 23 °C ±5 °C)
±1 % or ±1 °C	from 0 °C ... 530 °C (highest value shall be valid)
±1 °C ± 0.07 °C/°C	from 0 °C ... -32 °C
Repeat accuracy:	±0.5 % or ±0.7 °C from 0 °C ... 530 °C (highest value shall be valid)
	±0.7 °C ±0.05 °C/°C from 0 °C ... -32 °C
Optical Resolution (D:S):	20 : 1
Response time (t₉₅):	0.3 s
Spectral range:	8 - 14 μm
Emission rate:	0.100 ... 1.000, free selectable
Laser:	< 1 mW laser class IIa
Configuration:	Min/Max/Scan/Hold/Offset/°C/°F
Display illumination:	yes
Alarm function:	optical and acoustic HIGH-/LOW-alarm
Working temperature:	0 ... 50 °C
Storage temperature:	-20 ... +60 °C (without battery)
Power supply:	9 V alkaline battery
Battery service life:	approx. 20 hours for use with laser and illumination
Dimensions:	190 x 38 x 45 mm (H x W x D)
Weight:	approx. 150 g;
Scope of supply:	Device, battery, manual, device bag made of nylon

Accessories and spare parts:

GKK 252
Product-ID: 601056
small case (235 x 185 x 48 mm) with foam lining

ISO-WPT
Product-ID: 600888
(testpoints at +24 °C, +166 °C and +500 °C)



Infrared measurement is not suitable for liquids and specular or reflective surfaces

INFRARED THERMOMETER

FUNCTIONS:



HIGHLIGHTS:

- Dual-laser
- Alarm function

ST 512

Product-ID: 600004

Infrared thermometer with dual laser

Application:

- **Monitoring of circuit boards:** overheated parts
- **Heating / ventilation / air-conditioning:** detecting bad isolation, untight pipes, energy consumption, general service measurements, etc.
- **Electrical systems, machines, power engines:** detecting hot spots at electric connections, temperature rises at motors, bearings, pumps, compressors, etc.
- **Food processing and monitoring:** food temperature, process temperature, etc.
- **Medical technology, biological and chemical analysis:** contact-free temperature measurements within seconds, no longer problems with dangerous, aggressive or similar media
- **Industry, engineering, craft:** Surface temperature measurements of rotating parts (barrels, drums, shafts, printing machines, plastic welding, bitumen, concrete, etc.)

Specifications:

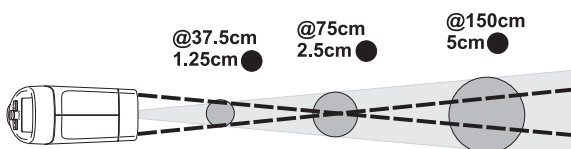
Measuring range:	-50 ... +1000 °C
Resolution:	0.1 °C
Accuracy:	-50 °C ... -23 °C ±7 °C (typical) (at ambient temperature = -23 °C ... -2 °C ±4 °C 23 °C ... 25 °C) -2 °C ... +94 °C ±2.5 °C 94 °C ... 204 °C ±(1.0 % of meas. value + 1 °C) 204 °C ... 426 °C ±(1.5 % of meas. value + 1 °C) 426 °C ... 1000 °C ±(3 % of meas. value+1 °C)
Reproducibility:	±0.5 % of meas. value or ±1 °C
Response time (T ₉₅):	150 ms
Emission rate:	0.10 ... 1.00, selectable
Spectral range:	8 ... 14 µm
Optical resolution (D/S):	approx. 30:1
Visiereinrichtung:	dual laser
Stromversorgung:	9 V battery
Display:	LCD-display with function indicator symbols and background illumination
Working conditions:	0 °C ... 50 °C, 10 ... 90 % RH
Storage temperature:	-10 ... +60 °C
Features:	HOLD, Min-/Max, °F, LOCK, Alarm
Alarm function:	selectable min / max alarm, with integrated buzzer
Dimensions:	146 x 104 x 43 mm
Weight:	163 g
Scope of supply:	device, battery, manual

Accessories and spare parts:

ISO (25 / 100 / 200 °C)

Product-ID: 607071

Initial calibration at first delivery



ST 512

INFRARED THERMOMETER

FUNCTIONS:



INCL. SOFTWARE AND
CALIBRATION PROTOCOL

THERMOCOUPLE INPUT

GIM 3590

Product-ID: 600005

Infrared thermometer with cross-hair laser

General:

- The measured point will be marked exactly with the precision of a laser cross-hair. The integrated sharp point optics allows measurements of even smallest measuring objects down to 1 mm. Its position sensor turns the display always to the most comfortable orientation.
- switchable focus point optics
- laser cross-hair shows real measuring point size
- Flip-display
- additional thermocouple input
- USB interface and graphical software

Specifications:

Measuring range:	-35.0 ... +900.0 °C (IR and thermocouple type K)
TC input:	thermocouple type K
Resolution:	0.1 °C
Accuracy IR:	±0.75 °C or ± 0.75 % of m.v.
Accuracy type K:	±0.75 K or ± 1 % m.v. (at 23 °C ± 5 °C)
Response time (t ₉₅):	150 ms
Optical resolution:	75:1 16 mm @ 1200 mm
at focus point optic:	1 mm @ 62 mm
Rate of emission:	0.100 ... 1.100, selectable
Measuring functions:	MAX / MIN / HOLD / DIF / AVG / °C / °F
Alarm functions:	acoustic / visual high-low-alarm
Display:	LC Flipwith position sensor / bar graph
Backlight:	green or alarm colours (red / blue)
Spectral range:	8 - 14 µm
Working temperature:	0 ... 50 °C
Relative humidity:	10 ... 95 % RH (non condensing)
Data logger:	100 measurements protocols
Interface:	USB
Software:	oscilloscopstyle software, 20 readings / s
Voltage supply:	2 x AA alkaline battery or USB
Weight:	420 g
Scope of supply:	Device incl. USB cable & software, bag, insertion probe type K, batteries, carrying loop, calibration protocol, transport case

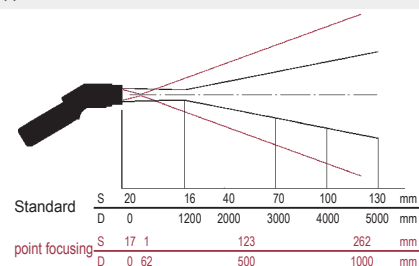
Accessories and spare parts:

ISO-WPT

Product-ID: 603274

Tripod

Product-ID: 603541



GIM3590

Infrared measurement is not suitable for liquids and specular or reflective surfaces

HUMIDITY / FLOW RATE



	GMH 3330 + TFS 0100 E	GMH 3350 + TFS 0100 E	GFTH 95	GFTH 200	GFTB 200
Application:					
Air conditioning / Ambient air monitoring	•	•	•	•	•
Meteorology					•
Room climate	•	•			•
Flow measurement	•	•			
Air pressure measuring					•
Calculation of:					
Dew point Td	•	•		•	•
Wet bulb temperatur Twb				•	•
Moisture content x / Absolute humidity d					•
Dew point distance / Enthalpy	•	•			

Ausstattung:

Plug-in probe	•	•		• (Temperature)	
General functions	•	•		•	•
Serial interface	•	•			•
Alarm		•			•
Data logger		•			

Device information:

Catalogue page	28	28	30	30	27
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CLIMATE MEASURING DEVICE – PRECISION HYGRO- / THERMO- / BAROMETER



FUNCTIONS:



ADDITIONAL DISPLAY

FOR FURTHER PARAMETERS,

E.G. DEW POINT TEMPERATURE

AND ABSOLUTE HUMIDITY

ALARM FUNCTION

WITH INTEGRATED BUZZER

PC INTERFACE

GFTB 200

Product-ID: 600161

Digital-Hygro-/Thermo-/Barometer

General:

The GFTB 200 is designed for measuring air pressure, air humidity and temperature within seconds. It reaches remarkable accuracy because of its high precision sensors. The dew point temperature monitoring with GFTB 200 provides efficient protection from moisture damage potentially caused by condensation water and therefore helps preventing mold infestation. The integrated alarm function can be used to acoustically remind the user to ventilate in order to optimally and efficiently use heating energy. The integrated interface together with the software EBS 20M (optional) allow the use as mobile weather station with additional long-term recording. The GFTB 200 can precisely and clearly display the air condition with parameters like wet bulb temperature, absolute humidity and moisture content of the air.

Application:

- mobile weather station
- housing space, indoor swimming pools
- offices and production rooms, laboratories, storage rooms
- museums, gallery, churches
- cooling and climate technology
- construction, building physics, loss assessment

Specifications:**Measuring ranges:**

Temperature:	-25.0 °C ... +70.0 °C
Air humidity:	0.0 ... 100.0 % RH (recommended range: 11 ... 90 % RH)
Air pressure:	10.0 ... 1100.0 mbar

Calculated parameters:

Dew point temperature Td:	-40.0 ... +70.0 °C
Wet bulb temperature Twb:	-27.0 ... +70.0 °C
mixing ratio x:	0.0 ... 280.0 g/kg
Absolute humidity d:	0.0 ... 200.0 g/m³

Resolution: 0.1 % RH; 0.1 °C or 0.1 °F, 0.1 mbar

Accuracy: (±1 digit) (at nominal temperature = 25 °C)

Temperature:	±0.5 % v. MW. ±0.1 °C (Pt1000 1/3 DIN B)
Air humidity:	±2.5 % RH (at range 11 ... 90 %)
Air pressure:	±1.5 mbar (750 ... 1100 mbar)

Sensors:

Temperature:	Pt1000
Air humidity:	capacitive polymer humidity sensor
Air pressure:	piezo-resistive sensor hybrid

Response time: T₉₀ = 10 s

Display: 4½ -digit, approx. 11 mm high LCD-display with additional displays

Operation elements: 3 keys for ON/OFF, min/max value display, hold

Nominal temperature: 25 °C

Working conditions:

electronics:	-25 ... +70 °C; 0 ... 80 % RH (non condensing)
sensors:	-25 ... +70 °C; 0 ... 100 % RH

Power supply: 9 V battery

Current consumption: approx. 30 µA at 1 measuring / 60 s (mode SLOW)
approx. 70 µA at 1 measuring / s (mode FAST)

Interface:	Serial interface, via electrical isolated interface converter USB 3100 N (accessories) directly connectable to PC.
Configurable display:	choice between automatically displaying all values rotationally (cycle of 2 or 4 s) or manual selection, units not needed can be excluded
Offset und Scale:	digital offset- and scale adjustment of measurements
Tendency indicator:	Air pressure rising/falling (for barometer)
Sea level correction:	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
Housing:	Housing made of impact-resistant ABS
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), additionally the sensor head at the front side, 35 mm long, Ø 14 mm; resulting total length 141 mm
Weight:	approx. 130 g incl. battery
Scope of supply:	Device, battery, manual

Variante:**GFTB 200-KIT**

Product-ID: 600890

Digital-Hygro-/Thermo-/Barometer with USB-interface kit, consisting of:

- USB interface converter USB 3100 N
- multi channel software EBS20M (to record all device units)

Accessories and spare parts:**GKK 252**

Product-ID: 601056

case (235 x 185 x 48 mm) with foam lining

ISO-WPF4

Product-ID: 602543

Certificate of calibration, humidity, for ISO9000ff (p.r.t. page 7)

ISO- WPD5

Product-ID: 602514

Certificate of calibration, pressure, for ISO9000ff (p.r.t. page 7)

**HIGHLIGHTS:**

- easy and fast search for thermal bridges
- targeting laser for precise location even of inaccessible areas
- audible alarm below dewpoint

GFTB 200 SET

Product-ID: 600163

Measurement set GFTB200 incl. infrared thermometer GIM 530 MS and case GKK 3000

General:

The additional infrared thermometer contained in the GFTB 200 SET makes it easy to check mould-problem areas on walls etc. The wall can easily be scanned by means of the laser beam within very short time. When wall temperature falls below the critical dewpoint (this is, when the wall gets wet), the device alerts with an audible signal.

Note:

for technical data for the infrared thermometer GIM530MS please refer to catalog page 24.



STANDARD-FUNCTIONS:



CALCULATION OF DEW POINT TEMPERATURE,
DEW POINT DISTANCE
AND ENTHALPY

ADDITIONAL TEMPERATURE INPUT (TYPE K)

ADDITIONAL FUNCTIONS GMH 3350:



GMH 3330

Product-ID: 600343

climate measuring device, probe not included

GMH 3350

Product-ID: 600345

climate measuring device, probe not included,
with data logger

General:

The GMH 33xx devices are universal precision hygrometer / Thermometer and flow meter with additional Thermocouple input in one. The plug-in probes are interchangeable without recalibration, because your calibration data are on an integrated memory stick (TFS) or they are interchangeable by the high mechanical precision (STS ...). The thermocouple input T2 is optimized to be able to quickly absorb surface temperatures to e.g. to display the dew point directly.

Application:

- Heating / Ventilation Air Conditioning (HVAC)
- Indoor air, meteorology, laboratory, research and teaching
- Energy assessment / optimization of buildings
- Identify research in structural damage

Specifications:

Measuring ranges:

Relative humidity:	0.0 ... 100.0 % RH
Ambient temperature:	-40.0 ... +120.0 °C (depending on TFS-probe)
Surface temperature:	-80.0 ... +250.0 °C
Flow rate:	depending on STS probe (p.r.t. next page)
Resolution:	0.1 % RH, 0.1 °C / 0.1 °F, 0.01 m/s

Accuracy (device) (±1 digit) (at nominal temperature = 25 °C)

Relative humidity:	±0.1 %
Ambient temperature (Pt1000):	±0.2 %
Surface temperature (NiCr-Ni):	±0.5 % of m.v. ±0.5 °C
Flow rate:	±0.1 %

Probes: (p.r.t. next page) No calibration required for exchange of humidity/temperature or flow rate probe.

Probe connection: 6-pin screened Mini-DIN-socket

NiCr-Ni-connection: for miniature flat-pin plug

Display: two 4½ digit LCDs (12.4 mm or 7 mm high), as well as additional functional arrows.

Working temperature: -25 ... +50 °C

Relative humidity: 0 ... 95 % RH (non-condensing)

Storage temperature: -25 ... +70 °C

Pushbuttons:	6 membrane keys
Interface:	serial interface, direct connection to RS232 or USB interface of a PC via electrically isolated interface adapter GRS 3100 or GRS 3105 resp. USB 3100 N (p.r.t. accessories).
Power supply:	9 V battery as well as additional d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)
Power consumption:	approx. 2.5 mA (incl. TFS 0100)
Housing:	Impact-resistant ABS plastic housing, membrane keyboard, transparent panel, front side IP65, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 160 g (incl. battery)
Scope of supply:	Device, battery, manual

Additional functions:

Calculation of dew point: based upon humidity and temperature.

Calculation of dew point distance: by means of a surface measurement

Calculation of enthalpy: thermal content h of the air

Adjustment-function for atmospheric humidity measurements

NiCr-Ni-temperature measuring:

any standard NiCr-Ni-probe (type K) can be plugged in. Recommendation: GOF 400 VE (p.r.t. p. 20). A compensation value can be set for surface measurement if necessary.

Flow measurements:

Two different systems for averaging are integrated:

- **continuous averaging:** the average value displayed is calculated using the last measurements during the averaging time set.
 - **averaging upon request:** by starting the current measuring value will be displayed for the averaging time. As soon as the time has expired the average value will be displayed, the device is in HOLD mode.
 - **selectable averaging time:** 1 ... 30 s
 - Logger function**
 - **manual:** 99 data sets (fetch data via buttons or interface)
 - **cyclic:** 5.400 data sets (fetch data via interface) adjustable cycle time: 1 s ... 1 h
- The logger is started or stopped by keypad or interface. The software GSOF3050 (see accessories) is available for comfortable read-out of logger data.

Accessories and spare parts:

GNG 10/3000

Product-ID: 600273
plug-in power supply

USB 3100 N

Product-ID: 601092
interface converter, electrically isolated

GSOF 3050

Product-ID: 601336
software for the setting, data read-out and printing of all logger data stored for devices of the GMH3xxx-series with logger function

GAM 3000

Product-ID: 601132
Switching module for devices of the GMH3xxx-series incl. alarm output

ST-RN

Product-ID: 601074
device protection bag with cut out for sensor connection, suitable for: GMH3330, GMH3350

GKK 3500

Product-ID: 601052
case with cut-outs for GMH3xxx

GKK 3600

Product-ID: 601062
case with foam lining for universal use

COMPLETE SOLUTION



GMH 3330-TFS 0100E-WPF4

Product-ID: 602682

Complete Solution with humidity-/temperature probe TFS 0100 E and incl. certificate of calibration WPF4 (~20 % / ~40 % / ~60 % / ~80 % RH ascending / descending) and case GKK 3500.

SUITABLE MEASURING PROBES

HUMIDITY / TEMPERATURE

**TFS 0100 E**

Product-ID: 601488
(0.0 ... 100.0 % RH)
Humidity/temperature probe, exchangeable

General:	
Hand sensor for universal application cap with integral stainless steel gauze filter for good mechanical protection and despite optimum airflow also for fast measurements in ambient air	
Specifications:	
Measuring ranges:	
Humidity:	0.0 ... 100.0 % RH (rec. range of application: 11 ... 90 % RH)
Temperature:	-40.0 ... +120.0 °C (attention: working temperature of electronics!)
Accuracy: (at nominal temperature = 25 °C)	
Humidity:	±2.5 % RH
Temperature:	±0.5 °C
Sensors:	
Humidity:	capacitive polymer humidity sensor
Temperature:	Pt1000, 1/3 DIN
Electronics:	
PC board with amplifier and data memory for sensor data (calibration, etc.) integrated in probe handle.	
Working temperature:	
-25 ... +60 °C (handle and electronics) -40 ... +100 °C (for short time up to +120 °C) (sensor head and tube)	
Relative humidity:	
0 ... +100 % RH	
Dimensions:	
Probe tube: Ø 14 x 119 mm, plastic handle: Ø 19 x 135 mm, approx. 1.2 m PVC connection cable with 6-pin Mini-DIN-plug	
Weight:	
approx. 90 g	
Scope of supply:	
sensor, manual	

Variant:**TFS 0100 E-POR**

Product-ID: 606784
Humidity / temperature sensor with plastic paper filter
for use in dusty environments and also in powder
colors and granulates

**GFN-SET1**

Product-ID: 602708
Humidity reference cells for ~33 and ~76 %RH,
probe adapter and robust carry case

General:	
Humidity reference cells works on the basis of physiochemical processes. A specific value of relative humidity adjusts itself over a saturated salt solution. The test chamber is separated from the solution by a diaphragm so that the sensor under test is protected against contamination by the solution. The test container can be used in all mounted positions.	

**Accessories and spare parts:****GFN 33**

Product-ID: 602715
humidity reference cell for ~33 % RH, incl. adapter

GFN 76

Product-ID: 602717
humidity reference cell for ~76 % RH, incl. adapter

SURFACE TEMPERATURE:

GOF 400VE

Product-ID: 600496
(p.r.t. page 20)
Quick-response surface probes for walls, floors etc.

GTF 300

Product-ID: 600072
(p.r.t. page 22)
Quick-response basic thermocouple probe for universal applications
(surface measurement)

FLOW SPEED

STS 005

Product-ID: 602396
(0.05 ... 5.00 m/s)
Flow measuring probe with snap-on head, exchangeable

Specifications:	
Sensor type:	windmill-type anemometer
Measuring range:	0.05 ... 5.00 m/s (water)
Accuracy:	±1 % of range ± 3 % of meas. value (at nominal temperature = 25 °C)
Permiss. angle flow:	±20°, without additional measuring faults
Working temperature:	-10 ... +80 °C
Relative humidity:	0 ... +100 % RH (non-condensing)
Dimensions:	Probe head: Ø 11 x 15 mm, tube: Ø 15 mm, overall length 165 mm, required insertion opening: Ø 16 mm, approx. 5 m PVC connection cable with 6-pin Mini-DIN-plug
Weight:	approx. 75 g
Scope of supply:	sensor, manual

Accessories and spare parts:**STE 005**

Product-ID: 602406
Spare snap-on head for STS 005

STS 005-GTS

Product-ID: 602645
GTS Telescopic rod (overall length 1 m)

FLOW / AIR

**STS 020**

Product-ID: 602397
(0.55 ... 20.00 m/s)
Flow measuring probe with snap-on head, calibrated and exchangeable.

Specifications:	
Sensor type:	windmill-type anemometer
Measuring range:	0.55 ... 20.00 m/s (air)
Accuracy:	±1 % of range ± 3 % of meas. value (at nominal temperature) = 25 °C)
Permiss. angle flow:	±20°, without additional measuring faults
Working temperature:	-10 ... +80 °C
Relative humidity:	0 ... +100 % RH (non-condensing)
Dimensions:	Probe head: Ø 11 x 15 mm, tube: Ø 15 mm, overall length 165 mm, required insertion opening: Ø 16 mm, approx. 5 m PVC connection cable with 6-pin Mini-DIN-plug
Weight:	approx. 75 g
Scope of supply:	sensor, manual

Accessories and spare parts:**STE 020**

Product-ID: 602519
Spare snap-on head for STS 020

STS 020-GTS

Product-ID: 604217
GTS Telescopic rod (overall length 1 m)



picture shows GTS with assembled STS 020

HUMIDITY/TEMPERATURE MEASURING DEVICE



FUNCTIONS:



GFTH 95

Product-ID: 600245
Hygro-/Thermometer

Application:

Quick-response humidity and temperature measurements in EDP rooms, museums, galleries, churches, office complexes, workshops, storage rooms, swimming-baths, private buildings, greenhouses, for refrigeration engineering, air conditioning, for building sites/technology, for inspectors or rendering of expert opinions etc.

Specifications:

Measuring range:

°C:	-20.0 ... +70.0 °C
% RH:	10 ... 95 % RH (recommended range: 30 ... 80 %)
Resolution:	0.1 °C or 0.1 % RH

Accuracy: (±1 digit) (at nominal temperature = 25 °C)

temperature:	±0.5 % of m.v. ±0.1 °C
humidity:	±3 % RH (for range 30 ... 80 %)

Measuring probe:

temperature:	Pt 1000
humidity:	capacitive polymer humidity sensor

Response time

T_{90}	= 15 s
----------	--------

Display:

Operation elements:	slide switch for selection of measuring range
---------------------	---

Nominal temperature: 25 °C

Operating conditions:

Electronic:	-20 ... +70 °C; 0 ... 80 % RH (non-condensing)
Sensors:	-20 ... 70 °C; 0 ... 100 % RH
Power supply:	9 V-battery
Power consumption:	max. 0.1 mA

Housing:

Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), plus sensor head protruding at the longer side 35 mm long and 14 mm Ø, overall length 141 mm.
-------------	---

Weight:

Scope of supply:	Device, battery, manual
------------------	-------------------------

Accessories and spare parts:

GB 9 V
Product-ID: 601115
spare battery

GKK 252
Product-ID: 601056
case (235 x 185 x 48 mm) with foam lining

WPF4
Product-ID: 602543
Certificate of calibration for ISO9000ff (p.r.t. page 7)

HUMIDITY / TEMPERATURE / DEW POINT MEASURING DEVICE



FUNCTIONS:



GFTH 200

GFTH 200

Product-ID: 600249
Hygro-/Thermometer

General:

Because of the low power consumption and the integrated min-/max-value memory the GFTH 200 is perfectly suitable for long term climate surveillances.

Specifications:

Measuring range:

Temperature:	-25.0 ... +70.0 °C; -13.0 ... +158.0 °F
% RH:	0.0 ... 100.0 % RH (recommended range: 11 - 90 % RH)
Td: (Dewpoint)	-40.0 ... +70.0 °C or -40.0 ... +158.0 °F

Resolution:

	0.1 % RH, 0.1 °C or 0.1 °F
--	----------------------------

Accuracy: (±1 digit) (at nominal temperature = 25 °C)

Temperature (internal):	±0.5 % of m.v. ±0.1 °C
Temperature (external):	0.1 °C (device) + probe accuracy
humidity:	±2.5 % RH (for range 11 ... 90 %)

Measuring probe:

Temperature:	Pt 1000
humidity:	capacitive polymer humidity sensor

Response time:

T_{90}	= 10 s
----------	--------

terminal for external probe:

Display:	3½-digit, 13 mm high LCD-display
operation elements:	3 keys for On/Off, min-/max-value display and hold. Slide switch for selection of measuring range.

Nominal temperature: 25 °C

Operating conditions:

Electronic:	-25 ... +70 °C; 0 ... 80 % RH (non-condensing)
Sensors:	-25 ... +70 °C; 0 ... 100 % RH
Power supply:	9 V battery
Power consumption:	approx. 9 µA at 1 measuring / 60 s approx. 100 µA at 1 measuring / s (mode FAST)

Housing:

Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), plus sensor head protruding at the longer side 35 mm long and 14 mm Ø, overall length 141 mm.
-------------	---

Weight:

Scope of supply:	Device, battery, manual
------------------	-------------------------

EXTERNAL PT1000

TEMPERATURE PROBE CONNECTABLE

RELATIVE HUMIDITY,

TEMPERATURE AND

DEW POINT IN JUST ONE INSTRUMENT

Accessories and spare parts:

GOF 175 Mini

Product-ID: 600436

temperature probe for surface temperature measuring (p.r.t. page 13)

further temperature probe

refer to page 13

GKK 252

Product-ID: 601056

case (235 x 185 x 48 mm) with foam lining

ISO-WPF4

Product-ID: 602543

Certificate of calibration for ISO9000ff (p.r.t. page 7)

COMPLETE SOLUTION

GFTH 200-WPF4

Product-ID: 602678

Complete solution incl. certificate of calibration WPF4 (~20 % / ~40 % / ~60 % / ~80 % RH increasing and decreasing) and case GKK 252.



GFTH 200 SET

EASY SEARCH FOR
THERMAL BRIDGES

GFTH 200 SET

Product-ID: 600285

Measuring set incl. infrared thermometer GIM 530 MS and case GKK 3000

General:

The additional infrared thermometer contained in the GFTH 200 SET makes it easy to check mould-problem areas on walls etc. The wall can easily scanned by means of the laser beam within very short time. When wall temperature falls below the critical dewpoint (this is, when the wall gets wet), the device alerts with an audible signal.

advantages GFTH 200 SET:

- targeting laser for precise location even of inaccessible areas
- audible alarm below dewpoint
- fast evaluation of mould-problem areas

Scope of supply: GFTH 200, GIM 530 MS, battery, GKK 3000, manual

GIM 530 MS:

for technical data for this instrument please refer to page 24.

MATERIAL MOISTURE



Application:

	GMK 210	GMK 100	GMI 15	GMR 110	GMH 3810	GMH 3830 + appropriate electrode	GMH 3851 + appropriate electrode	BaleCheck 100	BaleCheck 200
Carpenter, joiners, DIY		•	•	•	•	•			
Boat & Caravan (wood & GFK)	•								
Certified glue lam						•	•		
Foelwood, wooden log				•	•	•	•		
Wood chips						•	•		
Plaster, screed, concrete, bricks, lime mortars		•	•	•	•	•	•		
Construction-damage assess- ment/ Water damage restoration		•	•	•	•	•	•		
Hay bale / bale of straw/ Corn (barley, wheat)						•	•	•	•

Equipment:

Method	capacitive (non-destructive)			resistive (Resistance)					
Sensor / Probe	integrated			integrated		external		external GSF 40	external GSF 40TF
Characteristics	14	18		4	494			4	494
User curves							4		
General functions	Hold, Auto-Off	Hold, Auto-Off		Hold, Auto-Off	Hold, Auto- Off, Sort	Hold, Auto- Off, Sort	Hold, Auto- Off, Sort	Hold, Auto-Off	Hold, Auto- Off, Sort
Serial interface / Analog output						• / 0 ... 1 V	• / 0 ... 1 V		• / 0 ... 1 V
Data logger							•		

Device information:

Catalogue page	33	33	32	37	37	34	34	38	38
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Material Moisture Measurement with **GREISINGER** handheld instruments

Methods

• Resistive measuring method

(GMR 110, GMH 3810, GMH 3830, GMH 3851)

The electrical resistance often depends on the material moisture. Therefore the devices measure the (possibly extremely high) values of resistance and convert them to the displayed value by means of integrated characteristic curves. The temperature has to be compensated especially at the measurement of wood – all GREISINGER- instruments have an integrated temperature compensation. In most cases the contact is realised by nails that are driven into the material are used to contact.

• Capacitive measuring method

(GMK 210, GMK 100, GMI 15)

The dielectric properties of an object are often a good indicator for its material moisture. The dielectric coefficient of water is considerably higher than that of dry lumbers or building materials. Therefore the total dielectric coefficient of the measuring object can be easily used to get its material moisture. For the measurement the device has to be applied on the material.

Precondition therefore: planar surfaces, no metallic elements.

• relative humidity

(i.e. mit GMH 3330 + TFS 0100 E)

Another method is to measure the material moisture indirectly by means of the relative humidity: The humidity in a sealed hole within a material depends on the material moisture. By means of a so-called sorption isotherm or a corresponding table the material moisture can be calculated from the humidity.

• dry method

The oven dry method can be used for reference point measurement with highest accuracy.

The moist material is weighed and afterwards dried at increased temperature until no weight loss is detectable anymore. The material moisture can be calculated from the moist and arid weight.

Units

• Material moisture u (also „atro“):

relating to dry mass
material moisture u [%] =
 $(\text{mass wet} - \text{mass dry}) / \text{mass dry} * 100$
Particularly important for carpenters, joiners, etc.

• Moisture content w:

material moisture related to wet total mass
moisture content w [%] =
 $(\text{mass wet} - \text{mass dry}) / \text{mass wet} * 100$
Particularly important for the evaluation of combustibles.

• “Digit“ (GMI 15)

The displayed value is relative, that means without a physical unit. This can be used to get comparative moisture information of the same materials. Lower values indicate less moisture, higher values indicate therefore more moisture.

For further information on this topic please see the devices' manuals and our homepage
www.greisinger.de under Download -> Documents

INDICATOR FOR MOISTURE IN WOOD AND BUILDINGS



FUNCTIONS:



EASY AND FAST
MOISTURE RATING



NONDESTRUCTIVE
MEASUREMENT

GMI 15

Product-ID: 600059

Indicator for moisture in wood and buildings

General:

Device for high-speed determination of moisture in buildings, contracting work etc. The GMI 15 allows detection of moisture in wood down to a depth of approx. 3 cm and in concrete or wash floor down to a depth of approx. 4 cm. Detection of moisture behind ceramic tiles and/or various wall or floor coverings.
To check moisture simply place device on the surface to be measured - no injection into the measuring object required. The displayed values by „digit“ are relative, that means the values can be well compared.

Application:

Humidity indication for i.e. estate agents (for fast control state of buildings), property management, house owners, architects, building experts, building contractors, etc.

Note:

The GMI 15 is an indicator for the fast estimation - it does not replace precision instruments like the GMH 3810, GMH 3830, GMH 3851 or GMK 100.

Specifications:

Display:	3½-digits, 13 mm high LCD
Display range:	
concrete / floor pavement:	0 ... 5 = dry 6 ... 9 = humid, normal humidity level 10 ... = wet
wood / fibre glass reinforced polyester:	0 ... 3 ~ 0 ... 12 % : dry 3 ... 6 ~ 12 ... 20 % : air-dry 6 ... 11 ~ 20 ... 30 % : wind-dry 11 ... ~ 30 % ... : wet
Power supply:	9 V-battery
Power consumption:	approx. 5 mA
Working temperature:	0 ... 50 °C (not frozen)
Storage temperature:	-20 ... +70 °C
Relative humidity:	0 ... 80 % RH (non-condensing)
Housing:	Impact resistant ABS plastic housing
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 150 g (ready for use)
Scope of supply:	Device, battery, manual

MEASURING DEVICE MOISTURE IN WOOD AND BUILDINGS



FUNCTIONS:



FOR WOOD AND
BUILDING MOISTURE



HIGHLIGHTS:

- Moisture display in percent
- Acoustical and visual moisture rating
- 18 material characteristics for wood and building materials
- 2 different measurement depth

GMK 100

Product-ID: 600105

Measuring device moisture in wood and buildings

General:

The GMK 100 is a capacitive material moisture measuring device with direct moisture display in percent. It is optimally suited for home and handcraft. Depending on the application, it is possible to display the material moisture "u" or the water content "w". The humidity is measured by a measuring plate on the back of the device. With a side-mounted switch the measuring depths can be changed. With the help of measurements in different depth a statement could be made if for example the material dries already or if the moisture is just on the surface of the material.

Application:

Humidity measurement and indication of wood, concrete, screed, plaster, etc.

Specifications:

Display:	2 displays for material and measured value, in % material moisture or in % moisture content, backlight
Moisture rating:	
Visual:	Rating of the moisture in 6 levels from WET to DRY
Acoustic:	Signal tone
Measurement depths:	10 mm and 25 mm
Curves:	18 characteristic curves for wood (with assignment label for wood species) and popular materials, additionally reference curve (rEF) for high-resolution relative measurements
Working temperature:	-25 ... +50 °C (not frozen)
Storage temperature:	-25 ... +70 °C
Power supply:	9 V battery
Power consumption:	approx. 0.12 mA
Power backlight:	approx. 2.5 mA (Auto-Off)
Housing:	impact-resistant ABS plastic housing, plastic foil keyboard, clear screen, front: IP65
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 145 g (ready for use)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

PW 25

Product-ID: 601368

Testing probe to control the device

MATERIAL MOISTURE MEASURING DEVICE FOR CARAVAN AND BOAT



FUNCTIONS:



FOR CARAVAN
& BOAT



SEARCH MODE FOR
QUICKLY LOCATING
HUMIDITY AND THE LIKE

HIGHLIGHTS:

- Moisture display in percent
- Acoustical and visual moisture rating
- 14 material characteristics for wood and GFK
- 2 different measurement depth

GMK 210

Product-ID: 600107

Material moisture measuring device for caravan and boat

General:

The GMK 210 is a capacitive material moisture measuring device with direct moisture display in percent. It is optimally suited for home and handcraft. Depending on the application, it is possible to display the material moisture "u" or the water content "w". The humidity is measured by a measuring plate on the back of the device. With a side-mounted switch the measuring depth can be changed. With the help of measurements in different depth a statement could be made if for example the material dries already or if the moisture is just on the surface of the material.

Application:

Humidity measurement and indication of wood and GFK (glass fiber reinforced plastic)

Specifications:

Display:	2 displays for material and measured value, in % material moisture or in % moisture content, backlight
Moisture rating:	
Visual:	Rating of the moisture in 6 levels from WET to DRY
Acoustic:	Signal tone
Messtiefen:	10 mm and 25 mm
Curves:	14 characteristic curves for wood (with assignment label for wood species) and GFK, insulating materials i.e. Styropor; additionally reference curve for high-resolution relative measurements
Working temperature:	-25 ... +50 °C (not frozen)
Storage temperature:	-25 ... +70 °C
Power supply:	9 V battery
Power consumption:	approx. 0.2 mA
Power backlight:	approx. 2.5 mA (Auto-Off)
Housing:	impact-resistant ABS plastic housing, plastic foil keyboard, clear screen, front: IP65
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 145 g (ready for use)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

PW 25

Product-ID: 601368

Testing probe to control the device

PRECISION MATERIAL MOISTURE MEASURING DEVICE FOR WOOD, BUILDING MATERIALS, STRAW, HAY, PAPER, TEXTILES, ETC.



STANDARD-FUNKTIONS:



HIGHLIGHTS:

- serial interface or analog output 0-1 V, freely scalable
- 4 programmable characteristics (GMH 3851)
- incl. calibration protocol

ADDITIONAL FUNCTIONS GMH 3851:



466 WOOD TYPE CHARACTERISTICS
28 CONSTRUCTION MATERIALS

MPA certified appr. for glued timber construction acc. to DIN 1052-1

GMH 3830

Product-ID: 600347

Resistive material moisture and temperature measuring device, w/o accessories

GMH 3851

Product-ID: 602009

Resistive material moisture and temperature measuring device, w/o accessories, with data logger and programmable characteristic curves memory

General:

The GMH 3830 and GMH 3851 offer decisive advantages in handling, user-friendliness, functional range and accuracy. The absolute moisture of 494 material types is displayed directly and can be automatically converted to water content. The cumbersome usage of calculation tables becomes a thing of the past. Additionally you get a moisture rating (wet ... dry) of the measured material.

Application:

Precision measurements in cut-wood, chip board, veneer, sawdust, wood chips, wood wool, flax, straw, hay, concrete, bricks, wash floor, plaster, limestone mortar, cement mortar, paper, carton, textiles, wood chips, professional firewood humidity measurement, etc.

User:

architect, expert, inspector, building contractor, painter, carpenter, parquet joiner, floor tiler, wood works, timber desiccation plant, building repair company, textile industry etc.

Specifications:

Measuring principle:

Moisture: Resistive material moisture measurement acc. to DIN EN 13183-2:2002

Temperature:

external: thermocouple, NiCr-Ni (type K)

internal: NTC

Characteristic curves : 494 material characteristics

Measuring range:

Moisture: 0.0 ... 100 % u (material moisture)
0.0 ... 50 % w (water content, wet basis)
(depends on selected characteristic)

Temperature: -40.0 ... +200.0 °C (-40.0 ... +392.0 °F)

Moisture rating: 9 steps (dry ... wet)

Resolution: 0.1 % or 0.1 °C (0.1 °F)

Device accuracy: (at nominal temperature)

Wood: ±0.2 % material moisture (deviation from corresponding characteristic curve in range 6 ... 30 %)

Building material: ±0.2 % material moisture (deviation from corresponding characteristic curve)

Temperature: (external) ± 0.2 % of m.v. ± 0.3 °C

Temperature compensation: automatic or manual

Sensor connection:

Moisture: BNC

Temperature: thermovoltage-free type K (NiCr-Ni) socket

Permitted working temperature: -25 ... +50 °C

Display:	two 4-digit LCD displays (12.4 mm and 7 mm high), additional indicator arrows
Output:	3-pole jack connector Ø 3.5 mm, either with serial interface or analog output
Serial interface:	connectable to RS232 or USB interface of PCs via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N (accessories).
Analog output:	0 - 1 V, freely scalable
Power supply:	9 V battery, additional socket for external 10.5-12 V direct current power supply (adequate PSU: GNG10/3000).
Power consumption:	approx. 2.5 mA
Housing:	impact-resistant ABS, front side IP65, integrated pop-up clip for table top or suspended use.
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	155 g
Scope of supply:	Device, battery, manual

additional functions of GMH 3851:

User specific characteristics: 4, freely programmable

Interpolation points per curve: 20

By means of the gratis software GMHKonfig the interpolation points can be comfortably edited and stored to the instrument.
(Required accessories: interface converter)

Average value of 3 measurements, e.g. for professional firewood moisture measurements

Data logger:

This instrument is essential for the documentation of material state by quality assurance systems, etc. By means of the integrated data logger there can be up to 10.000 measuring values recorded and processed on demand. Additionally it is possible to individually program 4 material curves (e.g. with dry oven or CM-method). This instruments finally makes paper correction tables unnecessary.

Logger function

manual: 99 data sets (fetch data via buttons or interface)

cyclic: 10.000 data sets (fetch data via interface)

adjustable cycle time: 1 s ... 1 h

The logger is started or stopped by keypad or interface.

The software GSOF3050 (see accessories) is available for comfortable read-out of logger data.

Accessories and spare parts:

GSOF 3050

Product-ID: 601336

Logger operation software

GRS 3100

Product-ID: 601097

RS232 interface converter

USB 3100 N

Product-ID: 601092

Interface converter

additional accessories: see next page

ACCESSORIES

1

**GMK 38**

Product-ID: 601261

Connection cable

(BNC to 2 x banana plug) approx. 90 cm long

2

**GHE 91**

Product-ID: 601262

Reciprocating piston electrode *

to drive measuring nails into material without auxiliary devices

3

**GSE 91**

Product-ID: 601266

Impact electrode *

to drive measuring nails into material

4

**GEG 91**

Product-ID: 601268

Handle

suitable for GSE 91

5

**GSG 91**

Product-ID: 601270

Penetration electrode *

adequate for steel nails and measuring rods

6

**GST 91**

Product-ID: 601273

steel nails

9 steel nails (3 pieces each, 12, 16 and 23 mm long) in plastic case, Ø 2.5 mm

GST 91/40

Product-ID: 601275

steel nails

10 steel nails, 40 mm long, Ø 2.5 mm, in plastic case

7

**GST 45i**

Product-ID: 601277

steel nails

2 Teflon isolated steel nails, 45 mm long, Ø 2.5 mm

GST 60i

Product-ID: 601279

steel nails, as above, 60 mm lang

8

**GOK 91**

Product-ID: 601287

Measuring cap

Surface measuring caps (pair) (for use with GSG 91 or GSE 91)

9

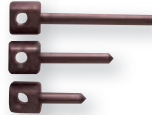
**GMS 300/91**

Product-ID: 601289

Measuring rods

300 mm long (pair), for wood chips, wood wool, paper, carton, etc. (for use with GSG 91 or GSE 91)

10

**GST 15B**

Product-ID: 601281

steel nails *

2 steel nails with bore hole, 15 mm long, Ø 3.8 mm (for direct connection of measuring cable GMK 38)

GST 25B

Product-ID: 601283

steel nails * as above, Ø 3.8 x 25 mm**GST 40B**

Product-ID: 601285

steel nails * as above, Ø 3.8 x 40 mm

11

**GBSK 91**

Product-ID: 601293

Wire brush (pair) short *

for depths up to approx. 100 mm

12

**GBSL 91**

Product-ID: 601294

Wire brush (pair) long *

for depths up to approx. 300 mm

13

**GEF 38**

Product-ID: 601296

Flat electrode (pair) *

for screed, paper, etc.

14

**GLP 91**

Product-ID: 601299

conducting paste *

100 ml, for surface measurements and depth indication in walls, wash floors etc. with brush probes

15

**GSP 91**

Product-ID: 601301

sensor for surface measurements *

on paper, textiles etc.

GSP 91 ES

Product-ID: 601303

spare sensor element

for GSP 91

16

**GMZ 38**

Product-ID: 605783

Measuring clamp *

for measurements of veneers or thin wood (up to approx. 10 mm)

17

**GSF 50 (110 cm)**

Product-ID: 601306

GSF 50K (43 cm)

Product-ID: 601308

Injection probe

(without temperature sensor) for measurement up to a depth of 40 cm or 107 cm, incl. 1 m connection cable. Suitable for: wood chips, wood wool, straw, hay, grain, saw dust, etc.

18

**GSF 50TF (110 cm)**

Product-ID: 601312

GSF 50TFK (43 cm)

Product-ID: 601314

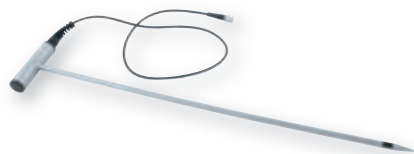
Injection probe

(with temperature sensor) for measurement up to a depth of 40 cm or 107 cm, incl. 1 m connection cable. Suitable for: wood chips, wood wool, straw, hay, grain, saw dust, etc.

* Measuring cable necessary for GHE 91, GSE 91, GSG 91, GST 15B / 25B / 40B, GBSK 91, GBSL 91, GEF 38, GLP 91, GSP 91, GMZ 38

ACCESSORIES

19



GSF 40 (67 cm)

Product-ID: 601316

Injection probe

(without temperature sensor) for measurement of pressed bales up to a depth of 60 cm, incl. 1 m connection cable. Suitable for: pressed hay or straw bales, grain

20



GSF 40TF (67 cm)

Product-ID: 601319

Injection probe

(with temperature sensor) for measurement of pressed bales up to a depth of 60 cm, incl. 1 m connection cable. Suitable for: pressed hay or straw bales, grain

21



GTF 38

Product-ID: 601347

NiCr-Ni temperature probe

volt-free, Ø 2.2 x 25 mm, 1 m cable (recommended for wood moisture measurements)

22



GES 38

Product-ID: 601350

NiCr-Ni injection probe

volt-free, Ø 4 x 150 mm, 1 m cable (recommended for wood moisture measurements)

23



GPAD 38

Product-ID: 601328

Test adapter

(with 2 reference values) for testing GMH 38xx and GMR 110

24



GKK 3500

Product-ID: 601052

Plastic case

(394 x 294 x 106 mm) with cut-outs for device and accessories

25



pict.: GMH3830 in ST-RN

ST-RN

Product-ID: 601074

Protection bag

with blanked out sensor connections (suitable for GMH 3830, GMH 3851)

ACCESSORIES-SETS



SET WITHOUT DEVICE

SET 38 HF

Product-ID: 602071

Wood moisture set

Content:

- GKK 3500 (case)
- GMK 38 (measuring cable)
- GSE 91 (impact electrode)
- GST 91 (measuring nails)
- GTF 38 (temperature probe)

Application:

wood



SET WITHOUT DEVICE

SET 38 BF

Product-ID: 602073

Wood and building moisture set

Content:

- GKK 3500 (case)
- GMK 38 (measuring cable)
- GSE 91 (impact electrode)
- GST 91 (measuring nails)
- GTF 38 (temperature probe)
- GMS 300/91 (measuring rods)
- GBSK 91 (wire brush)
- GLP 91 (conductive paste)

Application:

wood, concrete, screed, plaster



SET WITHOUT DEVICE

SET 38 MPA

Product-ID: 602075

MPA wood moisture set

Content:

- GKK 3500 (case)
- GMK 38 (measuring cable)
- GHE 91 (reciprocating piston electrode)
- GST 91 (measuring nails)
- GTF 38 (temperature probe)

Application:

wood, gluelam

MOISTURE COMPLET SET



NEW!

GMH 38-LW1-TF

Product-ID: 606470

GMH 38-LW1-TFK

Product-ID: 606462

GMH 38-LW2-TF

Product-ID: 606471

GMH 38-LW2-TFK

Product-ID: 606463

Moister complete set for for agricultural use.

General:

Measuring device for fast moisture analysis in lumps and bulks. Universally applicable tool damage prevention and quality assurance. The more than 1 m long insertion probe with integrated temperature sensor is very good for measuring in hay and straw lump and bulk suitable. Material humidity and temperature can be easily determined by piercing the object.

Application:

- Hay, flax
 - Straw, cereals
 - Wood chips
 - Wheat
 - Barley
- the simple humidity indication is done in nine steps.

Specifications:

Device:	GMH 3830 GMH 3851 respectively, see page 34
Penetration:	GSF 50, GSF 50K, GSF 50TF, GSF 50TFK, see page 35
Scope of supply:	
GMH 38-LW1-TF	GMH 3830, GSF 50 TF, battery, manual
GMH 38-LW1-TFK	GMH 3830, GSF 50 TFK, battery, manual
GMH 38-LW2-TF	GMH 3851, GSF 50 TF, battery, manual
GMH 38-LW2-TFK	GMH 3851, GSF 50 TFK, battery, manual

RESISTIVE MATERIAL-MOISTURE MEASURING DEVICE



FUNKTIONEN:



HIGHLIGHTS:

- 494 characteristic curves
- incl. calibration protocol

FOR WOOD AND BUILDING MATERIALS

GMH 3810

Product-ID: 600350

Resistive material-moisture measuring device with integrated measuring pins

General:

The measuring pins integrated on the reinforced front numerous measurements can be done without additional accessories.

For measuring of very hard materials we suggest the components shown at the accessories section.

Specifications:

Measuring principle:

moisture: resistive material-moisture-measuring according to DIN EN 13183-2:2002

temperature internal: NTC

Curves: 494 material characteristics

Measuring range:

moisture: 0.0 ... 100.0 % moisture content
0.0 ... 50.0 % water content
(depending on characteristic curve)

temperature: -25.0 ... +50.0 °C
(-13.0 ... +122.0 °F)

Estimation: in 9 steps (dry ... wet)

Resolution: 0.1 % resp. 0.1 °C (0.1 °F)

Accuracy device: (at nominal temperature = 25 °C)

wood: ±0.2 % moisture content
(deviation from characteristic curve at range 6 ... 30 %)

building material: ±0.2 % moisture content
(deviation from characteristic curve)

Temperature compensation: automatically or manual

Measuring probe: 2 pin holders M6 x 0.75 with 19 mm pins (12 mm utilisable)

Perm. working temperature: 0 ... 50 °C (not frozen)

Storage temperature: -25 ... +70 °C

Rel. humidity: 0 ... 95 % RH (non-condensing)

Display: two 4-digit LCDs

Sort: the material selection is restricted to up to 8 favorites

Power supply: 9 V battery

Power consumption: approx. 2.5 mA

Housing: Impact-resistant ABS plastic housing, membrane keyboard, transparent panel. Front side IP65, integrated pop-up clip

Dimensions: 142 x 71 x 26 mm (H x W x D)

Weight: 175 g

Scope of supply: Device, battery, manual

Accessories and spare parts:

GST 3810

Product-ID: 601392
replacement pins (10 pcs.)

GMK 3810

Product-ID: 603070
1 m connection cable with 2 x banana plugs and 2 adapters. Allows connection of accessories (except GSF38..., GTF38 and GES38) on GMH3810 / GMR110.



RESISTIVE MATERIAL-MOISTURE MEASURING DEVICE



FUNKTIONEN:



AUTOMATIC TEMPERATURE COMPENSATION

COMFORTABLE CHARACTERISTIC CURVE- AND RATED DISPLAY



rear side of device

GMR 110

Product-ID: 600101

Resistive material moisture measuring device with integrated measuring needles.

General:

Compact and robust measuring device for fast evaluation of material moisture in firewood, timber, flake board, inlay, plaster, cement and lots more. A suitable characteristic is selected with help of material table on the rear side of the device before measuring. The material is contacted by pressing the measuring needles into it. The measured value is displayed only a short time afterwards. The device is especially designed for precise firewood and timber measurements, however, a lot of additional building materials can be rated.

- Material tables on rear side of device
- Integrated, exchangeable measuring needles
- Moisture rating (wet/dry) via bar graph
- Display of material moisture or water content
- Integrated temperature compensation
- Characteristic curve display

Specifications:

Measuring principle: resistive material moisture measurement acc. to DIN EN 13183

Characteristic curves: 3 different wood groups (h.01, h.02, h.03) for a total of 130 wood types and 8 different building material curves (c.01, c.02, c.03, c.04, c.05, c.06, c.07, c.08)

Measuring range: 0.0 ... 100 % material moisture (depends on selected characteristics)

Moisture rating: in 6 steps (wet ... dry)

Resolution: 0.1 % (<20 %), 1 % (>20 %)

Accuracy: (at nominal temperature = 25 °C)

wood: ±0.2 % material moisture
(Deviation to wood characteristic curve in range 6 ... 20 %)

building materials: ±0.2 % material moisture
(Deviation to corresponding characteristic curve)

Temperature compensation: automatically or manual

Measuring probe: 2 needle holder M6 x 0.75 with 19 mm measuring needles (12 mm usable length)

Perm. working temperature: -5 ... +50 °C (not frozen)

Storage temperature: -25 ... +70 °C

Rel. humidity: 0 ... 95 % RH (non condensing)

Display: 2 LCD displays for characteristic and measuring value

Power supply: 9 V battery

Current consumption: approx. 1.8 mA

Housing:

Impact-resistant ABS plastic housing, membrane keyboard, transparent panel. Front side IP65

Dimensions:

110 x 67 x 30 mm + needles 26 mm

Weight:

approx. 155 g

Scope of supply:

device, 2 needle protection caps, battery, manual

Characteristic curves:

3 wood groups:

- h.01 spruce, pine
- h.02 maple, birch, beech, larch (EUR), ash (EUR), fir
- h.03 oak, ash (AM), poplar, douglas fir

a lot of additional wood types can be determined with the table of the instruction manual

8 building material curves:

- c.01 cement screed, concrete
- c.02 anhydrite screed
- c.03 plaster, lime mortar
- c.04 cement mortar
- c.05 gas concrete
- c.06 lime sand brick
- c.07 clay brick
- c.08 gypsum plaster

Accessories and spare parts:

GST 3810

Product-ID: 601392
replacement pins (10 pcs.)

GMK 3810

Product-ID: 603070
1 m connection cable with 2 x banana plugs and 2 adapters. Allows connection of accessories (except GSF38..., GTF38 and GES38) on GMH3810 / GMR110.

additional special accessories at page 35.

GB 9 V

Product-ID: 601115
spare battery

GKK 252

Product-ID: 601056
case (235 x 185 x 48 mm) with foam lining

HAY AND STRAW HUMIDITY MEASURING DEVICE



FUNKTIONEN:



HIGHLIGHTS:

- robust 60 cm V4A measuring rod
- characteristics for hay, straw and grain

BaleCheck 100

Product-ID: 600103

Hay and straw humidity measuring device (incl. measuring rod and protective bag)

General:

The BaleCheck 100 is a professional measuring device for measuring the moisture in bales of pressed hay and straw. It allows to easily determine the suitability for storage and quality of hay and straw – important especially in agriculture, stock breeding and horse keeping. The slim but robust measuring rod should be used for measurements in different depths. If the maximal moisture is < 16.0 % u, the material can be stored or spent without hesitation.

Application:

- agriculture
- processing or storing of hay or straw
- hay and straw trading
- stock breeding
- horse keeping

Specifications:

Measuring range:	0.0 100 % u (material moisture) 0.0 ... 50 % w (water content)
Resolution:	0.1 % (till 19.9 %) and 1 % (from 20 %)
Characteristics:	hay, straw, grain, reference characteristics
Moisture rating:	6-step bar graph (wet ... dry)
Temperature compensation:	manual
Display:	2 displays for characteristics and measuring value
Housing/weight:	impact-resistant ABS, 110 x 67 x 30 mm (H x W x D), 155 g
Working conditions:	-25 ... +50 °C (device), 0 ... +100 °C (rod), 0 ... 95 % RH (non condensing)
Measuring rod:	V4A stainless steel, 600 mm x Ø 10 mm, 1 m connection cable with BNC-plug, 260 g, design of probe handle offers comfortable operation
Power supply:	9 V battery
Current consumption:	approx. 1.8 mA
Scope of supply:	Device, measuring rod, protective bag, battery, manual

HAY AND STRAW HUMIDITY MEASURING DEVICE INCL. TEMPERATURE MEASUREMENT



FUNKTIONEN:



HIGHLIGHTS:

- fast temperature measurement integrated
- robust 60 cm V4A measuring rod
- characteristics for hay, straw and grain

BaleCheck 200

Product-ID: 600354

Hay and straw humidity measuring device incl. temperature measurement (incl. measuring rod and protective bag)

General:

The BaleCheck 200 is a professional measuring device for measuring the moisture in bales of pressed hay and straw. It allows to very precisely determine the suitability for storage and quality of hay and straw as well as grain – important especially in agriculture, stock breeding and horse keeping. The slim but robust measuring rod should be used for measurements in different depths. If the maximal moisture is < 16.0 % u, the material can be stored or spent without hesitation. The additional temperature measurement makes an automatic temperature compensation possible and supports fire prevention (proof of due diligence).

Application:

- fire prevention
- agriculture
- processing or storing of hay or straw
- hay and straw trading
- stock breeding
- horse keeping

Specifications:

Measuring range:	0.0 100.0 % u (material moisture) 0.0 ... 50.0 % w (water content) -40.0 ... +200.0 °C (device)
Resolution:	0.1 %, 0.1 %
Characteristics:	hay, straw, grain, reference characteristics approx. 480 additional material moisture characteristics
Moisture rating:	9-step bar graph (wet ... dry)
Temperature compensation:	automatic or manual
Display:	two 4-digit LCD displays (12.4 mm and 7 mm)
Housing/weight:	impact-resistant ABS, 142 x 71 x 26 mm (H x W x D), 155 g
Working conditions:	-25 ... +50 °C (device), 0 ... +100 °C (rod), 0 ... 95 % RH (non condensing)
Measuring rod:	V4A stainless steel, 600 mm x Ø 10 mm, 1 m connection cable with BNC-/type K- plug, temperature 0 ... 100 °C, 260 g
Features:	interface, analog output (0-1 V), power supply terminal (10.5-12 VDC)
Sort:	the material selection is restricted to up to 8 favorites.
Power supply:	9 V battery
Current consumption:	approx. 2.5 mA
Scope of supply:	device, measuring rod with temperature sensor, protective bag, operation manual

Variants:

- BaleCheck 200 - 1000**
Product-ID: 607147
Hay and straw humidity measuring device incl. measuring rod 1000 mm
- BaleCheck 200 - 1500**
Product-ID: 607146
Hay and straw humidity measuring device incl. measuring rod 1500 mm

CONDUCTIVITY



GMH 5430



GMH 5450



GMH 3431



GMH 3451



GLF 100



GLF 100 RW

Application:

Waters measuring, fishkeeping, aquafarming (fresh- / marine waters)	•	•	•	•	•	
Drinking water-, process monitoring, ground measurements	•	•	•	•	•	
Cleaning processes	•	•	•	•	•	•
Ultrapure water	•	•				•
Food production and -control	•	•	•	•	•	
Quality management	•	•	•	•	•	•
Water-proof	•	•				
Electrodes for replacement	•	•				

Equipment:

Measuring range Conductivity / Temperature esp. Resistance TDS / Salinity	• • •	• • •	• • •	• • •	• •	• •
Sensor connection	7-pole bayonet	7-pole bayonet	fixed	fixed	fixed	fixed
Electrode	2- or 4-pole	2- or 4-pole	2-pole graphite	4-pole graphite	2-pole graphite	2-pole stainless steel
General functions	Min/Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off, Calibration memory	Min/Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off
Interface	•	•	•	•		
Alarm / Data logger		•		•		

Device information:

Catalogue page	40	40	42	42	43	43
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STANDARD-FUNKTIONEN:



HIGHLIGHTS:

- Measurement of conductivity, resistance, salinity, TDS
- Large double display with background illumination
- Automatic cell correction with reference solutions

ADDITIONAL FUNCTIONS GMH 5450:



**WATER-PROOF
DEVICE AND PLUG CONNECTIONS**

GMH 5430

Product-ID: 600035

Water-proof handheld device without electrode

GMH 5450

Product-ID: 600037

Water-proof handheld device with analog output and data logger, without electrode

Application:

Mobile use for:

- industry and craft
- measurements of waters and aquaristics, fish farming
- drinking water monitoring, process control, soil measurements
- food production and control
- quality management

Additional applications at laboratory:

- medicine, pharmacy, chemistry

Specifications:

Measuring range:

Number of meas. ranges: 5

Smallest range: 0.000 ... 5.000 $\mu\text{S}/\text{cm}$ * or 0.0 ... 500.0 $\mu\text{S}/\text{cm}$ **

Biggest range: 0 ... 5000 $\mu\text{S}/\text{cm}$ * or 0 ... 1000 mS/cm **

Resistivity: 0.005 ... 500.0 $\text{k}\Omega\text{cm}$ * (depends on cell constant)

TDS: 0 ... 5000 mg/l (depends on cell constant)

Salinity: 0.0 ... 70.0 (g salt / kg water)

Temperature: -5.0 ... +100.0 $^{\circ}\text{C}$, Pt1000 or NTC (10 k)

Supported cell constants: 4.000 ... 15.000 / cm - 0.4000 ... 1.5000 / cm - 0.04000 ... 0.15000 / cm - 0.004000 ... 0.015000 / cm

Accuracy (at nominal temperature = 25 $^{\circ}\text{C}$):

Conductivity: ± 0.5 % of m.v. ± 0.1 % FS (depends on electrode)

Temperature: ± 0.2 K

Connection:

Conductivity, temperature: 1 x 7-pole bayonet connector for connection of different measuring cells, supported temperature sensors: Pt1000 or NTC (10 k)

Interface / ext. supply: 4-pole bayonet connector for serial interface and supply (with accessory: USB adapter USB 5100)

Analog output: (only GMH 5450) 0 - 1 V, freely adjustable, connection with 4-pole bayonet connector, resolution 13 bit, accuracy 0.05 % at nominal temperature

Datenlogger: (nur GMH 5450) Zyklisch: 10.000 Datensätze, Zyklus wählbar: 1 s ... 60 min Einzel: 1000 Datensätze (mit Messstelleneingabe, 40 einstellbare Messstellentexte oder Messstellennummern)

Display: 4 1/2 digit 7-segment, illuminated (white)

Operating conditions: -25 ... +50 $^{\circ}\text{C}$, 0 ... 95 % RH (non-condensing)

Storage temperature: -25 ... +70 $^{\circ}\text{C}$

Background illumination: duration adjustable (off, 5 s ... 2 min.)

Power supply: 2 x AAA battery (included), power consumption 6.25 mA

Battery life time:	approx. 160 h (without background illumination)
Protection class:	IP65 / IP67
Housing:	Impact-resistant ABS plastic housing, integrated pop-up clip
Dimensions:	160 x 86 x 37 mm (H x W x D) incl. silicone protection cover
Weight:	approx. 250 g incl. battery and protection cover
Scope of supply:	Device, K 50 BL, battery, manual
<i>depends on cell constant of used electrode</i>	
<i>* cell constant 0.01 / cm ** cell constant 0.1 ... 1.2 / cm (standard)</i>	

additional Functions:

Cell correction

Manually or automatically with reference solution

Automatic temperature compensation:

As conductivity depends strongly on temperature, each conductivity value is only valid at the corresponding temperature. Therefore the device supports temperature compensation, i.e. referring the conductivity to a reference temperature (selectable: 20 $^{\circ}\text{C}$ or 25 $^{\circ}\text{C}$).

Supported types of compensation:

- nLF: Non-linear function of natural waters acc. to DIN EN 27888 (ISO 7888) (Reference temperature 25 $^{\circ}\text{C}$)
- Lin: adjustable linear compensation
- off: no compensation

Salinity measurement:

Salinity means the sum of the concentrations of all dissolved salts in water. The unit is g/kg. (equals PSU = Practical Salinity Unit).

TDS measurement (total dissolved solids)

TDS means the mass concentration of dissolved media in a liquid. The unit is mg/l.

GLP (Good Laboratory Practice)

adjustable calibration intervals
GMH 5450: Calibration memory: latest 16 calibrations

Accessories and spare parts:

EBS 20M

Product-ID: 601158

Software for long-term monitoring (p.r.t. page 76)

GSOFT 3050

Product-ID: 601336

Software for operation of logger devices (p.r.t. page 77)

USB 5100

Product-ID: 601095

Electrically isolated interface converter, supplied via USB

GNG 5 / 5000

Product-ID: 602287

Plug-in power supply 5 V DC, suitable for devices of the series GMH 5000 (p.r.t. page 74)

GKK 3500

Product-ID: 601052

Device case (394 x 294 x 106 mm) with eggcrate foam and cut-outs for 1 device (p.r.t. page 72)

CONDUCTIVITY ELECTRODES

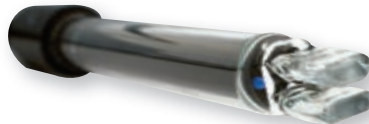


**PURE AND ULTRA
PURE WATER**

LF 200 RW

Product-ID: 602841
conductivity electrode

Specifications:	
Measuring range:	0 ... 100 µS/cm
Temperature range:	-5 ... +100 °C
Cell constant *:	approx. 0.1
Temperature measurement:	NTC 10 k
Shaft:	Stainless steel, Ø 12 mm x 75 mm
Electrode:	2-pole stainless steel
Application:	Pure and ultra pure water
cable length:	1 m



**ALCOHOL,
FUEL, DIESEL**

LF 210

Product-ID: 602969
conductivity electrode

Specifications:	
Measuring range:	0 ... 1000 µS/cm
Temperature range:	-5 ... +100 °C
Cell constant *:	approx. 1
Temperature measurement:	NTC 10 k
Shaft:	Glass, Ø 12 mm x 120 mm
Electrode:	2-pole glass / platinum
Application:	Alcohol, fuel, diesel
cable length:	1 m



**FOR UNIVERSAL
APPLICATION**

LF 400

Product-ID: 602968
conductivity electrode

Specifications:	
Measuring range:	0 ... 200 mS/cm
Temperature range:	0 ... 100 °C
Cell constant *:	approx. 0.55
Temperature measurement:	NTC 10 k
Dimensions:	Epoxide, Ø 12 mm x 120 mm
Characteristics:	4-pole graphite
Applications:	Universal application, Economy Class
cable length:	2 m

* Note:

The particular cell constant (appears in calibration protocol and electrode's label) has to be entered to device. Then it is ready-to-use.



**TIGHT TOLERANCES,
ROBUST AND PRECISE**

LF 425

Product-ID: 602840
conductivity electrode

Specifications:	
Measuring range:	0 ... 1000 mS/cm
Temperature range:	-10 ... +80 °C (90 °C - max. 5 min)
Cell constant *:	approx. 0.42
Temperature measurement:	Pt 1000
Dimensions:	PVC-C, Ø 16 mm x 145 mm
Characteristics:	4-pole graphite
Applications:	Tight tolerances, robust and precise for highest demands, High End Class
cable length:	1 m

Accessories and spare parts:

GEH 1

Product-ID: 601089

Electrode holder for measuring electrodes with plastic handle (p.r.t. page 72)

GKL 100

Product-ID: 601396

Conductivity control solution (100 ml bottle with 1413 µS/cm according to DIN EN 27888)

GKL 101

Product-ID: 601398

Conductivity control solution (250 ml bottle with 84 µS/cm)

GKL 102

Product-ID: 601400

Conductivity control solution (100 ml bottle with 50 µS/cm)

Handheld instrument *water analysis*

HANDHELD INSTRUMENTS INCL. ELECTRODE



i. e. GMH 5450

READY-TO-USE



LF 400



LF 425

GMH 5430-400

Product-ID: 602752

Handheld instrument incl. electrode LF 400

GMH 5450-400

Product-ID: 602754

Handheld instrument incl. electrode LF 400, with data logger

GMH 5430-425

Product-ID: 602753

Handheld instrument incl. electrode LF 425

GMH 5450-425

Product-ID: 602755

Handheld instrument incl. electrode LF 425, with data logger

General:

All sets get preadjusted and are ready-for-use. They do not include a case.

Accessories and spare parts:

GKK 3500

Product-ID: 601052

Case with foam lining and cut-outs for 1 device (394 x 294 x 106 mm) (p.r.t. page 72)



STANDARD-FUNCTIONS:



DISPLAY OF RESISTIVITY,
SALINITY OR TDSTDS

CONFORM TO THE REGULATIONS
OF THE DRINKING WATER ORDINANCE
(TRINKWV 2001) AND DIN EN 27888

ADDITIONAL FUNCTIONS GMH 3451:



GMH 3431

Product-ID: 601917

Conductivity measuring device incl. 2-pole measuring cell

GMH 3451

Product-ID: 601919

Conductivity measuring device incl. 4-pole measuring cell, with data logger

Specifications:

Measuring range:

Conductivity: 0.0 ... 200.0 $\mu\text{S}/\text{cm}$
0 ... 2000 $\mu\text{S}/\text{cm}$
0.00 ... 20.00 mS/cm
0.0 ... 200.0 mS/cm
0 ... 400 mS/cm (only GMH 3451)
manually selectable or AutoRange

Temperature: -5.0 ... +100.0 $^{\circ}\text{C}$

Resistivity: 0.005 ... 100.0 $\text{k}\Omega\text{m} \cdot \text{cm}$

Salinity: 0.0 ... 70.0 g/kg water

TDS: 0 ... 1999 mg/l

Accuracy: (± 1 digit) (at nominal temperature = 25 $^{\circ}\text{C}$)

Conductivity: $\pm 0.5\%$ of m.v $\pm 0.3\%$ FS or $\pm 2\%$ $\mu\text{S}/\text{cm}$

Temperature: $\pm 0.2\%$ of m.v $\pm 0.3\%$ K

Cell correction: adjustable 0.800 ... 1.200 cm^{-1} , manually or automatically with selectable reference solution

Temperature compensation: off or automatically (by temperature sensor integrated to electrode)

Type of compensation: -nLF: Non-linear function of natural waters acc. to DIN EN 27888 (ISO 7888) (Reference temperature selectable: 20 $^{\circ}\text{C}$ or 25 $^{\circ}\text{C}$)
-Lin: linear compensation from 0.3 ... 3.0 $\%/^{\circ}\text{K}$ (Reference temperature selectable: 20 $^{\circ}\text{C}$ or 25 $^{\circ}\text{C}$)
-off: no compensation.

Display: two 4-digit LCD displays (12.4 and 7 mm high) for current conductivity (resistivity, salinity, TDS) and temperature, or for min-, max- value, hold function, etc. and additional indicator arrows.

Measuring cell: Conductivity measuring cell with integrated temperature sensor in shaft. Electrode material: graphite. Shaft material: PPE, PS (GMH 3431), Epoxide (GMH 3451). The graphite electrodes are the optimum solution for sewage and can be cleaned easily.

Warranty for sensor element: 12 months

Working conditions: device: -25 ... +50 $^{\circ}\text{C}$, 0 ... 95 % RH; measuring cell: -5 ... +80 $^{\circ}\text{C}$ (permanent), up to +100 $^{\circ}\text{C}$ (short-term)

Relative humidity: 0 ... 95 % RH (non condensing)

Interface: serial interface; connectable to RS232 or USB interface of PCs via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N (accessories).

Operation buttons:	6 membrane keys for ON/OFF-switch, selection of meas. range, min- and max-value memory, hold-function, etc.
Power supply:	9 V-battery as well as additional PSU connector (internal pin $\varnothing$ 1.9 mm) for external 10.5-12 V DC supply. (suitable power supply: GNG10/3000)
Power consumption:	approx. 2 mA
Dimensions (device):	142 x 71 x 26 mm (L x W x D) impact-resistant ABS housing, membrane keyboard, transparent panel. Front side IP65, integrated pop-up clip for table top or suspended use.
Dimensions (electrode shaft):	approx. 120 mm long, $\varnothing$ approx. 12 mm, 1 m of fixed connection cable between electrode and device
Weight:	approx. 230 g (incl. battery and measuring cell)
Scope of supply:	Device incl. measuring cell, battery, manual

Additional functions:

Salinity determination:

Salinity is understood to be the sum of concentrations of all salts dissolved in water. Displayed in g/kg .

TDS-determination (total dissolved solids):

The dry residue of filtrate is understood to be the concentration of substances dissolved in a liquid. Displayed in mg/l

Additional functions GMH 3451:

Analog output:

0 - 1 V, freely scalable, connection via 3-pole jack socket $\varnothing$ 3.5 mm, resolution 13 bit, accuracy 0.05 % at nominal temperature

4-pole measuring cell:

Better long-term stability at high conductivity values ($>20\text{ mS}/\text{cm}$) and for harsh environments, stable measuring values even in polluted media (e.g. sewage, salt water)

data logger:

cyclic 10,000 data sets, manual: 1,000 data sets (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)

Option:

LTG

for organic matter (alcohol, petrol, diesel)
up to 1000 $\mu\text{S}/\text{cm}$ with glass shaft, platinum electrodes,
1.35 m PUR-cable permanently connected to device

Accessories and spare parts:

GKL 100

Product-ID: 601396

100 ml conductivity test solution

(100 ml bottle with 1413 $\mu\text{S}/\text{cm}$, acc. to DIN EN 27888)



CONDUCTIVITY MEASURING DEVICES



FUNCTIONS:



FUNCTIONS:



AUTOMATIC

MEASURING RANGE CHANGE-OVER

AUTOMATIC TEMPERATURE

COMPENSATION VIA

INTEGRATED TEMPERATURE SENSOR

GLF 100

Product-ID: 600109

Universal conductivity measuring device
(incl. calibration protocol)**Application:**

- Fresh and sea water aquaristics
- Fish farming / water monitoring
- Drink water monitoring, etc.

GLF 100 RW

Product-ID: 600111

Conductivity meter for ultra-pure water

Application:

- Checking of pure and ultra-pure water
- Checking of boiler water
- Functional check of ion exchangers

Specifications:	GLF 100	GLF 100 RW
Measuring ranges:		
Conductivity:	0 ... 2000 µS/cm 0.00 ... 20.00 mS/cm 0.0 ... 100.0 mS/cm	0.000 ... 2.000 µS/cm 0.00 ... 20.00 µS/cm 0.0 ... 100.0 µS/cm
Temperature:	-5.0 ... +100.0 °C	-5.0 ... +100.0 °C
TDS:	0 ... 2000 mg/l	--
Salinity:	0.0 ... 50.0	--
Resistivity:	-- -- --	0.0100 ... 0.2000 MΩ*cm 0.010 ... 2.000 MΩ*cm 0.01 ... 20.00 MΩ*cm
Accuracy: (±1 digit, at nominal temperature = 25 °C)		
Conductivity:	±0.5 % of m.v. ±0.5 % FS	typ. ±1 % of m.v. ±0.5 % FS
Temperature:	±0.3 °C	±0.3 °C
Temperature-compensation:	off: deactivated nLF: non-linear, acc. to EN 27888 -- --	off: deactivated nLF: non-linear, acc. to EN 27888 LIN: linear, with adjustable coefficients NaCl: compensation for weak NaCl-solutions acc. to EN 60746-3
Reference temperatures:	20 and 25 °C	20 and 25 °C
Measuring cell:	2-pole measuring cell, Ø 12 mm (graphite) Cable length: 1.2 m, with integrated temperature sensor	2-pole measuring cell, Ø 12 mm (stainless steel: 1.4404, 1.4435) Cable length: 1.2 m with integrated temperature sensor
warranty for sensor element:	12 months	
Display:	approx. 11 mm high, 4½-digit LCD-display	
Working conditions:		
Device:	-25 ... +50 °C, 0 ... 95 % RH (non condensing)	
Measuring cell:	-5 ... +80 °C (for short-time: 100 °C)	
Power supply:	9 V battery	
Power consumption:	< 1.5 mA	
Housing:	impact resistant ABS, membrane keyboard, transparent panel, front side IP65	
Dimensions (device):	110 x 67 x 30 mm (H x W x D)	
Weight:	approx. 155 g	
Scope of supply:	Device incl. measuring cell, battery, calibration protocol (only GLF 100), manual	

The measuring cell:

The measuring head is designed without compromise. The holes ensure the well exchange of the measuring fluid, nonetheless the sensor is protected against mechanical loads.

The integrated temperature sensor has very quick response time. Compared to simpler electrode designs the measurements are much more accurate and faster.

GLF 100:

Graphite used as material for the electrodes makes the applicability up to 100 mS/cm possible - a must have in seawater analytic

GLF 100 RW:

Universal applicability at highest standards is made possible by the use of stainless steel electrodes (1.4404, 1.4435).

Accessories and spare parts:**GKL 100**

Product-ID: 601396

Conductivity control solution (100 ml bottles with 1413 µS/cm acc. to DIN EN 27888)

GKL 101

Product-ID: 601398

Conductivity control solution (250 ml bottles with 84 µS/cm)

GKL 102

Product-ID: 601400

Conductivity control solution (100 ml bottles with 50 mS/cm)

GEH 1

Product-ID: 601089

Swivel-arm electrode-retainer (for up to 4 electrodes / probes)

GWZ-01

Product-ID: 603499

Flow-through chamber (for measuring cell with Ø 12 mm, hose connection Ø 6 mm)



PH/REDOX/O₂ dissolved



	pH / Redox						dissolved oxygen				
	GMH 5530	GMH 5550	GMH 3511	GMH 3531	GMH 3551	GPH 114	GMH 5630	GMH 5650	GMH 3611	GMH 3651	GOX 20
Application:											
Waters measuring, fish-keeping, aquafarming	•	•	•	•	•	•	•	•	•	•	•
Drinking water-, process monitoring, ground measurement	•	•	•	•	•	•	•	•	•	•	•
Food production and -control	•	•	•	•	•	•					
Precision measurement	•	•	•	•	•		•	•			
Laboratory (GLP)	•	•		•	•			•		•	
Quality management	•	•	•	•	•			•		•	
Water-proof	•	•					•	•			
incl. air pressure measuring							•	•	•	•	

Equipment:

Measuring range	pH, mV, rH, T		pH, mV, T		pH, mV, rH, T		pH	mg/l, ppm, % O ₂ , T, hPa		mg/l, ppm, % O ₂ , T, hPa		mg/l
Connections	BNC-socket 2 banana-jack		BNC-socket 2 banana-jack				BNC-socket --	7-pol. LTW or 6-pol. HEC/LTW		6-pole Mini-DIN-socket		Electrode permanently connected to device
Temperature												
Temperature compensation	automatic and manual (Pt1000, NTC 10k)		automatic and manual (Pt1000)				manual			automatic	automatic	manual
General functions	Min/Max, Hold, Auto-Off, adjustable calibration intervals		Min/Max, Hold, Auto-Off					Min/Max, Hold, Auto-Off, calibration, GLP		Min/Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off, correction of salinity	
Interface	•	•		•	•			•	•	•	•	
Analog output		•	•	•	•			•	•		•	
Calibration history		•			•						•	
Data logger, alarm		•			•				•		•	

Device information:

Catalogue page	46	46	45	45	45	47	51	51	52	52	51
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PH / ORP / TEMPERATURE MEASURING DEVICES

STANDARD-
FUNCTIONS:ORP MODE ALLOWS FOR AUTOMATIC CONVERSION
TO HYDROGEN SYSTEM ELECTRODES

AUTOMATIC OR MANUAL TEMPERATURE COMPENSATION

AUTOMATIC BUFFER DETECTION

RATING FUNCTION OF ELECTRODE'S QUALITY

ADDITIONAL FUNCTIONS GMH 3551:

NEW: ANALOG OUTPUT
FOR ALL VARIANTSSUCCESSOR OF
GPRT 1400 & GPHR 1400**GMH 3511**

Product-ID: 604953

pH / ORP / temp. measuring device w/o accessories

GMH 3531

Product-ID: 602076

pH / ORP / temp. measuring device w/o accessories

GMH 3551

Product-ID: 602817

pH / ORP / temperature measuring device with data
logger w/o accessories**Specifications:****Measuring ranges:**

Temperature:	-5.0 ... +150.0 °C or 23.0 ... +302.0 °F
pH:	0.00 ... 14.00 pH
Redox (ORP):	-1999 ... +2000 mV Based on hydrogen system: -1792 ... +2207 mV _H (DIN38404)
rH:	0.0 ... 70.0 rH (not GMH 3511)
Accuracy (device):	±1 digit at nominal temperature = 25 °C
Temperature:	±0.2 °C (at range -5 ... 100 °C)
pH:	±0.01 pH
Redox (ORP):	±0.1% FS (mV or mV _H)
rH:	±0.1 rH (not GMH 3511)

Sensor connections:

Temperature:	2 x 4 mm banana socket for Pt1000, 2-wire
pH, Redox:	BNC socket
Display:	two 4-digit LCD displays (12.4 and 7 mm high)

Working temperature: 0 ... +50 °C**Storage temperature:** -20 ... +70 °C**Interface:** serial interface; connectable to
RS232 or USB interface of PCs
via electrically isolated interface
converter GRS 3100, GRS 3105
or USB 3100 N (accessories).**Power supply:** 9 V battery, additional socket for
external 10.5-12 V direct current
power supply
(adequate PSU: GNG10/3000).**Current consumption:** < 1 mA**Housing:** Impact-resistant ABS housing,
membrane keyboard, transparent
panel. Front side IP65, inte-
grated pop-up clip for table top or
suspended use.**Dimensions:** 142 x 71 x 26 mm (H x W x D)**Weight:** approx. 170 g**Scope of supply:** Device, battery, manual**Functions:****Automatic temperature compensation:**In operation mode „pH“ an automatic temperature
compensation (ATC) is possible in the range
0 ... 105 °C if a temperature probe is connected.
Otherwise a manual input of temperature is possible.**pH calibration:**Buffer selection, temperature compensation and sensor
rating according to calibration result (from 10 ... 100 %) is
done automatically.**GMH 3511:** 2-point calibration with Greisinger buffer
capsules (GPH 4, 7, 10)**GMH 3531, GMH 3551:** Either 1-, 2- of 3- point cali-
bration with Greisinger standard buffer, buffer according to
DIN19266 (A, C, D, F, G) or manual buffer selection.**Calibration interval (not for GMH 3511):**The device asks for a recalibration after a
selectable time period (1 - 365 days or inactive)
GMH 3551: Calibration history additional**ORP measurement (Redox):**

There are 2 choices:

„mV“: standard ORP or mV measurement
„mV_H“: temp. compensated conversion to hydrogen
system acc. to DIN38404 part 6, table 1
based on the standard ORP electrode (e.g.
GE105 with Ag/AgCl system and 3 mol KCl)
used.**rH measurement: (except GMH 3511):**Calculation of the rH value by means of a ORP me-
asurement and by manually entering the pH-value.
The pH-value may also be taken from a previous pH
measurement.**Analog output:**0 ... 1 V, not changeable 0 ... 1 V Δ 0 ... 14 pH or -2000
... 2000 mV, connection via 3-pole jack socket $\varnothing$ 3.5 mm,
resolution 13 bit, accuracy 0.05 % at nominal temperature
GMH 3551: Analog output freely scalable**data logger (GMH 3551 only):**cyclic 10,000 data sets, manual: 1,000 data sets (with
measuring point input, 40 adjustable measuring point
texts or measuring point numbers)**GMH 3511-Set**

Product-ID: 605021

Full set for pH/temperature measurements

General:For comfortable measurements of pH value and tempera-
ture. Even easier operation ensured by a menu reduced to
5 points for GMH 3511. Minimal measuring effort because
of maintenance-free gel-electrode and automatic tempera-
ture compensation.**Specifications:**

p.r.t. GMH 3511

Scope of supply:GMH 3511, pH electrode GE 114,
temperature probe GTF 55 B, buf-
fer capsules 5 x GPH 4, 5 x GPH
7, 2 plastic wide mouth bottles
GPF 100**Accessories:****GKK 1105**Product-ID: 601050
appropriate case**Accessories and spare parts:****GMH 55 ES**

Product-ID: 603066

Additional set: pH-electrode GE 100 BNC, temperature
probe GTF 55 B (Pt1000), case GKK3500, GAK1400**GTF 55 B**

Product-ID: 602764

Temperature probe, Pt1000 (see page 47)

GE 100-BNC

Product-ID: 600704

Standard electrode, BNC plug

GE 117-BNC

Product-ID: 600730

pH electrode with integrated Pt1000 sensor
(see p. 48)**GNG 10/3000**

Product-ID: 600273

Plug-in power supply

GKK 3000

Product-ID: 601048

Case with cut-outs for GMH 3xxx

USB 3100 N

Product-ID: 601092

Interface converter to USB, electrically isolated

EBS 20M

Product-ID: 601158

Software for read-out, recording and archiving of
measuring data (see page 76).



STANDARD-FUNCTIONS:



GLP-FEATURES (GOOD LABORATORY PRACTICE)

BIG DUAL DISPLAY WITH
BACKGROUND ILLUMINATION

HIGH RESOLUTION (0.001pH / 0.1 mV)

ADDITIONAL FUNCTIONS GMH 5550:



WATER-PROOF
DEVICE AND PLUG CONNECTIONS

GMH 5530

Product-ID: 600041

Waterproof handheld measuring device without electrode

GMH 5550

Product-ID: 600043

Waterproof handheld measuring device with analog output and data logger, without electrode

Application:

- Waters measuring, fishkeeping, aquafarming
- Drinking water monitoring, process control, soil measuring
- Food production and monitoring
- Laboratory: Medicine, pharmaceuticals, chemistry
- Quality management

Specifications:

Measuring ranges:

pH:	-2.000 ... 16.000 pH (resolution selectable)
Redox / mV:	-2000.0 ... 2000.0 mV (resolution selectable) (for hydrogen system DIN38404: -1792 ... +2207 mV _H)
Temperature:	-5.0 ... +150.0 °C 23.0 ... 302.0 °F
rH:	0.0 ... 70.0 rH

Accuracy:

pH:	±0.005 pH
Redox / mV:	±0.05 % FS (mV or mV _H)
Temperature:	±0.2 °C (in the range of -5.0 ... +100.0 °C)
rH:	±0.1 rH

Connections:

pH, Redox:	BNC-female connector, compatible to standard BNC-plugs and waterproof BNC-plugs, additional banana-jack (4 mm) for separate reference electrode, input resistance: 10 ¹² Ohm
Temperature:	2 banana-jacks (4 mm) for temperature probes (Pt1000 or NTC 10K)
Interface / Supply:	4-pole bayonet connector for serial interface and supply (with accessory USB 5100)

Working conditions: -25 ... +50 °C; 0 ... 95 % RH (non condensing)

Display: two 4½ - digit seven-segment display (15 mm and 12 mm)

pH-Calibration

Automatically: 1-, 2- or 3- point calibration, GREISINGER standard buffer or buffer to DIN19266 (A, C, D, F, G)

Manually: 1-, 2- or 3- point calibration

Power supply: 2 x AAA-battery (incl. in scope of supply)
power consumption: <1.0 mA

Battery life time: 1000 hours

Housing: impact resistant ABS housing with pop-up clip

Protection class: IP65 / IP67

Dimensions: 160 x 86 x 37 mm (H x W x D) incl. protection cover

Weight: 250 g incl. battery and protection cover

Scope of supply: Device, battery, calibration protocol, manual

Additional functions:

Additional Display for pH-Electrode and Battery: Bar graph display

Background illumination: duration adjustable (off, 5 s ... 2 min)

Automatic Temperature Compensation:

There is an automatic temperature compensation (ATC) in the range of 0 - 105 °C for operation mode "pH" and if a temperature probe is connected. Without connected probe the temperature can be input manually.

pH-Calibration:

1-, 2- or 3- point calibration with characteristics bend for GREISINGER standard buffer, buffer to DIN 19266 or manual buffer input.

The used buffer is detected automatically. The temperature dependency of the buffer is automatically compensated.

Permissible electrodes' data: Asymmetry: ±55 mV / Slope: 45 ... 62 mV/pH

The condition of pH-Electrode is checked at each calibration.

Redox-Measurement (ORP): 2 choices:

„mV“ Standard-redox-, ORP or mV- measurement

„mV_H“ Conversion to hydrogen systems according to DIN38404 part 6

rH-Measurement:

The rH-value is calculated from a measured Redox-value and a manually input pH-value.

Calibration interval:

The device asks for a recalibration after a selectable time period (1 - 365 days or inactive)

Calibration memory (GMH 5550):

last 16 calibrations

Analog output (GMH 5550):

0 - 1 V, freely adjustable, connection with 4-pole bayonet connector, resolution 13 bit, accuracy 0.05 % at nominal temperature

data logger (only GMH 5550):

with measuring point input, adjustable cycle time: 1 s ... 1 h

recording time: 416 days at intervall 1 h,

data logger: cyclic: 10000 data sets, manual: 1000 data sets

Accessories and spare parts:

EBS 20M

Product-ID: 601158

Software for long-term monitoring (p.r.t. page 76)

GSOFT 3050

Product-ID: 601336

Software for operation of logger devices (p.r.t. page 77)

USB 5100

Product-ID: 601095

Electrically isolated interface converter with supply of device via USB

GNG 5 / 5000

Product-ID: 602287

Plug-in power supply 5 V DC, suitable for GMH 5000 - series (p.r.t. page 74)

GKK 3500

Product-ID: 601052

Device case (394 x 294 x 106 mm) with punched lining for 1 device (p.r.t. page 72)

PH / REDOX ACCESSORIES

Supplementary set
GMH 55 ES

Accessories and spare parts:

GMH 55 ES

Product-ID: 603066

Supplementary set, including pH-electrode (GE 100 BNC), temperature probe (GTF 55 B), case (GKK 3500), working and calibration set (GAK 1400)

GE 125-BNC

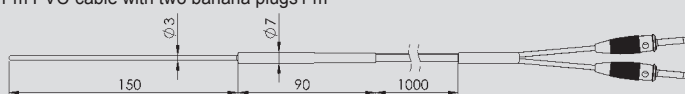
Product-ID: 600732

waterproof pH-electrode with integrated Pt1000 temperature sensor incl. waterproof BNC-plug and two banana plugs (p.r.t. page 48)

GTF 55 B

Product-ID: 602764

Pt1000 temperature immersion sensor for liquids
1 m PVC-cable with two banana plugs 1 m

**GE 100-BNC**

Product-ID: 600704

pH-electrode (p.r.t. page 48)

GE 105-BNC

Product-ID: 600740

Redox-electrode (p.r.t. p. 49)

PHL 4

Product-ID: 601370

ready-to-use buffer solution (pH 4.01 / 25 °C), 250 ml

PHL 7

Product-ID: 601371

ready-to-use buffer solution (pH 7.00 / 25 °C), 250 ml

PHL 10

Product-ID: 601373

ready-to-use buffer solution (pH 10.01 / 25 °C), 250 ml

KCL 3 M

Product-ID: 602477

3 mol KCl electrolyte for refill or storage (filled in the protective cap) of electrodes with 3 mol KCl electrolyte. 100 ml plastic vial.

CaCl

Product-ID: 603254

1000 ml, solution for measuring the pH value of soil

GRL 100

Product-ID: 601422

Pepsin cleaning solution, 100 ml

GRP 100

Product-ID: 601424

ORP buffer solution (220 mV at 25 °C), 100 ml

GAK 1400

Product-ID: 603523

Working and calibration set

General:

Working and calibration set consisting of:

5 buffer capsules each GPH4.0, GPH7.0 and GPH10.0,
3 x 100 ml-plastic bottle GPF100, 1 x 3 mol KCL-
electrolyte KCL3M and 1 x Pepsin-cleaning agent
GRL100. GAK1400 is required if no buffer solutions
are existing.



PH-METER



FUNCTIONS:



**GAK 1400
RECOMMENDED**

GPH 114

Product-ID: 604700

pH-meter ready for use incl. pH-electrode type GE 114 and battery.

Specifications:

Measuring range:	0.00 ... 14.00 pH with standard pH-electrode type GE 114
Resolution:	0.01 pH
Accuracy (device):	± 0.02 pH ± 1 digit (at nominal temperature 25 °C)
Working conditions:	0 ... 45 °C; 0 ... 80 % RH (non condensing)
Storage temperature:	-20 ... +70 °C
Connection:	BNC Bajonett
pH-electrode:	GE 114 (standard electrode) Combination electrode with GEL-electrolyte. Measuring range: 0-14 pH, temperature 0-60 °C, conductivity >200 µS/cm
Input resistance:	approx. 10 ¹² Ohm
Display:	3½-digit LCD display, 13 mm high
Calibration:	3 turning knobs for: 1. temperature compensation 0-90 °C, 2. pH 7 value and 3. pH X value (e.g. pH 1,09, pH 4, pH 10 or pH 12, depends on working range)
Power supply:	9 V battery
Battery service life:	approx. 200 operating h
EMC:	The device corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member countries regarding electromagnetic compatibility (2004/108/EG) Additional fault: <1 %
Housing:	Impact resistant ABS
Dimensions:	106 x 67 x 30 mm (H x W x D)
Weight:	approx. 200 g (incl. battery and electrode)
Scope of supply:	Device, pH-electrode GE 114, battery, manual

Accessories and spare parts:

GE 114-BNC

Product-ID: 604701

Spare electrode

GPH 114 GL

Product-ID: 600119

Loose device (without accessories)

GE 100-BNC

Product-ID: 600704

Universal electrode (0-14 pH, 0-80 °C)

GE 101-BNC

Product-ID: 600693

Injection electrode (2-11 pH, 0-60 °C)

GE 104-BNC

Product-ID: 602063

pH-electrode for low-ion water (as of 25 µS/cm)

GKK 252

Product-ID: 601056

Case (235 x 185 x 48 mm) with foam lining

GKK 1100

Product-ID: 601060

Case (340 x 275 x 83 mm) with foam lining

GB 9 V

Product-ID: 601115

Spare battery

additional accessories p.r.t. p. 49



STERILIZABLE

	GE 100	GE 101	GE 104	GE 108	GE 114	GE 117	GE 120	GE 125	GE 151	GE 171	GE 173
Measuring range	0 ... 14 pH 0 ... 80 °C	2 - 11 pH 0 - 60 °C	2 ... 14 pH 0 - 80 °C	0 ... 14 pH 0 ... 80 °C	0 ... 14 pH 0 ... 60 °C	0 ... 14 pH 0 ... 80 °C	0 ... 14 pH 0 ... 60 °C	0 ... 14 pH 0 ... 70 °C	0 ... 14 pH -5 ... 80 °C	0 ... 14 pH 0 ... 140 °C	0 ... 14 pH 0 ... 80 °C
Conductivity	> 100 µS/cm	> 100 µS/cm	> 20 µS/cm	> 100 µS/cm	> 200 µS/cm	> 100 µS/cm	> 200 µS/cm	> 200 µS/cm	> 100 µS/cm	> 100 µS/cm	> 50 µS/cm
Temperature measuring	no	no	no	no	no	integr. Pt1000 4 mm banana	no	integr. Pt1000 4 mm banana	no	no	no
Water-proof	no	no	no	no	no	no	no	yes	no	no	no
Pressure resistant	no	no	no	6 bar	no	6 bar	no	1 bar	no	10 bar	6 bar
Cable	1 m ¹⁾	1 m ¹⁾	1 m ¹⁾	2 m ¹⁾	1 m	2 m ²⁾	1 m	2 m	1 m ¹⁾	ohne	1 m ¹⁾
Electrolyte	3 mol/l KCl	3 mol/l KCl	3 mol/l KCl	gel electrolyte	gel electrolyte	gel electrolyte	gel electrolyte	gel electrolyte	3 mol/l KCl	gel electrolyte	gel electrolyte
Diaphragm	2 x ceramic	2 x ceramic	moving joint	2 x ceramic	1 x pellon	2 x ceramic	2 x ceramic	1 x ceramic	1 x ceramic	2 x ceramic	joint
Thread	without	without	without	PG 13.5	without	PG 13.5	without	without	without	PG 13.5	PG 13.5
Electrode shaft	Tyrl, Ø 12 mm x 120 mm	glass, Ø 12 or 6 mm x 120 mm	glass, Ø 12 mm x 120 mm	PSU, Ø 12 mm x 120 mm	epoxide, Ø 12 mm x 120 mm	PSU, Ø 12 mm x 120 mm	PVC, Ø 22 mm x 110 mm	epoxide, Ø 12 mm x 120 mm	glass, Ø 12 mm x 120 mm	glass, Ø 12 mm x 120 mm	glass, Ø 12 mm x 120 mm
Features	universal electrode	tip Ø 6 mm, small sample volume	for low-ion media	low-maintenance	Low-cost low-maintenance	temperature compensated	insertion electrode, blade Ø 13 mm x 60 mm	submersible, water-proof IP67 (also BNC-plug)	chemicals-resistant glass shaft	for extreme conditions, sterilizable, autoclavable	for process chemistry, bio-chemistry, alkali-resistant
Connection:											
BNC											
Product-ID:	600704	600693	602063	600713	604701	600730	600698	600732	600727	-	600735
Cinch											
Product-ID:	600702	600690	604504	600711	-	-	600696	-	600724	-	600734
S7*)											
Product-ID:	-	-	-	606089	-	-	-	-	-	606375	606572

¹⁾ Note: cable GEAK-2S7-BNC or GEAK-5S7-BNC is needed for connection S7, for devices with cinch connection adapter GAD 1 BNC is necessary. Electrodes are consumption objects. Lifetime under careful treatment: > 2 years; warranty: 12 months

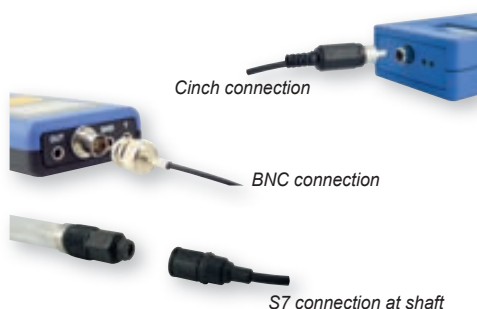
Options:

Longer cable for ^{1) 2)}
(available cable lengths: up to 5 m)

Special designs
(electrodes with thread, other lengths, special applications etc.)

Accessories and spare parts:

Kabel-BNCM/BNCF
Product-ID: 606158
Extension cables for electrodes with BNC connector, Cable length: 3 m



Diaphragm:

The diaphragm makes the electric connection between reference system and sample. Additionally it should prevent the spoiling of the reference electrolyte by the measured medium.

Ceramic diaphragm

Porous ceramic rods ensure low leak rates.

Application:

General applications in clean till lightly soiled media.



Joint / movable joint

The roughened surface between the cut glass of the electrode and a cut glass sleeve permits a electrolyte flow of several ml/h.

Application:

low-ion or heavily soiled samples

Pellon diaphragm

A permeable diaphragm made of Pellon texture is used for fast response times and stable measuring values

Application:

Clean till lightly soiled media.



Reference electrolyte:

The reference electrolyte offers a constant voltage of the reference system and makes the electrical connection between sample and reference electrode.

Liquid electrolyte

Mainly 3 mol KCl is used. Liquid electrolytes offer fast response times in general and can be replaced if contaminated.

Gel electrolyte

The electrolyte is solidified for low-maintenance electrodes able to measure irrespective to its position. Under normal measurement conditions no noticeable electrolyte leakage is observable.

Electrodes with S7 connection:

The electrodes are offered with an S7 industrial screw plug fitted, also known as industrial-S8 Plug head. In contrast to S7 lab plug head this one is for direct installation in fittings with PG 13.5 suitable thread.

APPLICATION AREAS: ELECTRODES

Application	GE 100	GE 101	GE 104	GE 108	GE 114	GE 117	GE 120	GE 125	GE 151	GE 171	GE 173	GR 105	GR 175
Sewage											•		
Aquarium water	•		•	•	•	•			•			•	•
Soil testing		•											
Emulsions		•	•										
On-site measurements				•	•	•		•				•	
Fish farming	•		•	•	•	•		•	•			•	•
Galvanic baths											•		•
Beverages								•	•			•	•
Low-ion media			•								•		
Cosmetics			•										
Food sample		•					•						
Sea water	•	•	•	•	•	•	•	•	•	•	•	•	•
Online measuring										•	•		•
Process chemistry									•	•	•		•
Swimming pool water	•			•	•	•		•			•	•	•
Suspensions		•	•										•
Drinking water	•		•	•	•	•		•			•	•	•
Water-based lacquers			•								•		

Note: The set information are to provide general recommendations. It needs to be checked, which electrodes for each area of application are suitable.

ORP ELECTRODE

**GR 105-BNC**

Product-ID: 607798
with BNC connection

GR 105-Cinch

Product-ID: 607797
with Cinch connection

**GR 175-BNC**

Product-ID: 607801
with BNC connection

GR 175-S7

Product-ID: 607802
incl. S7 connector - without connecting cable *)

Specifications:	GR 105	GR 175
Measuring unit:	ORP	
Measuring range:	± 2000 mV, 0 ... 80 °C	
Conductivity:	> 100 µS/cm	
Temperature measurement:	no	
Water-proof:	no	
Pressure resistant:	no	6 bar
Cable:	1 m ¹⁾	without / 1 m
Electrolyte:	3 mol/l KCL	gel electrolyte
Diaphragm:	2 x ceramic	1 x ceramic
Metal electrode:	Ø 5 mm Platin dome	
Thread:	no	PG 13,5
Electrode shaft:	Tyrl, Ø 12 mm x 120 mm	Glass, Ø 12 mm x 120 mm
Minimal depth of immersion:	15 mm	
Scope of supply:	ORP electrode, manual	

ELECTRODES - ACCESSORIES

Accessories and spare parts:

GEAK-2S7-BNC

Product-ID: 601996
Adapter cable S7-BNC, 2 m

GEAK-5S7-BNC

Product-ID: 601998
Adapterkabel S7-BNC, 5 m

VD120

Product-ID: 601380
Pricker for insertion electrode GE101

GAD 1 BNC

Product-ID: 601382
Adapter to connect electrodes with Cinch plug to devices with BNC socket.

GPF 100

Product-ID: 601417
Plastic wide mouth bottle, 100 ml

GPH 4,0 / 5

Product-ID: 602614
Buffer capsules (5 pieces), pH 4.0

GPH 4,0 / 10

Product-ID: 602615
Buffer capsules (10 pieces), pH 4.0

GPH 7,0 / 5

Product-ID: 602616
Buffer capsules (5 pieces), pH 7.0

GPH 7,0 / 10

Product-ID: 602617
Buffer capsules (10 pieces), pH 7.0

GPH 10,0 / 5

Product-ID: 602618
Buffer capsules (5 pieces), pH 10.0

GPH 10,0 / 10

Product-ID: 602619
Buffer capsules (10 pieces), pH 10.0

GPH 12,0 / 5

Product-ID: 602620
Buffer capsules (5 pieces), pH 12.0

GPH 12,0 / 10

Product-ID: 602621
Buffer capsules (10 pieces), pH 12.0

All buffer capsules are traceable to NIST standards and have ±0.02 pH at 25 °C.

GAK 1400

Product-ID: 603523
Working and calibration set; GPH4.0, GPH7.0, GPH10.0 (5 capsules of each type); 3 x GPF100; 1 x KCL3M; 1 x GRL100

PHL 4

Product-ID: 601370
ready-to-use buffer solution (pH 4.01 / 25 °C), 250 ml

PHL 7

Product-ID: 601371
ready-to-use buffer solution (pH 7.00 / 25 °C), 250 ml

PHL 10

Product-ID: 601373
ready-to-use buffer solution (pH 10.01 / 25 °C), 250 ml

KCL 3 M

Product-ID: 602477
3 mol KCl electrolyte for refilling and storage (fill into protective cap) of electrodes with 3 mol KCl electrolyte, injection bottle, 100 ml

CaCl

Product-ID: 603254
1000 ml, solution for measuring the pH value of soil

GRL 100

Product-ID: 601422
Pepsin cleaning solution, 100 ml

GRP 100

Product-ID: 601424
ORP test solution (220 mV at 25 °C), 100 ml

GWA1Z

Product-ID: 602914
Thread adapter PG13.5 to G1", plastic

PG 13.5

Product-ID: 603205
Plug-on thread adapter for pressure-less use, for any electrode

GWA 11 PG

Product-ID: 605379
Thread adapter from PG11 external thread to PG 13.5 internal thread incl. sealing and PG11 counter nut, material: polyamide, fiber glass reinforced, O-ring: NBR, temperature range: -10 ... +100 °C



STANDARD-FUNCTIONS:



NEW!

HIGHLIGHTS

- Waterproof and durable (protective silicone case)
- Large double display with background lighting
- New oxygen sensor GWO 5610
- Environmental pressure compensation with integrated barometer

ADDITIONAL HIGHLIGHTS GMH 5650

- Data logger and alarm function
- Analogue output, pressure connection

ADDITIONAL FUNCTIONS - GMH 5650:



GMH 5630

Product-ID: 606880

Waterproof dissolved O₂ handheld measuring device without accessories

GMH 5650

Product-ID: 606882

Waterproof dissolved O₂ handheld measuring device without accessories with data logger and alarm

Application:

Oxygen monitoring in aquaculture and aquaria. Testing of well water, sewer systems and in wastewater treatment plants, also suitable for harsh environments. Delivery can take place ready for use (filled) or dry. Electrodes delivered try are long lasting and ready for use within about 1 h after filling.

Specifications:	GMH 5630	GMH 5650
Measuring channels:	O ₂ , T, air pressure (integrated)	O ₂ , T, air pressure (integrated) / measuring depth *1)
Measuring ranges:		
O ₂ -concentration:	0.00 ... 70.00 mg/l (ppm) (Variable resolution)	
O ₂ -saturation:	0.0 ... 600.0 % O ₂ (Variable resolution)	
O ₂ -partial pressure:	0 ... 1200 hPa O ₂ (0.0 ... 427.5 mmHg)	
Temperature:	0.0 ... 50.0 °C	
Air pressure:	10 ... 1200 hPa abs	300 ... 5000 hPa abs
Measuring depth:	-	0 ... 40.0 m water column *1)
Accuracy:		
Oxygen:	±1.5 % of MW ±0.2 mg/l (0 ... 25 mg/l) or ±2.5 % of MW ±0.3 mg/l (25 ... 70 mg/l)	
Temperature:	0.0 ... 50.0 °C	
Air pressure:	10 ... 1200 hPa abs	300 ... 5000 hPa abs
Sensor:	GWO 5610, active diaphragm type with platinum cathode, Ø 12 mm, standard cable length 2 m, 7 pin bayonet connection	
Response time:	90 % in 10 s	
Service life:	approx. 3 years, depending on usage and care	
Display:	4 ½ digit, 7-segment, illuminated (white)	

Working temperature:	Device: -25 ... +70 °C Sensor: 0 ... 40 °C
Sensor operating pressure:	max. 3 bar corresponds to max. 30 m water depth
Inward flow:	min. 20 cm/s
Power supply:	2 x AAA battery, power consumption: 0.9 mA
Battery life:	approx. 1000 h (without lighting)
Ingress protection:	IP65 / IP67
Housing:	Impact-resistant ABS, with stand/hanging bracket
Dimensions:	160 x 86 x 37 mm (H x W x D) including protective silicone case
Weight:	approx. 250 g, including battery and protective case
Scope of supply:	Device incl. batteries (2xAAA), protective silicone case, manual, quick guide

Additional functions:	
Salinity correction:	0.0 ... 70.0
Pabs / height correction:	Automatic with integrated sensor
Measuring depth (only GMH 5650):	Hydrostatic depth measurement *1)
Output / external supply:	OUT jack: 38400 baud interface, 5 V external supply
Additional with GMH 5650:	Analogue output 0-1 V, adjustable
Calibration:	1 point air
Additional with GMH 5650:	1 point water, 2 point or 3 point (air and zero point and 100 % O ₂)
GLP:	Calibration interval
Additional with GMH 5650:	Calibration history
Data logger (only GMH 5650):	Cyclical: 10,000, Single: 1000, single value logger with measuring point input
Alarm (only GMH 5650):	2 alarm channels (O ₂ and temperature) with separate alarm thresholds
Alarm notification:	horn / visual / interface

*1) A simple hydrostatic depth measurement can be made with special accessories. For instance, oxygen profiles in waste water can be recorded very conveniently together with the logger function.



NEW!

HIGHLIGHTS:

- Significantly lower inward flow required than with the predecessor model
- Dry storage possible for long-term storage needs
- Compact 12 mm diameter retained!

GWO 5610-L02

Product-ID: 607386

Sensor with 2 m cable

General:	Standard, for laboratory use, electrode is delivered filled, dry delivery available on request
Accessories and spare parts:	
GWO 5610-L04	
Product-ID: 607764	Spare sensor GWO 5610 with 4 m cable (field use)
GWO 5610-L10	
Product-ID: 607765	Spare sensor GWO 5610 with 10 m cable (field use)
GWO 5610-L30	
Product-ID: 607766	Spare sensor GWO 5610 with 30 m cable (field use)
GSKA 3600	
Product-ID: 601414	Protective PVC cap
GSKA 3610	
Product-ID: 607267	Protective cap for depth measurement made of brass with drilled hole fastening on carabiner/rope
GWOK 02	
Product-ID: 608012	Spare membrane cap
GAS 5610	
Product-ID: 608032	Work set (3 spare membrane caps, 100 ml of electrolyte)
TMV 3600	
Product-ID: 603356	Depth measuring device
KOH 100	
Product-ID: 603356	Spare electrolyte, 100 ml



NEW!

HANDHELD MEASURING DEVICE SETS

**GMH 5630-L02**

Product-ID: 607470

Waterproof dissolved O₂ handheld measuring device, including sensor GWO 5610, 2 m cable**GMH 5650-L02**

Product-ID: 607474

Waterproof dissolved O₂ handheld measuring device, including sensor GWO 5610, 2 m cable, with data logger and alarm**Versions:****GMH 5630-L04**

Product-ID: 606881

GMBH 5630 handheld measuring device with sensor with 4 m cable length

GMH 5630-L10

Product-ID: 607471

GMBH 5630 handheld measuring device with sensor with 10 m cable length

GMH 5630-L30

Product-ID: 607472

GMBH 5630 handheld measuring device with sensor with 30 m cable length

GMH 5650-L04

Product-ID: 606883

GMBH 5650 handheld measuring device with sensor with 4 m cable length

GMH 5650-L10

Product-ID: 607478

GMBH 5650 handheld measuring device with sensor with 10 m cable length

GMH 5650-L30

Product-ID: 607479

GMBH 5650 handheld measuring device with sensor with 30 m cable length

Accessories and spare parts:**GKK 5240**

Product-ID: 602068

Durable case, suitable for universal applications with individual configuration of the foam insert, pressure equalisation possible, waterproof.

Dimensions: 520 x 415 x 200 mm



OXYGEN MEASURING DEVICES



FUNCTIONS:

BAT

**GOX 20**

Product-ID: 600126

Oxygen measuring device, operative, incl. oxygen probe and battery

Specifications:**Measuring range:****Temperature:** 0.0 ... 40.0 °C**Oxygen:** 0.0 ... 20.0 mg/l O₂**Resolution:****Temperature:** 0.1 °C**Oxygen:** 0.1 mg/l O₂**Accuracy: (at nominal temperature = 25 °C) ±1 digit****Temperature:** ±0.3 °C (in range 0-30 °C)**Oxygen:** ±2 % o. m.w. ±0.2 mg/l**Electrode:**

active diaphragm type. Electrode-Ø front: approx. 12 mm, length: approx. 170 mm, connecting cable approx. 2 m permanently connected to device.

Response time: 95 % in 10 s, depending on temperature.**Operation life:** approx. 3 years or more depending on maintenance**Operation pressure:** max. 3 bar**Temperature compensation:** automatically via temperature sensor integrated in electrode**Calibration:** simple quick-calibration in atmospheric air**Display:** 3½-digit LCD display, 13 mm high**Working temperature:** 0 ... 50 °C**Power supply:** 9 V battery**Power consumption:** max. 1 mA**Dimensions:** 106 x 67 x 30 mm (H x W x D), impact-resistant ABS housing**Weight:** approx. 250 g (ready for use)**Scope of supply:** device incl. electrode, battery, GWOK01 and KOH electrolyte, manual**Accessories and spare parts:****GWOK 01**

Product-ID: 601411

spare diaphragm head

KOH 100

Product-ID: 603356

spare electrolyte 100 ml



STANDARD-FUNCTIONS:



HIGHLIGHTS:

- Automatic air pressure compensation
- Salinity correction
- Simple calibration in atmospheric air

ADDITIONAL FUNCTIONS GMH 3651:



MEAS. UNITS: O₂-CONCENTRATION

O₂-SATURATION

AND O₂-PARTIAL PRESSURE (GMH3651 ONLY)

Handheld Measuring device..... with Sensor with ... m cable length

GMH 3611

Product-ID: 605922

Oxygen measuring device incl. oxygen electrode, with 4 m cable

GMH 3651

Product-ID: 605924

Oxygen measuring device incl. oxygen electrode with data logger, with 4 m cable

Specifications:

Measuring ranges: (device)

O ₂ -concentration:	0.00 ... 70.00 mg/l (ppm) (resolution selectable)
O ₂ -saturation:	0.0 ... 600.0 % O ₂ (resolution selectable)
O ₂ -partial pressure:	3651: 0 ... 1200 hPa O ₂ (0.0 ... 427.5 mmHg)
Temperature:	0.0 ... 50.0 °C
Pressure:	3611: 10 ... 1200 hPa abs. 3651: 10 ... 11000 hPa abs. or 0 ... 100.0 m water column* (with pressure port)

Accuracy: (at nominal temperature = 25 °C)

Oxygen:	±1.5 % of m.v. ±0.2 mg/l (0 ... 25 mg/l) or ±2.5 % of m.v. ±0.3 mg/l (25 ... 70 mg/l)
Temperature:	±0.1 °C ±1 digit
Pressure:	±0.5 % FS ±1 digit ±3 hPa or 0.1 % of m.v. ±2 hPa (750 ... 1100 hPa)

Sensor connection:

Sensor: 6-pin screened Mini-DIN-socket
Active membrane type. Electrode-
Ø front: approx. 12 mm, overall
length: approx. 220 mm, anti
buckling glanding, neck collar: Ø
approx. 20 mm, 4 m connection
cable with Mini-DIN-plug

Response time: 95 % in 10 s, depends on
temperature

Operation life: approx. 3 years, depends on
maintenance

Working temperature: 0 ... +40 °C

Working pressure: max. 3 bar
Operating pressure sensor GWO
3600 max. 3000 hPa rel. or 4000
hPa pay attention to abs.!

Flow rate: min. 30 cm/s

Display: 2 x 4 digit LCDs
(12.4 / 7 mm high)

Interface:	serial interface, direct connection to RS232 or USB interface of a PC via electrically isolated interface converter.
Power supply:	9 V-battery as well as additional d.c. connector for external 10.5- 12 V direct voltage supply. (suita- ble power pack: GNG10/3000)
Power consumption:	approx. 0.6 mA, approx. 500 h
Housing dimensions:	142 x 71 x 26 mm (H x W x D) impact-resistant ABS, front side IP65, integrated pop-up clip for table top or suspended use.
Weight:	approx. 300 g (incl. battery and probe)
Scope of supply:	Device incl. electrode, GWOK01 and KOH electrolyte.

Additional functions:

Temperature compensation:
automatic via temperature sensor integrated in electrode.

Air pressure compensation:
automatic via integrated pressure sensor. Display of
current air pressure.

Correction of salinity:
autom. salinity value can be set via keyboard from
0.0 ... 70.0

Calibration:
1-point calibration: extremely simple quick
calibration in atmospheric air.
additional at GMH 3651: 2- and 3-point-calibration

Calibration interval:
The device asks for a recalibration after a selectable time
period (1 - 365 days or inactive).
GMH 3651: additional calibration history

Analog output (GMH 3651 only):
0 -1 V, freely adjustable

Alarm (GMH 3651 only):
2 Alarm (O₂ and temperature) with separate alarm limits,
Alarm horn / visual / interface

Data logger (GMH 3651 only):
cyclic: 10.000 data sets, manual: 1.000 data sets
(with measuring point input, 40 adjustable measuring
point texts or measuring point numbers)

* There is the possibility for hydrostatic depth measure-
ments with special accessories (upon request / pressure
connection). This allows in combination with the logger
function e.g. comfortable recordings of oxygen profiles
in waters.

Variants:

GMH 3611-L10
Product-ID: 606233
Device GMH 3611 with Sensor with 10 m cable length

GMH 3611-L30
Product-ID: 607086
Device GMH 3611 with Sensor with 30 m cable length

GMH 3651-L10
Product-ID: 606105
Device GMH 3651 with Sensor with 10 m cable length

GMH 3651-L30
Product-ID: 606106
Device GMH 3651 with Sensor with 30 m cable length

Accessories and spare parts:

GMH 3611-GL
Product-ID: 606310
Oxygen measuring device without accessories

GMH 3651-GL
Product-ID: 606312
Oxygen measuring device without accessories

GWO 3600-L04
Product-ID: 603895
Spare sensor with 4 m cable

GWO 3600-L10
Product-ID: 603258
Spare sensor with 10 m cable

GWO 3600-L30
Product-ID: 603259
Spare sensor with 30 m cable

GWOK 01
Product-ID: 601411
spare diaphragm head

GAS 3600
Product-ID: 603497
Working set (consisting of 3 spare diaphragm heads
and 100 ml KOH-electrolyte)

GSKA 3600
Product-ID: 601414
PVC protection cap

GSKA 3610
Product-ID: 607267
Protection cap for depth measurement
brass with hole for an attachment
to carabiners / rope

KOH 100
Product-ID: 603356
Spare electrolyte 100 ml



NEW!

GAS



Application:

	GMH 5690	GMH 5695	GMH 3692 +Sensor	GMH 3695 +Sensor	GOX 100	GOX 100T	GCO 100
Measurement of atmospheric oxygen	•	•	•	•	•	•	
O ₂ -concentration	•		•	•	•	•	
O ₂ -partial pressure	•	•	•	•			
CO-concentration (carbon monoxide)							•
Protective gases	•	•	•	•			
Diving *	•		•			•	•
Exhaust gas monitoring							•

Equipment:

Measuring ranges	O ₂ -concentration 0 ... 100 % O ₂ -partial pressure 0 ... 1100 hPa Temperature -5 ... +50 °C ambient pressure 10 ... 1200 hPa 0 ... 11000 hPa		O ₂ -concentration 0 ... 100 % O ₂ -partial pressure 0 ... 1100 hPa Temperature -5 ... +50 °C 10 ... 1200 hPa 0 ... 11000 hPa		O ₂ -concentration 0 ... 100 %		CO-concentration 0 ... 1000 ppm 0 ... 1250 mg/m ³ 0 ... 60 % COHb
Electrode / sensor	external sensor, order sensor separately		external sensor, order sensor separately		in external sensor housing		Sensor internal
Sensor connection cable	7-pol. bayonet		6-pole mini-DIN socket		0.7 m cable with jack plug		-
General functions	Min/Max, Hold, Auto-Off, background illumination		Min/Max, Hold, Auto-Off		Min- / Max, Hold, Auto-Off	Min/Max, Hold, Auto-Off, MOD-Anzeige	Max, Hold, Auto-Off
Alarm / Interface	•	•	•	•			•
Logger		•		•			

Device information:

Catalogue page	54	54	55	55	58	58	58
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* not suited for „under water“-applications (rebreather, etc.)

STANDARD-
FUNCTIONS:**NEW!**

HIGHLIGHTS

- High display resolution (0.01 % O₂ concentration)
- Waterproof and durable (protective silicone case)
- Large double display with background lighting
- Multi-point calibration for precision measurements
- Environmental pressure compensation with integrated barometer
- Alarm function

ADDITIONAL HIGHLIGHTS - GHM 5695

- Data logger
- Analogue output
- Pressure connection

ADDITIONAL FUNCTIONS - GHM 5695:



THE DEVICE IS ONLY INTENDED FOR CONTROL PURPOSES FOR THESE APPLICATIONS. IT IS NOT A REPLACEMENT FOR A MONITORING DEVICE SUBJECT TO AUTHORISATION!

GMH 5690

Product-ID: 607466

Waterproof air oxygen measuring device without sensor

GMH 5695

Product-ID: 607468

Waterproof air oxygen measuring device without sensor with data logger and alarm

Application:

Protective gas measurements for

- Welding and soldering
- Food production/packaging technology (MAP, see also the GHM 5690 GOG Set)
- For storage of foods, semiconductor components, etc.
- Immersion gas testing: Checking of oxygen concentration in nitrox, trimix or similar gas compositions

Note: Not suitable for use in 'underwater applications' (rebreather, etc.)

Specifications:	GMH 5690	GMH 5695
Measuring channels:	O ₂ , T, air pressure (integrated)	O ₂ , T, air pressure (integrated, with external connection)
Measuring ranges:		
O₂ concentration:	0.0 – 100.0 % O ₂ vol. or 0.00 – 100.00 % O ₂ vol. (resolution can be selected in menu)	
O₂ partial pressure:	0 – 1100 hPa O ₂ / 0 – 825 mmHg O ₂ 0.0 – 1100.0 hPa O ₂ / 0.0 – 825.0 mmHg O ₂ (resolution can be selected in menu)	
Temperature:	-5.0 ... +50.0 °C	
Air pressure:	10 ... 1200 hPa abs	300 ... 5000 hPa abs *1)
Accuracy: (device at nominal temperature = 25 °C)		
O₂ concentration:	±0.1 % ± 1 digit	
Temperature:	±0.1 °C ± 1 digit	
Air pressure:	±3 hPa or 0.1 % of MW (higher applies)	
Compatible sensors	GG05 / G005 with elements GOEL 370, 380 etc.	GGA5 / GGO5 / G005 with elements GOEL 370, 380 etc.
Connections:		
Sensor:	7-pin bayonet connection	7-pin bayonet connection Port for pressure connection*)
Output / ext. Power supply:	OUT jack: - 38400 baud interface - 5 V external supply	OUT jack: - 38400 baud interface - Analogue output 0-1 V, adjustable - 5 V external supply
Display:	4 ½ digit, 7-segment, illuminated (white)	
Working conditions:	-25 ... +50 °C; 0 ... 95 % r.h. (non-condensing, sensor min. -5 °C)	
Power supply:	2 x AAA battery, power consumption: 0.9 mA	
Battery life:	approx. 1000 h (without lighting)	

Ingress protection:	IP65 / IP67
Housing:	Impact-resistant ABS, with stand/hanging bracket
Dimensions:	160 x 86 x 37 mm (H x W x D) including protective silicone case
Weight:	approx. 250 g, including battery and protective case
Scope of supply:	Handheld measuring device incl. batteries (2xAAA), protective silicone case, manual, quick guide

*) Optimal air pressure compensation with GGA 570 /GGA 580

Additional functions:

Backlighting: Adjustable light duration (off, 5 s ... 2 min.)

Calibration: 1 point air, 2 point or 3 point (air and zero point and 100 % O₂)

GLP: Calibration interval
Only GMH 5695: Calibration history

Data logger (only GMH 5695): Cyclical: 10,000, Single: 1000
Single value logger with measuring point input

Alarm: 2 alarm channels (O₂ and temperature) with separate alarm thresholds
Alarm notification horn / visual / interface

Accessories and spare parts:

See page 56/57 for matching sensors

GKK 3600

Product-ID: 601062

with napped foam for universal application (394 x 294 x 106 mm)

USB 5100

Product-ID: 601095

Interface converter GMH 5xxx <=> PC

GSOFT 3050

Product-ID: 601336

Windows software for GMBH 3000 and GMH 5000 handheld measuring devices with logger function

AIR OXYGEN MEASURING DEVICE



STANDARD-FUNCTIONS:



WIDE RANGE OF APPLICATION FOR
YOUR HOME, JOB AND HOBBY!

HIGHLIGHTS:

- Alarm detector with integrated horn
- automatic compensation of ambient air

ADDITIONAL FUNCTIONS GMH 3695:



THE DEVICE IS ONLY INTENDED FOR CONTROL PURPOSES FOR THESE APPLICATIONS. IT IS NOT A REPLACEMENT FOR A MONITORING DEVICE SUBJECT TO AUTHORISATION!

GMH 3692

Product-ID: 605919

Air oxygen measuring device w/o sensor

GMH 3695

Product-ID: 605921

Air oxygen measuring device w/o sensor with data logger

Application:

- Bio chemistry:**
Oxygen monitoring in breeding chambers for cell cultures. Monitoring of fermenting process of fruits in fermentation plants etc.
 - Medicine:**
Monitoring of oxygen concentration in respirators; checking of breathing, monitoring of oxygen concentration in incubators, oxygen tents etc.
 - Food technology:**
Monitoring of residual oxygen in packages (e.g. coffee, tea, etc.).
Monitoring of oxygen content during production processes.
 - Air conditioning and ventilation technology:**
Oxygen measurements, air quality monitoring, measuring of oxygen concentration in enclosed air conditioning systems, etc.
 - Sport:**
Checking of oxygen content in compressed air bottles (diving, etc.).
- Note:** not suited for „under water“-applications (rebreather, etc.)

Specifications:

Measuring ranges:

Oxygen concentration: 0.0 ... 100.0 % O₂ (gaseous)
0 ... 1100 hPa O₂

Temperature: -5.0 ... +50.0 °C

Air pressure: GMH 3692: 10 ... 1200 hPa
GMH 3695: 10 ... 11000 hPa

Accuracy: (device) (at nominal temperature = 25 °C)

Oxygen concentration: ±0.1 % ± 1 digit

Temperature: ±0.1 °C ± 1 digit

Air pressure: ±3 hPa or 0.1 % v. MW (whichever is higher)

Oxygen sensor: for suitable sensors p.r.t. page 56

Sensor connection: 6-pin screened Mini-DIN-socket.
GMH 3695: additional pressure ports

Display: two 4 digit LCDs (12.4 mm or 7 mm high),
as well as additional arrows.

Pushbuttons: 6 membrane keys for ON/OFF-switch, selection of meas.
range, min- and max- value memory, hold-function,
calibration etc.

Working temperature: 0 ... +50 °C

Relative humidity: 0 ... +95 % RH (non-condensing)

Storage temperature: -20 ... +70 °C

Interface: serial interface, direct connection to RS232 or USB interface
of a PC via electrically isolated interface converter GRS 3100
or GRS 3105 resp. USB 3100 N (p.r.t. accessories).

Power supply: 9 V-battery as well as additional d.c. connector for external
10.5-12 V direct voltage supply. (suitable power supply:
GNG10/3000)

Power consumption: approx. 0.6 mA, approx. 300 h

Housing: impact-resistant ABS plastic housing, membrane keyboard,
transparent panel. Front side IP65, integrated pop-up clip.

Dimensions: 142 x 71 x 26 mm (H x W x D)

Weight: approx. 160 g (incl. battery)

Scope of supply: Device, battery, manual

Additional functions:

Temperature compensation: automatic via temperature sensor, integrated in probe
housing.

Air pressure compensation: The O₂ concentration will be compensated according to the
absolute atmospheric pressure set.

Calibration:

1-point calibration: extremely simple quick calibration in atmospheric air.
(press button to compensate unit to 20.9 %).

2-/3-point calibration: first point at atmospheric air (20.9 %), second and third point 0 or
100 %.

Calibration interval:

The device asks for a recalibration after a selectable time period (1 - 365 days or inactive).
GMH 3695: additional calibration history

Analog output (GMH 3695 only): 0 - 1 V, freely scalable

Pressure nozzles for pressure compensation

Data logger (GMH 3695 only):

cyclic: 8000 data sets, adjustable cycle time: 1 s ... 60 min

manual: 1000 data sets, with measuring point input

Accessories and spare parts:

Suitable sensors

p.r.t. next page

GKK 3000

Product-ID: 601048

case (275 x 229 x 83 mm) with punched lining suitable for GMH3xxx

USB 3100 N

Product-ID: 601092

interface converter, electrical isolated

GRS 3105

Product-ID: 601099

interface converter with 5 connection points, electrical isolated,
for the connection of 5 devices to one PC (RS232).

GSOF 3050

Product-ID: 601336

Software for operation of logger devices

ST-R1

Product-ID: 601066

device protection bag with cut-out for probe connection

CLOSED SENSOR TYPE GGO



GGO 580

Product-ID: 607481

For low oxygen concentrations, fast response time, suitable for GMH 569x

GGO 570

Product-ID: 607480

Universal application, diving gas, longlife, suitable for GMH 569x

GGO 380

Product-ID: 601226

For low oxygen-concentration, fast response time suitable for GMH 369x

GGO 370

Product-ID: 601224

Universal applications, diving, longlife, suitable for GMH 369x

General:

- suitable for under and over pressure
- for using in gas-tight systems

Application:

Suitable for measuring in normal atmosphere and in systems without or with slight under or over pressure. The sensor type features a screw thread and can be built in gas-tight in almost every system directly resp. with tube-adaptor.

longer cable length 4 m and 10 m on demand

OPEN SENSOR TYPE GOO



GOO 580

Product-ID: 607483

For low oxygen concentrations, fast response time, suitable for GMH 569x

GOO 570

Product-ID: 607482

Universal application, diving gas, longlife, suitable for GMH 569x

GOO 380

Product-ID: 601231

for low oxygen-concentration, fast response time, suitable for GMH 369x

GOO 370

Product-ID: 601228

universal applications, diving, longlife, suitable for GMH 369x

General:

- suitable for air- or gas-stream
- quick temperature compensation

Application:

Because of the special sensor construction the measuring gas streams optimally around the sensor and escapes through holes in the housing into the air. No pressure build-up at slight streaming of the probe, that falsify the result of measurement. Particularly suitable for measuring of gas out of gas-bottle etc. Even measuring indoor-gas concentration is possible.

longer cable length 4 m and 10 m on demand

CLOSED SENSOR TYPE WITH PRESSURE CONNECTION GGA



NEW!
FOR DEVICES WITH PRESSURE CONNECTION

GGA 580

Product-ID: 607487

Pressure connection, suitable for GMH 569x

GGA 570

Product-ID: 607486

Pressure connection, suitable for GMH 569x

GGA 380

Product-ID: 607485

Pressure connection, suitable for GMH 369x

GGA 370

Product-ID: 607484

Pressure connection, suitable for GMH 369x

General:

For devices with external pressure port (GMH 5695/3695) is this housing optimal. Especially for systems with high or low pressure or with existing back pressure by flow.

Application:

It can be screwed airtight (Attention: Observe permissible operating pressure!). The device-pressure port is connected to the sensor pressure port. The device measures and compensates for the actual pressure at the sensor.

longer cable length 4 m and 10 m on demand

Specifications:	GGA/GGO/GOO 570/370	GGA/GGO/GOO 580/380
Specific features:	Stronger membrane, coated electronics, temperature compensation	for low oxygen-concentration, fast response time
Measuring range:		
Partial oxygen pressure:	0 ... 1100 hPa O ₂	0 ... 300 hPa O ₂
Oxygen concentration:	0.0 ... 100.0 % O ₂	0.0 ... 25.0 % O ₂
Response time: T ₉₀	< 10 s	< 5 s
Accuracy (at 25 °C, 1013 hPa):		
< 2 % O ₂	±0.2 % O ₂	±0.1 % O ₂
< 25 % O ₂	±0.5 % O ₂	±0.5 % O ₂
> 25 % O ₂	±0.5 % O ₂	no information
Operating conditions:	0 ... 45 °C 0 ... 95 % RH (non-condensing)	0 ... 50 °C 0 ... 95 % RH (non-condensing)
Ambient pressure:	0.5 ... 2.0 bar abs.	
Over-/under-pressure:	max. 0.25 bar (pressure difference sensor membrane to ambient - sensor screwed-in)	
Storage temperature:	-15 ... +60 °C	
Operation life:	on air: >4 years (warranty for sensor element: 12 months)	on air: >2 years (warranty for sensor element: 12 months)
Sensor:	GOEL 370	GOEL 380
Connection:	GGA/GGO/GOO 3...: approx. 1.2 m cable with Mini-DIN-plug. GGA/GGO/GOO 5...: approx. 1 m cable with 7-pole bayonet connector	
Dimensions of housing:	GGA...: approx. Ø 36 mm x 95 mm (150 mm incl. anti-buckl. glanding), GGO...: approx. Ø 36 mm x 95 mm (150 mm incl. anti-buckl. glanding), GOO...: approx. Ø 40 mm x 105 mm (160 mm incl. anti-buckl. glanding) Housing with M16 x 1-screw thread (sensor can be connected to line tubes by means of an additional adapter)	
Weight:	approx. 135 g (GGO...) or approx. 145 g (GOO.../GGA...)	
Scope of supply:	GGA.../GGO...: sensor, flow diverter, T-piece GOO...: sensor, flow diverter	

Note: not suited for „under water“-applications (rebreather, etc.)

ACCESSORIES

**GOEL 370**

Product-ID: 601490

sensor element (acidic electrolyte):

General:

Integrated into GGO 370, GGA 370, GGO 370 (for GMH 3690/91/92/95) or GGO 570, GGA 570, GGO 570 (for GMH 5690/95)

Universal sensor element with special precautions particularly for immersion applications ("nitrox"), very long life, even for applications with elevated CO₂ concentration.

Note:

not suited for „under water“-applications (rebreather, etc.)

**GOEL 380**

Product-ID: 601492

sensor element (alkaline electrolyte)

General:

Integrated into GGO 380, GGA 380, GGO 380 (for GMH 3690/91/92/95) or GGO 580, GGA 580, GGO 580 (for GMH 5690/95) Fast sensor element especially for low Oxygen concentrations below 1 %, measuring range up to 25 %, e. g. a protective gas atmosphere. For application without permanently higher CO₂ concentration

Note:

not suited for „under water“-applications (rebreather, etc.)

Accessories and spare parts:**GZ-11**

Product-ID: 603144

flow rate adapter to measure the oxygen concentration with 6/4 mm tube

ESA 369

Product-ID: 603058

spare tube-adapter M16x1, for tubes with a inner-diameter of 15 mm

ZOT 369

Product-ID: 603094

T-piece



RESIDUAL OXYGEN MEASURING DEVICE



GMH 5690

**APPLICATION IN
PACKAGING AND FOOD INDUSTRY**

GMH 3692 GOG-H

Product-ID: 605925

Residual oxygen measuring device for universal use

GMH 3692 GOG-L

Product-ID: 605926

Residual oxygen measuring device for low oxygen-concentrations with fast response time

GMH 5690 GOG-H

Product-ID: 607746

Residual oxygen measuring device for universal use

GMH 5690 GOG-L

Product-ID: 607748

Residual oxygen measuring device for low oxygen-concentrations with fast response time

Application:

If delicate products are conserved at low-oxygen atmospheres (protective gas), these measuring devices will provide a vital check of the residual oxygen content.

- packaging industry
- food industry

Specifications:

Sensor elements: - H: GOEL 370 - L: GOEL 380

Measuring range (hPa O₂): - H: 0 ... 1100 - L: 0 ... 300

Measuring range (% O₂): - H: 0.0 ... 100.0 - L: 0.0 ... 25.0

Response time: T₉₀ - H: <10 s - L: <5 s

Resolution: GMH 3692...: 0.1 % O₂
GMH 5690...: 0.01 % O₂

Accuracy:
(whole system - if careful calibration and measuring)

1-point-calibration: ±0.2 % O₂ ±1 digit
(for concentrations < 10 %)

2-point-calibration: ±0.1 % O₂ ±1 digit
(for concentrations < 10 %)

Oxygen sensor: Oxygen partial pressure sensor, built in external sensor housing

Operation life: 12 month warranty for sensor element (if appropriate application and ambient pressure)

Working pressure: 0.5 ... 2.0 bar abs.

Over-/under-pressure: max. 0.25 bar (pressure difference)

Dimensions case: approx. 394 x 294 x 106 mm

Weight: GMH 36xx: approx. 1400 g (complete set)
GMH 56xx: approx. 1480 g (complete set)

Scope of supply:

Device GMH3692, hand pump with air tube, GOG oxygen sensor with penetration needle, case GKK 3500, spare needle Ø 0.9 mm, rubber foam sticker (40 pieces), battery, operating manual.

for additional technical data refer to GMH3692 and corresponding sensors on page 56

Accessories and spare parts:**GOG-SET-3000-H**

Product-ID: 603048

Set without instrument

Scope of supply: GOG oxygen sensor (GOEL 370) with penetration needle, hand pump with air tube, case GKK 3500, spare needle and 40 rubber foam stickers

GOG-SET-3000-L

Product-ID: 603050

Set without instrument

Scope of supply: GOG oxygen sensor (GOEL 380) with penetration needle, hand pump with air tube, case GKK 3500, spare needle and 40 rubber foam stickers

GOG-SET-5000-H

Product-ID: 607949

Set without instrument

Scope of supply: GOG oxygen sensor (GOEL 370) with penetration needle, hand pump with air tube, case GKK 3500, spare needle and 40 rubber foam stickers

GOG-SET-5000-L

Product-ID: 607950

Set without instrument

Scope of supply: GOG oxygen sensor (GOEL 380) with penetration needle, hand pump with air tube, case GKK 3500, spare needle and 40 rubber foam stickers

GOEL 370

Product-ID: 601490

Spare sensor element, universal applications, diving, longlife

GOEL 380

Product-ID: 601492

Spare sensor element, for low oxygen-concentration, fast response time

GOG-N

Product-ID: 603047

Needle, Ø 0.9 mm (5 pieces)

GOG-A

Product-ID: 603043

rubber foam sticker (40 pieces)

COMPACT CO - MEASURING DEVICE



FUNCTIONS:



HIGHLIGHTS:

- 3 display units selectable (ppm, mg/m³ and % CO Hb)
- Alert at exceeding the maximum concentration at work (MAK/AGW)
- incl. interface

THE DEVICE IS ONLY INTENDED FOR CONTROL PURPOSES FOR THESE APPLICATIONS. IT IS NOT A REPLACEMENT FOR A MONITORING DEVICE SUBJECT TO AUTHORISATION!

GCO 100

Product-ID: 600062
CO-measuring device

General:

Carbon monoxide (CO) is created by the combustion of carbon. Depending on the effectiveness of the combustion (oxygen supply) and the temperature of the combustion more or less CO gas is created. The gas is inflammable and highly toxic. It is invisible, tasteless and scentless.

Even smallest concentrations are dangerous for humans!

Therefore a directive exists in Germany, which limits the maximum concentration of CO gas at work (MAK / AGW) to 30 ppm.

Application:

- Control of the air quality (e.g. at work place)
- Checking of heating systems, gas central-heating, fireplace
- Control of the air at maintenance work (tunnel, flue gas tract, ...)
- Detection of CO in the breath of smoker (% CO Hb)
- Cognition of CO poisoning i.e. at burnt offering (fire fighters, ...)

Specifications:

Measuring principle:	electrochemical CO measuring cell
Measuring range:	0 ... 1000 ppm CO concentration
Display ranges:	0 ... 1000 ppm CO concentration 0 ... 1250 mg/m ³ CO concentration 0 ... 60.0 % CO Hb (estimation via exhaled breath gas)
Resolution:	1 ppm, 1 mg/m ³ or 0.1 % CO Hb
Measuring element:	integrated in device, measuring inlet at front plate, with inner thread for accessories screw in
Life time:	>5 years at proper usage at air suggested test interval: every 6 months (depending on precision requirements)

Accuracy: (at range 0 ... 500 ppm)

linearity:	< ±5 % of measured value ±1 digit
repeatability:	< ±5 % of measured value ±1 digit

Interference: (extract)

	Concentration (ppm)	residence time (min.)	display (ppm)
sulphur dioxide	50	600	<1
nitrogen dioxide	50	900	-1
nitric oxide	50	5	8
hydrogen	100	5	20
carbon dioxide	5000	5	0

Display:	approx. 11 mm high, 4½-digit LCD-display
Pushbuttons:	3 membrane keys
Nominal temperature:	25 °C
Ambient condition:	-10 ... +50 °C, 15 ... 90 % RH (non condensing)
Storage temperature:	-10 ... +50 °C
Serial interface:	Serial interface, direct connection to RS232 or USB interface of a PC via electrically isolated interface adapter

Power supply:	9 V-battery as well as additional d.c. connector for external 10.5 - 12 V direct voltage supply. (suitable power supply: GNG 10 / 3000)
Power consumption:	<0.25 mA (>1000 operating hours)
Housing:	impact-resistant ABS plastic housing, membrane keyboard, transparent panel. Front side IP65, integrated pop-up clip for table top or suspended use.
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 155 g
Scope of supply:	Device, battery, manual

Accessories and spare parts:

ESA 100

Product-ID: 603013
tube-adapter/flow diverter to screw in front plates.

ZOT 369

Product-ID: 603094
T-piece

GRV 100

Product-ID: 603093
non return valve

MSK 100

Product-ID: 603012
mouth piece of plastic

GAS 100

Product-ID: 603587
extension set for exhaled air control (consisting of ESA100, ZOT369, GRV 100 and 5x MSK100)

GZ-10

Product-ID: 603133
test gas cap GCO (for controlled flow with test gas)

GZ-02

Product-ID: 603569
gas bottle with 12l test gas: 30 ppm CO

GZ-03

Product-ID: 603123
gas bottle with 12l test gas: 300 ppm CO

GZ-04

Product-ID: 603570
gas valve unit MiniFlo for gas bottles with 12l

GB 9 V

Product-ID: 601115
spare battery 9 V / approx. 300mA/h

GLI 9 V

Product-ID: 601117
Lithium battery 9 V / approx. 1200 mA/h

GKK 3000

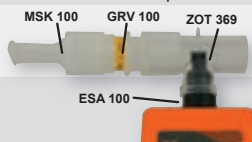
Product-ID: 601048
case (275 x 229 x 83 mm) with punched lining

USB 3100 N

Product-ID: 601092
interface converter to USB, electrical isolated

GAM 3000

Product-ID: 601132
switching module for 230 VAC/10 A



COMPACT AIR OXYGEN MEASURING DEVICE



FUNCTIONS:



FOR DIVING APPLICATIONS

GOX 100

Product-ID: 600142
for universal applications

General:

- 1-button calibration
 - Automatic power-off
 - Min-/max- value memory
 - Incl. sensor GOEL 370
- Note: not for under water use (Rebreathers)

GOX 100T

Product-ID: 600157
for diving applications

General:

- 1-button calibration
 - MOD-Display (Maximum Operating Depth)
 - HOLD function
 - Incl. sensor GOEL 370
- Note: not for under water use (Rebreathers)

Specifications:

Measuring range:	0.0 ... 100.0 % O ₂
Accuracy typ.:	±0.1 % O ₂ ±1 digit, calibrated device (range from 15 ... 40 % O ₂)
MOD (GOX 100T):	0 ... 100 m / 0 ... 199 ft
Sensor Connection:	0.7 m jack-connector cable
Sensor	Oxygen-partial pressure probe, mounted in external sensor housing
Warranty:	12 months
Working pressure:	0.5 ... 2.0 bar abs.
Over-/under-pressure:	max. 0.25 bar (pressure difference)
Working temperature:	0 ... 45 °C (sensor), -20 ... +50 °C (device)
Relative humidity:	0 ... 95 % RH
Power supply:	9 V battery
Power consumption:	approx. 120 µA (over 2500 h)
Display:	3½-digit, 13 mm high LCD-display
Housing:	ABS-enclosure, front side IP65
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 185 g
Scope of supply:	Device incl. sensor, tube-adaper, t-piece, battery

Variants:

GOX 100-LACK

Product-ID: 602047
with encapsulated PC board (for applications where condensation is possible)

GOX 100-T-LACK

Product-ID: 604660
with encapsulated PC board (for applications where condensation is possible)



	GMH 5130 GMH 5150 GMH 5155	GMH 3111 GMH 3151 GMH 3156	GMH 3161-12 GMH 3181-12	GMH 3161-002 / -01 / -07 ... / -13	GMH 3181--002 / -01 / -07 ... / -13	GDH 200-07 GDH 200-13	GDH 200-14	GPB 3300 GTD 1100	GDUSB 1000
Application:									
Relative pressure meas. (over, under- and pressure difference)	• • •	• • •		•	•	• •			•
Absolute pressure measuring	• • •	• • •	• •				•	• •	•
Heating, ventilation, climate	• • •	• • •	• •	•	•	• •	•	• •	•
Measuring in liquids	• • •	• • •							•
Vacuum measuring	• • •	• • •	• •				•		•
Meteorology			• •				•		
Altitude measuring (sports)								•	
Water-proof application	• • •								
Optionally EX-protection		• • •	• •	•	•				

Equipment:

Plug-in probe	1 1 2	1 1 2							1
Min/Max, Zero	• • •	• • •	• •	•	•	• •	•	• •	•
Alarm / Data logger / Analog output	• •	• •	•		•				

Device information:

Catalogue page	60	61-62	65-67	65-67	65-67	68	68	69	70
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STANDARD-FUNCTIONS:



**CALIBRATED AND FULLY
INTERCHANGEABLE
PRESSURE PROBES**

HIGHLIGHTS:

- Peak value detection (1000 measurements / s)
- Large double display with background illumination

ADDITIONAL FUNCTIONS GMH 5150 AND 5155:



GMH 5130 / 50



GMH 5155

suitable pressure probes
p. r. t. page 63/64

WATER-PROOF

DEVICE AND PLUG-IN CONNECTIONS

GMH 5130

Product-ID: 600027

Pressure measurement device with 1 sensor connection, without sensor

GMH 5150

Product-ID: 600031

Pressure measurement device with 1 sensor connection, analog output and data logger, without sensor

GMH 5155

Product-ID: 600033

Pressure measurement device with 2 sensor connections, analog output and data logger, without sensors

General:

This handheld instrument is a valuable tool for demanding pressure measurements. Extremely robust plug connections, the silicone protection cover, backlight and a water-proof design allow its usage in harsh industrial and field environments.

Application:

- industry and craft
- HVAC: heating, ventilation, air-conditioning
- leakage test / pressure test
- chimney draft measurement: under pressure
- leakage test at buildings (i.e. 4 Pascal test)
- measurements of gas and oil firings
- automobile trade
- hydraulic analysis (peak pressure)

Specifications: GMH 5130

Sensor connections:	1
Suitable probes:	GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar)
display range max.:	-19999 ... +19999 digit
Display unit: *	depends on measuring range selection and sensor: mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH ₂ O
Measuring frequency:	4 measurements / s or 1000 measurements / s with peak value memory
Average filter:	adjustable: 1 ... 120 s
Accuracy:	± 0.1 % FS ± 1 digit
Connections:	
Sensor	1x 7-pole bayonet connector
Output / external supply	4-pole bayonet connector for serial interface, * supply (with accessories: USB adapter USB 5100)
Display:	4 ½ digit 7-segment, illuminated (white)
Working temperature:	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
Storage temperature:	-25 ... +70 °C
Power supply:	2 x AAA-battery, battery life 500 h (without illumination, 4 measurings / s)
Housing:	impact resistant ABS housing with pop-up clip
Protection class:	IP65 / IP67
Dimensions:	160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red)
Weight:	approx. 250 g incl. battery and protection cover
Scope of supply:	Device, battery, manual

Specifications: GMH 5150 und GMH 5155

Sensor connections:	1 GMH 5155 only: 2
Suitable probes:	GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar)
display range max.:	-19999 ... +19999 digit
Display unit: *	depends on measuring range selection and sensor: mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH ₂ O, user
Measuring frequency:	4 measurements / s or 1000 measurements / s with peak value memory
Average filter:	adjustable: 1 ... 120 s
Accuracy:	± 0.1 % FS ± 1 digit
Connections:	
Sensor	1 x 7-pole bayonet connector GMH 5155 only: 2 x 7-pole bayonet connector
Output / external supply	4-pole bayonet connector for serial interface, * supply (with accessories: USB adapter USB 5100)
Analog output:	0 - 1 V, freely adjustable, connection with 4-pole bayonet connector, resolution 12 bit
Display:	4 ½ digit 7-segment, illuminated (white)
Working temperature:	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
Storage temperature:	-25 ... +70 °C
Power supply:	2 x AAA-battery (included), battery life 500 h (without illumination, 4 measurings / s)
Housing:	impact resistant ABS housing with pop-up clip
Protection class:	IP65 / IP67
Dimensions:	160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red)
Weight:	approx. 250 g incl. battery and protection cover
Scope of supply:	Device, battery, manual

Additional functions:

Additional Display for Battery: Bar graph display
Background Illumination: duration adjustable (off, 5 s ... 2 min.)
Adjustment: offset / slope adjustable in menu
User-defined displayed unit: (user/GMH 5150/55)
 conversion to any unit with help of linear factor
Leakage test function (GMH 5150/55):
 leak rate display, leak rate alarm (/s, /min, /h)
Air velocity / flow volume (GMH 5150/55):
 Pitot tube measurement (accessories)
peak-detect (Peak value memory):
 The min- / max- value memory stored unfiltered pressure peaks ≥ 1 ms
Logger function
 - cyclic: 10.000 data sets (GMH 5150), 8.000 data sets (GMH 5155)
 - manual: 1.000 data sets (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)

* = Note to the pressure unit selection:

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

ACCESSORIES

Accessories and spare parts:

GMSD ... - K51

pressure sensors

(p.r.t. page 62)

Application field:

non-aggressive gases

for over / under pressure and difference pressure meas. or absolute pressure meas.

MSD ...

pressure sensors / stainless steel

(p.r.t. page 63)

Application field: air,

aggressive gases

for over / under pressure and relative pressure meas. or absolute pressure meas.

MSD-K51

Product-ID: 603809

1 m connection cable for MSD sensors

Prandtl-Staurohr

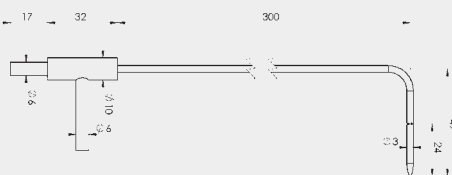
Product-ID: 604150

(made of stainless steel)

for air velocity / flow volume measurement

Ø = 3 mm, NL = 300 mm, max. 600 °C

GMSD 2,5 MR-K51 or GMSD 25 MR-K51 are required

**GDZ-01**

Product-ID: 601541

PVC tube 6/4 (6 mm outer Ø, 4 mm inner Ø)

(5 bar at 23 °C)

**GDZ-30**

Product-ID: 601601

Adapter G1/2" inner to tube 6/4

EBS 20M

Product-ID: 601158

software for long-term monitoring (p.r.t. page 77)

GSOFT 3050

Product-ID: 601336

Software for operation of logger devices (p.r.t. page 77)

USB 5100

Product-ID: 601095

Electrically isolated interface converter, supplied via USB

GNG 5 / 5000

Product-ID: 602287

Plug-in power supply 5 V DC, suitable for GMH 5000 series (see p. 75)

GKK 3500

Product-ID: 601052

Device case (394 x 294 x 106 mm) with eggcrate foam and cut-outs for 1 device (p.r.t. page 72)

HAND-HELD PRESSURE MEASURING DEVICE



FUNCTIONS:



HIGHLIGHTS:

- one device for any measuring range (2.500 mbar ... 1000 bar)

**CALIBRATED AND FULLY
INTERCHANGEABLE
PRESSURE PROBES**

Suitable pressure probes
p.r.t.p. 63/64

GMH 3111

Art.-Nr 600374

device with 1 sensor connection, without sensor

GMH 3111 - ex

Art.-Nr 600380

device with 1 sensor connection, without sensor, ex

Specifications:

max. display range:	-19999 ... +19999 digit
Measuring range:	corresponding to used probe
Overload:	corresponding to used probe
Resolution:	corresponding to used probe
Accuracy: (device)	±0.1 % FS ±1 digit (at nominal temperature = 25 °C)
Pressure units: *	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH ₂ O, can be selected.
Probe connection:	1 sensor socket 6-pin lockable Mini-DIN-socket(s) for GMSD/MSD-sensors. Automatic probe detection and setting of measuring range upon plugging in of probe.
Display:	2 x 4 1/2 digit LCD
Output:	interface
serial interface:	direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N.
Power supply:	9 V-battery, d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)
Sensor adjustment:	digital offset and scale input
Measuring cycle:	4 measurements / s
Power consumption:	approx. 1.6 mA
Working condition:	-25 ... 50 °C, 0 ... 95 % RH, GMH 3111-ex: -10 ... +50 °C, 0 ... 95 % RH
Housing:	impact-resistant ABS plastic housing, Front side IP65 GMH 3111 only: integrated pop-up clip for table top or suspended use.
Dimensions:	142 x 71 x 26 mm
Weight:	approx. 150 g, GMH3111-ex: approx. 190 g (incl. leather case)
Scope of supply:	Device, battery, manual

* Note to the pressure unit selection:
(information for all GMH 31xx)

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

Note to Ex- design types:

Technical changes compared to standard instrument (valid for all GMH31xx - ex)

Ex qualification:: II 2 G Ex ib IIC T4 Gb

Ref. document: EPS 09 ATEX 1 227 X

Standards:

The device meets the standards for electric resources in explosion endangered areas according to EN 60079-0 : 2012, EN 60079-11 : 2012

Probe:

(GMH 3111 - ex, GMH 3151 - ex, GMH 3156 - ex) All GMSD sensors with option 'Ex type' can be used.

Interface:

suitable interface adapter are USB 3100 N, GRS 3100 and GRS 3105

Please note: The operation of the interface is not allowed within the Ex area!

Working temperature: -10 ... +50 °C

Power supply: 9 V-battery, d.c. connector

Please note: the use of d.c. connector is not allowed within the Ex area!
Just d.c. connectors of type GNG10/3000 can be used.

Alarm function:

(GMH 3151 - ex, GMH 3156 - ex, GMH 3181 - ex)
The device is without a horn, in the alarm settings are only the parameter „no.so“ and „off“ adjustable.

Scope of supply:

device with associated leather case.



PRESSURE MEASURING DEVICE WITH LOGGER



STANDARD-FUNCTIONS:



LOGGER FUNCTION

Suitable pressure probes
p.r.t. p. 63/64

GMH 3151

Product-ID: 600381

Device with 1 sensor connection, analog output and data logger, without sensor

GMH 3156

Product-ID: 600386

Device with 2 sensor connections, analog output and data logger, without sensor

GMH 3151 - ex

Product-ID: 600383

Device with 1 sensor connection, analog output and data logger, without sensor

GMH 3156 - ex

Product-ID: 600394

Device with 2 sensor connections, analog output and data logger, without sensor

Specifications:

max. display range:	-19999 ... +19999 digit
Measuring range:	corresponding to used probe
Overload:	corresponding to used probe
Resolution:	corresponding to used probe
Accuracy: (device)	±0.1 % FS ±1 digit (at nominal temperature = 25 °C)
Pressure units:	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH ₂ O, can be selected.
Probe connection:	1, GMH 3156/-ex: 2 6-pin screened lockable Mini-DIN-socket(s) for GMSD/MSD-sensors. Automatic probe detection and setting of measuring range upon plugging in of probe.
Display:	2 x 4½-digit LCD
Output:	serial interface or AAG *
serial interface:	direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N.
analog output:	0-1 V, freely adjustable (resolution 12 bit)
Power supply:	9 V-battery, d.c. connector * for external 10.5-12 V direct voltage supply. (i. e. GNG10/3000)
Sensor adjustment:	digital offset and scale input
Measuring cycle:	
	„slow“ 4 measurements / s
	„fast“ (with filter) ≥ 1000 measurements / s
	„peak-detect“ ≥ 1000 measurements / s

HIGHLIGHTS:

- 4½-digit display, probes with higher resolution up on request
- peak value memory 1000 measurements / s
- analog output 0-1 V
- digital adjustable
- integrated horn

ADDITIONAL FUNCTIONS OF GMH 3156:

- 2 GMSD/MSD-probes connectable.
- difference measurement of two probes

peak-detect:	The min- / max- value memory stored unfiltered pressure peaks ≥ 1 ms
Logger functions:	
manually data sets:	99 data sets
cycle data sets:	10000, GMH 3156/-ex: 4000 (max. 64 recording sequences)
adjustable cycle time:	1 ... 3600 s
Averaging function:	x
Power consumption:	max. 1.6 mA (4 measurements/s) max. 7 mA (1000 measurements/s)
Working conditions:	-25 ... +50 °C, 0 ... +95 % RH (non-condensing), GMH 315x-ex: -10 ... +50 °C, 0 ... 95 % RH (non-condensing)
Housing:	impact-resistant ABS plastic housing. Front side IP65 GMH315x only: pop-up clip for table top or suspended use.
Dimensions:	142 x 71 x 26 mm
Weight:	approx. 150 g, GMH 315x-ex: approx. 190 g (incl. case)
Scope of supply:	Device, battery, manual

* refer to note to EX-design types at page before

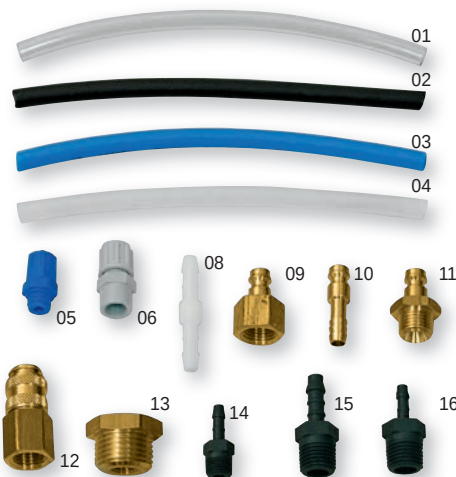
Additional functions:

Averaging function: integrates the meas. values during a selectable period of time and then calculates the average display value.

Sea-Level-correction: when connecting an abs. pressure probe the barom. air pressure can also be displayed corrected to sea level „zero“. (Air pressure compensation achieved by entering the meters above sea level „zero“)

Logger Functions:
manual: 99 data sets
cyclic: 10000 data sets (GMH 3151)
4000 data sets (GMH 3156)
(max. 64 recording sequences), adjustable cycle time: 1 ... 3600 s; The logger is started or stopped by keypad or interface. The software GSOF3050 (see accessories) is available for comfortable read-out of logger data.

TUBE, TUBE CLIPS, ADAPTER, COUPLINGS, ETC.



for GMH31xx, GMSD, MSD, GDHs and pressure measuring transducers.

- GDZ-01**
Product-ID: 601541
PVC-tube 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (5 bar @ 23 °C)
- GDZ-02**
Product-ID: 601543
PE (polyethylene) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (10 bar @ 23 °C)
- GDZ-03**
Product-ID: 601545
PUR (polyurethane) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (9 bar @ 23 °C)
- GDZ-04**
Product-ID: 601547
PA (polyamide) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (25 bar @ 23 °C)
- GDZ-05**
Product-ID: 601549
Screw-type glanding for 6/4 tube with outside thread G1/8
- GDZ-06**
Product-ID: 601551
Increase glanding for 6/4 tube with inside thread G1/8"
- GDZ-08**
Product-ID: 601555
Double adapter for 6/4 tube to 6/4 tube
- GDZ-09**
Product-ID: 601557
Coupling adapter (NW5) made of brass with inside thread G1/4" (suitable for GDZ-12)
- GDZ-10**
Product-ID: 601559
Coupling adapter (NW5) made of brass for tube with 6 mm inside-Ø (suitable for GDZ-12)
- GDZ-11**
Product-ID: 601561
Coupling adapter (NW5) made of brass with outside thread G1/4" (suitable for GDZ-12)
- GDZ-12**
Product-ID: 601564
Coupler socket (NW5) made of brass (single-hand use) with inside thread G1/4"
- GDZ-13**
Product-ID: 601566
Increase/reducer made of brass with G1/2" outside thread and G1/8" inside thread
- GDZ-14**
Product-ID: 601568
Screw-in nozzle for 6/4 tube with outside thread G1/8"
- GDZ-15**
Product-ID: 601570
Screw-in nozzle for tube with 6 mm inside-Ø with outside thread G1/4"
- GDZ-16**
Product-ID: 601572
Screw-in nozzle for 6/4 tube with outside thread G1/4"

TUBE, TUBE CLIPS, ADAPTER, COUPLINGS, ETC.



GDZ-17
Product-ID: 601574
Screw-in connection for 6/4 tube with outside thread G1/4"

GDZ-18
Product-ID: 601576
Tube clamp for 6/4 tube

GDZ-19
Product-ID: 601578
Tube clamp for 8/6 tube
(8 mm outside-Ø and 6 mm inside-Ø)

GDZ-20
Product-ID: 601580
Screw-on connection made of brass for 6/4 tube with inside thread G1/4"

GDZ-21
Product-ID: 601582
T-piece for 6/4 tubes

GDZ-22
Product-ID: 601584
Coupling adapter (NW5) made of brass with tube connection 6/4 (suitable for GDZ-12)

GDZ-23
Product-ID: 601586
Adapter G1/2" Innen auf G1/4" Außen, aus Messing

GDZ-27
Product-ID: 601594
Manometer profile gasket (thickness 3mm, Cu) for G1/4" head

GDZ-28
Product-ID: 601597
Flat gasket (thickness 5 mm, Cu) for thread G1/2"

GDZ-29
Product-ID: 601599
Filter-Membrane incl. Luer-Locks (GDZ-32 and GDZ-33)

GDZ-30
Product-ID: 601601
Adapter G1/2" inside thread to tube 6/4 (w/o picture)

GDZ-31
Product-ID: 606070
Silicone tube 8/5 (8 mm outer / 5 mm inner) (2 bar at 23 °C) temperature-resistant up to 200 °C, very flexible (figure similar to GDZ-04)

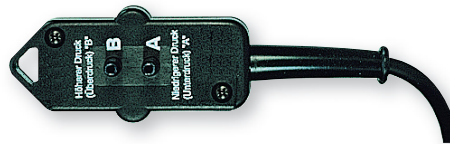
GDZ-32
Product-ID: 607951
Luer-lock male to hose 6/4

GDZ-33
Product-ID: 607952
Luer-lock female to hose 6/4

GWA 1214
Product-ID: 603979
Adapter G1/2" inside thread to G1/4" outside thread (without picture)

GOG-N
Product-ID: 603047
needle, Ø 0.9 mm - suitable to Luer-Lock male (5 pieces) (without picture)

PLASTIC PRESSURE SENSORS WITH TUBE CONNECTION



**FOR AIR AND
NON AGGRESSIVE GASES**

General:

for use with
GMH 31xx, GDSB: Type GMSD ... -K31,
GMH 51xx: Type: GMSD ... - K51

Application:

air and non aggressive gases
not suitable for water / liquids

SENSORS FOR MEASURING PRESSURE DIFFERENCE

for differential pressure measuring (both pressures are connected) as well as for relative pressure measuring (pressure / vacuum, one terminal is left open)

	GMSD 2,5 MR ..	GMSD 25 MR ..	GMSD 350 MR ..	GMSD 2 BR ..	GMSD 10 BR ..
Measuring range	-1.999 ... +2.500 mbar	-19.99 ... +25.00 mbar	-199.9 ... +350.0 mbar	-1000 ... +2000 mbar	-1.00 ... 10.00 bar
Overload	max. 200 mbar	max. 300 mbar	max. 1 bar	max. 4 bar	max. 10.34 bar
Resolution	0.001 mbar (0.1 Pa)	0.01 mbar (1 Pa)	0.1 mbar	1 mbar	10 mbar
Accuracy (typ.)					
hysteresis / linearity	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS
temperature influence (from 0-50 °C)	± 1.0 % FS	± 0.5 % FS	± 0.4 % FS	± 0.4 % FS	± 0.4 % FS
GMSD ... - K31					
Product-ID:	601039	601148	601154	601170	601183
GMSD ... - K51					
Product-ID:	601038	601149	601157	601171	601184

ABSOLUTE PRESSURE SENSORS

for absolut pressure measuring

	GMSD 1,3 BA ..	GMSD 2 BA ..	GMSD 7 BA ..
Measuring range	0 ... 1300 mbar abs.	0 ... 2000 mbar abs.	0.00 ... 7,00 bar abs.
Overload	max. 4 bar abs.	max. 4 bar abs.	max. 10.34 bar abs.
Resolution	1 mbar	1 mbar	10 mbar
Accuracy (typ.)			
hysteresis / linearity	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS
temperature influence (from 0-50 °C)	± 0.4 % FS	± 0.4 % FS	± 0.4 % FS
GMSD ... - K31			
Product-ID:	601192	601196	601200
GMSD ... - K51			
Product-ID:	601193	601197	601201

Specifications:

Sensor:	piezoresistive pressure sensor
Pressure connection:	2 connection pins for tubes 6 x 1 mm (6 mm inside-Ø and 4 mm outside-Ø)
Electronics:	PC board with amplifier and data memory for sensor data (measuring range / calibration etc.) integrated in sensor housing
Working temperature:	0 ... +50 °C
Relative humidity:	0 ... +95 % r.F. (non condensing)
Storage temperature:	-25 ... +70 °C
Housing:	ABS plastic with suspension eye, dimensions do not incl. conn. pin: 68 x 32.5 x 15 mm, dimensions with connection pin: 68 x 32.5 x 27.5 mm.
Weight:	approx. 75 g (...-K51: approx. 82 g)
Device connection:	
GMSD ... - K31:	1.2 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug, lockable
GMSD ... - ex:	
GMSD ... - K51:	1 m PVC connection cable, screened with 7-pin bayonet plug

Options:

Ex-protection

Higher probe accuracy
by multi point calibration
Additional individual linearisation points are stored in sensor memory.
(not possible for GMSD 2,5 MR and GMSD 25 MR!)

ISO-WPD5

Product-ID: 602514
Certificate of calibration: 5 points ascending, 5 points descending



**FOR AIR, AGGRESSIVE
GASES AND LIQUIDS**

Follow-on type für GMSD-
stainless-steel-sensors

MSD ...

Stainless steel pressure sensors without cable
Connection cable MSD-K31 or MSD-K51 has to be ordered separately
(Accessories)

General:

for use with GMH31xx, GMH 51xx and GDUSB 1000

Application:

air, aggressive gases, aggressive liquids / water, etc.

Abs. pressure	Measuring range	Overload	Resolution
MSD 1 BAE Product-ID: 600583	0 ... 1000 mbar abs.	max. 5 bar abs.	1 mbar
MSD 2,5 BAE Product-ID: 600585	0 ... 2500 mbar abs.	max. 10 bar abs.	1 mbar
MSD 4 BAE Product-ID: 600587	0 ... 4000 mbar abs.	max. 17 bar abs.	1 mbar
MSD 6 BAE Product-ID: 600592	0 ... 6000 mbar abs.	max. 35 bar abs.	1 mbar
MSD 10 BAE Product-ID: 600594	0 ... 10.00 bar abs.	max. 35 bar abs.	10 mbar
MSD 16 BAE Product-ID: 600596	0 ... 16.00 bar abs.	max. 80 bar abs.	10 mbar
MSD 25 BAE Product-ID: 600598	0 ... 25.00 bar abs.	max. 50 bar abs.	10 mbar

Rel. pressure	Measuring range	Overload	Resolution
MSD 100 MRE Product-ID: 600600	0.0 ... 100.0 mbar rel.	max. 1 bar rel.	0.1 mbar
MSD 250 MRE Product-ID: 600604	0.0 ... 250.0 mbar rel.	max. 2 bar rel.	0.1 mbar
MSD 400 MRE Product-ID: 600606	0.0 ... 400.0 mbar rel.	max. 2 bar rel.	0.1 mbar
MSD -1/1.5 BRE Product-ID: 600608	-1000 ... +1500 mbar rel.	max. 10 bar rel.	1 mbar
MSD -1/3 BRE Product-ID: 600610	-1000 ... +3000 mbar rel.	max. 17 bar rel.	1 mbar
MSD 1 BRE Product-ID: 600612	0 ... 1000 mbar rel.	max. 5 bar rel.	1 mbar
MSD 2,5 BRE Product-ID: 600614	0 ... 2500 mbar rel.	max. 10 bar rel.	1 mbar
MSD 4 BRE Product-ID: 600616	0 ... 4000 mbar rel.	max. 17 bar rel.	1 mbar
MSD 6 BRE Product-ID: 600618	0 ... 6000 mbar rel.	max. 35 bar rel.	1 mbar
MSD 10 BRE Product-ID: 600620	0.00 ... 10.00 bar rel.	max. 35 bar rel.	10 mbar
MSD 25 BRE Product-ID: 600622	0.00 ... 25.00 bar rel.	max. 50 bar rel.	10 mbar
MSD 40 BRE Product-ID: 600624	0.00 ... 40.00 bar rel.	max. 80 bar rel.	10 mbar
MSD 60 BRE Product-ID: 600627	0.00 ... 60.00 bar rel.	max. 120 bar rel.	10 mbar
MSD 100 BRE Product-ID: 600629	0.0 ... 100.0 bar rel.	max. 200 bar rel.	0.1 bar
MSD 160 BRE Product-ID: 600631	0.0 ... 160.0 bar rel.	max. 320 bar rel.	0.1 bar
MSD 250 BRE Product-ID: 600639	0.0 ... 250.0 bar rel.	max. 500 bar rel.	0.1 bar
MSD 400 BRE Product-ID: 600633	0.0 ... 400.0 bar rel.	max. 800 bar rel.	0.1 bar
MSD 600 BRE Product-ID: 600635	0.0 ... 600.0 bar rel.	max. 1200 bar rel.	0.1 bar
MSD 1000 BRE Product-ID: 600637	0 ... 1000 bar rel.	max. 1500 bar rel.	1 bar

MSD 25 MRE

MSD -20/60 MRE

not suited for aggressive media, water, etc.,
no Ex design and no option „higher accuracy“ available

Rel. pressure	Measuring range	Overload	Resolution
MSD 25 MRE Product-ID: 606904	0.00 ... 25.00 mbar	max. 500 mbar	0.01 mbar
MSD -20/60 MRE Product-ID: 606765	-20.00 ... 60.00 mbar	max. 500 mbar	0.01 mbar

Specifications:

Sensor:	stainless steel pressure sensor (parts coming into contact with media). Suitable for aggressive media, water, etc.. (does not apply to MSD 25 MRE and MSD -20/60 MRE)
Accuracy: (typ. values)	± 0.2 % FS (hysteresis and linearity) ± 0.02 % FS / K (TC for zero or slope)
Electronics:	PC board with amplifier and data memory for sensor data (meas. range, etc.) integrated in sensor housing, sealed sensor electronic
Reaction time:	1 ms
Medium temperature:	-25 ... +100 °C (compensated range: 0 ... 80 °C); -25 ... +80 °C at MSD 25 MRE and MSD -20/60 MRE
Working conditions:	-20 ... +80 °C
Storage temperature:	-40 ... +80 °C
Pressure connection:	connection thread G1/2B (other on request).
Cable connection:	M16 built-in plug
Housing:	CrNi-steel or elgiloy (parts coming into contact with media) length: 88.5 mm, Ø 27 mm, approx. 220 g
Protection class:	IP 67 (sensor)
Scope of supply:	pressure sensor, manual; Note: Connection cable has to be ordered separately.

Optionen:

Higher probe accuracy
by multi point calibration. Additional individual linearisation points are stored in sensor memory. (not available for MSD 25 MRE and MSD -20/60 MRE)

ISO-WPD5

Product-ID: 602514

Certificate of calibration: 5 points ascending, 5 points descending

Accessories:

MSD-K31

Product-ID: 600657

Connection cable for use with GMH 31xx / GDUSB 1000
1.2 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug and M16-socket (IP 54)

MSD-K51

Product-ID: 603809

Connection cable for use with GMH 51xx
1 m PVC connection cable, screened with 7-pin bayonet plug
cable and plug connection water proof acc. to IP 67 and M16-socket

MSD-K31-xx

Longer connection cable (as MSD-K31); Length 2 ... 10 m please specify

MSD-K51-xx

Longer connection cable (as MSD-K51); Length 2 ... 10 m please specify

Ex-Protection:



MSD ... - ex

Stainless steel pressure sensor (without cable) with Ex-protection

MSD-K31 - ex

Product-ID: 600871

Connection cable with Ex-protection
Connection to GMH 31xx, 1 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug and M12-socket

A SERIES OF HAND-HELD MEASURING DEVICES WITH INTEGRATED SENSOR



FUNCTIONS:



HIGHLIGHTS:

- integrated pressure sensor
- sturdy metal connection pin
- tare function / zero point offset
- model with protection available

ADDITIONAL FEATURES FOR GMH 3181-...:



Type specific data:	GMH 3161 - ...	GMH 3181 - ...	GMH 3161 - ... - ex	GMH 3181 - ... - ex
Display:	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD
Sensor:	piezoresistive differential pressure sensor internally built into the instrument. Suitable for air and non-aggressive gases. (Note: Not suited for water!)			
Pressure connection:	2 pressure port for universal 6 x 1 mm (4 mm hose inside diameter) or 8 x 1 mm (6 mm hose inside diameter) plastic tubing			
Output:	interface	interface or AAG	interface *	interface or AAG*
- serial interface:	x	x	x	x
- analog output:	--	0 - 1 V, freely adjustable (resolution 12 bit)	--	0 - 1 V, freely adjustable (resolution 12 bit)
Power supply:	9 V-battery, d.c. connector	9 V-battery, d.c. connector	9 V-battery, d.c. connector *	9 V-battery, d.c. connector *
	suitable 9 V-battery, d.c. connector for external 10.5-12 V direct voltage supply. (suitable power supply: GNG10/3000)			
Sensor adjustment:	digital offset and scale input	digital offset and scale input	digital offset and scale input	digital offset and scale input
Peak value memory:	--	≥1 ms	--	≥1 ms
Measuring cycle: „slow“	4 measurements / s	4 measurements / s	4 measurements / s	4 measurements / s
„fast“ (with filter)	--	≥ 1000 measurements / s	--	≥ 1000 measurements / s
„peak-detect“	--	≥ 1000 measurements / s	--	≥ 1000 measurements / s
Averaging function:	--	x	--	x
Power consumption:	approx. 0.6 mA	approx. 0.6 mA (slow mode) max. 2.5 mA (fast = 1000 Hz)	approx. 0.6 mA	approx. 0.6 mA (slow mode) max. 2.5 mA (fast = 1000 Hz)
Working condition:	-25 ... +50 °C, 0 ... +95 % RH (non-condensing)		-10 ... +50 °C, 0 ... 95 % RH (non-condensing)	
Housing:	142 x 71 x 26 mm (without pressure connection pin - pin approx. 11 mm protruding at front side of device), impact-resistant ABS plastic housing. Front side IP65 integrated pop-up clip for table top or suspended use.			
Weight:	approx. 165 g	approx. 170 g	approx. 205 g (incl. leather case)	approx. 210 g (incl. leather case)
Scope of supply:	Device, battery, manual	Device, battery, manual	Device, battery, manual	Device, battery, manual

* Please refer to note to Ex-design types (p. 61)

Additional functions:

Serial interface: direct connection to RS232 or USB interface of a PC via electrically isolated interface adapter GRS 3100, GRS 3105 or USB 3100 N.

GMH 3181:

Low power logger mode: (only in measuring cycle „slow“) Only one measurement carried out at the end of the respective logger cycle. The battery life is considerably prolonged. For long-term recordings (e.g. leaktest).

Averaging function: integrates the meas. values during a selectable period of time and then calculates the average display value.

Controlling function: with the help of the switching module GAM3000 (optionally) electric equipment can be switched on/off or alarm monitored (see accessories)

LoggerFunctions:

- manual: 99 data sets
- cyclic: 10000 data sets (max. 64 recording sequences), adjustable cycle time: 1 ... 3600 s

Note to the pressure unit selection: (information for all GMH31xx)

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.



GMH 3161-002

Product-ID: 600469
Device -500.0 ... +500.0 Pa (± 500.0 Pa ^{*)})

GMH 3181-002

Product-ID: 600470
Device -500.0 ... +500.0 Pa (± 500.0 Pa ^{*)}), Logger

Specifications:	
Measuring range:	-500.0 ... +500.0 Pa (-5.000 ... +5.000 mbar)
Overload:	max. 250 hPa (mbar)
Resolution:	0.1 Pa (0.001 mbar)
additional pressure units:	kPa, PSI, mmHg, mH ₂ O
Accuracy: (typ. values)	
hysteresis and linearity:	0.3 %
temperature-influence from 0-50 °C:	0.4 %
Option higher accuracy available:	no
Pressure connection:	2

For type specific data please refer to page 65.

*1 measuring range possible by changing the pressure connection ports

*2 without changing the pressure connection ports



GMH 3161-01

Product-ID: 600397
Device -100 ... 2500 Pa (± 2500 Pa ^{*)})

GMH 3181-01

Product-ID: 600411
Device -100 ... 2500 Pa (± 2500 Pa ^{*)}), Logger

GMH 3161-07H

Product-ID: 600405
Device -1.00 ... 70.00 mbar (± 70.00 mbar ^{*)})

GMH 3181-07H

Product-ID: 600417
Device -1.00 ... 70.00 mbar (± 70.00 mbar ^{*)}), Logger

Specifications:		
	... - 01	... - 07H
Measuring range:	-100 ... 2500 Pa (-1.00 ... 25.00 mbar)	-1.00 ... +70.00 mbar
Overload:	max. 100 mbar	max. 1000 mbar
Resolution:	1 Pa (0.01 mbar)	0.01 mbar
additional pressure units:	bar, kPa, PSI, mmHg, mH ₂ O	bar, Pa, kPa, PSI, mmHg, mH ₂ O
Accuracy: (typ. values)		
hysteresis and linearity:	± 0.3 % FS	± 0.1 % FS
temperature-influence from 0-50 °C:	± 0.4 % FS	± 0.4 % FS
Option higher accuracy available:	no	already integrated
Pressure connection:	2	

For type specific data please refer to page 65.

*1 measuring range possible by changing the pressure connection ports



GMH 3161-07

Product-ID: 600400
Device -10.0 ... +350.0 mbar (± 350.0 mbar ^{*)})

GMH 3181-07

Product-ID: 600413
Device -10.0 ... +350.0 mbar (± 350.0 mbar ^{*)}), Logger

GMH 3161-07B

Product-ID: 600402
Device -10.0 ... 420.0 mbar (-7.5 ... 315.0 mmHg)

GMH 3181-07B

Product-ID: 600415
Device -10.0 ... 420.0 mbar (-7.5 ... 315.0 mmHg), Logger

Specifications:		
	... - 07	... - 07B
Measuring range:	-10.0 ... +350.0 mbar	-10.0 ... +420.0 mbar (-7.5 ... 315.0 mmHg)
Overload:	max. 1 bar	max. 1 bar
Resolution:	0.1 mbar	0.1 mbar (0.1 mmHg)
additional pressure units:	bar, kPa, MPa, PSI, mmHg, mH ₂ O	bar, kPa, MPa, PSI, mH ₂ O
Accuracy: (typ. values)		
hysteresis and linearity:	± 0.2 % FS	± 0.1 % FS
temperature-influence from 0-50 °C:	± 0.4 % FS	± 0.4 % FS
Option higher accuracy available:	yes	already integrated
Pressure connection:	2	

For type specific data please refer to page 65.

*1 measuring range possible by changing the pressure connection ports

*2 without changing the pressure connection ports

Special design type:



Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)
device type with Ex-protection

MANOMETER FOR OVER/UNDER PRESSURE AND PRESSURE DIFFERENCE.



GMH 3161-13

Product-ID: 600409

Device -100 ... 2000 mbar (± 2000 mbar ^{*1})

GMH 3181-13

Product-ID: 600421

Device -100 ... 2000 mbar (± 2000 mbar ^{*1}), with data logger

Specifications:

Measuring range: -100 ... 2000 mbar
(optional: -1000 ... 2000 mbar)

Overload: max. 4 bar

Resolution: 1 mbar

additional pressure units: bar, kPa, MPa, PSI, mmHg, mH₂O

Accuracy: (typ. values)

hysteresis and linearity: ± 0.2 % FS

temperature-influence from 0-50 °C: ± 0.4 % FS

Option higher accuracy available: yes

Pressure connection: 2

Option:

MB -1...2 BAR

measuring range: -1000 ... 2000 mbar ^{*2}

For type specific data please refer to page 65.

^{*1} measuring range possible by changing the pressure connection ports

^{*2} without changing the pressure connection ports

VAKUUM- OR BAROMETER



FOR ABSOLUTE PRESSURE MEASUREMENT

GMH 3161-12

Product-ID: 600407

Device 0 ... 1300 mbar abs.

GMH 3181-12

Product-ID: 600419

Device 0 ... 1300 mbar abs., with data logger

Specifications:

Measuring range: 0 ... 1300 mbar abs.

Overload: max. 4 bar abs.

Resolution: 1 mbar

Pressure units: mbar, bar, kPa, MPa, PSI, mmHg, mH₂O

Accuracy: (typ. values)

hysteresis and linearity: ± 0.2 % FS

temperature-influence from 0-50 °C: ± 0.4 % FS

Option higher accuracy available: yes

Pressure connection: 1

Sonderfunktion:

SeaLevel-correction:

The barometric air pressure can also be related to sea level „zero“. (Correction of air pressure is achieved by entering m above „zero“)

For type specific data please refer to page 65.

ACCESSORIES

Options:

Higher sensor accuracy

by multi point calibration

Note: not possible for all device types!

ISO-WPD5

Product-ID: 602514

Certificate of calibration: 5 points increase, 5 points decrease.

ISO-WPD10

Product-ID: 602565

Certificate of calibration: 10 points increase, 10 points decrease.

Accessories and spare parts:

GNG 10/3000

Product-ID: 600273

plug-in power supply

GRS 3100

Product-ID: 601097

interface converter, RS232, electrically isolated

USB 3100 N

Product-ID: 601092

interface converter, USB, electrically isolated

GDZ-01

Product-ID: 601541

PVC-tube (5 bar) 6/4 (6 mm outside-Ø, 4 mm inside-Ø)

GDZ-08

Product-ID: 601555

Double adapter for 6/4 tube to 6/4 tube

GDZ-18

Product-ID: 601576

tube clamp for 6/4 tube

GDZ-21

Product-ID: 601582

T-piece for 6/4 tubes

GKK 3000

Product-ID: 601048

case (275 x 229 x 83 mm) with cut-outs for GMH3xxx

for miscellaneous accessories p.r.t. pages 62 - 63

Special design type:



Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)
device type with Ex-protection

COMPLETE SOLUTIONS



GMH 3161-07-WPD5

Product-ID: 602684

Complete Solution incl. certificate of calibration WPD5 (5 points ascending / descending) and case GKK 3000.

GMH 3161-12-WPD5

Product-ID: 602685

Complete Solution incl. certificate of calibration WPD5 (5 points ascending / descending) and case GKK 3000.

GMH 3161-13-WPD5

Product-ID: 602686

Complete Solution incl. certificate of calibration WPD5 (5 points ascending / descending) and case GKK 3000.

FINE MANOMETER



**FOR OVER/UNDER PRESSURE
OR PRESSURE DIFFERENCE**

GDH 200 - 07

Product-ID: 601254

0.00 ... 19.99 / 199.9 mbar (± 199.9 mbar)^{*1}

Functions:

- Differential and relative pressure measurement
- Autorange
- Excellent zero point stabilisation
- Manual slope adjustment
- 4 selectable measuring units: Pa, mbar, mmHg, PSI
- automatic off-function: 1 ... 120 min

Specifications:

Measuring range:	0.00 ... 19.99 or 20.0 ... 199.9 mbar (hPa) 0.00 ... 19.99 or 20.0 ... 150.0 mmHg 0.000 ... 1.999 PSI / 0 ... 1999 Pa
Resolution:	automatic change 0.1 / 0.01
Overload:	max. 500 mbar
Accuracy:	(at nominal temperature = 25 °C and automatic zero point-adjustment)
Measuring range: up to 200 mbar	± 0.2 % f.s. hysteresis and linearity, ± 0.4 % f.s. temperature drift from 0 ... 50 °C
Measuring range: up to 20 mbar	± 1 % f.s. hysteresis and linearity ± 2 % f.s. temperature drift from 0 ... 50 °C
Sensor:	piezoresistive relative pressure sensor
Pressure connection:	2 pressure port sockets made of nickel-plated brass, for flexible pressure tubings 6 x 1 mm (4 mm inner-diameter), approx. 11 mm protruding
Working temperature:	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
Display:	3½ digit LCD display, approx. 13 mm high
Pushbuttons:	3 membrane keys
Power supply:	9 V battery
Power consumption:	approx. 250 µA (= 1200 operating hours)
Housing:	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +11 mm pressure port sockets
Weight:	approx. 135 g (incl. battery)
Zero point-adjustment:	automatically
Slope-adjustment:	manually
Scope of supply:	Device, battery, manual

^{*1} measuring range possible by changing the pressure connection ports

Tubes, clamps, adapters, accessories, etc. p.r.t. pages 62/63

MANOMETER



**FOR OVER/UNDER PRESSURE
OR PRESSURE DIFFERENCE**

GDH 200 - 13

Product-ID: 601256

0.0 ... 199.9 / 1999 mbar (± 1999 mbar)^{*1}

Functions:

- Differential and relative pressure measurement
- Autorange
- Excellent zero point stabilisation
- Manual slope adjustment
- 3 selectable measuring units: mbar, mmHg, PSI
- automatic off-function: 1 ... 120 min

Specifications:

Measuring range:	0.0 ... 199.9 or 200 ... 1999 mbar (hPa) 0.0 ... 199.9 or 200 ... 1500 mmHg 0.00 ... 19.99 PSI
Resolution:	automatic change 1 / 0.1
Overload:	max. 4000 mbar
Accuracy:	(at nominal temperature = 25 °C and automatic Zero point-adjustment)
Measuring range: up to 2000 mbar	± 0.2 % f.s. hysteresis and linearity ± 0.4 % f.s. temperature drift from 0 ... 50 °C
Measuring range: up to 200 mbar	± 1 % f.s. hysteresis and linearity ± 2 % f.s. temperature drift from 0 ... 50 °C
Sensor:	piezoresistive relative pressure sensor
Pressure connection:	2 pressure port sockets made of nickel-plated brass, for flexible pressure tubings 6 x 1 mm (4 mm inner-diameter).
Working temperature:	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
Display:	3½ digit LCD display, approx. 13 mm high
Pushbuttons:	3 membrane keys
Power supply:	9 V battery
Power consumption:	approx. 250 µA (= 1200 operating hours)
Housing:	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +11 mm pressure port sockets
Weight:	approx. 135 g (incl. battery)
Zero point-adjustment:	automatically
Slope-adjustment:	manually
Scope of supply:	Device, battery, manual

^{*1} measuring range possible by changing the pressure connection ports

Tubes, clamps, adapters, accessories, etc. p.r.t. pages 62/63

VAKUUM-/BAROMETER OR MANOMETER



FOR ABSOLUTE PRESSURE

GDH 200 - 14

Product-ID: 601258

0 ... 11000 mbar abs.

Functions:

- Sea level-adjustment possible
- suitable for relative pressure measurement (-1...10 bar) by use the zero function
- Manual slope and offset adjustment
- 4 selectable measuring units: mbar, mmHg, bar, PSI
- automatic off-function: 1 ... 120 min

Specifications:

Measuring range:	0 ... 11000 mbar (hPa) abs. 0 ... 8250 mmHg abs. 0.000 ... 11.000 bar abs. 0.00 ... 160.00 PSI abs.
Resolution:	1 mbar, 1 mmHg, 0,001 bar, 0.02 PSI
Overload:	max. 13 bar abs.
Accuracy: (at nominal temperature = 25 °C)	± 3 mbar or 0.10 % of m.v. (whichever is higher) ± 0.3 % f.s. temperature drift from 0 ... 50 °C
Sensor:	piezoresistive absolute pressure sensor
Pressure connection:	pressure port socket made of nickel-plated brass, for flexible pressure tubings 6 x 1 mm (4 mm inner-diameter), approx. 11 mm protruding
Working temperature:	-25 ... 50 °C, 0 ... 95 % RH (non-condensing)
Display:	4½ digit LCD display, approx. 12 mm high
Pushbuttons:	3 membrane keys
Power supply:	9 V battery
Power consumption:	approx. 40 µA (= 7500 operating hours)
Sea level correction:	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
Housing:	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +11 mm pressure port sockets
Weight:	approx. 135 g (incl. battery)
Zero point-adjustment:	manually
Slope-adjustment:	manually
Scope of supply:	Device, battery, manual

Tubes, clamps, adapters, accessories, etc. p.r.t. pages 62/63

BAROMETER



GPB 3300

Product-ID: 600129

300.0 ... 1100.0 mbar abs.

Functions:

- manual offset and slope adjustment
- sea level-adjustment possible
- 2 measuring units selectable: mbar, mmHg
- Auto-off-function: 1 ... 120 min

Specifications:

Measuring ranges:	300.0 ... 1100.0 mbar (hPa) abs. 225.0 ... 825.0 mmHg abs.
Max. Overload:	4000 mbar or 3000 mmHg
Accuracy: (at nominal temperature)	± 2.0 mbar (typ. at 0 - 50 °C)
Sensor:	piezoresistive abs. pressure sensor integrated in housing.
Nominal temperature:	25 °C
Operating temperature:	-25 ... 50 °C, 0 ... 95 % RH (non-condensing)
Display:	4½-digit, 12 mm high LCD-display
Pushbuttons:	3 membrane key for ON/OFF, min-/max-value memory, tara, etc.
Power supply:	9 V battery
Power consumption:	approx. 60 µA (= 5000 operating hours)
Zero point-adjustment:	manually
Slopeadjustment:	manually
Sea level correction:	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
Housing:	impact resistant ABS housing
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 135 g (incl. battery)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

- GKK 252**
Product-ID: 601056
small case (235 x 185 x 48 mm) with foam lining
- GB 9 V**
Product-ID: 601115
spare battery

ALTIMETER / BAROMETER / THERMOMETER
PRECISION BAROMETER

GTD 1100

Product-ID: 600132

300.0 ... 1100.0 mbar abs. + Altimeter

General:

- Device for simple determination of a building size (steeples, skyscrapers, bridges, etc.)
- **further application areas:** hiking, hang gliding, cycling, motorsports, etc.

Functions:

- manual offset and slope-adjustment
- sea level-adjustment possible
- tendency-meter, summing-function (ascendency, descendency, overall)
- over 6.000 operating hours

Specifications:

Measuring ranges:	
Temperature:	-10.0 ... +50.0 °C, or 14.0 ... +122.0 °F,
Pressure:	300.0 ... 1100.0 mbar abs. or 225.0 ... 825.0 mmHg abs.
High:	-500 ... -200 m, res. 1 m or -1640 ... -655 ft, res. ~5 ft -200 ... 2000 m, res. 0.5 m or -654 ... 1999 ft, res. ~2 ft 2000 ... 9000 m, res. 1 m or 2000 ... 19999 ft, res. ~5 ft
Measuring units:	hPa / mbar, mmHg, °C, °F, m, ft
Max. Overload:	pressure: 4000 mbar or 3000 mmHg
Accuracy: (at nominal temperature = 25 °C)	
Temperature:	±1 % FS ± 1 digit
Absolute pressure:	±1.5 mbar ±1 digit (750 ... 1100 mbar), with certificate of calibration: ±0.5 mbar ± 1 digit
Sensor:	absolute pressure sensor, integrated in housing.
Operating conditions:	-10 ... +50 °C; 0 ... 80 % RH (non condensing)
Storage temperature:	-20 ... +70 °C
measuring-frequency:	1 measuring / s
Display:	approx. 12 mm high, 4½-digit LCD-display
Sum function:	The covered altitude can be displayed (ascent, descent, total)
Tendency indicator (for barometer):	Air pressure rising/falling

FOR PROFESSIONAL USAGE IN MEASUREMENT
TECHNOLOGY AS WELL
AS IN SPARE TIME SPORTS

Sea level correction:	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
Pushbuttons:	keypad (3 push-buttons) for On/ off, min/max-value, tara-function, zero-, slope-, and sea level-adjustment slide switch for unit selection.
Power supply:	9 V battery
Power consumption:	approx. 50 µA (= over 6.000 operating hours)
System Notifications:	permanent self-diagnosis and error indication.
Housing:	impact resistant ABS housing
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 135 g (incl. battery)
Scope of supply:	Device, battery, manual

Accessories and spare parts:

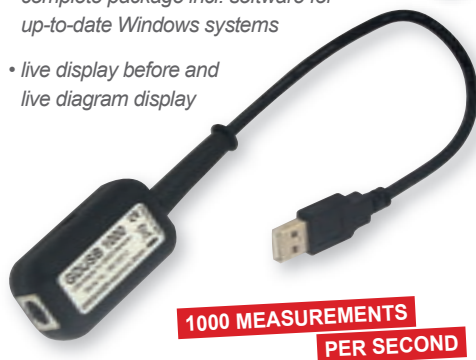
- GB 9 V**
Product-ID: 601115
spare battery
- ISO-WPD 5**
Product-ID: 602514
5 points rising, 5 points falling
- GKK 252**
Product-ID: 601056
small case (235 x 185 x 48 mm) with foam lining

calibration certificate, p.r.t. page 7

UNIVERSAL PRESSURE MEASUREMENT SYSTEM

HIGHLIGHTS:

- complete package incl. software for up-to-date Windows systems
- live display before and live diagram display



1000 MEASUREMENTS
PER SECOND

GDUSB 1000

Product-ID: 600271

Full set incl. software for high-speed live measurement data logging GDUSB FastView (p.r.t. page 78)

Applications:

- Test rigs and laboratory experiments
- Detection of pressure peaks
- Monitoring system pressure curves e.g. for process technology, engineering, etc.
- Live and offline displaying of measuring data of several GDUSB 1000 e.g. for data evaluation and logging, for optimization of processes and other statistics
- Multi-channel measurements with high recoding rate
- Test setups or on-site recordings with GDUSB 1000

Functions:

The GDUSB 1000 adapter allows to connect a standard pressure sensor of type GMSD / MSD directly to the USB interface of a PC. It provides 4 channels, i.e. currently measured value, average value, max and min value. There are two operation modes:

Fast mode:

A GDUSB 1000 in fast mode can output up to 1000 measured values per second. The provided software displays the data and records for later usage. The software can be configured to start or stop the recording with several selectable trigger conditions

Standard mode:

A GDUSB 1000 in standard mode can be responded similarly to GMH handheld devices or EASYBus modules (up to 32 measurements per second). Then a long term recording can be archived with the software EBS 20M / EBS 60M (2 measurements per second).

Specifications:

Measuring ranges:	depends on connected sensor
Max. range:	-19999 ... +19999 digit
Pressure units:	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH ₂ O, selectable, depending on connected sensor
Measuring rate:	1000 measurements / s (= 1 ms)
Accuracy:	±0.2 % FS (at nominal temperature = 25 °C)
Recording interval:	1 ms (FAST mode) ... 10 s, adjustable via software
Connections:	
PC:	standard USB plug (type A)
GMSD/MSD:	6-pole screened mini-DIN socket with locking
Power supply:	supplied by USB interface
Dimensions:	56 x 31 x 24 mm
Cable length (USB):	approx. 20 cm

Suitable GMSD/MSD sensors for GDUSB 1000 are at page 62/63.

VOLUMETRIC FLOW ANEMOMETER : FLOW SPEED MEASURING DEVICE

FUNCTIONS:

- AUTO OFF
- BAT
- HOLD
- MIN MAX



GVA 0430

Product-ID: 603526

Volumetric flow anemometer

General:

- flow rate
- volumetric flow
- temperature

Application:

Ventilation and air conditioning technology, industrial drying technology, meteorology, water sport, air gliding, etc.

Specifications:

Measuring ranges:	
Flow rate:	0.40 m/s ... 30.00 m/s
Temperature:	-10.0 ... +50.0 °C
Resolution:	0.01 m/s or 0.1 °C
Accuracy: (at nominal temperature = 25 °C)	
Flow rate:	±2 % FS
Temperature:	±0.6 °C
Measuring probes:	vane probe, 70 mm rotor-Ø and precision-NTC
Meas. interval:	1 measuring / s
Display:	2-line LCD display, 37 x 42 mm
Working temperature:	-10 ... +50 °C
Relative humidity:	0 ... +95 % RH (non-condensing)
Storage temperature:	-10 ... +50 °C
Interface:	serial interface RS232
Special function:	averaging of 8 meas. points, averaging throughout meas. time, volumetric flow calculation
Power supply:	9 V battery, external power supply
Operating time:	100 hours (with alkaline)
Dimensions:	Device: 183 x 76 x 45 mm (H x W x D), Probe: 155 x 75 x 42 mm (H x W x D)
Weight:	approx. 350 g (meas. device and probe), approx. 1.05 kg (cpl. in case)
Scope of supply:	Device, interface RS232, software, battery, case, manual

Accessories and spare parts:

GNG 8901

Product-ID: 601131
power supply



TA 888 N

Product-ID: 602574

Thermal anemometer

General:

- high accuracy
- smallest and slow air flows measurable
- slimline telescopic probe

Application:

Classic application of the TA 888 N is flow measurement in ventilation ducts. Due to its high resolution of 0.01 m/s even smallest changes of the flow velocity can be easily and fast detected. The sensor's small dimensions ensure measurements yet in thin tubes and confined spaces. Further applications are function and dirt checks of filters and exhaust ducts as well as measurements of room air velocity, e.g. for workspace checks.

Specifications:

Measuring range:	
Flow:	0.10 m/s ... 15.00 m/s
Temperature:	0.0 ... +50.0 °C
Resolution:	0.01 m/s or 0.1 °C
Accuracy:	
Flow:	0 ... 1 m/s ±0.25 m/s 1 ... 5 m/s ±0.5 m/s 5 ... 10 m/s ±1.0 m/s 10 ... 15 m/s ±2.0 m/s
Temperature:	±1 °C
Display:	LCD-Anzeige
Meas. interval:	approx. 0.8 s
Working temperature:	0 ... 50 °C
Relative humidity:	0 ... 80 % RH
Power supply:	9 V battery, external power supply
Dimensions:	- Housing: 210 x 75 x 50 mm (H x W x D) - Telescopic probe: extendable up to 1150 mm (incl. handle), Ø 10 mm - Cable: 2 m
Weight:	approx. 275 g (only measuring device) approx. 1800 g (complete set in case)
Scope of supply:	Device, battery, probe, power supply, USB-cable, software, case, manual

PHONOMETER

**GSH 8922**

Product-ID: 602739

Phonometer

General:

Compensation of the background-noise for measuring sound-sources in the fore-ground. Weighting of the sound level via two weighting-filters according to the IEC standard. Assignment of the max/min value during one measuring period.

Specifications:

Measuring ranges:	30 - 130 dB (6 ranges) 30 - 80, 40 - 90, 50 - 100, 60 - 110, 70 - 120, 80 - 130 dB manual or automatic selection of range
Resolution:	0.1 dB
Accuracy:	±1.5 dB
Norms:	ANSI S1.4 and IEC 651 Type 2
Frequency rate weighted:	31.5 Hz - 8 kHz
Evaluation weight filter:	2, selectable
Type A:	evaluation of the spectrum in accordance with the perceptive faculties of the human ear. (Sound insulation establishment, environmental analysis)
Type C:	linear evaluation of spectrum (sonic-analysis of engines or machines)
Weight of time factor:	fast or slow
Microphone:	6 mm Electret condensator microphone
Display:	3½-digit LCD-backlight display, additionally quasi-analog bar graph
Analog output:	AC: 0.707 Vrms, DC: 10 mV DC / dB
Working temperature:	4 ... +50 °C
Relative humidity:	10 ... +90 % RH
Storage temperature:	-20 ... +60 °C
Interface:	RS232, (2400BD8N1)
Power supply:	9 V battery, external 9 V power supply
Operating time:	20 hours (with alkaline)
Housing:	256 x 80 x 38 mm (H x W x D)
Weight:	approx. 240 g (device)
Scope of supply:	Device with analog output, battery, case, manual

ROTATION SPEED MEASURING DEVICE



**VELOCITY AND LENGTH MEASUREMENT
VIA MEASURING WHEEL**

rotaro 3

Product-ID: 603861

Rotation speed measuring device via light and reflecting label or measuring tip

Application:

The handheld tachometer rotaro 3 is useful at the installation and setup of plants and machinery as well as for service application, monitoring production processes or use at development laboratory. The rotaro 3 can measure rotary speed of for example motors, turbines, pumps as well as stirring devices, centrifuges and haulage installations, foil or textile manufacturing units, coil and transformer winding machines, machine tools, etc. Furthermore it can measure running speed and length of foils and band of all kind.

Specifications:

Measuring range:	
rpm:	1.00 ... 99.999 min ⁻¹ (optical measurement) 1 ... 19.999 min ⁻¹ (mechanical measurement)
Velocity:	Ø 0.1 m: 0.10 ... 1999 m/min Ø 6": 0.10 ... 1524 m/min (other units possible: m/sec, ft/min, in/min ...)
Length:	0 ... 99999 m / ft / in
Accuracy:	
rpm:	± 0.02 % of m.v. (± 1 digit)
Measuring distance:	max. 600 mm
Measuring principle:	optical / mechanical
Memory function:	min- / max- value memory, average and last value
Power-off:	automatically after 30 s
Display:	5-digit LCD display with 10 mm height of digits and floating point at range change
Power supply:	2 x AA battery or accumulator
Working temperature:	0 ... 50 °C
Storage temperature:	-20 ... +70 °C
Housing:	plastic ABS
Approval:	CE
Dimensions:	175 x 60 x 28 mm (H x W x D)
Weight:	250 g
Scope of supply:	Rotation speed measuring device incl. reflecting labels, measuring tip, hollow tip, measuring wheels (Ø 0.1 m and Ø 6"), extension shaft, calibration certificate, case, battery, manual

ROTATION SPEED MEASURING DEVICE



**VIA LIGHT AND
REFLECTING LABEL**

ecotach

Product-ID: 603673

Rotation speed measuring device via light and reflecting label

Application:

The handheld tachometer ecotach is useful at the installation and setup of plants and machinery as well as for service application, monitoring production processes or use at development laboratory. It can measure rotary speed of for example motors, turbines, pumps as well as stirring devices, centrifuges and haulage installations.

Specifications:

Measuring range:	1 ... 60.000 rpm
Accuracy:	± 0.02 % of m.w. (± 1 digit)
Measuring distance:	max. 450 mm
Measuring principle:	optical
Power-off:	automatically after 30 s
Display:	5-digit LCD display for measuring value with floating point, measuring unit, trigger signal, low-battery warning, notification when battery is low
Power Supply:	2 x AA battery or accumulator
Working temperature:	0 ... 50 °C
Housing:	plastic ABS
Approval:	CE
Dimensions:	145 x 60 x 28 mm (H x W x D)
Weight:	147 g
Scope of supply:	Rotation speed measuring device incl. reflecting labels, transportation slip case, battery, manual



GKK 3000



GKK 1105



GKK 3500



GKK 1420



GKK 252



GKK 3100



GKK 3600



GKK 3700



GKK 4400



Color may vary.



GKK 5240 with foam lining for individual adaption

DEVICE CASE

GKK 3000

Product-ID: 601048
with punched lining for 1 device of the GMH 3xxx-series (275 x 229 x 83 mm)

GKK 1105

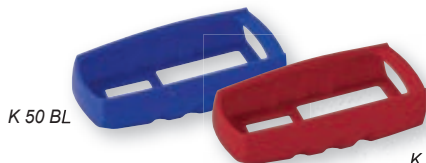
Product-ID: 601050
with punched lining for 1 device of the GMH 3xxx- or 5xxx-series (340 x 275 x 83 mm)

GKK 3500

Product-ID: 601052
with punched lining for 1 device of the GMH 3xxx- or 5xxx-series (394 x 294 x 106 mm)

GKK 1420

Product-ID: 601054
with punched lining for 2 devices of the GMH 3xxx-series (450 x 360 x 123 mm)



K 50 BL

K 50 RE

SILICONE PROTECTION COVER

K 50 BL

Product-ID: 601352
Silicone protection cover blue, suitable for: GMH 5xxx, GMH 2710

K 50 RE

Product-ID: 607456
Silicone protection cover red, suitable for: GMH 5xxx, GMH 2710

UNIVERSAL CASE

GKK 252

Product-ID: 601056
with foam lining for universal use (235 x 185 x 48 mm)

GKK 3100

Product-ID: 601058
with foam lining for universal use (275 x 229 x 83 mm)

GKK 1100

Product-ID: 601060
with foam lining for universal use (340 x 275 x 83 mm)

GKK 3600

Product-ID: 601062
with foam lining for universal use (394 x 294 x 106 mm)

GKK 3700

Product-ID: 601064
with foam lining for universal use (450 x 360 x 123 mm)

UNIVERSAL CASE

GKK 4400

Product-ID: 602067
robust case for up to 10 devices or accessories, foam for water analysis (closed cell structure), with bottle and electrode retainer. Dimensions: 500 x 405 x 140 mm

GKK 5240

Product-ID: 602068
robust case, suitable for universal applications due to possibility of individual adaption of its foam lining, pressure balance possible, water-protected. Dimensions: 520 x 415 x 200 mm



GMH 1300

GEH 1 with probe

MOUNT

GMH 1300

Product-ID: 601091
Magnetic mount for hanging up devices with integrated suspension clip

GEH 1

Product-ID: 601089
Electrode retainer for measuring electrodes and probes suitable for our electrodes (pH/redox, conductivity, oxygen, ...) and temperature probes with plastic handle
Devices and accessories are not included in scope of supply.

HANDHELD INSTRUMENTS - ACCESSORIES



ST-R1

ST-R2

ST-KO

ST-KF

PROTECTION BAG

**ST-R1***Product-ID: 601066*

Nappa leathern device protection bag with 1 round cut-out for sensor connection suitable for:

GMH 3111, GMH 3151, GMH 3161-12, GMH 3181-12, GMH 3431, GMH 3451, GMH 3611, GMH 3651, GMH 3692, GMH 3710, GMH 3750, GMH 175

ST-R1-US*Product-ID: 605929*

Nappa leathern device protection bag with 1 round cut-out for sensor connection with strap

**ST-R2***Product-ID: 601068*

Nappa leathern device protection bag with 2 round cut-outs for sensor connection suitable for:

GMH 3156, GMH 3161-002, GMH 3161-01, GMH 3161-07, GMH 3161-13, GMH 3181-002, GMH 3181-01, GMH 3181-07, GMH 3181-13

**ST-R3***Product-ID: 605931*

Nappa leathern device protection bag with 2 round cut-outs for sensor connection suitable for: GMH 3511/31/51

**ST-N1***Product-ID: 601070*

Nappa leathern device protection bag with 1 rectangular cut-out for sensor connection suitable for:

GMH 3210, GMH 1150, GMH 1170

**ST-N2***Product-ID: 601072*

Nappa leathern device protection bag with 2 rectangular cut-outs for sensor connection suitable for:

GMH 3230, GMH 3251

**ST-RN***Product-ID: 601074*

Nappa leathern device protection bag with 2 round cut-outs for sensor connection (1 x round, 1 x rectangular) suitable for:

GMH 3330, GMH 3350, GMH 3830, GMH 3850

ST-KO*Product-ID: 601078*

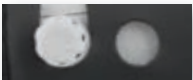
device protection bag, without cutouts suitable for: GTD 1100, GPB 3300

**ST-KN***Product-ID: 601080*

device protection bag with rectangular cut-out for sensor connection suitable for: GTH 1150, GTH 1170

**ST-KR***Product-ID: 601082*

device protection bag with round cut-out (central) suitable for: GTH 175, GOX 20, GOX 100, GLF 100, GLF 100 RW

**ST-KF***Product-ID: 601084*

device protection bag with punched-out slot for a sensor head suitable for:

GFTH 95, GFTH 200, GFTB 200, GTH 200 air

**ST-KD***Product-ID: 601086*

device protection bag with 2 round cut-outs suitable for:

GDH 200 - 07, GDH 200 - 13, GDH 200 - 14, GMR 110



WLAN 3100

LAN 3100

REMOTE OPERATION

LAN 3100*Product-ID: 602842*

Gigabit Ethernet to USB converter

General:

For inquiring EASYBus modules, GMH handheld devices with interface or GDUSB 1000 via network. 2 USB ports for direct connection of EBW 3, USB 3100 N or GDUSB 1000 (up to 15 with USB hub). Connection of EBW 1, EBW 64 or EBW 240 via USB adapter (included to scope of supply)

Accessories:

power supply unit, USB adapter, manual, driver CD

WLAN 3100*Product-ID: 606061*

Gigabit-Ethernet or Wireless-LAN to USB converter

General:

For accessing EASYBus modules, GMH handheld devices with interface or GDUSB 1000 via local network or via WiFi. With 2 USB ports for direct connection of one or more EBW 3, USB 3100N or GDUSB 1000 (up to 15 with a USB hub). With an USB to serial converter for connection of an EBW 1, EBW 64 or EBW 240.

Scope of delivery:

WLAN 3100, mains adapter, USB to serial converter, manual, CD



USB 3100 N



USB Adapter



GRS 3105



GRS 3100



USB 5200

INTERFACE

USB 3100 N

Product-ID: 601092

Interface converter GMH 3xxx <=> PC, for electrically isolated connection of a GMH 3xxx to the USB-interface of your PC. (Converter supplying from PC interface)

USB 5100

Product-ID: 601095

Interface converter GMH 5xxx <=> PC, for electrically isolated connection of a GMH 5xxx to the USB-interface of your PCs. (Converter supplying from PC interface)

USB 5200

Product-ID: 607177

USB level converter for GMH 5000 Handheld Instruments (such as USB 5100). With additional analog output, can be set on the device.

GRS 3100

Product-ID: 601097

Interface converter GMH 3xxx <=> PC for electrically isolated connection of a GMH 3xxx to the RS232-interface.

GRS 3105

Product-ID: 601099

5-point interface converter GMH 3xxx <=> PC, connection of 5 GMH 3xxx to the RS232-interface of your PC. (Converter supply achieved via permanently connected power supply) Device delivered with 9-pin Dsub extension cable and 5 connection cables VEKA3105.

VEKA 3105

Product-ID: 601103

Spare connection cable GMH 3xxx <=> GRS 3105

GSA 25S-9B

Product-ID: 601105

Connection adapter (25-pin Dsub-adapter <=> 9-pin Dsub-socket)

GSA 9S-25B

Product-ID: 601107

Connection adapter (9-pin Dsub-adapter <=> 25-pin Dsub-socket)

USB-Adapter

Product-ID: 601109

for connection of a RS232-interface converter to the USB-interface



GAM 3000

SWITCHING MODULES

GAM 3000

Product-ID: 601132

Switching module for the GMH 3xxx-series with alarm

General:

The GAM 3000 is an alarm or control output for the devices of the GMH 3xxx-series with alarm output function. The GAM 3000 is controlled via the serial interface of the GMH 3xxx. The setting of the alarm/switching limits are carried out the GMH 3xxx as usual.

You can choose between 2 different switching modes:

- **Alarm output:** Relay switches when the measuring value is no longer within the min/max alarm limit values or an error state occurs at the set channel.
- **Control output:** In this case the min/max values are not used as alarm points but as on/off switching points. In case of an error state the relay switches in its preferred state "off".

The desired switching function can be selected via an externally accessible miniature switch.

Specifications:

Power supply:	220 / 240 V, 50 / 60 Hz
Switching output:	controlled power socket, selector switch to choose switching state normally-open or normally-closed
Switching power:	10 A (ohmic load)
GMH-connection:	GMH 3xxx interface and supply (integrated power supply 10.5 V/10 mA) via 1 m cable each, permanently connected to GAM 3000.
Dimensions:	(controller) 112 x 71 x 48 mm (H x W x D)

PLUG AND CABLE

MINIDIN 4S

Product-ID: 601111

Mini-DIN plug, 4-pin, with lock and for self installation

AAG2M

Product-ID: 601112

2 m analog output cable for GMH3xxx-series, 2 x banana plug and 3.5 mm jack connector

AAG 5000

Product-ID: 603871

Cable for analog output, with cable length 1 m, connectors: 1 x bayonet socket LTW 4-pole, 1 x loose ends, with ferrules, application: GMH 5xxx.



GNG 10



GLG 1300



GB 9 V GLI 9 V GAK 9 V

Picture similar



GNG 10 / 3000

POWER SUPPLY

GB 9 V

Product-ID: 601115

Spare battery 9 V, type IEC 6F22

GLI 9 V

Product-ID: 601117

Lithium battery 9 V, approx. 1200 mAh

GAK 9 V

Product-ID: 601118

NiMH accu 9 V

AAA-AKKU

Product-ID: 601121

AAA accu, 1.2 V, 2 pieces, NiMH accu

GLG 1300

Product-ID: 601126

Rechargeable battery charger for two 9 V accus, AA- or AAA-batteries at the same time

GNG 10

Product-ID: 600272

Plug-in power supply (220 / 240 V, 50 / 60 Hz), output voltage: 10.5 V / 10 mA, suitable for devices with 2.5 mm jack connector (e.g. for devices of the series GDH ...)

GNG 8901

Product-ID: 601131

Plug-in power supply (220 / 240V, 50 / 60 Hz), output voltage: 9 V / 500 mA, suitable for devices with DC device socket 5.4 / 2.1 (suitable for GVA 0430)

GNG 5 / 5000

Product-ID: 602287

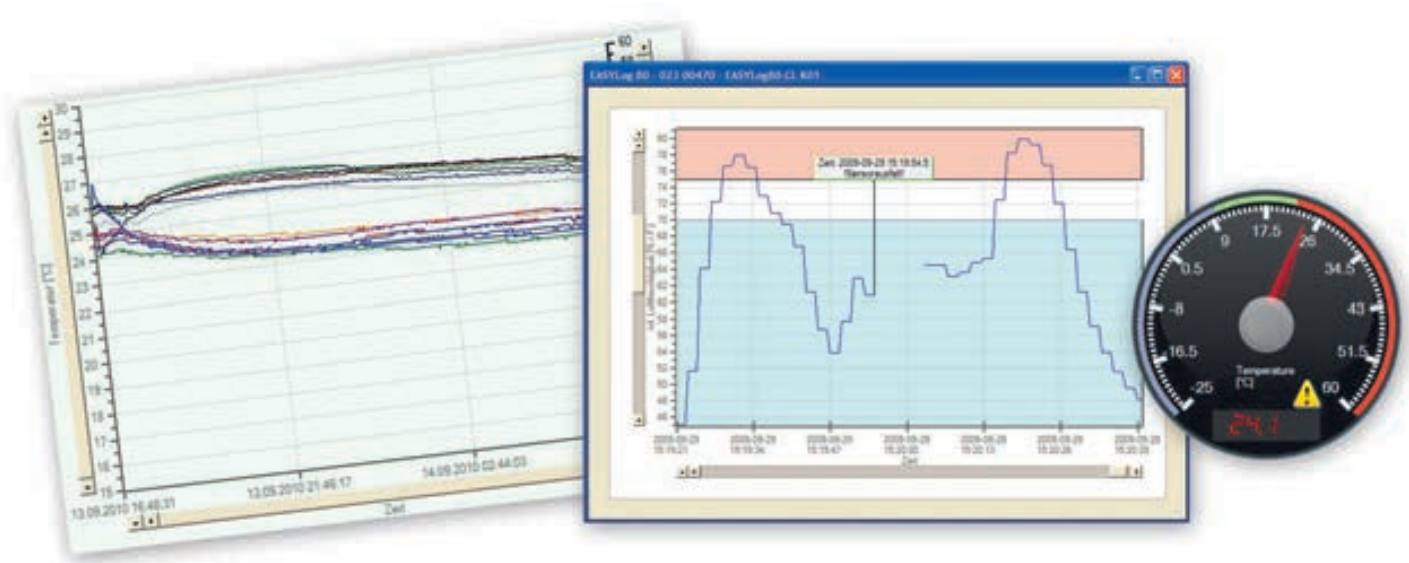
Plug-in power supply (220 / 240 V, 50 / 60 Hz), output voltage: 5 VDC, suitable for devices with BNC (e.g. for devices of the series GMH5xxx)

GNG 10 / 3000

Product-ID: 600273

Plug-in power supply (220 / 240 V, 50 / 60 Hz), output voltage: 10.5 V / 10 mA, suitable for devices with power supply socket (e.g. for devices of the series GMH3xxx)

SOFTWARE

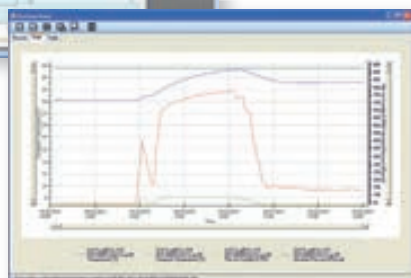
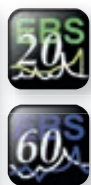


Application:	EBS 20M EBS 60M	EASYControl net	GSOFT 3050	GSOFT 40k	MINISOFT	EASYBus Configurator	GDUSB FastView
GMH 3xxx and GMH 5xxx	•	•	•				
EASYBus and EASYLog	•	•		•		•	
TLogg				•	•		
GDUSB 1000							•
Executable from / support from Windows	7	7	XP/7	XP/7	XP/7	7	7
Several interfaces usable at the same time	• *	• *					• ***
Live measuring value recoding and displaying	•	•					•
Number of data points (recommendation)	up to 1 Mio.	from 1 Mio.					up to 10 Mio.
Stop logger and delete memory			•	•	•	•	
Read-out logger			•	•	•		
Change alarm boundaries		•		•	•	•	
Change correction (offset, slope)			•		•	•	
Change label		•		•	•	•	
Network compatible (Simultaneous access to data by several PCs)		•					
Access via SQL queries possible		•					
Pilot EBB Out		• **					
Subject to a charge	•	•	•	•			
Application	Lab, test rig	Long-term monitoring	Read-out data logger			Start-up	Lab, test rig

* GMH 3xxx/5xxx and EASYBus can be used simultaneously.

** Interface-spanning, alarm of GMH 3xxx/5xxx can be assigned to EBB-Out of EASYBus.

*** Recommended up to 5 GDUSB 1000 at full measuring speed, depending on CPU performance.



EBS 20M

Product-ID: 601158

20-Channel Measurement Data Logging

EBS 60M

Product-ID: 601160

60-Channel Measurement Data Logging

General:

This software makes up a low-price and comfortable multi-channel acquisition program for measuring data. The program is suitable for recording, monitoring, visualization and documentation.
Simultaneous use of different serial Bus-Systems: EASYBus, GMH handheld devices, GDUSB 1000

Application:

- On-site recording
- Process and system control, monitoring of climate and buildings
- Real time monitoring of measuring data i.e for data evaluation and logging for cost listings, overview of consumption, optimisation of processes, and other statistics

Functions:

- Simultaneous use of several serial interfaces
- Simultaneous use of different serial converters
- Quick and easy installation and handling
- Freely scaleable diagrams and alarm limits
- Visualization of actual measurements values
- Trusted data storage via SQL database
- Data export

Measuring Cycle:

smallest possible measuring cycle: 500 ms

System requirements:

1GHz CPU, 1GB RAM, 100 MB HDD, 1 available USB Port
Microsoft Windows 7 SP1 (32 or 64 Bit)
(not executable with Windows RT, ARM or Intel Itanium based Windows systems)



EASYControl net

Product-ID: 601152

Network-compatible data logging

General:

This software allows cost-efficient network-compatible data logging and monitoring systems. The visualization can be done by any computer in the network. EASYBus as well as GHM hand-held instruments are supported at the same time.

Secured:

- User accounts (with secured password transmission).
- Stored data can't be modified or manipulated later

Live:

- Constantly updating data
- Time assignment of the data
- Load ancient data and complete them with „live“ data

Peripheral:

- Uncoupling of data acquisition, data storage and visualisation
- Component communication via LAN
- Data visualisation by local network

Controlled:

- Trigger EBB Out switching channels via EASYBus

Clear:

- Different kinds of visualisation (table, digital, tachometer, chart)
- Display multiple graphs "live" in one chart
- Tooltips (with status information) for each measuring point in the chart
- Blinking symbols on error or status message in the visualisation
- Displaying error- and status messages.
- Displaying min- max- and mean value of the sensors
- Generate reports and store them as PDF, Excel or Word file

System requirements:

1GHz CPU, 1GB RAM, 100 MB HDD, 1 available USB Port
Microsoft Windows 7 SP1 (32 or 64 Bit)
(not executable with Windows RT, ARM or Intel Itanium based Windows systems)

LOGGER-SOFTWARE

**GSOFT 40K**

Product-ID: 601145

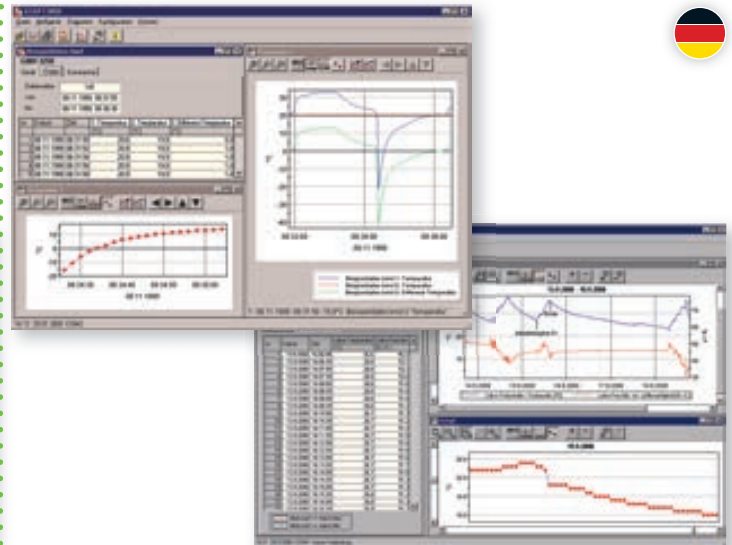
Windows-software for EASYLog and T-Logg with logger.

Functions:

- Display of the device status information
- Setting the alarm function
- Operation of the logger function
 - Start
 - Stop
 - Cycle time
 - Read data
 - Delete data
- Chart display
 - Various measuring sequences in one diagram
 - Real-time axis
 - Zoom function
 - Measurement points, legend and measurement cursor displayed or hidden
 - Add comments
 - Storing the window position
- Export function
 - Data export of series of measurements as a CSV file
- Print function
 - Print out the data as a table and/or trace
- Multilingual
 - German, English, Czech and French
- Automated retrieval and archiving
 - Readout of all connected data loggers to be fixed times
 - Automatic storage of measured values on the hard disk
 - Automatic export of measurement values as a CSV file
 - Automatic printout

System Requirements:

1 GHz CPU, 1 GB RAM, 100 MB HDD
 Windows 7 SP 1 (32 or 64 Bit)
 interface converter
 for GMH 3000: GRS 3100, GRS 3105 or USB 3100 N
 for GMH 5000: USB 5100
 (executable from Windows XP, not executable with Windows RT, ARM or Intel Itanium based Windows systems)

**GSOFT 3050**

Product-ID: 601336

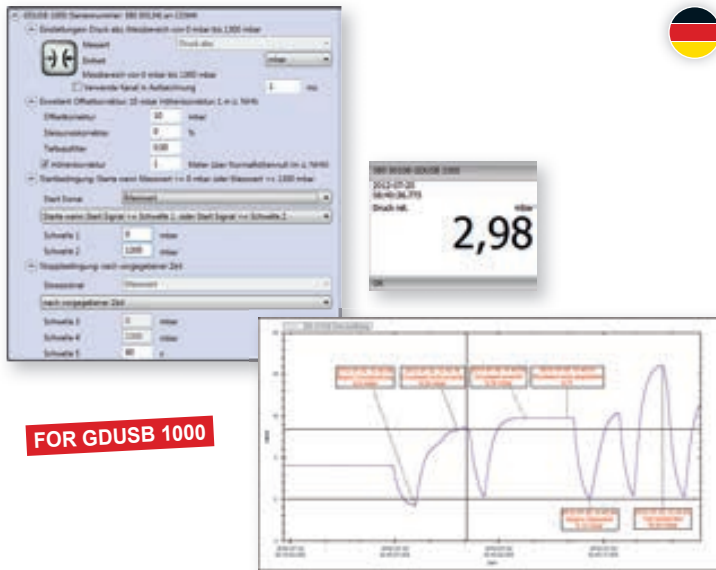
Windows-software for GMH3xxx- and GMH5xxx-series with logger.

Functions:

- Display of the GMH-information
- Setting of the alarm function
- Operation of the logger function
 - start
 - stop
 - Cycle time
 - Read data
 - Delete data
- Diagram display
 - The Logger data can be displayed in the form of a diagram
 - Real-time axis
 - Zoom function
 - Display of legend and marking of measuring points can be switched on / off
 - Add comments
 - Storing the window position
- Export function
 - Data export of series of measurements as a CSV file
- Logger data print-out
 - Data can be printed as tables or as diagram
- Multilingual
 - German, English, Czech and French

System Requirements:

1 GHz CPU, 1 GB RAM, 100 MB HDD
 Windows 7 SP 1 (32 or 64 Bit)
 interface converter
 for GMH 3000: GRS 3100, GRS 3105 or USB 3100 N
 for GMH 5000: USB 5100
 (executable from Windows XP, not executable with Windows RT, ARM or Intel Itanium based Windows systems)



GDUSB FastView

Software for high-speed live measurement data logging of fast pressure measurements

Functions:

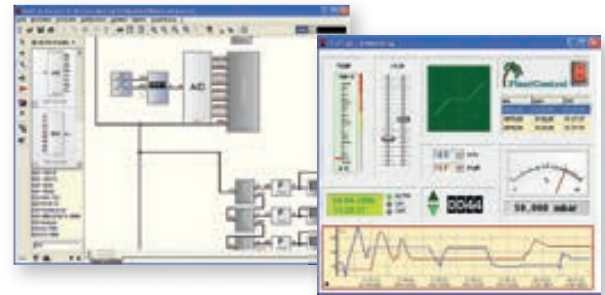
- Several GDUSB 1000 usable at one PC at the same time
- Measuring rates up to 1000 measurements per second
- Live display with current value and measurement diagram, even for highest measuring rates
- Different measuring rates for each sensor selectable
- Safe storage of measurement and sensor data in a SQL based data base
- Fast diagram display
- Comment function for measured values
- Data export as CSV file and as picture
- Multi-language software (German, English, French, Italian, Czech)
- 32-bit or 64-bit application

System requirements:

1GHz CPU, 1GB RAM, 100 MB HDD, 1 available USB Port
Microsoft Windows 7 SP1 (32 or 64 bit)
(not executable with Windows RT, ARM or Intel Itanium based Windows systems)

*This software uses open-source components under LGPL conditions.
The license terms of this software provide further information.*

	GMH 3000-DLL (windows library)	EASYBus-DLL (windows library)	GDUSB 1000-DLL (windows library)	Connection for PROFILAB Expert 4.0	Plug-in for IPETRONIK - IPeMotion (www.IPETRONIK.de)	inray - inMOVE GPL-Router- Plug-in (www.inray.de)	Protocol description (www.greisinger.de)
GMH 3xxx GMH 5xxx	●			●	●		●
EASYBus und EASYLog		●		●	●	●	●
TLogg		●					●
GDUSB 1000			●				
Start, stop, delete, read-out logger	●	●					
Program examples	Visual Studio, Excel VBA, Lab View		Visual Studio	data logging			
subject to costs	●	●	●			●	



ProfilLab-Expert 4.0

Product-ID: 603510

Development of metrological control

General:

- The software ProfilLab-Expert allows you to develop your own digital or analog measuring technology requirement. It doesn't matter if you want to create analog measurements or digital controls - you can realize it all. And for all this you don't have to write a single program-line!
- ProfilLab-Expert supports our devices of the GMH3xxx-Serie with serial interface, GCO100, GFTB100/GRS, as well as all EASYBus-devices. Every device will be displayed in your project like a normal component. You only have to connect his inputs and outputs. Compiler inclusive!
- ProfilLab-Expert is equipped with an integrated compiler. The compiler can create executable files for stand-alone applications that run on systems without ProfilLab-Expert.
- The distribution of these compiled applications is unlimited, so ProfilLab-Expert become a complete and professional developers system.

System requirements:

- Windows 7 SP 1 (32 or 64 Bit)
- interface converter
for GMH 3000: GRS 3100, GRS 3105 or USB 3100 N
- for GMH 5000: USB 5100
(executable from Windows XP, not executable with Windows RT, ARM or Intel Itanium based Windows systems)

GMH 3000.DLL

Product-ID: 603027

Windows-functional library for interface communication to integrate all GMH 3xxx/5xxx device functions.

EASYBUS.dll

Product-ID: 601155

Windows-function library for interface communication EASYBus - PC

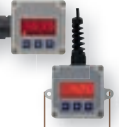
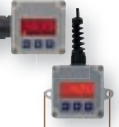
DISPLAY

															
Application:	GIA ... N	GIA ... N - ex	GIA 2448	GTH2448/1	GTH2448/2 ..3	GTH2428/4 ..5	GIA 2000	TA 9648	pH 9648	ET 2011	EDT 24...	GIA 0420 VO(T) GIA 010 VO(T)	GIA 0420 VOT - ex GIA 010 VOT - ex	GIA 0420 WKT GIA 010 WKT	GIA 0420 WKT - ex GIA 010 WKT - ex
Dimensions	24x48	24x48	24x48	24x48	24x48	24x48	48x96	48x96	48x96	35x77	35x77	Special size			
Measuring input normalized signal	●	●	●				●	●				●	●	●	●
Measuring input temperature (Pt100 / Pt1000)					●	●	●			●					
Measuring input temperature (thermo elements)				●			●			●					
Measuring input NTC											●				
Measuring input frequency							●								
Universal input							●								
Messeingang PH / LF									●						
 - Protection		●											●		●

Device information:

Catalogue page	80	80	81	81	81	81	89	90	92	98	98	100	100	100	100
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CONTROLLER

Application:																			
	GIA 20 EB	GIR 230 ...	GIR 230 DIF...	GIR 300	GIR 360	GIR 2002	GIR 2002 PID	GIR 2002 NS / DIF ...	GIR 2000 Pt ...	UZ 9648	LF 9648	V 9648	A 9648	MAXVU 16/8	SD 9648	KM	GRA ... VO	GRA ... WK	
	Dimensions	24x48	24x48	24x48	36x72	36x72	48x96	48x96	48x96	48x96	48x96	48x96	48x96	48x96		48x96	48x48	Sondergröße	
	Measuring input normalized signal		●	●	●		●	●	●						●	●	●	●	●
	Measuring input temperature (Pt100 / Pt1000)		●	●	●		●	●		●					●		●		
	Measuring input temperature (thermo elements)		●		●		●	●							●		●		
	Temperature (NTC, PTC)		●	●															
	Measuring input frequency		●		●	●	●	●			●					●			
	Universal input	●			●		●	●							●				
	Measuring input Voltage / current												●	●					
Measuring input PH / LF											●								

Device information:

Catalogue page	82	83	83	84	85	86	86	88	88	91	93	94	95	97	96	99	101	101
----------------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----



HIGHLIGHTS:

- time-saving on-site scaling without any additional auxiliary modules
- large display range from -1999 to +9999 digits
- smallest housing dimensions possible
- monitoring of probe damage, probe short-circuit, values no longer within measuring range.

MOISTURE, PH, REDOX, OXYGEN, CONDUCTIVITY,
GAS, TEMPERATURE, PRESSURE, DISTANCE,
REVOLUTIONAL SPEED, FLOW RATE, FLOW, FILL LEVEL, POWER

GIA 0420 N

Product-ID: 601026

μP-display with freely adjustable scale, without auxiliary energy, input 4-20 mA

GIA 010 N

Product-ID: 601031

μP-display with freely adjustable scale, input 0-10 V

Specifications:	GIA 0420 N ..	GIA 010 N ..
Input signal:	4 ... 20 mA 2-wire	0 ... 10 V 3-wire
Voltage load:	approx. 3.5 V	-
Input resistance:	-	approx. 100 kOhm
Max. input:	25 mA	15 V
Power supply:	-	12 - 28 V DC
Power consumption:	from current loop	< 10 mA
Display:	LCD display, approx. 10 mm high	
Display range:	-1999 ... +9999	
Decimal point:	any position selectable	
Scaling:	scale freely adjustable via 3 keys at the back side of the unit	
Accuracy:	< 0.2% FS ±1 digit (at 25 °C)	
Temperature drift:	< 100 ppm / K	
Measuring rate:	approx. 5 measurements / s	
Filter:	adjustable: 0.1 ... 2.0; off	
Storage:	min- / max-value memory selectable via button	
Switching output:	electrically isolated open collector	
Switching capacity:	28 V DC / 50 mA	
Working temperature:	-20 ... +50 °C	
Storage temperature:	-20 ... +70 °C	
Electric connection:	GIA 0420 N ..: 2 x 2-pin screw-type/plug-in terminal max. terminal range up to 1.5 mm ² GIA 010 N ..: 1 x 2-pin., 1 x 3-pin. screw-type/plug-in terminal, max. terminal range up to 1.5 mm ²	
Housing:	fibre-reinforced Noryl	
Front screen:	polycarbonate	
Dimensions:	24 x 48 mm (H x W, front dimensions)	
panel cutout:	21.7 ^{+0.5} x 45 ^{+0.5} mm (H x W)	
mounting depth:	approx. 65 mm incl. terminal	
Protection rating:	IP 20, with front flush installation IP 54	
Scope of supply:	Device, manual	

GIA 0420 N - ex

Product-ID: 601033

μP-display with freely adjustable scale, input 4-20 mA, with EX-protection for all potentially explosive atmospheres
Ex qualification: II 2G Ex ia/ib IIC/IIB T4

(Further Information please refer to our homepage www.greisinger.de)

GIA 010 N - ex

Product-ID: 601034

μP-display with freely adjustable scale, input 0-10 V, with EX-protection for all potentially explosive atmospheres
Ex qualification: II 2G Ex ia/ib IIC/IIB T4

(Further Information please refer to our homepage www.greisinger.de)

Note to Ex-design types:

Ex protection: II 2 G Ex ia IIC T4
EC type examination: BVS 11 ATEX 1 333 X

Connection data:

U_{max}: 28 V
I_{max}: 100 mA
P_{max}: 1.2 W (for GIA 0420 N - ex) or 0.95 W (for GIA 010 N - ex)

max. effective internal capacitance:
Ci = 13 nF (for GIA 0420 ...) or 26 nF (for GIA 010 ...)
additionally for the switching output: Ci = 4.5 nF
max. effective internal inductance: negligible small

Please keep in mind for the circuit of the optionally available switching output that the wiring has to be done from the same intrinsically safe circuit as the measuring signal!



UNIVERSAL DISPLAY FOR STANDARD SIGNALS

**GIA 2448***Product-ID: 600090 (standard model)*

Display for Standard Signals (for self-adjustment)

GIA 2448 WE ¹⁾

Display for Standard Signals (settings and calibrations by our works)

¹⁾ Please specify as follows upon order: Input signal, scaling (lower and upper limits), decimal point and supply voltage. (Order to read e.g. GIA 2448 WE: 4-20 mA, 4 mA=-50.0, 20 mA = 100.0, 12 VDC)

Specifications:	
Measuring input:	0-20 V, 0-10 V, 0-2 V, 0-1 V, 0-200 mV, 0-20 mA and 4-20 mA (select via soldering jumpers)
Display range:	-1999 ... +1999 digit (adjustable via soldering jumpers and potentiometer)
Decimal point:	any position by means of soldering jumpers (soldering jumpers accessible after removal of front panel)
Accuracy:	±0.2 % ±1 digit (at nominal temperature = 25 °C)
Scan rate:	approx. 3 measurements / s
Display:	3½-digit, red 10 mm high LED display
Working temperature:	0 ... 50 °C (permissible ambient temperature)
Relative humidity:	5 ... 95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Voltage supply:	8 - 20 V DC or 18 - 29 V DC (standard) (set via soldering jumper)
Current supply:	max. 20 mA
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	24 x 48 mm (H x W) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel mounting:	with VA-spring clamp. allowed panel thicknesses from 1 ... approx. 10 mm
Panel cut-out:	21,7 ^{+0.5} x 45 ^{+0.5} mm (H x W).
Connection terminal:	4-pin screw-type/plug-in terminal for wire cross sections from 0.14 ... 1.5 mm ²
Noise immunity (EMV):	meets EN50081-1 and EN50082-2 requirements, additional fault: <1 %
Protection class:	front side IP54 (with optional O-rings IP65).
Scope of supply:	Device, manual

Option:

VAC
voltage supply 8-20 V AC or 18 - 29 V AC set via soldering jumper

G24
22-27 V DC, electrically isolated)

Accessories and spare parts:

GNG 220/2-12V
Product-ID: 600305
power supply for GIA 2448 and GTH 2448
(Input: 230 VAC; output: 2 x 12 VDC regulated, 30 mA each)

GNG 12 / 24
Product-ID: 600276
power supply (Input: 12 VDC; output: 24 VDC electrically isolated)

GNG 24 / 24
Product-ID: 600277
power supply (Input: 24 VDC; output: 24 VDC electrically isolated)

for additional accessories, transmitter, probes p.r.t. chapters transmitter and temperature probe

UNIVERSAL DISPLAY FOR TEMPERATURE

**GTH 2448/1***Product-ID: 600083*

Display for temperature (NiCr-Ni)

GTH 2448/2*Product-ID: 600084*

Display for temperature (Pt100)

GTH 2448/3*Product-ID: 600085*

Display for temperature (Pt100)

GTH 2448/4*Product-ID: 600086*

Display for temperature (Pt1000)

GTH 2448/5*Product-ID: 600087*

Display for temperature (Pt1000)

Specifications:	
Measuring input, Resolution:	
GTH 2448/1:	-50 ... +1150 °C (NiCr-Ni)
GTH 2448/2:	-200 ... + 650 °C (Pt100, 2-wire), 1 °C
GTH 2448/3:	-60.0 ... +199.9 °C (Pt100, 2-wire), 0.1 °C
GTH 2448/4:	-200 ... + 650 °C (Pt1000, 2-wire), 1 °C
GTH 2448/5:	-60.0 ... +199.9 °C (Pt1000, 2-wire), 0.1 °C
Accuracy: (at nominal temperature = 25 °C)	
NiCr-Ni:	±1 % ±1 digit (from -20 ...+550 °C and 920 ...1150 °C) ±1.5 % ±1 digit (from 550 ... 920 °C)
Pt100, Pt1000:	±0.5 °C ±1 digit or ±1 °C ±1 digit
Offset compensation: (only for Pt100 and Pt1000)	The zero point offset of the sensor (e.g. due to long cables) can be compensated for by means of the spindle trimmer on the backside of the device.
Display:	3½-digit, red 10 mm high LED display
Scan rate:	approx. 3 measurements / s
Working temperature:	0 ... 50 °C (permissible ambient temperature)
Relative humidity:	5 ... 95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Voltage supply:	8 - 20 V DC or 18 - 29 V DC (standard) (set via soldering jumper)
Current supply:	max. 20 mA
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	24 x 48 mm (H x W) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel mounting:	with VA-spring clamp. allowed panel thicknesses from 1 ... approx. 10 mm
Panel cut-out:	21,7 ^{+0.5} x 45 ^{+0.5} mm (H x W).
Connection terminal:	4-pin screw-type/plug-in terminal for wire cross sections from 0.14 ... 1.5 mm ²
Protection rating:	front side IP54
Scope of supply:	Device, manual

System solution - complete packages:**KFZ 2000***Product-ID: 603241*

Exhaust gas temperature set for measurement of exhaust gas temperatures up to 1000 °C in motor vehicles (e.g. motorsports). The set consists of:

GTH 2448/1 12 V DC:*Product-ID: 601017*

NiCr-Ni thermometer with additional over-voltage protection.

GTF 101-5-30-0150-L03-S:*Product-ID: 601317*

temperature probe with jacket material: Nimonic 75 (view p.r.t. page 147)
Cable length = 3 m (extended cable against upcharge available)

GKV 4:*Product-ID: 602891*

clamping ring screw connection (p.r.t. p. 158)



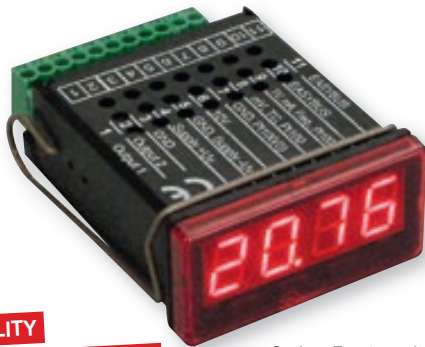
E.A.S.Y.Bus - Modul

FUNCTIONS:



EASY OPERABILITY

HIGH ACCURACY



Option: Frontpanel with push buttons
(frontpanel without buttons included in delivery)

HIGHLIGHTS:

- Universal inputs for normalized signals, frequency, Pt100, Pt1000 and thermocouples
- Configurable as display or controller (5 switching functions)
- extensive self-monitoring and diagnostic system
- Limit functions, digital filter, min-/max value memory
- Alarm delay selectable

GIA 20 EB

Product-ID: 601832 (standard model)
Universal display and regulating device

Specifications:

Measuring input:	universal input for
Normalized signal:	4-20 mA, 0-20 mA, 0-1 V, 0-2 V, 0-10 V, 0-50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	types J, K, N, S, T
Frequency, Rotational speed:	TTL-signal, switching contact
Counter up / down:	TTL-signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurings / s (for normalized signal) resp. approx. 4 measurings / s (for temperature and frequency)
Measuring resp. display ranges, resolution:	
Temperature:	(display unit selectable: °C or °F) Pt100: -200 ... +850 °C or -50.0 ... +200.0 °C; Pt1000: -200 ... +850 °C; Type J: -170 ... +950 °C; Type K: -270 ... +1350 °C; Type N: -270 ... +1300 °C; Type S: -50 ... +1750 °C; Type T: -270 ... +400 °C
Normalized signals:	-1999 ... 9999 digit, start and end value and DP freely scaleable
recommended range:	≤ 2000 digit
Frequency:	0.000 Hz ... 10 kHz, display freely scaleable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1-1000
Counter up/down:	countervalue remains on power loss 0 ... 9999 (10 Mio. with prescaler), pulse frequency: < 10 kHz, selectable prescaler: 1-1000
Serial interface:	Displaying and controlling from values coming via the serial interface.
Accuracy: (at nominal temperature = 25 °C)	
Normalized signal:	< 0.2 % FS ±1 digit (at 0-50 mV: < 0.3 % FS ±1 digit)
Resistance thermometer:	< 0.5 % FS ±1 digit
Thermocouples:	< 0.3 % FS ±1 digit (at type S: < 0.5 % FS ±1 digit)
Point of comparison:	± 1 °C
Frequency, rotational speed, counter:	< 0.1 % FS ±1 digit
Outputs:	2 switching outputs, not electrically isolated
Switching behavior:	Low-Side, High-Side or Push-Pull (selectable)
Connection data:	Low-Side: 28 V/1A; High-Side: Ub/200 mA
Controller state:	2-point, 3-point, 2-point with alarm, min/max alarm to 1 output, min/max alarm to 2 outputs
Switching point, hysteresis:	freely adjustable
Response time:	≤ 20 ms at normalized signals ≤ 0.5 s at temperature and frequency
Display:	approx. 10 mm high, 4-digit red LED-display
Service:	with 3 push-buttons (after disassembly of the frontpanel)
Optional:	FS3T, frontpanel with 3 push-buttons for comfortable configuration. Trouble-free replacement is possible (refer accessories)
Interface:	serial interface, electrical isolated, EASYBus compatible
Miscellaneous:	permanent self-monitoring, digital filter function, measuring range boundary (limit)
Voltage supply:	9 ... 28 V DC (Standard)
Option:	electrical isolated voltage supply 11-14 V or 22-27 V

Power consumption:	max. 30 mA (without outputs)
Nominal temperature:	25 °C
Operating temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	24 x 48 mm (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel mounting:	with VA-spring clamp
Allowed panel thicknesses:	from 1 ... approx. 10 mm.
Panel cut-out:	21,7 ^{+0.5} x 45 ^{+0.5} mm (H x W)
Connection terminal:	screw-type/plug-in terminal: 2-pin for interface and 9-pin for other connections. For wire cross sections from 0.14 ... 1.5 mm ²
Protection rating:	front side IP54
Noise immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, manual

Variants:

GIA 20 EB-G12

Product-ID: 604305

type with insulated power supply: 11-14 V DC

GIA 20 EB-G24

Product-ID: 601983

type with insulated power supply: 22-27 V DC

Accessories and spare parts:

FS3T

Product-ID: 603215

Frontpanel with 3 push-buttons for comfortable configuration, for adjustments at variable switching points, calling of min- and max-values etc.

GNR 10

Product-ID: 603680

Power supply and relay module for one GIA20EB (p.r.t. page 103)

(Input: 230VAC, Power supply for device + transducer, 2 relay outputs)

Temperature probes

p.r.t. page 145 - 159

Transducer

p.r.t. page 113 - 144

Special design types:

GIA 20 EB/PK

Product-ID: 600968

Universal display and regulating device with individual programmable linearization characteristic.

General:

Even heavily bent sensor characteristics/value curves can be approximated by a straightened curve with 30 freely programmable linearization points. The adjustment to the measurement is done via the integrated interface with the (free) configuration software. For the connection with a PC, an additional serial converter EBW 1 or EBW 3 will be needed. Therefore only the input values (in mA, V, Ω or Hz) and the corresponding displayed values have to be entered.

For detailed information please refer to our homepage www.greisinger.de

THE DISPLAYING AND REGULATING DEVICE FOR 230 V



FRONT
24 x 48



**CONFIGURABLE AS DISPLAY
OR CONTROLLER
(5 SWITCHING FUNCTIONS)**

GIR 230 NS

Product-ID: 600972

GIR 230 Pt

Product-ID: 600976

GIR 230 TC

Product-ID: 600978

GIR 230 FR

Product-ID: 600970

GIR 230 NT

Product-ID: 600974

Version GIR 230 NS (normalized signal):	
Measuring input:	4-20 mA, 0-20 mA, 0-10 V
Display range:	-1999 ... 9999 digit, initial value, final value and DP freely adjustable
Recommended range:	≤ 2000 digit
Accuracy:	< 0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s

Version GIR 230 Pt (resistor):	
Measuring input:	Pt100 (3-wire), Pt1000 (2-wire)
Measuring ranges, resolution:	
Pt100:	-200 ... +850 °C (1°) or -50.0 ... +200.0 °C (0.1°)
Pt1000:	-200 ... +850 °C
Accuracy:	< 0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Messrate:	approx. 4 measurings / s

Version GIR 230 TC (thermo couple):	
Measuring input:	types J, K, N, S, T and 0-50 mV
Measuring ranges, resolution:	Type J: -170 ... +950 °C, Type K: -270 ... +1350 °C, Type N: -270 ... +1300 °C, Type S: -50 ... +1750 °C, Type T: -270 ... +400 °C
Accuracy:	< 0.3 % FS ±1 digit (type S: < 0.5 % FS ±1 digit) (at 25 °C)
Point of comparison:	± 1 °C
Measuring rate:	approx. 4 measurings / s

Version GIR 230 FR (frequency):	
Measuring input:	frequency
Display range:	-1999 ... 9999 digit, freely scaleable
Accuracy:	< 0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Frequency measuring:	0.000 Hz ... 10 kHz
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler (1-1000)
Counter up/down:	0 ... 9999 (10 mio with prescaler)

Version GIR 230 NT (NT and only 1 relay output):	
Measuring input:	NTC (2-wire)
Measuring ranges:	-40.0 ... +120.0 °C
Accuracy:	< 0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 4 measurings / s

Accessories and spare parts:	
GTF 230 S	
Product-ID: 603014	
NTC-temperature probe, -40 ... +120 °C, sensor sleeve made of stainless steel, Ø 5 x 50 mm, approx. 1 m silicone-cable	
GTF 230 S-L03	
Product-ID: 605910	
see above, approx. 3 m silicone cable	
GTF 230 S-L05	
Product-ID: 604620	
see above, approx. 5 m silicone cable	

HIGHLIGHTS:

- 5 input executions for choice:
- normalized signal: 4-20 mA, 0-20 mA, 0-10 V
- resistor: Pt100 (3-wire), Pt1000 (2-wire)
- thermo couple: type J, K, N, S, T and 0-50 mV
- frequency
- NTC

GIR 230 DIF-PT...

Product-ID: 600982

Difference controller with 2 measuring inputs for Pt1000

GIR 230 DIF-NT...

Product-ID: 600984

Difference controller with 2 measuring inputs for NTC

GIR 230 DIF-NS...

Product-ID: 600980

Difference controller with 2 measuring inputs for 4-20 mA, 0-20 mA or 0-10 V

Version GIR 230 Pt1000 / DIF, GIR 230 NTC / DIF:	
Measuring inputs:	2 x Pt1000 (2-wire) or 2 x NTC
Measuring ranges, resolution:	Pt1000: -200 ... +850 °C, 1 °C NTC: -40.0 ... +120.0 °C, 0.1 °C
Display:	difference temperature sensor 1 - sensor 2
Accuracy:	< 0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 4 measurings / s

Version GIR 230 NS / DIF - 420 mA, ... - 020 mA, ... - 010 V:	
Measuring inputs:	(2 x) 4-20 mA, (2 x) 0-20 mA or (2 x) 0-10 V specify required input signals by order!
Display range:	-1999 ... 9999 digit, start and end value and DP freely adjustable
Recommended range:	≤ 2000 digit
Accuracy:	< 0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s

Specification:	
Relay output:	2 (1) closing contacts (GIR 230 NTC: 1 relay output), 230 V~ switching, switching power: 5 A, 230 VAC
Alarm output:	NPN, open collector, switching power: 30 mA, max. 28 V
Controller states:	2-point, 3-point*, 2-point with alarm, min/max alarm to 1 output, min/max alarm to 2 outputs* (* = not available at GIR 230 NTC)
Switching points, hysteresis, alarm points:	freely selectable
Display:	approx. 10 mm high, 4-digit red LED-display
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Power supply:	230 V, 50/60 Hz, approx. 2 VA
Optional:	SA1: GIR with power supply 12 - 28 V DC Outputs: 2 (1) relay outputs, +Ub switching
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	24 x 48 mm (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel mounting:	with VA-spring clamp
Allowed panel thicknesses:	from 1 ... approx. 10 mm
Panel cut-out:	21,7 ^{+0.5} x 45 ^{+0.5} mm (H x W)
Connection terminal via screw-type/plug-in terminal:	
4-pin (...NTC: 3-pin)	for power supply and relay outputs
4-pin (...NTC: 3-pin)	for measuring input and alarm output
For wire cross selections:	from 0.14 ... 1.5 mm ²
Protection rating:	front side IP54
Noise immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, manual

Options:	
SA1	power supply 12 - 28 V DC, Outputs: 2 (1) relay outputs, +Ub switching
SA2	power supply 12-24 V DC
SA3	power supply 12 V DC, electrically isolated
SA4	power supply 24 V DC, electrically isolated



FRONT
36 x 72

E.A.S.Y.Bus - Modul

FUNCTIONS:



NEW DESIGN!

EASY HANDLING

HIGH PRECISION

LOW PRICE

HIGHLIGHTS:

- Universal input for standard signals, frequency, Pt100, Pt1000 and thermocouples
- 2 integrated switching outputs (electrically isolated)
- Configurable as display or controller (5 switching functions)
- Fast controlling and monitoring
- Comprehensive self-test and diagnostic system
- Serial EASYBus interface (max. 240 devices)
- Limit functions, digital filter, min- / max- value memory
- Adjustable alarm delay

GIR 300

Product-ID: 604692 (standard model)

Universal displaying and controlling device

Specifications:	
Measuring input:	universal input for
Standard signals:	4-20 mA, 0-20 mA, 0-1 V, 0-2 V, 0-10 V, 0-50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	types J, K, N, S, T
Frequency, rotational speed:	TTL signal, switching contact
Up- / down- counter:	TTL signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurements / s (standard signal) approx. 4 measurements / s (temperature and frequency)
Measuring and display range, resolution:	
Temperature: (unit switchable between °C and °F)	Pt100: -200 ... +850 °C or -50.0 ... +200.0 °C; Pt1000: -200 ... +850 °C; Type J: -170 ... +950 °C; Type K: -270 ... +1350 °C; Type N: -270 ... +1300 °C; Type S: -50 ... +1750 °C; Type T: -270 ... +400 °C
Standard signals:	-1999 ... 9999 digit, decimal point, start and end value freely selectable
recommended range:	≤ 2000 digit
Frequency:	0.000 Hz ... 10 kHz, display freely scalable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1-1000
Up- / down- counter:	The counter reading is stored also in power-down state. 0 ... 9999 (10 million with prescaler), pulse frequency: ≤ 10 kHz, selectable prescaler: 1-1000
Serial interface:	Display and control functions with values obtained via serial interface
Accuracy: (at nominal temperature = 25 °C)	
Standard signals:	< 0.2 % FS ±1 digit (at 0-50 mV: < 0.3 % FS ±1 digit)
Resistance thermometer:	< 0.5 % FS ±1 digit
Thermocouples:	< 0.3 % FS ±1 digit (for type S: < 0.5 % FS ±1 digit)
Point of comparison accuracy:	± 1 °C
Frequency, rotational speed, counter:	< 0.1 % FS ±1 digit
Outputs:	2 volt-free relay switching outputs relay 1: normally-open contact relay 2: normally-closed contact
Switching functions:	2-point, 3-point, 2-point with alarm, combined min-/max- alarm with 1 output, separate min-/max- alarm with 2 outputs
Switching points, switching hysteresis:	freely selectable
Response time:	≤ 20 ms for standard signals ≤ 0.5 s for temperature and frequency
Display:	approx. 13 mm high, 4-digit red LED display
Interface:	serial interface, electrically isolated, compatible to EASYBus
Miscellaneous:	continuous self-diagnostics, digital filter function, measuring range limitation

Supply voltage:	9 ... 28 V DC (standard)
Optional:	G24: 22 ... 27 v DC, electrically isolated
Current consumption:	max. 70 mA
Nominal temperature:	25 °C
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Housing:	
Dimensions:	36 x 72 mm (front frame)
Installation depth:	approx. 75 mm (incl. screw-type/plug-in terminals)
Panel mounting:	with fixing clamps panel cutout: 32.0 ^{+0.5} x 68.5 ^{+0.5} mm (H x W)
Electric connection:	via screw-type/plug-in terminals cable cross section: 0.14 ... 1.5 mm².
Scope of supply:	device, manual

Variants:

GIR 300-G24

Product-ID: 605203

GIR 300 with electrically isolated supply 22 ... 27 V DC

Accessories and spare parts:

APG-7

Product-ID: 606825

Housing for surface mounting incl. seal GGD4896

EAK 36

Product-ID: 603227

Unit stickers (black with white text) for 36 different units for lettering of display devices.

UNIVERSAL COUNTER AND FREQUENCY DEVICE



FRONT
36 x 72

E.A.S.Y.Bus - Modul

FUNCTIONS:



NEW DESIGN!

NEW!

HIGHLIGHTS:

- 6-digit display
- Assembly, dismantling, sum and difference counter
- 2 integrated switching outputs (galvanically isolated)
- Configurable as display or controller (5 switching functions)
- Extensive self-monitoring and diagnostic system
- Serial EASYBus interface
(max 240 devices combined)

AVAILABLE FROM 1ST QUARTER 2016

GIR 360

Product-ID: 607953

Freely selectable universal counter and frequency meter

Specifications:	
Inputs:	
Input 1:	frequency, rotational speed, counter input A
Input voltage:	0 ... 5 V (0 ... 28 V with dropping resistor)
Input level:	Low < 0.5 V; High > 2.2 V
NPN:	pullup resistor 7 kohms to 3.3 V
PNP:	pulldown resistor 7 kohms against GND
Min. pulse width:	50 us
Input 2:	count input B, Gate, direction
Input voltage:	0 ... 5 V (0 ... 28 V with dropping resistor)
Input level:	Low < 0.5 V; High > 2.2 V
NPN:	pullup resistor 7 kohms to 3.3 V
PNP:	pulldown resistor 7 kohms against GND
Min pulse width:	50 us
Input 3:	reset input
Input level:	Low < 1 V; High > 8 V
Min pulse width:	50 ms
Measuring / counting areas:	
Frequency:	0 ... 10 kHz
Speed:	max. 10000 U/min, switchable prescaler: 1 ... 1000
Counter:	-2.147.483.647 ... 2.147.483.646
Display area:	
Frequency / Speed:	-1999 ... 9999 digit, decimal point freely selectable
Counter:	-1999999 ... 9999999 digit, decimal point freely selectable
Functions:	
Frequency measurement	
Speed measurement	
Up counter, down counter	
Up / down counter with direction input	
Totalizer A + B,	
Difference counter A-B, phase discriminator	
Display:	approx. 10 mm high, 6-digit red LED display
Outputs:	
2 volt-free relay switching outputs	
relay 1: normally-open contact	
relay 2: normally-closed contact	
Switching functions:	
2-point, 3-point, 2-point with alarm, combined min-/max- alarm	
with 1 output, separate min-/max- alarm with 2 outputs	
Switching points, switching hysteresis:	
freely selectable	
Interface:	serial interface, electrically isolated, compatible to EASYBus
Miscellaneous:	continuous self-diagnostics, digital filter function, measuring range limitation
Supply voltage:	9 ... 28 V DC (standard)
Optional:	G24: 22 ... 27 V DC, electrically isolated

Current consumption:	max. 70 mA
Nominal temperature:	25 °C
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % r.F. (non condensing)
Storage temperature:	-30 ... +70 °C
Housing:	
Dimensions:	36 x 72 mm (front frame)
Installation depth:	approx. 75 mm (incl. screw-type/plug-in terminals)
Panel mounting:	with fixing clamps panel cutout: 32.0 ^{+0.5} x 68.5 ^{+0.5} mm (H x W)
Electric connection:	via screw-type/plug-in terminals cable cross section: 0.14 ... 1.5 mm ² .
Scope of supply:	device, manual

Variants:

GIR 360-G24

Product-ID: 607954

GIR 300 with electrically isolated supply 22 ... 27 V DC

Accessories and spare parts:

APG-7

Product-ID: 606825

Housing for surface mounting incl. seal GGD4896

EAK 36

Product-ID: 603227

Unit stickers (black with white text)
for 36 different units for lettering
of display devices.




 FRONT
48 x 96

E.A.S.Y.-Bus - Modul

FUNCTIONS:



HIGHLIGHTS:

- 2 relay switching outputs
- 1 analog output (0(4)-20 mA or 0-10 V) (optional)
- 5 programmable switching modes
- electrical isolated power supply for a transmitter (24 V / 22 mA)
- serial interface, bus operation
- Configurable via PC using GIR 2002 configuration software (EBW 3 required)

ADDITIONAL FUNCTIONS GIR 2002 PID:

- P, I, PI, PD or PID control mode
- 3-point motorized valve control
- continuous regulating output (optional)

UNIVERSAL INPUT FOR

NORMALIZED SIGNALS, FREQUENCY, PT100,

PT1000, THERMOCOUPLE

GIR 2002

Product-ID: 600948 (Standard model)

Universal displaying and regulating device with on/off-control mode

GIR 2002 PID

Product-ID: 600951 (Standard model)

Universal displaying and regulating device with PID-control mode

Anwendungen:

- process regulating
- temperature controller
- pressure monitoring
- rotation speed display
- flow counter, etc.

General:

The universal controller GIR 2002 is the ideal device for simple control systems (on/off switching, relay outputs, ...), because of its compact construction and its high ease of use. The GIR 2002 PID (basic version) supplies one control output for a 2-point-control the types of control P, I, PI, PD or PID and a second control output for on/off switching. The device can also be configured as a 3-point motorized valve controller or as controller with continuous output (optional).

Due to the universal input and the various switching functions the controller can be optimally adapted to the requirements of the system. The structured menu navigation allows a straightforward handling and a fast adjustment of the parameters.

A LED switching position display gives information to the user about the current status of the switching outputs. The automatic self-test and diagnostic system ensures maximum operational safety and reports systems errors by conclusive error codes. The parameters are automatically saved, so that all data will be maintained even in case of a power blackout.

Among others most of the GREISINGER transmitters, rpm sensors and flow rate sensors can be connected directly to the integrated transmitter power supply (24 VDC/22 mA) of the controller.

If the device is used as a thermocouple or resistance thermometer, the measuring value can be alternatively displayed in °C or °F. By means of an offset correction the measured value can be scaled i.e. to the resistivity of the wires. The current and voltage inputs can be arbitrarily scaled in the range of -1999 ... +9999.

The GIR 2002 has a serial, bus-compatible interface by default, by which a comfortable adjustment of the parameters as well as recording of measured values is possible. With the optionally available Windows library EASYBUS.dll up to 240 devices can be integrated into own programs (i.e. LabView).

Specifications:

Measuring input	Measuring / display ranges:	Accuracy (at nominal temperature):
Thermocouples (4 measurings / s)		
FeCu-Ni: (type J, IEC 584)	-70.0 ... +300.0 °C or -170 ... +950 °C	< 0.3 % FS ±1 digit *
NiCr-Ni: (type K, IEC 584)	-70.0 ... +250.0 °C or -270 ... +1372 °C	< 0.3 % FS ±1 digit *
NiCrSi-NiSi: (type N, IEC 584)	-100.0 ... +300.0 °C or -270 ... +1350 °C	< 0.3 % FS ±1 digit *
Pt10Rh-Pt: (type S, IEC 584)	-50 ... +1750 °C	< 0.5 % FS ±1 digit *
Cu-CuNi: (type T, IEC 584)	-70.0 ... +200.0 °C or -270 ... +400 °C	< 0.3 % FS ±1 digit *
* = Point of comparison: ± 1 °C		
Resistance thermometer (4 measurings / s)		
Pt 100: (3-wire, DIN EN 60751)	-50.0 ... +200.0 °C or -200 ... +850 °C	< 0.3 % FS ±1 digit

Pt1000: (2-wire, DIN EN 60751)	-200 ... +850 °C	< 0.3 % FS ±1 digit
Action signals / normalized signal (100 measurings / s)		
0 ... 1 V, 0 ... 2 V, 0 ... 10 V:	-1999 ... +9999 digit, scale freely adjustable	< 0.2 % FS ±1 digit
0 ... 20 mA, 4 ... 20 mA:	-1999 ... +9999 digit, scale freely adjustable	< 0.2 % FS ±1 digit
0 ... 50 mV:	-1999 ... +9999 digit, scale freely adjustable	< 0.3 % FS ±1 digit
Frequency		
TTL-signal:	0.000 Hz ... 10 kHz, scale freely adjustable	< 0.1 % FS ±1 digit
Switching contact NPN:	0.000 Hz ... 3 kHz, scale freely adjustable	< 0.1 % FS ±1 digit
Switching contact PNP:	0.000 Hz ... 1 kHz, scale freely adjustable	< 0.1 % FS ±1 digit
Rotational speed:	0.000 ... 9999 U/min.	selectable prescaler: 1-1000, pulse frequency: max. 600 000 Imp./min. at TTL
Flow:	0 ... 9999 l/s, 0 ... 9999 l/min or 0 ... 9999 l/h	
Counter up / down		
TTL-signal, switching contact (NPN, PNP):	0 ... 9999 or 0 ... 999 000 (with prescaler) selectable prescaler: 1-1000, pulse frequency: max. 10 000 Imp./s at TTL	< 0.1 % FS ±1 digit
Serial interface:		
displaying and controlling from values coming via the serial interface		
Outputs:		
Please note: Not all options are available for both device types and not all options can be combined with each other. Please see therefore the matrix.		
Output 1 R1: (standard version)	voltage free relay output (standard) normally-open contact, switching power: 5 A (ohmic load), 250 VAC	
Optional:	H1: control output for semiconductor relay (6 VDC/15 mA) AAG..1: freely scalable analog output 0(4)-20 mA or 0-10 V ST..1: continuous output 0(4)-20 mA or 0-10 V	
Output 2 R2: (standard version)	voltage free relay output (standard) change-over contact, switching power: 10 A (ohmic load), 250 VAC	
Optional:	H2: control output for semiconductor relay (6VDC/15 mA)	
Output 3:	(not available at standard device type)	
Optional:	R3: voltage free relay output (chance-over contact) switching power: 1 A / 40 VAC or 30 VDC H3: control output for semiconductor relay (14 VDC / 15 mA) N3: electrical isolated NPN-switching contact (max. 1 A / 30 VDC) AA3: freely scalable analog output 0(4)-20 mA or 0-10 V SA3: continuous output 0(4)-20 mA SV3: continuous output 0-10 V	
Controller states:	5 or 6, selectable (e.g. 2-point regulator, 3-point regulator, ...)	
Switching point, hysteresis:	freely adjustable	
Response time:	≤ 25 ms at normalized signals ≤ 0.5 s at temperature and frequency	
Display:	approx. 13 mm high, 4-digit red LED-display	

UNIVERSAL DISPLAYING AND REGULATING DEVICE

Interface:	serial interface, electrical isolated, EASYBus compatible
Power supply for sensor:	24 V DC $\pm 5\%$, 22 mA (for DC-supply 18 V DC)
Miscellaneous:	permanent self-monitoring, digital filter function, measuring range boundary (limit)
Voltage supply:	230 V AC, 50/60 Hz (standard)
optional:	012D: voltage supply: 12 VDC (11-14 V) ¹⁾ 024D: voltage supply: 24 VDC (22-27 V) ¹⁾ 024A: voltage supply: 24 VAC $\pm 5\%$ 115A: voltage supply: 115 VAC $\pm 5\%$
Power consumption:	approx. 6 VA
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Housing:	standard rack type housing 48 x 96 mm (front frame) installation depth: approx. 115 mm (incl. screw-type/plug-in terminals)
Panel mounting:	with fixing clamps panel cutout: 43.0 ^{+0.5} x 90.5 ^{+0.5} mm (H x W)
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm ² .
Protection class:	front side IP54, with optional sealing IP65
Electromagnetic immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, fixing clamps, manual

Accessories and spare parts:

GGD4896 Product-ID: 603042 additional sealing for panel mounting IP65	
EAK 36 Product-ID: 603227 Unit stickers (black with white text) for 36 different units for lettering of display devices (p.r.t. page 89)	
Temperature probes	p.r.t. page 145 - 159

for other accessories p.r.t. page 76, 112

Outputs		GIR 2002			GIR 2002 PID		
		out 1	out 2	out 3	out 1	out 2	out 3
Standard type:		normally-open contact	chance-over contact	--	normally-open contact	chance-over contact	--
available output options							
output 1 = control output	H1:	•			•		
output 2 = control output	H2:		•			•	
output 3 = relay (chance-over contact)	R3:			•			•
output 3 = control output	H3:			•			•
output 3 = NPN-switching output	N3:			•			•
output 1 = analog output 0(4) - 20 mA	AA1:	•		no out3 possible			
output 1 = analog output 0 - 10 V	AV1:	•					
output 3 = analog output 0(4) - 20 mA	AA3:			•			•
output 3 = analog output 0 - 10 V	AV3:			•			•
output 1 = continuous output 0(4) - 20 mA	SA1:				•		no out3 possible
output 1 = continuous output 0 - 10 V	SV1:				•		
output 3 = continuous output 0(4) - 20 mA	SA3:						•
output 3 = continuous output 0 - 10 V	SV3:						•

Ordering code:GIR2002- 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Supply voltage	
	230A	230 V AC
	012D	12V DC
	012DA	12V DC for analog output or NPN or REL3 or HLR3
	024A	24V AC
	024D	24V DC
	024DA	24V DC
	115A	115 V AC
2.	Output 1	
	-R1	Relay, NO switch
	-H1	Solid-State-Relais
	-AA1	Analog output 0(4)..20mA
	-AV1	Analog output 0-10V
3.	Output 2	
	-R2	Relay, NO switch
	-H2	Solid-State-Relais
4.	Output 3	
	-00	No third output
	-R3	Relay, NO switch
	-H3	Solid-State-Relais
	-N3	NPN switch output
	-AA3	Analog output 0(4)..20mA
	-AV3	Analog output 0-10V
5.	Option	
	-00	Without option
6.	Option	
	-IP	Protection IP65

Ordering code:GIR2002PID- 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Supply voltage	
	230A	230 V AC (Standard)
	012D	12V DC
	012DA	12V DC for analog output or NPN or REL3 or HLR3
	024A	24V AC
	024D	24V DC
	024DA	24V DC for Stetig / Analog; NPN
	115A	115 V AC
2.	Output 1	
	-R1	Relay, NO switch (Standard)
	-H1	Solid-State-Relais
	-SA1	Continuous output 0(4)..20 mA, no out3 possible
	-SV1	Continuous output 0 to 10V, no out3 possible
3.	Output 2	
	-R2	Relay, NO switch (Standard)
	-H2	Solid-State-Relais
4.	Output 3	
	-00	No third output (Standard)
	-R3	Relay, NO switch
	-H3	Solid-State-Relais
	-N3	NPN switch output
	-AA3	Analog output 0(4)..20mA
	-AV3	Analog output 0-10V
	-SA3	Continuous output 0 (4) .. 20 mA
	-SV3	Continuous output 0 to 10 V free scalable
5.	Option	
	-00	Without option
	-SW	Setpoint controller
6.	Option	
	-IP	Protection IP65

2-CHANNEL DIFFERENCE CONTROLLER



FRONT
48 x 96

E.A.S.Y.Bus - Modul



GIR 2002 NS / DIF - 020

Product-ID: 604871 (Standard model)

2-channel difference controller, input signal (2x) 0-20 mA

GIR 2002 NS / DIF - 420

Product-ID: 600960 (Standard model)

2-channel difference controller, input signal (2x) 4-20 mA

GIR 2002 NS / DIF - 010

Product-ID: 601846 (Standard model)

2-channel difference controller, input signal (2x) 0-10 V

General:

The GIR 2002 NS / DIF is a display, control and regulating device for difference measurements. The measuring inputs are designed for standard signals. Please state your desired input signal at order transaction.

Application:

- difference controller for 2 channels
- detection of leaks
- control of delivery and exit air
- pressure compensation, etc.

Specifications:

Measuring inputs:	(2x) 4-20 mA, (2 x) 0-20 mA or (2 x) 0-10 V Please state your desired input signal at order transaction!
Display range:	-1999 ... 9999 digit, decimal point, initial and final values freely selectable
Recommended range:	≤ 2000 digit
Accuracy:	< 0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s
Display/regulation:	difference: input 1 - input 2
Outputs:	1 normally open contact, 1 change-over contact output options like HLR-control output, analog output or continuous output available - p.r.t. previous page
Controller states:	5 or 6, selectable (e.g. 2-point-regulator, 3-point-regulator, ...)
Limit values:	freely selectable
Display:	approx. 13 mm high, 4-digit red LED-display
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Voltage supply:	230 V AC, 50/60 Hz, approx. 6 VA
Housing:	standard rack type housing 48 x 96 mm (front frame), installation depth: approx. 115 mm (incl. screw-type/ plug-in terminals)
Panel mounting:	with fixing clamps, panel cutout: 43.0 ^{+0.5} x 90.5 ^{+0.5} mm (H x W)
Electrical connection:	via screw-type/ plug-in terminals: cable diameters from 0.14 ... 1.5 mm ² .
Protection class:	front side IP54 (IP65 on request)
Electromagnetic immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, manual

for further technical data refer to GIR 2002 (page 86)

Option:

Output for control output, analog output and other voltage supply p.r.t. previous page

Accessories and spare parts:

EBW 3

Product-ID: 601137

Interface converter for connection of one EASYBus-module to the USB interface of your PC. (Power supply: from the USB port)

EBS 20M

Product-ID: 601158

20 channel measurement data acquisition software

GIA 20 EB/GIR 2002 - Configuration Software

Software for easy configuration of the types GIA 20 EB, GIR 2002, GIR 2002 PID, download under www.greisinger.de

TEMPERATURE REGULATOR



FRONT
48 x 96

FUNCTIONS:



MEASURING INPUT
FOR PT100 (3-WIRE)

GIR 2000 Pt

Product-ID: 601701 (Standard model)

Temperature regulator complete with sensor

GIR 2000 Pt OF

Product-ID: 601703 (Standard model)

Temperature regulator complete without sensor

Specifications:

Measuring input:	Pt100 (3-wire)
Measuring range:	-50.0 ... +200.0 °C
Resolution:	0.1 °C
Measuring rate:	approx. 4 measurings / s
Accuracy:	< 0.3 % FS ±1 digit (at nominal temperature = 25 °C)
Temperature probe:	GTF200 Pt100 / 3-wire Product-ID: 600018 Pt100-probe, DIN class B (±0.3 °C at 0 °C), V4A-tube Ø 5 mm 50 mm length, approx. 1 m silicone cable.



Output:	voltage free relays output, change-over-contact, switching power: 10 A (ohmic load), 250 VAC
Controller state:	2-point, min-/max-alarm
Switching point:	freely adjustable
Response time:	≤ 0.5 s
Display:	approx. 13 mm high, 4-digit red LED-display
Miscellaneous:	permanent self-monitoring, digital zero point and scale adjustment
Voltage supply:	230 V AC, 50/60 Hz (standard) optionally other supply voltages are possible
Power consumption:	approx. 5 VA
Operating temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Housing:	standard rack type housing 48 x 96 mm (front frame), installation depth: approx. 115 mm (incl. screw-type/plug-in terminals)
Panel mounting:	by fixing clamps Panel cutout: 43.0 ^{+0.5} x 90.5 ^{+0.5} mm (H x W)
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm ² .
Protection class:	front side IP54, with optional sealing IP65
Electromagnetic immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, manual

Accessories and spare parts:

GGD4896

Product-ID: 603042

additional sealing for panel mounting IP65

APG-4

Product-ID: 602827

Housing for surface mounting (incl. seal GGD4896)
device assembled in housing, Dimensions: 75 x 125 x 127 mm (H x W x D) (without screw
connections), Cable insert: screw connections M12 x 1.5 and M16 x 1.5

additional suitable temperature probes

p.r.t. page 145-159



Standard variant:

GIR2000-PT-024D

Product-ID: 603491

GIR 2000 PT with voltage supply 24 V DC (22-27 V)

GIR2000-PT-OF-024D

Product-ID: 602280

GIR 2000 PT with voltage supply 24 V DC (22-27 V)

UNIVERSAL DISPLAYING DEVICE



FRONT
48 x 96

E.A.S.Y.Bus - Modul

FUNCTIONS:



TEMPERATURE DISPLAY

PRESSURE CONTROL

TACHOMETER, FLOW METER, ETC.

HIGHLIGHTS:

- Universal inputs for normalized signals, frequency, Pt100, Pt1000 and thermocouples, freely adjustable
- Integrated isolated power supply for measuring transducer (24V / 22 mA)
- Extensive self-monitoring and diagnostic system
- Serial interface - EASYBus (max. 240 devices can be combined)
- Limit functions, digital filter, min-/max value memory

GIA 2000

Product-ID: 600963 (Standard version)
Universal Displaying Device

Specifications:	
Measuring input: universal input (freely adjustable) for	
Normalized signal:	4-20 mA, 0-20 mA, 0-1 V, 0-2 V, 0-10 V, 0-50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	types J, K, N, S, T
Frequency:	TTL-signal, switching contact
Flow, Rotational speed:	TTL-signal, switching contact
Counter up / down:	TTL-signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurings / s (for normalized signal and frequency) or approx. 4 measurings / s (for temperature)
Measuring resp. display ranges, resolution:	
Temperature: (display unit selectable: °C or °F)	Pt100: -200 ... +850 °C or -50.0 ... +200.0 °C; Pt1000: -200 ... +850 °C; Type J: -170 ... +950 °C or -70.0 ... +300.0 °C; Type K: -270 ... +1372 °C or -70.0 ... +250.0 °C; Type N: -270 ... +1350 °C or -100.0 ... +300.0 °C; Type S: -50 ... +1750 °C; Type T: -270 ... +400 °C or -70.0 ... +200.0 °C
Normalized signals:	-1999 ... 9999 digit, decimal point, start and end value freely selectable
recommended range:	≤ 2000 Digit
Frequency:	0.000 Hz ... 10 kHz, display freely scalable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1-1000
Flow:	0 ... 9999 l/s, 0 ... 9999 l/min, 0 ... 9999 l/h
Counter up/down:	counter value remains on power loss 0 ... 9999 (10 min. with prescaler), pulse frequency: ≤ 10 kHz
Serial interface:	Displaying and controlling from values coming via the serial interface.
Accuracy: (at nominal temperature = 25 °C)	
- Normalized signal:	< 0.2 % FS ±1 digit (at 0-50 mV: < 0.3 % FS ±1 digit)
- Resistance thermometer:	< 0.3 % FS ±1 digit
- Thermocouples:	< 0.3 % FS ±1 digit (at type S: < 0.5 % FS ±1 digit)
- Point of comparison:	± 1 °C
- Frequency, rotational speed, counter:	< 0.1 % FS ±1 digit
Analog output: (option)	freely scalable analogue output 0-20 mA / 4-20 mA or 0-10 V
Display:	approx. 13 mm high, 4-digit red LED-display
Interface:	serial interface, electrical isolated, EASYBus compatible
Power supply for sensor:	integrated isolated power supply for measuring transducer: 24 V DC ±5 %, 22 mA (for DC-supply 18 V DC)
Miscellaneous:	permanent self-monitoring, digital filter function, measuring range boundary (limit)
Voltage supply:	230 V AC, 50/60 Hz (standard) optionally other supply voltages are possible
Power consumption:	approx. 5 VA
Operating temperature:	-20 ... +50 °C

Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Housing:	standard rack type housing 48 x 96 mm (front frame)
Installation depth:	approx. 115 mm (incl. screw-type/plug-in terminals)
Panel mounting:	with fixing clamps panel cutout: 43.0 ^{+0.5} x 90.5 ^{+0.5} mm (H x W)
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm ² .
Protection class:	front side IP54, with optional sealing IP65
Electromagnetic immunity (EMC):	EN61326 (appendix A, class B)
Scope of supply:	device, manual

Variants:

GIA 2000-012D

Product-ID: 602103

GIA 2000 with voltage supply: 12 VDC (11-14 V)

GIA 2000-024D

Product-ID: 601501

GIA 2000 with voltage supply: 24 VDC (22-27 V)

GIA 2000-230A-AA

Product-ID: 601405

GIA 2000 with analog output 0 - 20 mA, 4 - 20 mA (changeable)

GIA 2000-AV

Product-ID: 602725

GIA 2000 with analog output 0 - 10 V

Accessories and spare parts:

GGD 4896

Product-ID: 603042

additional sealing for panel mounting IP65

EAK 36

Product-ID: 603227

Unit stickers (black with white text)
for 36 different units for lettering
of display devices.



EBW 3

Product-ID: 601137

Interface converter for connection of one EASYBus-module (e. g. EASYLog) to the USB-interface of your PC. (Power supply via USB)

EBS 20M

Product-ID: 601158

software for recording and archiving of the measuring values (p.r.t. page 76).

Temperature probes

p.r.t. page 145 - 159

for other accessories p.r.t. page 112



NEW!

HIGHLIGHTS:

- Inputs for standard signals 0/4 ... 20 mA or 0/2 ... 10 V
- 2nd input for pressure transmitter at pressure loaded tanks
- Input automatic level correction
- 6 standard- and custom sized tanks selectable

TA 9648

Tank Display

Application:

The tank display TA 9648 offers content measurement of tanks with no linear connection between level and content. Measurement will be realized by hydrostatic pressure or distance sensors. The device offers the possibility to connect a level sensor. Reaching a certain level, the displayed value will be corrected automatically to the value according to the position of the installed sensor.

Specifications:

Power supply:

Supply voltage: 230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$,
24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$

Power consumption: max. 3.5 VA, with analog output 5 VA

Working temperature: -10 ... +55 °C

CE-conformity: EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input:

Current: 0/4 ... 20 mA; $R_i = 10\ \Omega$
overload 2-times; 4-times for max. 5 s

Voltage: 0/2 ... 10 V DC; $R_i = 100\ k\Omega$
overload max. 100 V

Accuracy: $< 0.1\% \pm 2$ Digit

Transmitter supply: U0 approx. 24 V; R_i approx. 150 Ω ; max. 50 mA

Display: LED rot, 14.2 mm

Indicating range: 999999 Digit with leading zero suppression

Parameter display: LED 2 digit red, 7 mm (parameter - and output indicating)

Output:

Relay: SPDT $< 250\ V\ AC < 250\ VA < 2\ A$, $< 300\ V\ DC < 50\ W < 2\ A$

Analog: 0/4...20 mA burden $\leq 500\ \Omega$; 0/2...10 V, burden $> 500\ \Omega$,
isolated, automatic output changing

- Accuracy: 0.1 %; TK 0.01 %/K

Housing: panel case DIN 96 x 48 mm, material PA6-GF; UL94V-0

Dimensions: Front 96 x 48 mm, mounting depth 100 mm

Weight: max. 390 g

Connection: clamp terminals, 0.08 ... 1.5 mm², AWG28 ... AWG14

Protection class: Front IP65, terminals IP20 acc. to BGV A3

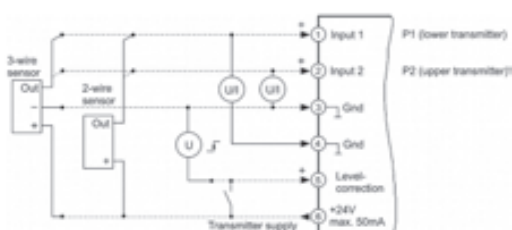
Scope of supply: Device, manual

Accessories and spare parts:

A-10, S-10, S-11, S-20 p.r.t. page 125
Pressure transmitter

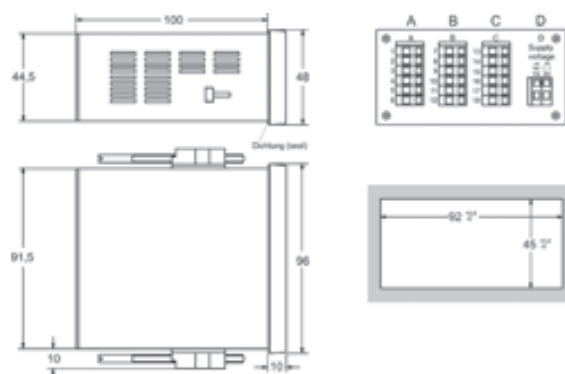
GBS01, GBS02 p.r.t. page 126
well probe

Connection:



* only with pressure loaded tanks

Dimensions:



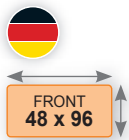
Ordering code:

TA9648- [1] - [2] - [3] - [4] - [5] - [6] - [7]

Ordering code:

1. Terminal strip A	
1	inputs 0/4...20 mA, 1 input for level correction, Integrated, transmitter supply 24 V max. 50 mA
2	as 1, but inputs 0/2 ... 10 V
2. Terminal strip B	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
3. Terminal strip C	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
AO	analog output 0/4 ... 20 mA, 0/2 ... 10 V
4. Terminal strip D; supply voltage	
0	230 V AC $\pm 10\%$ 50-60 Hz
1	115 V AC $\pm 10\%$ 50-60 Hz
4	24 V AC $\pm 10\%$ 50-60 Hz
5	24 V DC $\pm 15\%$
5. Options	
00	without option
6. Unit (appears in the unit field)	
7. Additional text placed above the display (3 x 90 mm H x W)	

UNIVERSAL COUNTER

**NEW!****HIGHLIGHTS:**

- Counting, length measurement, metering, positioning
- 2 digital input channels for summation- and subtraction
- Integrated transmitter supply
- Max. 4 preselect outputs, relay SPDT or transistor

UZ 9648

Universal Counter

Application:

The universal counter UZ 9648 has been designed for field application in process control and automation. Parameters for operation mode can be programmed. The counter can be used wherever quantity processes should be measured, displayed and monitored.

Specifications:**Power supply:**

Supply voltage: 230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$;
24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$

Power consumption: max. 3.5 VA, with analog output 5 VA

Working temperature: -10 ... +55 °C

CE- conformity: EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input:

PNP sensor: $R_i = 6.3\text{ k}\Omega$
level: < 4 V low; > 8.5 V high;
hysteresis > 2.5 V; max. 35 V DC

Namur sensor: R_i approx. 1 k Ω (< 4 mA)
level: < 1 mA low; > 2.2 mA high;
hysteresis > 0.5 mA; max. 35 V DC

Pulse frequency: input A or B = 15 kHz,
A and B together = 6 kHz,
contact = 30 Hz debounced,
2-channel rotary encoder = 8 kHz

Counting loss: 100 μ s at reset;
20 ms changing of preselect value

Min. pulse width: electronic 50 μ s, contact 5 ms

External reset: reset impulse ≥ 10 ms

Transmitter supply: 8 V DC (Namur), 24 V DC (PNP), R_i approx. 150 Ω , max. 50 mA (25 mA with 4 relay outputs)

Display LED red, 14.2 mm

Indicating range: -99999 ... +999999 Digit with leading zero suppression

Additional display: LED 2-digit red, 7 mm
(parameter - and output indicator)

Output:

Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A

Transistor: max. 35 V AC/DC, 100 mA,
with short circuit protection

Analog output: 0/4 ... 20 mA burden $\leq 500\ \Omega$; 0/2 ... 10 V,
burden > 500 Ω , with isolation

- Accuracy: 0.1 %; TK 0.01 %/K

Housing: panel case DIN 96 x 48 mm, material PA6-GF; UL94V-0

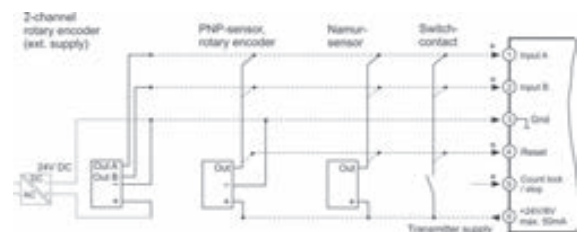
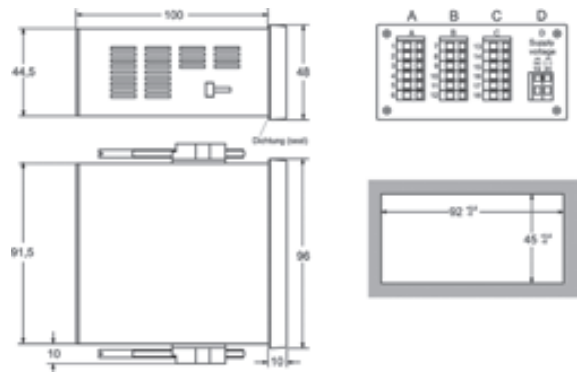
Dimensions: front 96 x 48 mm, mounting depth 100 mm

Weight: max. 390 g

Connection: clamp terminals, 0.08 ... 1.5 mm², AWG 28 ... AWG 14

Protection class: front IP65, terminals IP20 acc. to BGV A3

Scope of supply: Device, manual

Connection:**Dimensions:****Ordering code:**

UZ9648- [1] - [2] - [3] - [4] - [5] - [6] - [7]

Ordering code:

1. Terminal strip A	
1	2 configurable count inputs, display conversion, wide range of count functions, integrated transmitter supply 24 V max. 50 mA
2. Terminal strip B	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
3. Terminal strip C	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
AO	analog output 0/4 ... 20 mA, 0/2 ... 10 V DC
4. Terminal strip D; supply voltage	
0	230 V AC $\pm 10\%$ 50-60 Hz
1	115 V AC $\pm 10\%$ 50-60 Hz
4	24 V AC $\pm 10\%$ 50-60 Hz
5	24 V DC $\pm 15\%$
5. Options	
00	without option
6. Unit (appears in the unit field)	
7. Additional text placed above the display (3 x 90 mm H x W)	



pH 9648

pH and ORP panelmeter

Application:

The pH and ORP Panelmeter pH 9648 is suitable for pH and ORP measurement in food technology, chemistry within pharmaceutical and sewage-water technology. The pH 9648 operates with all common pH- and ORP electrodes. It is recommended to connect the Impedance-Converter pH40 for cable length > 5 m.

Specifications:

Power supply:

Supply voltage:	230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$; 24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$
Power consumption:	max. 3.5 VA, with analog output 5 VA
Working temperature:	-10 ... +55 °C
CE- conformity:	EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input pH/ORP

Measuring range:	1.00 ... +15.00 pH or -1500 ... +1500 mV
R_i:	> 10 ¹² Ω
Input current:	< 10 ⁻¹² A
Accuracy:	0.2 % measuring value, ± 2 Digit
pH setup:	electrode zero point 4.00 ... 10.00 pH slope 40.0 ... 70.0 mV/pH

ORP setup: ± 200 mV

Calibration mode:

- 1- or 2-point-calibration
- Buffer selection possible:
 - Schott
 - WTW
 - Ingold (Mettler Toledo)
 - Puffer acc. to DIN 19266
 - or manual buffer input
 - Data entering for zero point and slope
 - ORP offset

Temperature:

Sensor:	Pt100 or Pt1000 (2- or 3-wire connection)
Unit:	programmable °C, °F
Measuring range:	-40.0 ... +160.0 °C (-40.0 ... +320.0 °F)
Accuracy:	$\pm 0.1\%$, ± 1 Digit
Transmitter supply:	24 V DC, R _i approx. 150 Ω , max. 50 mA (25 mA with 4 relay outputs)

Display:

Parameter display:	LED red, 14.2 mm LED 2-digit red, 7 mm (Parameter - and output indicator)
---------------------------	---

Output:

Relay SPDT:	< 250 V AC < 250 VA < 2 A, < 300 V DC < 50 W < 2 A
Transistor:	< 35 V AC/DC, max. 100 mA, short-circuit-proof
Analog output active:	0/4 ... 20 mA burden $\leq 500 \Omega$; 0/2 ... 10 V burden > 500 Ω , isolated, automatic output changing (burden dependent)
Analog output passive:	4 ... 20 mA, ext. burden = $RA[\Omega] \leq (U_0 - 5 \text{ V}) \div 0.02 \text{ A}$; supply voltage 5 ... 30 V DC
Accuracy:	0.1 %

Housing:

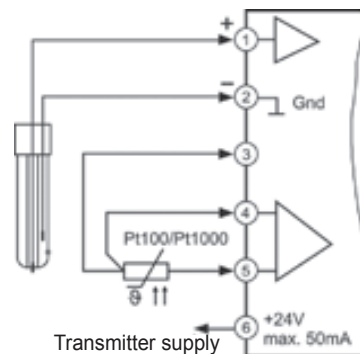
Dimensions:	Front 96 x 48 mm, mounting depth 100 mm
Weight:	max. 390 g
Connection:	clamp terminals, 2.5 mm ² single wire, 1.5 mm ² flex wire, AWG14
Protection class:	Front IP65, terminals IP20, BGV A3
Scope of supply:	Device, manual

further electrodes and accessories p.r.t page 48/49

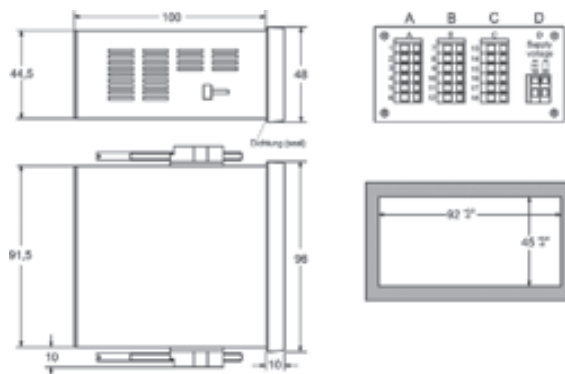
HIGHLIGHTS:

- Measuring range programmable -1 ... +15 pH / ± 1500 mV
- Temperature compensation via Pt100/Pt1000 sensor
- Analog output 0/4 ... 20 mA or 0/2 ... 10 V for pH/ORP
- Max. 4 alarm outputs relay or transistor

Connection:



Dimensions:



Ordering code:

pH9648- [1] - [2] - [3] - [4] - [5] - [6] - [7]

Ordering code:

1. Terminal strip A	13 input pH / ORP electrode, temperature compensation via Pt100 / Pt1000
2. Terminal strip B	00 not installed 2R 2 relay outputs 2T 2 electronic outputs
3. Terminal strip C	00 not installed 2R 2 relay outputs 2T 2 electronic outputs AO analog output 0/4...20 mA, 0/2...10 V DC 2A 2 analog outputs 4...20 mA passive
4. Terminal strip B supply voltage	0 230 V AC $\pm 10\%$ 50-60 Hz 1 115 V AC $\pm 10\%$ 50-60 Hz 4 24 V AC $\pm 10\%$ 50-60 Hz 5 24 V DC $\pm 15\%$
5. Options	00 without option
6. Unit appears in the unit field	
7. Additional text above the display (3 x 90 mm H x W)	

CONDUCTIVITY METER



HIGHLIGHTS:

- Input for 2- or 4-electrode cells
- Temperature compensation via Pt100
- relay or Thyristor outputs
- Analog output 0/4 ... 20 mA or 0/2 ... 10 V for the LF-value

LF 9648

Conductivity Meter

Application:

The Conductivity Meter LF9648 has been designed for the measurement of conductivity, as a degree of the purity or concentration of a liquid. In connection with 4-electrode-conductivity cells a high accuracy and insensitivity of contamination can be achieved. A further advantage is a broad range of application with only one cell. Only for measurement in ultra-pure water a special 2-electrode conductivity cell must be used.

Specifications:

Power supply:

Supply voltage: 230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$;
24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$

Power consumption: max. 3.5 VA, 5 VA with analog output

Working temperature: -10 ... +55 °C

CE-conformity: EN55022, EN60555, IEC61000-4-3/4/5/11/13

Inputs

MR conductivity: 0..2.000(0) $\mu\text{S/cm}$ up to 0..2000 / 200(0) mS/cm (at 25 °C)

- **Cell constant:** 0.080 ... 9.999

- **Accuracy:** 0.5 % of the measuring value, ± 2 Digit

- **Temperature compensation:** non linear for ultra pure water and natural water or linear programmable from 0.000 ... 9.999 %/K

MR temperature: -50.0 ... +200.0 °C; Sensor Pt100 or Pt1000

- **Accuracy:** ± 0.2 °C

Display: LED red, 14.2 mm

Indicating range: 2000(0) Digit with leading zero suppression

Parameter display: LED 2-digit red, 7 mm (parameter - and output indicator)

Outputs

Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A

Transistor: transistor, <35 V AC/DC, max. 100 mA, short circuit protected

Analog output:

Active: 0/4 ... 20 mA burden $\leq 500 \Omega$; 0/2 ... 10 V burden $> 500 \Omega$, isolated, automatic burden changing (burden dependent)

Passive: 4..20 mA, ext. burden = $RA[Q] \leq (\text{supply} - 5 \text{ V}) \div 0.02 \text{ A}$;
supply voltage 5 ... 30 V DC

Accuracy 0.1 %; TK 0.01 %/K

Housing: panel mounting DIN 96 x 48 mm, material PA6-GF; UL94V-0

Dimensions: Front 96 x 48 mm, mounting depth 100 mm,

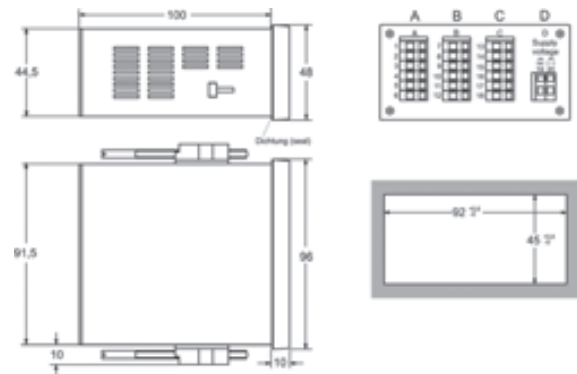
Weight: max. 390 g

Connection: clamp terminals, 0.08 ... 1.5 mm², AWG28 ... AWG14

Protection class: Front IP65, terminals IP20, BGV A3

Scope of supply: Device, manual

Dimensions:



Ordering code:

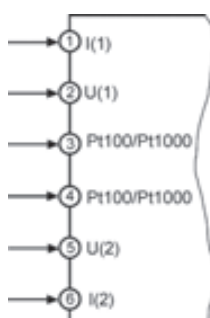
LF9648- [1] - [2] - [3] - [4] - [5] - [6] - [7]

Ordering code:

1. Terminal strip A	
1	input for 2- or 4-electrode-cells, temperature compensation via Pt100
3	as 1, but temperature compensation via Pt1000
2. Terminal strip B	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
3. Terminal strip C	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
AO	analog output 0/4..20 mA, 0/2..10 V DC
2A	2 analog outputs 4..20 mA passive
4. Terminal strip D Supply voltage	
0	230 V AC $\pm 10\%$ 50-60 Hz
1	115 V AC $\pm 10\%$ 50-60 Hz
4	24 V AC $\pm 10\%$ 50-60 Hz
5	24 V DC $\pm 15\%$
5. Options	
00	without option
01	min- and max-peak hold
14	measuring/monitoring acc. to USP<645>
6. Unit appears on the unit field	
7. Additional text above the display (3 x 90 mm H x W)	

further electrodes and accessories p.r.t. page 132

Connection:





FRONT
48 x 96

NEW!



HIGHLIGHTS:

- Measuring and indicating range separate programmable
- LED display 14.2 mm red, indicating range $\pm 9999(0)$ digit
- Max. 4 alarm outputs, relay SPDT or transistor

V 9648

Digital Voltmeter

Application:

The Digital Voltmeter V9648 has been designed to measure DC and AC (TRMS) voltage signals. Three basic models all are selectable and makes the possibility to measure voltages from 0 ... 30.00 mV up to 0 ... 999.9 V. Within a model the measurement range is free programmable. Measuring of bipolar voltages is also possible with basic models 1 and 2. For example -5 ... +5 V; or -10 ... +10 V in basic model 2. Additional a free programmable display range within $\pm 9999(0)$ digit can be assigned to a programmed voltage measurement range.

Specifications:

Power supply

Supply voltage: 230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$,
24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$

Power consumption: max. 3.5 VA, with analog output 5 VA

Working temperature: -10 ... +55 °C

CE-conformity: EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input

model 1: 0 ... 4000 mV DC/AC
model 2: 0 ... 250.0 V* DC/AC
model 3: 0 ... 999.9 V DC/AC

Input resistance: model 1 = 130 k Ω , model 2 = 1.3 M Ω ,
model 3 = 2.6 M Ω

Overload: model 1 and 2 = 300 V DC/AC TRMS,
model 3 = 1200 V DC/AC TRMS

Accuracy: < 0.1 % $\pm$ 2 digit (DC); 0.5 % $\pm$ 2 digit (AC)
crest-factor < 3 $\rightarrow$ max. 2 % error,
crest-factor < 5 $\rightarrow$ max. 5 % error

Display:

LED red, 14.2 mm

Indicating range: $\pm 9999(0)$ digit with leading zero suppression

Additional display: LED 2-digit red, 7 mm (parameter - and output indicator)

Output

Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A

Transistor: max. 35 V AC/DC, 100 mA,
with short circuit protection

Analog output: 0/4 ... 20 mA burden $\leq$ 500 Ω ; 0/2 ... 10 V,
burden > 500 Ω , with isolation
automatic burden changing

- Accuracy: 0.1 %; TK 0.01 %/K

Housing:

panel case DIN 96 x 48 mm, material PA6-GF; UL94V-0

Dimensions:

front 96 x 48 mm, mounting depth 100 mm

Weight:

max. 390 g

Connection:

clamp terminals, 0.08 ... 1.5 mm², AWG28 ... AWG14

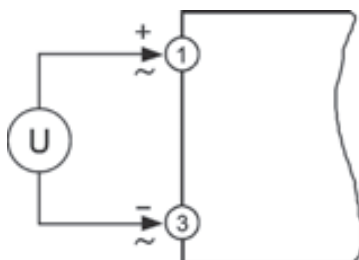
Protection class:

front IP65, terminals IP20 acc. to BGV A3

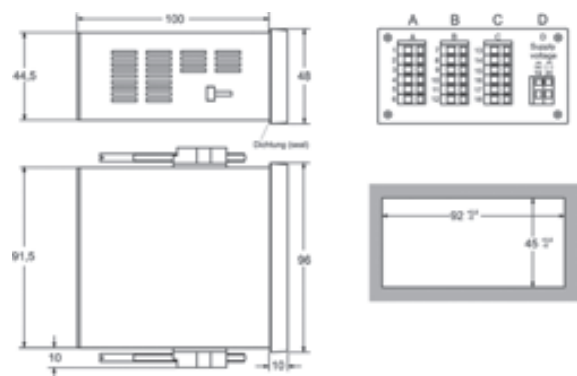
Scope of supply:

Device, manual

Connection:



Dimensions:



Ordering code:

V9648- [1] - [2] - [3] - [4] - [5] - [6] - [7]

Ordering code:

1. Terminal strip A

Measuring range programmable:

1 0 ... 4000 mV DC/AC TRMS
2 0 ... 250.0 V* DC/AC TRMS
* includes e.g ± 5 V, ± 10 V
3 0 ... 999.9 V DC/AC TRMS

2. Terminal strip B

00 not installed
2R relay outputs
2T 2 electronic outputs

3. Terminal strip C

00 not installed
2R relay outputs
2T 2 electronic outputs
AO analog output 0/4 ... 20 mA, 0/2 ... 10 V

4. Terminal strip D; supply voltage

0 230 V AC $\pm 10\%$ 50-60 Hz
1 115 V AC $\pm 10\%$ 50-60 Hz
4 24 V AC $\pm 10\%$ 50-60 Hz
5 24 V DC $\pm 15\%$

5. Options

00 without option
01 min- and max-peak hold
07 display brightness programmable, only measuring
range 1 and 2

6. Unit appears in the unit field

7. Additional text above the display (3 x 90 mm H x W)

STROM-REGLER



FRONT
48 x 96

NEW!



HIGHLIGHTS:

- Measuring range programmable 0 ... 6/60 A
- LED-Display 14.2 mm red, indicating range $\pm 9999(0)$ Digit
- Max. 4 alarm outputs, relay SPDT or electronic

A 9648

Digital Amperemeter

Application:

The Digital Amperemeter A 9648 has been designed to measure DC and AC current signals. Five basic models are selectable and possible to measure currents from 0 ... 0.900 mA to 0 ... 60.0 A. The measuring range is free programmable. Measuring of bipolar currents are possible. For example -20 ... +20 mA. Additional the free programmable display range within $\pm 9999(0)$ digit can be assigned to a programmed current measurement range.

Specifications:

Power supply

Supply voltage: 230 V AC $\pm 10\%$; 115 V AC $\pm 10\%$,
24 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$

Power consumption: max. 3.5 VA, with analog output 5 VA

working temperature: -10 ... +55 °C

Input

model 1-4 = 0 ... 0.9 mA up to 6 A DC/AC_{TRMS}
model 5 = 0 ... 4.5 up to 60 A AC_{TRMS}

Input resistant: model 1 = 20 Ω , model 2 = 2 Ω ,
model 3 = 0.2 Ω , model 4 = 0.02 Ω ,
model 5 = integrated current transformer

Basic accuracy: < 0.1 % ± 2 Digit (DC); 0.5 % ± 2 Digit (AC)

Display:

LED red, 14.2 mm

Indicating range: $\pm 9999(0)$ Digit

Parameter display: LED 2-digit red, 7 mm

Output

Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A

Transistor: max. 35 V AC/DC max. 100 mA

Analog output: 0/4 ... 20 mA, 0/2 ... 10 V, isolated

Housing: panel case DIN 96 x 48, material PA6-GF; UL94V-0

Dimensions: front 96 x 48 mm, mounting depth 100, 120 mm
(with transformer)

Weight: max. 390 g

Connection: clamp terminals, 0.08 ... 1.5 mm², AWG28 ... AWG14

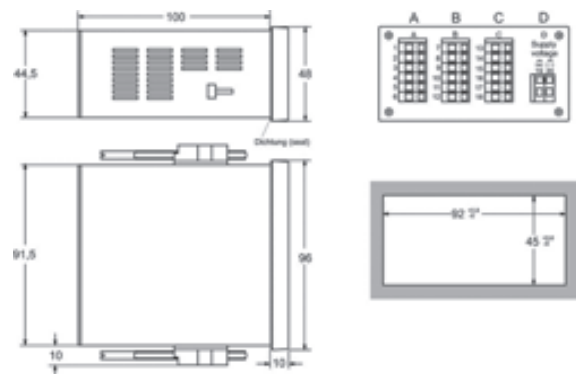
Protection class: front IP65, terminals IP20 acc. to BGV A3

Scope of supply: Device, manual

Connection:



Dimensions:



Ordering code:

A9648- 1 - 2 - 3 - 4 - 5 - 6 - 7

Ordering code:

Ordering code:	
1. Terminal strip A	
1	0 ... 9.999 mA DC / AC _{TRMS} clamp terminal
2	0 ... 99.99 mA DC / AC _{TRMS} clamp terminal
3	0 ... 999.9 mA DC / AC _{TRMS} clamp terminal
4	0 ... 6.000 A DC / AC _{TRMS} clamp terminal
5	0 ... 60.00 A AC _{TRMS} winding transformer
2. Terminal strip B	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
3. Terminal strip C	
00	not installed
2R	2 relay outputs
2T	2 electronic outputs
AO	analog output, 0/4 ... 20 mA, 0/2 ... 10 V
4. Terminal strip D; supply voltage	
0	230 V AC $\pm 10\%$ 50-60 Hz
1	115 V AC $\pm 10\%$ 50-60 Hz
4	24 V AC $\pm 10\%$ 50-60 Hz
5	24 V DC $\pm 15\%$
5. Option	
00	without option
01	min- and max-peak hold
07	display brightness programmable
6. Unit appears in the unit field	
7. Additional text above the display (3 x 90 mm H x W)	



FRONT
48 x 96

NEW!



SD 9648

Alarm-Display

Application:

The Alarm-Display SD 9648 will be used for indicating and evaluations of alarm signals as well as analog measured values. Activation with voltage free contacts, 0/24 V signals or 0/4 ... 20 mA for monitoring of analog measuring values.

Specifications:

Power supply

Supply voltage: 230 V AC $\pm 10\%$, 115 V AC $\pm 10\%$,
24 V AC $\pm 10\%$, 24 V DC $\pm 15\%$

Frequency AC: 50 / 60 Hz

Power consumption: max. 3.5 VA

working temperature: 0 ... 50 °C

CE- conformity: EN55022, EN60555, IEC61000-4-3/4/5/11/13

Inputs

Digital: 0 / 24 V DC, $R_i = 10\text{ k}\Omega$,
switching threshold low < 4 V, high > 11 V max. 35 V

Impulse/pause: min. 10 ms

Analog: 0 / 4 ... 20 mA, $R_i = 100\ \Omega$
voltage drop max. 2.2 V at 20 mA
over-load limit approx. 23 mA (max. voltage 35 V). With
powerless device the inputs became a high resistance

Accuracy: 0.1 %, ± 1 Digit

Transmitter supply: $U_o = 24\text{ V}$, $R_i = 150\ \Omega$, max. 50 mA

Display: LCD-dot matrix display white / blue, character height 6.5 mm,
with back-lite 2 lines 16 characters each

Display interval: 0.5 s (refresh time)

Output

Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A

Housing: panel case DIN 96 x 48, Material PA6-GF; UL94V-0

Dimensions: front 96 x 48 mm, mounting depth 100 mm

Weight: max. 390 g

Connection: clamp terminals, 0.08 ... 1.5 mm², AWG28 ... AWG14

Protection class: front IP65, terminals IP20 acc. to BGV A3

Scope of supply: Device, manual

Ordering code:

SD9648- 1 - 2 - 3 - 4 - 5

Ordering code:

Ordering code:	
1. Inputs	
1	20 digital inputs
2	12 digital + 8 analog inputs
2. Real time clock	
0	without clock
1	with clock
3. Supply voltage	
0	230 V AC $\pm 10\%$ 50-60 Hz
1	115 V AC $\pm 10\%$ 50-60 Hz
4	24 V AC $\pm 10\%$ 50-60 Hz
5	24 V DC $\pm 15\%$
4. Options	
00	without option
5. Additional text above the display (3 x 90mm H x W)	



NEW!

WS28D06

Slimline DIN-Rail Mounted SSR

WS28D12

Slimline DIN-Rail Mounted SSR

WS60D12

Slimline DIN-Rail Mounted SSR

General:

The WS range offers slim-line products for greater space saving. These single phase solid state relays fit a standard DIN-rail in a reduced 12 mm or 18 mm width for a minimal panel footprint. The WS SSR is a self contained device with no need for an additional heat sink.

Application:

- 6 & 12 Amps output rating
- 24 ... 280 V and 48 ... 600 VAC load voltage ratings
- 4 ... 32 VDC control voltage
- DIN rail mounting
- IP20 housing
- CE and UL / cUL
- RoHS compliant

Specifications:	WS28D06	WS28D12	WS60D12
Max. Rated Current:	6 A	12 A	12 A
Control voltage:	4 ... 32 VDC	4 ... 32 VDC	4 ... 32 VDC
Load voltage:	24 ... 280 VAC	24 ... 280 VAC	48 ... 600 VAC
Scope of supply:	Device	Device	Device

WD28D10

DIN-Rail Mounted SSR with Integral Heatsink

WD60D20

DIN-Rail Mounted SSR with Integral Heatsink

WD60D30

DIN-Rail Mounted SSR with Integral Heatsink

WD60D45

DIN-Rail Mounted SSR with Integral Heatsink

General:

The West family of SSRs includes WD range of DIN-rail mounted single phase devices. The relays come in 22.5 mm and 45 mm width and range up to 45 A. The SSRs can be directly mounted or DIN-rail mounted. The series also benefit from built-in heat sink with small panel footprint.

Application:

- 10, 20, 30 and 45 Amps output rating
- 24 ... 280 V and 48 ... 600 VAC load voltage ratings
- 4 ... 32 VDC control voltage
- DIN-rail or panel mounting
- Epoxy-free design
- IP20 touch-safe housing
- CE and UL / cUL
- RoHS compliant

Specifications:	WD28D10	WD60D20	WD60D30	WD60D45
Max. Rated Current:	10 A	20 A	30 A	45 A
Control voltage:	4 ... 32 VDC	4 ... 32 VDC	4 ... 32 VDC	4 ... 32 VDC
Load voltage:	24 ... 280 VAC	48 ... 600 VAC	48 ... 600 VAC	48 ... 600 VAC
Scope of supply:	Device	Device	Device	Device

TEMPERATURE REGULATING DEVICE

**HIGHLIGHTS:**

- Configuration in less than 60 s
- 18 mm actual value display
- Short installation depth
- PID regulator with automatic optimisation
- Mini programmer

MAXVU 16

Temperature regulating device

MAXVU 8

Temperature regulating device

General:

The new MAXVU is a cost-effective temperature regulating device that is easy to configure, has improved display legibility and costs related to wiring and spatial requirements are reduced to a minimum.

Save valuable time - configuration in less than 60 seconds. The MAXVU was specially designed for easy operability thanks to a simple configuration and adjustment menu accessible via the front keypad.

- Includes 10 of the most common parameter settings
- Setup in less than 60 seconds for many applications
- An expanded configuration menu can be added if necessary. The easy to use MAXVU PC software can also be used for quick configuration of multiple instruments.

Application:

MAXVU provides an affordable solution for applications with essential requirements for temperature regulation.

- Packaging lines
- Heat treatment
- General temperature control processes
- Food and beverage industry

Specifications:

Inputs: Thermocouple: B, C, J, K, L, N, R, S, T, RTD: PT100 2-wire or 3-wire, linear ranges: 0/4 ... 20 mA, 0/1 ... 5 V, 0/2 ... 10 V

Outputs: 2 or 3 output relay or SSR

Functions: PID or On/Off regulation, direction of action adjustable to 'heating exclusively' or 'heating and cooling'
2 alarms (absolute, deviation, band, loop alarm)
Self-retaining or non-self-retaining alarm outputs
One or two point calibration
Ramping and dwelling modes with variable delay time
Reset to standard values

Communication: RS485 Modbus RTU
Integrated configuration interface

Programming: Front keys or software programming

Front panel & touch panel: 3 operating buttons

Messages: Output status
Heating, cooling, alarm

Display: 1/16 DIN: 18 mm top, 10.2 mm bottom
1/8 DIN: 18 mm top, 18 mm bottom

Scope of supply: Device, manual

Accessories:

TTL / cable for MAXVU
9407-998-00003

Software
available for download free of charge at www.greisinger.de

Ordering code:

MAXVU 16- **1** - **2** - **3** - **4**

Ordering code:

1. Version	
0	Standard
2. Supply voltage	
M	100 ... 240 V 50 Hz / 60 Hz AC
L	24 V AC / DC
3. Output configuration	
AA 0	logic SSR / logic SSR
AR 0	logic SSR / relay
RR 0	relay / relay
AA R	logic SSR / logic SSR / relay
AR R	logic SSR / relay / relay
RR R	relay / relay / relay
4. Option module 2	
0	without
C	RS485 interface (ModBus RTU)

MAXVU 8- **1** - **2** - **3** - **4**

Ordering code:

1. Version	
0	Standard
2. Supply voltage	
M	100 ... 240 V 50 Hz / 60 Hz AC
L	24 V AC / DC
3. Output configuration	
AA 0	logic SSR / logic SSR
AR 0	logic SSR / relay
RR 0	relay / relay
AA R	logic SSR / logic SSR / relay
AR R	logic SSR / relay / relay
RR R	relay / relay / relay
4. Option module 2	
0	without
C	RS485 interface (ModBus RTU)

CAL DIGITALES THERMOSTAT



ET 2011

Digital thermostat

General:

The series of CAL digital thermostats is a complete family of small-format devices for simple heating and cooling applications that are also equipped with displays and timers for corresponding monitoring and regulation. The devices are easy to configure and use, are equipped with a large, easily legible display and have a compact design that enables quick installation.

Application:

Heating and cooling applications

- Thermocouple or PT100 inputs
- 2 outputs for control and for alarms
- Format 35 x 77 mm (cutout 29 x 71 mm)

Specifications:

Input:	Thermocouples (J, K, T, S, R) or PT100
Temperature range:	PT100: -99.9 ... 300.0 °C (-99.9 ... 543.0 °F) PT100: -200 ... 600 °C (-328 ... 1112 °F) J T/C: 0 ... 600 °C (32 ... 1112 °F) K T/C: 0 ... 1300 °C (32 ... 2372 °F) T T/C: 0 ... 400 °C (32 ... 752 °F) S & R T/C: 0 ... 1700 °C (32 ... 3092 °F)
Regulation type:	On/Off, PID
Regulating strategy:	Heating or cooling regulation
Number of relay outputs (8A):	1
Number of SSR outputs:	1

Ordering code:

ET 2011- 1 - 2 - 3

Ordering code:

1. Sensor type	
RT	PT100/RTD
T	Thermocouple
2. Supply voltage	
230	230 V AC
110	110 V AC
024	024 V AC
SM	9-30 V DC / 7-24 V AC
3. Power relay option	
(blank)	8A relay
P	16A relay

NTC-SENSORS

SUITABLE FOR EDT 24XX

E-NTC-APS

NTC-Sensor
Air sensor, maximum 150 °C, stainless steel casing, 1.5 m silicone cable

E-NTC-LPS

NTC-Sensor
Liquid sensor, maximum 150 °C, stainless steel casing, 1.5 m silicone cable

DEFROSTING THERMOSTAT



EDT 2411

Defrosting thermostat

EDT 2412

Defrosting thermostat

EDT 2423

Defrosting thermostat

General:

The series of CAL digital thermostats is a complete family of small-format devices. The devices are easy to configure and use, are equipped with a large, easily legible display and have a compact design that enables quick installation. The EDT defrosting models are provided with a variety of functions for the optimal regulation and performance of cooling systems, including compressor protection, real-time clock and communication.

Application:

- Compressor, defrosting and fan regulation
- Up to two NTC inputs for main and defrosting temperature measurement
- Support of manual, time-controlled and evaporator-controlled defrosting modes
- Format 35 x 77 mm (cutout 29 x 71 mm)
- Real-time clock (optional)
- RS485 communication (optional)

Specifications:	EDT2411	EDT2412	EDT2423
Type and number of inputs:	NTC x 1	NTC x 1	NTC x 2
Temperature range:	-60 ... +150 °C (-76 ... +302 °F)	-60 ... +150 °C (-76 ... +302 °F)	-60 ... +150 °C (-76 ... +302 °F)
Defrosting function:	Manual (button or DI)/automatic timer	Manual (button or DI)/automatic timer	Manual (button or DI)/timer/ evaporator temperature
Number of relay outputs (8A):	1	2	3
High-current relay (optional) - compressor output (20A):	•	•	
Defrosting output:		•	•
Fan output:			•
Defrosting sensor input:			•
Real-time clock (optional):	•	•	•
RS485 Modbus communication (optional):	•	•	•

Ordering code:

EDT 24- 1 - 2 - 3 - 4

Ordering code:

1. Number of inputs and outputs	
11	1x NTC input, 1 x relay output
12	1x NTC input, 2 x relay output
23	2x NTC input, 3 x relay output (2nd o/p for evap' temp')
2. Supply voltage	
230	230 V AC
110	110 V AC
12	12 V AC/DC
24	24 V AC/DC
3. Compressor relay output	
R	Dual Relay Output
P	16 A output (not with EDT 2423)
4. Options	
none	(blank)
RTC	real-time clock (only with 8A relay)
RS	Modbus RTU

TEMPERATURE CONTROLLER



HIGHLIGHTS:

- Installation depth only 63 mm
- Plug-in connection terminals
- Clear visualization of the switching state
- Multifunction input
- Presetting via configuration code

KM 3 WITH ANALOG OUTPUT

KM

Temperature controller

General:

Self-optimizing, microprocessor controlled digital controller with 2-, 3- point or PID control mode, timer function, programmer function, 3-point step control mode with selectable set-point gradient (ramp function)

Application:

- industrial burner
- thermal power station
- medical technology
- plastic injection moulding
- kitchen technology

Specifications:

Inputs:

Semiconductor:	PTC KTY 81-121: -50 ... +150 °C ±0.5 % of i.v.+ 1 digit
Resistance thermometer:	Pt100 / 3-wire: -200 ... +850 °C ±0.5 % of i.v.+ 1 digit Pt1000 / 2-wire: -200 ... +850 °C ±0.5 % of i.v.+ 1 digit
Thermocouple:	Type J: -50 ... +1000 °C ±0.5 % of i.v.+ 1 digit Type K: -50 ... +1370 °C ±0.5 % of i.v.+ 1 digit Type S: -50 ... +1760 °C ±1 % of i.v.+ 1 digit Type R: -50 ... +1760 °C ±0.5 % of i.v.+ 1 digit Type T: -70 ... +400 °C ±0.5 % of i.v.+ 1 digit 0 ... 50 mV, 0(12) ... 60 mV: -1999 ... +9999 ±0.5 % of i.v.+ 1 digit
Standard signal:	0(4) ... 20 mA: -1999 ... +9999 ±0.5 % of i.v.+ 1 digit 0(1) ... 5 V, 0(2) ... 10 V: -1999 ... +9999 ±0.5 % of i.v.+ 1 digit

Outputs:

Output OUT1:	Relay: normally-open contact, 4 A / 2 A / 240 VAC Semiconductor relay connection: 12 VDC, 12 mA Analog output: (0/4 ... 20 mA, 0/2 ... 10 V) (only KM3)
Output OUT2:	Relay: normally-open contact, 4 A / 2 A / 240 VAC Semiconductor relay connection: 12 VDC, 12 mA
Output OUT3:	Relay: normally-open contact, 4 A / 2 A / 240 VAC Semiconductor relay connection: 12 VDC, 12 mA
Output OUT4:	Semiconductor relay connection: 12 VDC, 12 mA (programmable)

Control mode: 2-point (on / off), 3-point (neutral zone), PID, double PID

Display: two-rowed

7-segment LED: 4-digit, red / green / orange, 15.5 mm

Additional display: set value display, green, 7 mm

Resolution:

Temperature:	1 °C or 0.1 °C in range -99.9 ... +999.9 °C
Current / voltage:	freely scalable, decimal point setable
Temperature unit:	°C, °F
Supply:	24 VAC / DC ±10 %, 50 / 60 Hz 100 ... 240 VAC ±10 %, 50 / 60 Hz

Configuration interface: TTL 5-pole

Control input: 1 or 2 potential-free inputs

Transmitter supply: 12 VDC / 20 mA

COM interface: serial RS 485 (ModBus)

Housing:

Protection class (Front):	IP65
Connection:	screw terminals (fixed)
Dimensions:	48 x 48 x 63 mm (W x H x D)
Scope of supply:	Device, manual

Modell: KM - # A B C D E F G H I

KM	ordering code:
#	Design type
1	Controller (+ timer)
3	Controller (+ timer + programming unit)
A	Additional functions
-	None
T	Timer function
P	Programmer + timer function (only KM3)
B	Power supply
H	100 ... 240 VAC (-15 ... +10 %)
L	24 VAC (-25 ... +12 %) or 24 VDC (-15 ... +25 %)
C	Input
C	TC, PT100, PT1000, mA, mV, V + digital input 1
D	Output OP1
R	Relay (1 SPST NO, 4 A/250 VAC)
O	VDC for SSR (12 VDC/20 mA)
I	Analog output (0/4 ... 20 mA, 0/2 ... 10 V) (only KM3)
E	Output OP2
-	Nonexistent
R	Relay (1 SPST NO, 2 A/250 VAC)
O	VDC for SSR (12 VDC/20 mA)
M	Relay (1 SPST NO, 2 A/250 VAC) (only KM3 servomotor) (note)
F	Output OP3
-	Nonexistent
R	Relay (1 SPST NO, 2 A/250 VAC)
O	VDC for SSR (12 VDC/20 mA)
M	Relay (1 SPST NO, 2 A/250 VAC) (only KM3 servomotor) (note)
G	Output OP4
D	I/O digital
H	Serial communication
-	TTL
S	RS485 Modbus
I	Terminal type
-	Standard (no extensible screw terminal block)
E	With extensible screw terminal block
N	With extensible terminal block (only fixed part)

Standard design types (available ex stock):

KM-1 HCRRRD--

Art.-Nr: 605743

KM 1 with 100 ... 240 VAC (power supply), TC, Pt100, Pt1000, mA, mV, V + digital input 1 (input), relay (1 SPST NO, 2 A/250 VAC) and I/O digital (outputs)

KM-1 LCRRRD--

Art.-Nr: 605744

KM 1 with 24 VAC (-25 ... +12 %) or 24 VDC (-15 ... +25 %), TC, Pt100, Pt1000, mA, mV, V + digital input 1 (input), relay (1 SPST NO, 2 A/250 VAC) and I/O digital (outputs)

KM-3 HCIR-D--

Art.-Nr: 605745

KM 3 with 100 ... 240 VAC (power supply), TC, Pt100, Pt1000, mA, mV, V + digital input 1 (input), analog output (0/4 ... 20 mA, 0/2 ... 10 V), relay (1 SPST NO, 2 A/250 VAC) (outputs)

other design types upon request



GIA 0420 VO

DEVICE WILL TAP FROM

4 - 20 mA LOOP CURRENT

GIA 0420 VOT or
GIA 010 VOTCAN BE TURNED
TO ANY POSITION**GIA 0420 VO**

Product-ID: 601016

Plug-in display without buttons, 4-20 mA

GIA 0420 VO-T

Product-ID: 604152

Plug-in display without buttons, 4-20 mA

GIA 010 VO-T

Product-ID: 604872

Plug-in display without buttons, 0-10 V

Specifications:

	GIA 0420	GIA 010
Input signal:	4 - 20 mA (2-wire)	0 - 10 V (3-wire)
Voltage load:	approx. 2 V, (approx. 3.5 V at ...-ex)	-
Input resistance:	-	approx. 100 kOhm
Supply voltage:	-	12 - 28 V DC
Supply current:	from current loop	< 10 mA
Accuracy:	± 0.2 % FS ±1 digit (at nominal temperature = 25 °C)	
Display:	10 mm high LCD	
Display range:	-1999 ... +9999	
Decimal point:	any position	
Scale:	freely adjustable via 3 buttons (for „VO“: accessible after cover has been removed)	
Measuring rate:	approx. 5 measurements / s	
Filter:	adjustable	
Limit:	3 limit functions selectable:	
LI 0:	Values above/below range permissible	
LI 1:	Values above/below range not permissible	
LI 2:	When range is exceeded, the refering rail will be displayed	
Switching outputs: (only devices with option S1 or S2)		
- S1:	1 electrically isolated open collector outputs	
- S2:	2 electrically isolated open collector outputs, connection via separate M8 jack	
Switching point, switching hysteresis:	freely adjustable	
max. switching voltage:	28 V	
max. switching current:	1 A (option S1: 20 mA)	
Reaction time:	≤ 250 ms	
Min./Max. value memory:	memorizing of max. and min. values.	
Operation, Configuration:	via 3 keys	
Working conditions:	-25 ... +50 °C / 0 ... 80 % RH (non-condensing)	
Electric connection:	special-adapter design for cubic plug EN 175301-803/A for simple plug-in wherever required. 2 screws (68 and 75 mm) included in scope of supply.	
Housing:	ABS, keypad (or transparent panel made of polycarbonate) approx. 48.5 x 48.5 x 35.5 mm (H x W x D) without special adapter, approx. 50.5 x 90 x 39.5 mm (H x W x D) with special adapter	
Protection rating:	IP65 (when mounted appropriately)	
Scope of supply:	Device, manual	

HIGHLIGHTS:

- scale freely adjustable „on site“ within seconds,
no auxiliary devices required
- large display range from -1999 ... 9999 digit.
- maximum accuracy and minimum temperature drift
- large, 10 mm high LCD
- monitoring for probe damage, probe short circuit, values above/
below permissible limit
- steady display even if transmitter signal is disturbed: due to
software filters (can be switched on/off)

GIA 0420 VO-T - ex

Product-ID: 601040

Plug-in display 0-10 V with Ex-protection for
all potentially explosive atmospheres
Ex qualification: Ex II 2G Ex ia/ib IIC/IIB T4**GIA 010 VO-T - ex**

Product-ID: 604874

Plug-in display 0-10 V with Ex-protection for
all potentially explosive atmospheres
Ex qualification: Ex II 2G Ex ia/ib IIC/IIB T4(Further Information please refer to our Homepage www.greisinger.de)**Option:****S1**with 1 electrically isolated switching output
(Option S1 just in combination with Ex-device available)**S2**with 2 electrically isolated switching outputs
Delivery incl. 1 m connecting cable for connection of both switching outputs (Option S2
not in combination with Ex-device available)**GIA 0420 WK-T**

Product-ID: 601653

plug-in display with buttons, 4-20 mA

GIA 0420 WK-T - ex

Product-ID: 601877

plug-in display with Ex-protection for all
potentially explosive atmospheres, 4-20 mA**GIA 010 WK-T**

Product-ID: 604879

plug-in display with buttons, 0-10 V

GIA 010 WK-T - ex

Product-ID: 604880

plug-in display with Ex-protection for all
potentially explosive atmospheres, 0-10 V**Specifications:**

as GIA ... VOT but

Electric connection: Connection to any standard signal source 4-20 mA or 0-10 V
via 2 m connection cable.**Housing:** with mounting holes can be mounted to any surface.

PLUG ON CONTROLLER/DISPLAY NEEDS NO AUXILIARY ENERGY



LED-DISPLAY

FREELY SCALABLE

VIA 3 KEYS

GRA 0420 VO

Product-ID: 601022

Plug on controller/display without auxiliary energy,
output 4-20 mA, 1 electrically isolated switching output.

GRA 010 VO

Product-ID: 601024

Plug on controller/display without auxiliary energy,
output 0-10 V, 1 +Ub-switching output.

Specifications:	GRA 0420 ...	GRA 010 ...
Input signal:	4 ... 20 mA (2-wire)	0 ... 10 Volt (3-wire)
Voltage load:	< 5.5 V	--
Input resistance:	--	approx. 30 kOhm
Supply voltage:	--	12 - 28 V DC
Supply current:	from current loop	< 10 mA
Display:	approx. 7 mm high, 4 digit LED	
Display range:	-1999 ... 9999 digit, first and last value freely adjustable	
Recommended range:	≤ 2000 digit	
Decimal point:	any position	
Accuracy:	≤ 0.2 % FS ±1 digit (at nominal temperature = 25 °C)	
Measuring rate:	> 50 measurements / s	
Filter:	selectable in 3 stages	
Limit:	3 limit functions selectable:	
LI 0:	Values above/below range permissible	
LI 1:	Values above/below range not permissible	
LI 2:	When range is exceeded, the refering rail will be displayed	
Switching outputs:		
GRA0420VO:	1 electrically isolated open collector output, connection via cubic plug	
GRA010VO:	1 +Ub-switching open collector output, connection via cubic plug	
Option ... - S2:	2 electrically isolated open collector outputs, connection via separate M8 jack	
Switching point, switching hysteresis:	freely adjustable	
max. switching voltage:	28 V	
max. switching current:	20 mA (at option ... - S2: 1 A)	
Reaction time:	≤ 20 ms	
Switching functions:	2 or 3 point controller, 2 point controller with alarm, min-/max-alarm	
Operation:	via 3 keys	
Working temperature:	-25 ... +50 °C	
Relative humidity:	0 ... 80 % RH (non-condensing)	
Electric connection:	special-adapter design for cubic plug EN 175301-803/A for simple plug-in wherever required. 2 screws (68 and 75 mm) included in scope of supply.	
Housing:	ABS, keypad (resp. transparent panel made of polycarbonate)	
Dimension:	approx. 48.5 x 48.5 x 35.5 mm (H x W x D) without special adapter, approx. 50.5 x 90 x 39.5 mm (H x W x D) with special adapter	
Protection rating:	IP65 (when mounted appropriately)	
Scope of supply:	Device, manual	

HIGHLIGHTS:

- with 1 open collector output
optional with 2 electrically isolated high current open collector switching outputs (28 V / 1 A)
- 4 switching functions
- fast controlling and supervision (reacting time <20 ms)
- alternatively available version: 0-10 V (auxiliary energy required)
- min./max. value memory
- 3 limit functions, 3 filter stages
- alarm delay adjustable
- extensive self check and diagnosis system

Variants:**GRA 0420 VO-S2**

Product-ID: 605920

design type with 2 electrically isolated switching outputs. Outputs with increased switching current (28 V/1 A), connection via separate M8 jack (Delivery incl. 1 m connecting cable for connection of both switching outputs)

GRA 0420 VO-OT

Product-ID: 605532

design type without pushbuttons in the cover (device's adjustment is not accessible for users)

GRA 010 VO-S2

Product-ID: 607650

design type with 2 electrically isolated switching outputs. Outputs with increased switching current (28 V/1 A), connection via separate M8 jack (Delivery incl. 1 m connecting cable for connection of both switching outputs)

GRA 010 VO-OT

Product-ID: 607645

design type without pushbuttons in the cover (device's adjustment is not accessible for users)

GRA 0420 WK

Product-ID: 604881

Without auxiliary energy, output 4-20 mA, 1 electrically isolated switching output.

GRA 010 WK

Product-ID: 604882

Output 0-10 V, 1 electrically isolated switching output.

Specifications:

same as GRA ... VO, but

Electric connection: connection to any standard signal source and switching output via 2 m connection cable.

Housing: with mounting holes can be mounted to any surface whatever.



HOUSINGS FOR SURFACE MOUNTING FOR BUILD IN OF DEVICES



APG-1*

Product-ID: 602826

Housing for surface mounting incl. seal GGD2448

Dimensions: 80 x 82 x 95 mm (H x W x D), without elbow-plug

Panel cutout: for 1 display at the format 24 x 48 mm

Connection: elbow-plug in according EN 175301-803/A, 4-pin

Protection class: IP65

Suitable for: GIA 20 EB / GIR 230 ... / GIA 0420 / GIA 0420 SP / GIA 2448 /WE / GTH2448/1,2,3



APG-2*

Product-ID: 603178

Housing for surface mounting incl. seal GGD2448

Dimensions: 80 x 82 x 95 mm (H x W x D), without screw connections

Panel cutout: for 1 display at the format 24 x 48 mm

Connection: 2 x screw connections M12 x 1.5

Protection class: IP65

Suitable for: GIA 20 EB / GIR 230 ... / GIA 0420 / GIA 0420 SP / GIA 2448 /WE / GTH2448/1,2,3



APG-3*

Product-ID: 603462

Housing for surface mounting incl. seal GGD2448

Dimensions: 80 x 82 x 95 mm (H x W x D), without screw connections

Panel cutout: for 2 displays at the format 24 x 48 mm

Connection: 2 x screw connections M12 x 1.5

Protection class: IP65

Suitable for: GIA 20 EB / GIR 230 ... / GIA 0420 / GIA 0420 SP / GIA 2448 /WE / GTH2448/1,2,3



APG-4*

Product-ID: 602827

Housing for surface mounting incl. seal GGD4896

Dimensions: 75 x 125 x 126 mm (H x W x D), without screw connections

Panel cutout: for 1 display at the format 48 x 96 mm

Connection: screw connections M12 x 1.5 and M16 x 1.5

Protection class: IP65

Suitable for: GIA 2000 / GIR 2000 Pt / GIR 2002 ..., / GTH 83 EG, / GTH 1150 EG GIR 300, GIR360



APG-6*

Product-ID: 603179

Housing for surface mounting incl. seal GGD4896

Dimensions: 175 x 125 x 126 mm (H x W x D), without screw connections

Panel cutout: for 2 displays at the format 48 x 96 mm

Connection: screw connections 2 x M12 x 1.5 and 2 x M16 x 1.5

Protection class: IP65

Suitable for: GIA 2000 / GIR 2000 Pt / GIR 2002 ..., / GTH 83 EG, / GTH 1150 EG GIR 300, GIR360



APG-7*

Product-ID: 606825

Housing for surface mounting incl. seal GGD4896

Dimensions: 72 x 122 x 126 mm (H x W x D), without screw connections

Panel cutout: for 1 display at the format 36 x 72 mm

Connection: screw connections M12 x 1.5

Protection class: IP65

Suitable for: GIA 2000 / GIR 2000 Pt / GIR 2002 ..., / GTH 83 EG, / GTH 1150 EG GIR 300, GIR360

* Note: All housings without installation device and without unit sticker!

These (see page 89) have to be ordered separately!

The Installation device will be assembled for free in the housing (on common order) if desired.

ALARM LIGHT WITH BUZZER



ALARM 230V

Product-ID: 600913

Alarm light with buzzer

General:

Universal alarm device with flashlight and buzzer, which is connected easily to relay outputs and the 230 V grid.

Specifications:

Color:	red
Sound level:	92 dB
Power supply:	230 V AC / 50 Hz
Working temperature:	-20 ... +50 °C
Protection class:	IP 65
Suitable for:	e. g. GIR 2002, GIR 230, GIR 300

SOLID STATE RELAYS



WP66D10

Solid State Relay

WP66D25

Solid State Relay

WP66D50

Solid State Relay

WP66D75

Solid State Relay

General:

The WP SSRs provide an economy option for users requiring devices to switch up to 75A.

- Panel mounting
- High thermal performance
- CE and UL / cUL
- RoSH compliant

Specifications:

Max. rated current:	10, 25, 50, 75 A
Control voltage:	48 ... 660 V AC
Load voltage:	4 ... 32 V DC
Scope of supply:	Device

ACCESSORIES

POWER SUPPLY



GNG 220



GNG 12/300



DPP 15

GNG 220/2

Product-ID: 600282

Power supply integrated in snap-on housing for top hat rail - for 2 transmitters

Specifications:

Input voltage:	230 V, 50/60 Hz
Output voltage:	2 x 18 V DC $\pm 5\%$, 25 mA each
Dimensions:	48 x 96 x 52 mm (W x H x D)
Mounting:	snap-on to top hat rail

GNG 220/2-12V

Product-ID: 600305

identical to GNG220/2, but with output voltage 2 x 12 V DC, 30 mA each

GNG 220

Product-ID: 603813

identical to GNG220/2, but with output voltage 1 x 12 V DC, 100 mA, unregulated

GNG 12 / 300

Product-ID: 600274

Power supply integrated in snap-on housing for top hat rail

Specifications:

Input voltage:	230 V, 50/60 Hz
Output voltage:	12 V DC $\pm 5\%$, 300 mA
Dimensions:	70.4 x 96 x 62 mm (W x H x D)
Mounting:	snap-on to top hat rail

GNG 24 / 150

Product-ID: 600275

identical to GNG12/300, but with output voltage: 24 V DC $\pm 5\%$, 150 mA other voltage upon request**DPP 15**

Product-ID: 607282

DC power supply unit

Specifications:

Input voltage:	85 ... 264 V AC, 50 ... 60 Hz or 90 ... 375 V DC
Output voltage:	22.5 ... 28.5 V DC, adjustable by trimmer
max. output current:	0.6 A
Dimensions:	22.8 x 75 x 102 mm (W x H x D)
Mounting:	snap-on to top hat rail

DC/DC-CONVERTER

**GNG 12 / 24**

Product-ID: 600276

GNG 24 / 24

Product-ID: 600277

DC/DC-converter to electrically isolate 12 V or 24 V DC-supply voltages

Specifications:

Input voltage:	GNG12/24: 10 - 18 V DC GNG24/24: 19 - 30 V DC
Output voltage:	24 V DC $\pm 5\%$, max. 80 mA, electrically isolated
Insulating voltage:	500 V
Operating temperature:	-20 ... +70 °C
Mounting:	snap on to top hat rail.
Dimensions:	minimum space requirements due to narrow rack housing (module fully encapsulated). Installation width only 22.5 mm.

GNG 12 / 2 x 24

Product-ID: 607942

GNG 24 / 2 x 24

Product-ID: 605492

DC/DC-converter

Specifications:

Input voltage:	GNG 12 / 2 x 24: 10 - 18 V DC GNG 24 / 2 x 24: 19 - 30 V DC
Output voltage:	2 x 24 V DC $\pm 5\%$, max. 80 mA each, electrically isolated

other data identical to GNG12/24 resp. GNG24/24

POWER SUPPLY AND RELAY MODULE (E.G. FOR GIA 20 EB)

**GNR10**

Product-ID: 603680

Power supply and relay module for top-hat rail, power supply for one GIA 20 EB and one transducer.

Specifications:

Input voltage:	230V, 50/60 Hz (others upon request)
Output voltage:	approx. 11 V DC (unregulated) for the supply of a GIA20EB 18 V DC $\pm 5\%$ (regulated), 25 mA for measuring transducer
Relay outputs:	2 volt-free changeover contacts, switching current: max. 10 A ohmic load.
Connection:	screw-type terminal
Dimensions:	48 x 96 x 60 mm (W x H x D)
Mounting:	snap on to top hat rail

GR10

Product-ID: 607943

Relay module for top-hat rail for one GIA 20 EB to mounting to a top-hat rail

Specifications:

Input voltage:	12 V DC (others e.g. 24 VDC upon request)
Relay outputs:	2 volt-free changeover contacts, switching current: max. 10 A ohmic load.
Connection:	screw-type terminal
Dimensions:	48 x 96 x 60 mm (W x H x D)
Mounting:	snap on to top hat rail

LOGGER/ EASYBUS



Data logger



EL-USB-2-LCD

EL-USB-TC-LCD



T-Logg 100 ..



T-Logg 120 ..



T-Logg 160

Application:

	EL-USB-2-LCD	EL-USB-TC-LCD	T-Logg 100 ..	T-Logg 120 ..	T-Logg 160
Standard signal				•	
Temperature	•	•	•		•
Humidity	•				•
USB-Connection	direct	direct	USB 100		

Device information:

Catalogue page	105	105	105	106	106
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EASYBus Data logger



EASYLog
40 K ..



EASYLog
40 IMP/ ..



EASYLog
24 RFT ..



EASYLog
40 NS ..



EASYLog
40 BIN



EASYLog
80 CL

Application:

	EASYLog 40 K ..	EASYLog 40 IMP/ ..	EASYLog 24 RFT ..	EASYLog 40 NS ..	EASYLog 40 BIN	EASYLog 80 CL
Standard signal				•		
Temperature	•		•			•
Humidity			•			•
Pressure (abs.)						•
Pulse		•				
State					•	
EASYBus-load	2	2	2	2	2	2

Device information:

Catalogue page	107	109	108	109	110	110
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USB DATA LOGGER WITH DISPLAY



EL-USB-2-LCD

Product-ID: 602982

USB Data Logger for Humidity / Temperature and Dew Point

EL-USB-TC-LCD

Product-ID: 602983

USB Data Logger for external Thermocouples (J, K and T)

General:

- Direct connection to USB interface
- 2 programmable alarm limits
- LED for indication of low battery power
- Data logger with display
- red, green and orange LED for system status
- Protection class IP67
- incl. software

Specifications EL-USB-2-LCD:

Measuring Range:

Temperature: -35 ... +80 °C

Humidity: 0 ... 100 % RH

Dew Point: via software

Resolution: 0.5 °C / 0.5 % RH

Accuracy:

Temperature (typ): ± 1 °C

Humidity: ± 3,5 % RH (in the range 20 ... 80 % RH)

Dew Point: ± 2 °C (in the range 40 ... 100 % RH/25 °C)

Memory: 16.382 recordings per humidity and temperature

Logging Interval: 10 s, 1 min, 5 min, 30 min, 1 h, 6 h, 12 h programmable via software

Serial Interface: USB

Battery: 3.6 V lithium battery, size 1/2 AA,

Dimensions housing: 103 x 26.4 mm (L X W), Ø 27 mm

Scope of supply: 1 device incl. lithium battery 3.6 V, 1 software, 1 protection cap, 1 operating manual (on CD-ROM), 1 clip

Specifications EL-USB-TC-LCD:

Measuring Range:

Type J: -130 ... +900 °C,

Type K: -200 ... +1300 °C

Type T: -200 ... +350 °C

Resolution: 0.5 °C

Accuracy (typ.): ± 1.0 °C (at nominal temperature 25 °C)

Thermocouple Connectors: Thermoelement socket in miniature size, suitable for flat-pin plugs

Memory: 32.000 data

Logging Interval: 1 s, 10 s, 1 min, 5 min, 30 min, 1 h, 6 h, 12 h, adjustable via software

Operating Temperature: -10 ... +40 °C

Serial Interface: USB

Battery: 3.6 V Lithium battery, size 1/2 AA

Dimensions: 118.2 x 26.8 mm (L X W), Ø 27 mm

Scope of supply: 1 device incl. 3.6 V lithium battery, 1 software, 1 protection cap, 1 operating manual (on CD-ROM), 1 clip, 1 wire temperature probe

Special Note:

EL-USB-2-LCD and EL-USB-TC-LCE are neither BUS- nor **E.A.S.Y.Bus** compatible.

TEMPERATURE-LOGGER



T-Logg

The logger series for stand-alone applications

FUNCTIONS:



T-Logg-100-E



T-Logg-100

DIN EN 12830

FREE SOFTWARE

**FOR SETTING, READING-OUT
SAVING AND ANALYZING**

T-Logg 100

Product-ID: 600563

Temperature data logger (16.000 measurement values) for any application

T-Logg 100-E

Product-ID: 600565

Temperature data logger (16.000 measurement values) for any application

T-Logg 100-SET

Art.-Nr. 602153

Complete set: T-Logg 100 + USB 100 (incl. software)

STARTER-SET

Specifications:

Measuring range:

T-Logg 100: -30.0 ... +60.0 °C

T-Logg 100 E: -30.0 ... +120.0 °C

Resolution: 0,1 °C

Accuracy (at nominal temperature = 25 °C)

T-Logg 100: ±0.5 °C

T-Logg 100 E: ±0.2 % of measuring value ±0.5 °C

Sensor:

T-Logg 100: integrated in device

T-Logg 100 E: sensor tube made of stain-less steel, Ø 5 mm, approx. 50 mm long, approx. 1 m silicone cable. Cable with anti-buckling glanding to housing.

Display: LCD-display, 10 mm high

Recording interval: from 2 s ... 5 h, free programmable via software

Storage capacity: 16.000 measuring values

Recording time: 166 days (if interval is 15 min.)

Working temperature: -30 ... +60 °C

Storage temperature: -40 ... +85 °C

Battery: CR 2032, exchangeable

Battery service life: over 3 years (if recording interval is 15 min.)

Approvals: DIN EN 12830

Interface: serial interface, 3-pin miniature integral plug.

Housing: 48.5 x 48.5 x 35.5 mm (L x W x D) plugs, sensor connection, ... are not included, Housing made of shock resistant plastic, transparent front made of polycarbonate. splash water-proof: IP 65.

Noise immunity (EMC): the T-Logg 100 have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B), additional error: < 0.5 % (< 1 % at T-Logg 100 E)

Scope of supply: Device, battery, manual, at T-Logg 100 SET: additional USB 100 (incl. Software)

Accessories and spare parts:

ISO-WPT3

Art.-Nr. 602596

Certificate of calibration: -20 °C / 0 °C / +70 °C

Note: The T-Logg 100 is neither BUS- nor **E.A.S.Y.Bus** compatible.



T-Logg
The logger series for
stand-alone applications



T-Logg 120-W



T-Logg 120-K

FREE SOFTWARE
FOR SETTING, READING-OUT
SAVING AND ANALYZING

T-Logg 120-K-...

T-Logg 120-W-...

Standard signal data logger (16.000 measuring values) for transducers etc.

Specifications:

Display range:	-1999 ... 9999 digit, freely programmable
Decimal point:	any position
Input signal:	only one signal! 0 - 1 V, 0 - 2 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA other input signals upon request (input is not isolated from interface)
Accuracy:	±0.5 % FS (at nominal temperature)
Display:	10 mm high LCD-display
Recording interval:	from 2 s ... 5 h, freely programmable via software
Storage capacity:	16.000 measuring values
Recording time:	166 days (if interval is 15 min.)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +85 °C
Battery:	CR 2032, exchangeable
Battery service life:	over 3 years (if recording interval is 15 min.)
Electric connection: (for input signals)	
... 120 W - ...	elbow-plug in accordance with EN 175301-803/A for connection to an existing transmitter.
... 120 K - ...	approx. 0.5 m connection cable
Interface:	serial interface, 3-pin miniature integral plug
Housing:	48.5 x 48.5 x 35.5 mm (L x W x D) plugs, sensor connection, ... are not included, Housing made of shock resistant plastic, transparent front made of polycarbonate, splash water-proof: IP 65.
Noise immunity (EMC):	The T-Logg 100 have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B), additional error: < 0.5 %
Scope of supply:	Device, battery, manual

Variants:

T-Logg 120-W-E1 Product-ID: 600567 Logger with input signal 4-20 mA	T-Logg 120-K-E1 Product-ID: 600571 Logger with input signal 4-20 mA
T-Logg 120-W-E2 Product-ID: 600569 Logger with input signal 0-10 V	T-Logg 120-K-E2 Product-ID: 600573 Logger with input signal 0-10 V
T-Logg 120-W-E3 Product-ID: 605410 Logger with input signal 0-20 mA	T-Logg 120-K-E3 Product-ID: 604364 Logger with input signal 0-20 mA
T-Logg 120-W-E4 Product-ID: 605409 Logger with input signal 0-1 V	T-Logg 120-K-E4 Product-ID: 604556 Logger with input signal 0-1 V
T-Logg 120-W-E5 Product-ID: 607637 Logger with input signal 0-2 V	T-Logg 120-K-E5 Product-ID: 602085 Logger with input signal 0-2 V

Note: The T-Logg 100 is not suitable for bus operation and is not **E.A.S.Y.Bus** compatible.



T-Logg
The logger series for
stand-alone applications



FREE SOFTWARE
FOR SETTING, READING-OUT
SAVING AND ANALYZING

T-Logg 160

Product-ID: 600887

Humidity- / Temperature- Data-Logger (16.000 meas. values) for any application

T-Logg 160 SET

STARTER-SET

Product-ID: 602273

Complete set with T-Logg 100 and interface converter USB 100 (incl. MINISOFT)

Specifications:

Measuring ranges, display ranges:	
Humidity:	0.0 ... 100.0 % RH
Temperature:	-25.0 ... +60.0 °C
Resolution:	0.1 °C / 0.1 % RH
Accuracy (at nominal temperature = 25 °C):	
Humidity:	±3 % in range 10 - 90 %
Temperature:	± 0.3 °C ± 0.017 * (T - 25 °C)
Sensors:	mounted in sensor tube
Sensor tube:	approx. Ø 15 mm made of polyamide with screw-type plastic protection cap
Display:	10 mm high LCD-display
Recording interval:	from 4 s ... 5 h, freely programmable via software
Storage capacity:	16.000 measuring values each
Recording time:	166 days (if interval is 15 min.)
Nominal temperature:	25 °C
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +85 °C
Battery:	CR 2032, exchangeable
Battery service life:	over 3 years (if recording interval is 15 min.)
Interface:	serial interface, 3-pin miniature integral plug
Housing:	48.5 x 48.5 x 35.5 mm (L x W x D) plugs, sensor connection, ... are not included, Housing made of shock resistant plastic, transparent front made of polycarbonate, splash water-proof: IP 65. (except filter cap of T-Logg 160).
Noise immunity (EMC):	The T-Logg 100 have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B), additional error: < 0.5 %
Scope of supply:	Device, battery, manual, free software for download: www.greisinger.de

Accessories and spare parts:

USB 100

Product-ID: 602051

interface converter, for direct connection of one T-Logg to the USB-interface of a PC.

GWH 40K

Product-ID: 601166

Wall suspension with lock against theft (picture: see page 112) suitable for e.g. T-Logg 100, T-Logg 120 K - ... and T-Logg 160.

GWH 10

Product-ID: 601169

Simple wall suspension, made of stainless steel (picture: see page 112) Mount wall suspension at the monitoring point, logger may now be easily put in.

Ersatz-CR2032

Product-ID: 606080

spare battery for T-loggs

ISO-WPFA

Product-ID: 602543

Certificate of calibration incl. standard-measuring values (approx. 20 % / 40 % / 60 % / 80 % RH increasing and decreasing; measurement point Temperature: approx. +23 °C)

Note: The T-Logg 100 is not suitable for bus operation and is not **E.A.S.Y.Bus** compatible.

TEMPERATURE LOGGER FOR WATCHING PRODUCTION AND SERVER-ROOMS



EASYLog 40K

Product-ID: 600542

Temperature Data Logger (48.000 meas. values) for any application, sensor tube are attached on the device

EASYLog 40KH

Product-ID: 600544

Temperature Data Logger (48.000 meas. values) for any application, sensor tube are connected via 1 m cable

EASYLog 40KH-E300

Product-ID: 600547

Temperature Data Logger (48.000 meas. values) for any application, tube connected via cable, increased measuring range

EASYLog 40KH-E600

Product-ID: 600549

Temperature Data Logger (48.000 meas. values) for any application, tube connected via cable, increased measuring range

EASYLog 40KH-GOF

Product-ID: 600551

Temperature Data Logger (48.000 meas. values) for any application, with surface probe for pipe mounting

Specifications:		
	Measuring ranges:	Resolution: Accuracy (25 °C):
EASYLog 40K:	-30.0 ... +60.0 °C	±0.5 °C
EASYLog 40KH:	-50.0 ... +150.0 °C	±0.5 °C
EASYLog 40KH-E300:	-50.0 ... +300.0 °C	0.1 °C ±0.5 °C ±0.2 % v. M.W.
EASYLog 40KH-E600:	0 ... 600 °C	1 °C ±1 °C ±0.2 % v. M.W.
EASYLog 40KH-GOF:	-50.0 ... +150.0 °C	±0.5 °C ±0.2 % v. M.W.
Sensor:	Pt1000 (2-wire), ½ DIN, 2-wire	
- Design 40K: (refer upper picture)	sensor tube made of plastic, Ø 7 mm, approx. 30 mm long, attached on the device. (Note: at certificate: stainless steel tube, Ø 5 mm, approx. 60 mm long)	
- Design 40KH: (refer upper picture)	sensor tube made of stainless steel, Ø 5 mm, approx. 50 mm long, approx. 1 m silicone cable. Cable with anti-buckling glanding to housing.	
- Design 40KH-E300: (without picture)	sensor tube made of stainless steel, Ø 3 mm, approx. 100 mm long, sleeve Ø 5 x 50 mm, approx. 1 m glass silk cable. Cable with anti-buckling glanding to housing.	
- Design 40KH-E600: (without picture)	sensor tube made of stainless steel, Ø 3 mm, approx. 100 mm long, sleeve Ø 5 x 50 mm, flexible coating-element, approx. 1 m silicone cable. Cable with anti-buckling glanding to housing.	
- Design 40KH-GOF: (refer upper picture)	self-adhesive surface temperature probe with moulded silicone design (type GOF 115 Pt1000 - p.r.t. p. 157), approx. 2 m PFA-insulated cable. Cable with anti-buckling glanding to housing.	
Display:	10 mm high LCD-display	
Recording interval:	2 s ... 5 h, free programmable via software GSOFT 40K	
Storage capacity:	48.000 measuring values	
Recording time:	500 days, (if recording interval is 15 min.)	

Battery service life:	approx. 6 years (if recording interval is 15 min.)
Working temperature (electronic):	-30 ... +60 °C
Storage temperature:	-40 ... +70 °C
Interface:	EASYBus-interface, 3-pin mini-integral plug. Needed connection-cable EBSK01 not included in delivery (see accessories page 112)
Noise immunity (EMC):	The EASYlog have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B) additional error: < 0.5 %
Approvals:	DIN EN 12830
Housing:	IP65.
Dimensions:	48.5 x 48.5 x 35.5 mm (W x W x D) sensor and plug not included
Scope of supply:	Device, manual

Accessories and spare parts:

ISO-WPT3

Product-ID: 602596

Certificate of calibration -20 °C / 0 °C / +70 °C (at ...40KH)

ISO-WPT3L

Product-ID: 603530

Certificate of calibration measuring points: -20 °C / 0 °C / +60 °C (at ...40 K)

Ordering code:

EASYLOG - 1 - 2 - 3 - 4 - 5 -GE

Greisinger		
1.	Design type	
	40K	40K
	40KH	40KH
	40KH-E300	40KH-E300
	40KH-E600	40KH-E600
	40KH-GOF	40KH-GOF
2.	Option	
	-DBK	Double battery capacity
3.	Option	
	-ALARM	Additional alarm output
4.	Option	
	-AFK	Detachable sensor cable
5.	Option	
	-SMB	Special measuring range selectable between -200 ... +600 °C

Other probes see page 148-150.



E.A.S.Y.Bus - Modul



EASYLOG 24-RFT

FOR MUSEUMS, GREENHOUSES,
MEDICINE TECHNOLOGY ETC.



EASYLOG 24-RFT-E

EASYLog 24-RFT

Product-ID: 600557

Humidity-/Temperature-Data-Logger (48.000 measuring values each) for individual use.

EASYLog 24-RFT-E

Product-ID: 600559

Humidity-/Temperature-Data-Logger (48.000 measuring values each) for individual use.

Specifications:

Measuring range, display ranges:

Humidity: 0.0 ... 100.0 % RH

Temperature: -25.0 ... +60.0 °C

Resolution display and memory: 0.1 °C and 0.1 % RH

Accuracy (at nominal temperature = 25 °C):

Humidity: ±3 % in range 11-90 %

Temperature: ±0.5 °C

Sensors: high-quality capacitive polymer humidity sensor and Pt1000 temperature sensor

Sensor tube:

EASYLog 24RFT: approx. Ø 15 mm made of polyamide

EASYLog 24RFT-E: approx. Ø 14 x 68 mm made of PVDF, connected to logger via 1 m teflon cable

Protection cap: screw-type plastic protection cap for quick responses

Display: LCD-display, 10 mm high

Recording interval: 4 s ... 5 h, free programmable via software GSOFT 40K

Storage capacity: 48.000 measuring values each channel

Recording time: 500 days (if recording interval is 15 min.)

Battery service life: approx. 6 years (if recording interval is 15 min.)

Working temperature: -25 ... +60 °C

Storage temperature: -30 ... +70 °C

Interface: EASYBus-interface 3-pin mini-integral plug.
Needed connection-cable EBSK01
not included in delivery (see accessories page 112)

Noise immunity (EMC): the **EASYLog** have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B), additional error: < 0.5 %

Housing: Housing made of shock resistant plastic, transparent front made of polycarbonate, splash water-proof.
IP 65 (excl. protection cap)

Dimensions: 48.5 x 48.5 x 35.5 mm (H x W x D)
sensor and plug not included.

Scope of supply: Device, manual

Variants:

EASYLOG 24RFT-ALARM

Product-ID: 602178

Humidity-/Temperature-Data-Logger with additional alarm-output, open-collector output via 4-pole miniature mounting connector (IP65) including 1 m cable. Max. switching power: 28 V, 50 mA

EASYLOG 24RFT-DBK

Product-ID: 606758

Humidity-/Temperature-Data-Logger with double battery capacity, recommended for high measure-rates

EASYLOG 24RFT-E-ALARM

Product-ID: 605594

Humidity-/Temperature-Data-Logger with additional alarm-output, open-collector output via 4-pole miniature mounting connector (IP65) including 1 m cable. Max. switching power: 28 V, 50 mA

EASYLOG 24RFT-E-DBK

Product-ID: 602176

Humidity-/Temperature-Data-Logger with double battery capacity, recommended for high measure-rates

Accessories and spare parts:

ISO-WPF4

Product-ID: 602543

Certificate of calibration incl. standard-measuring values (approx. 20 % / 40 % / 60 % / 80 % RH increasing and decreasing; measurement point Temperature: approx. +23 °C)

EBW 3

Product-ID: 601137

Level converter for connection of one EASYBus data logger to the USB-interface of a PC. (Power supply: via USB)

GSOFT 40K incl. EBSK 01

Product-ID: 601145

connection cable in scope of supply)
Windows software for setting of device, data readout and printing of the stored data.
(for further description p.r.t. page 77)

Attention: Our software GSOFT40K as well as a level converter (EBW1, EBW3 or EBW64) are required for all **EASYLog** devices for configuration and to read-out logger data. (p.r.t. page 77 and 112)

PULSE-LOGGER



E.A.S.Y.Bus - Modul

FOR CONSUMPTION AND
FLOW RATE MEASURING,
PIECE COUNTING ETC.



EASYLog 40IMP-S

Product-ID: 600553

Pulse Data Logger (48000 measuring values) for individual use (type switching contact - with PG-glanding and cable)

EASYLog 40IMP-T

Product-ID: 600555

Pulse Data Logger (48000 measuring values) for individual use (type TTL-signal - with PG-glanding and cable)

Specifications:	
Measuring range:	0 ... 30000 pulses/cycle
Resolution:	1 pulse
Cycle:	2 s ... 5 h, free programmable via software GSOF 40K
Display range:	-1999 ... 9999 digit free programmable
Decimal point:	any position
Input signals:	
EASYLog 40IMP/S:	passive volt-free switching contact
EASYLog 40IMP/T:	active TTL-signal
(input is not isolated for EASYBus)	
Resolution display and memory:	1 digit
Accuracy:	cycle time ± 50 ms
Display:	10 mm high LCD-display
Recording interval:	equal to cycle
Storage capacity:	48.000 measuring values
Recording time:	500 days (if recording interval is 15 min.)
Battery service life:	approx. 6 years (without switching current, at 15 min)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface, 3-pin mini-integral plug. Needed connection-cable EBSK01 not included in delivery (see accessories page 112)
Housing:	48.5 x 48.5 x 35.5 mm (L x W x D) plug and cable not included, IP65
Electric connection:	(for input signals) approx. 0.5 m connection cable, flying leads
Noise immunity (EMC):	the EASYLog have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B) additional error: < 0.5 %
Scope of supply:	Device, manual

Ordering code:

EASYLOG40IMP - 1 - 2 - 3 -GE

Greisinger		
1.	Design type	
	S	Switching contact - with PG screw fitting & cable
	T	TTL signal - with PG screw fitting & cable
2.	Option	
	-DBK	Double battery capacity
3.	Option	
	-ALARM	Additional Alarm output

STANDARD SIGNAL LOGGER



ISO

E.A.S.Y.Bus - Modul



EASYLOG 40NS-W

REPLACES FOR EXPENSIVE
RECORDERS

EASYLog 40NS-W-...

Standard Signal Data Logger (48.000 meas. values) for transducers etc. (with elbow type plug)

EASYLog 40NS-K-...

Standard Signal Data Logger (48.000 meas. values) for transducers etc. (with PG glanding and cable)

Specifications:	
Display range:	-1999 ... 9999 digit free programmable
Decimal point:	any position
Input signals:	one signal only! 0 - 2 V, 0 - 10 V, 0 - 20 mA or 4 - 20 mA, other input signals upon request (input is not isolated for EASYBus)
Accuracy:	± 0.5 % (at nominal temperature)
Display:	10 mm high LCD-display
Recording interval:	2 s ... 5 h, free programmable via software GSOF 40K
Storage capacity:	48.000 measuring values
Recording time:	500 days (if recording interval is 15 min.)
Battery service life:	approx. 6 years (at 15 min)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface 3-pin mini-integral plug. Needed connection-cable EBSK01 not included in delivery (see accessories page 112)
Housing:	48.5 x 48.5 x 35.5 mm (L x W x D), (with elbow-plug: 50.5 x 90 x 39.5 mm), splash water-proof IP65
Electric connection: (for input signals)	
... 40NS W:	elbow-plug in accordance with EN 175301-803/A for connection to an existing transmitter.
... 40NS K:	approx. 0.5 m connection cable
Noise immunity (EMC):	the EASYLog have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B), additional error: < 0.5 %
Scope of supply:	Device, manual

Ordering code:

EASYLOG40NS - 1 - 2 - 3 - 4 -GE

Greisinger		
1.	Design type	
	K	Cable connection
	W	Angle plug
2.	Input signal	
	-E1	4-20 mA
	-E2	0-10 V
	-E3	0-20 mA
	-E4	0-1 V
3.	Option	
	-DBK	Double battery capacity
4.	Option	
	-ALARM	Additional Alarm output

STATE-LOGGER



FOR STATE
MONITORING ETC.

E.A.S.Y.Bus - Modul

EASYLog 40BIN

Product-ID: 602975

State Data-Logger (48000 measuring values) for individual use

Specifications:

Input signal:	passive volt-free switching contact (input is not isolated for EASYBus)
Measuring values:	1 = contact is closed ($R < 50 \text{ Ohm}$) 0 = contact is open ($R > 20 \text{ kOhm}$)
Cycle:	2 s ... 5 h, free programmable via software GSOFT 40K
Resolution display and memory:	1 digit
Display:	10 mm high LCD-display
Recording interval:	equal to cycle
Storage capacity:	48.000 measuring values
Recording time:	500 days (if recording interval is 15 min.)
Battery service life:	approx. 6 years (without switching current, if recording interval is 15 min.)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface 3-pin mini-integral plug Needed connection-cable EBSK01 not included in supply (see accessories page 112)
Housing:	48.5 x 48.5 x 35.5 mm (L x W x D) plug and cable not included, IP65
Electric connection:	(for input signals) approx. 0.5 m connection cable, flying leads
Noise immunity (EMC):	the EASYLog have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B) additional error: < 0.5 %
Scope of supply:	Device, manual

Ordering code

EASYLOG40BIN - 1 - 2 -GE

Greisinger	
1.	Option
	DBK Double battery capacity
2.	Option
	ALARM Additional Alarm output

HUMIDITY-/TEMPERATURE-/AIR PRESSURE LOGGER



FUNCTIONS:



E.A.S.Y.Bus - Modul



FOR CLIMATE
MONITORING ETC.

EASYLog 80CL

Product-ID: 602773

Humidity-/Temperature-/Air pressure Data-Logger (each 250.000 measured values) for climatic applications.

Specifications:

	Measuring / display range:	Accuracy:
Humidity:	0.0 ... 100.0 % RH	± 2 % in range 10-90 %
Temperature:	-25.0 ... +60.0 °C	± 0.3 °C ± 0.017 * (T - 25 °C)
Air pressure:	300.0 ... 1100.0 hPa	± 1.0 hPa (typ., at 0 - 60 °C)
Additional available display ranges:		
Wet bulb temperature:	-27.0 ... +60.0 °C	
Dewpoint temperature:	-40.0 ... +60.0 °C	
Enthalpy:	-25.0 ... 999.9 kJ/kg	
Atmospheric humidity:	-0.0 ... 640.0 g/kg	
Absolute humidity:	0.0 ... 200.0 g/cm³	
Resolution display and memory:	0.1 °C, 0.1 % RH and 0.1 hPa or 1 digit	
Sensors:		
Humidity/Temperature:	sensor mounted in sensor tube (sensor is exchangeable)	
Air pressure:	sensor integrated in housing	
Sensor tube:	approx. Ø 15 mm made of polyamide	
Protection cap:	screw-type plastic protection cap for quick responses	
Display:	two 4½-digit LCD-displays	
Recording interval:	4 s ... 5 h, free programmable via buttons on the device or via the software GSOFT 40K	
Storage capacity:	250.000 data sets (humidity, temperature, air pressure) in max. 64 recording sequences	
Recording time:	7 years (at 15 min. interval)	
Battery service life:	approx. 5 years (at 15 min)	
Working temperature:	-25 ... +60 °C	
Storage temperature:	-30 ... +70 °C	
Interface:	EASYBus-interface 3-pin mini-integral plug.	
Housing:	48.5 x 48.5 x 35.5 mm (H x W x D) sensor and plug not included. Housing made of shock resistant plastic, transparent front made of polycarbonate, splash water-proof: IP 65 (excl. protection cap)	
Noise immunity (EMC):	the EASYLog have been manufactured in accordance with the regulations concerning EMC (2004/108/EG). The device meets EN 61326-1 (table 2, class B) additional error: < 0.5 %	

Variants:

EASYLOG 80CL-ALARM

Product-ID: 603336

additional alarm-output, open-collector output via 4-pole miniature mounting connector (IP65) including 1 m cable. Max. switching power: 28 V, 50 mA

Accessories and spare parts:

ISO-80CL

Product-ID: 607734

Certificate of calibration humidity (measured points about 20/40/60/80% at 23 °C)
Pressure 5 points increase, 5 points decrease over the entire measuring range

Attention: Our software GSOFT40K as well as a level converter (EBW1, EBW3 or EBW64) are required for all **EASYLog** devices for configuration and to read-out logger data. (p.r.t. p. 77 and 112)

E.A.S.Y.BUS® SYSTEM

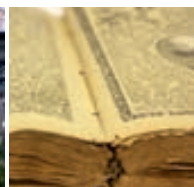
PRINCIPLE OVERVIEW

Characteristics of the EASYBus system

- Low-cost wiring by using a twisted 2-pin connection line in either bus or tree design (polarity-free); can be used in any combination
- Bus line for simultaneous power supply and signal transmission
- Bus length up to 1000 m, extensible by using a repeater
- Fully automatic start-up installation via software
- Sensor modules can be changed, removed or added during operation at any time
- Connection of up to 240 sensor modules
- Optimum transmission reliability by means of CRC check
- Bus system is able to process data up to 20 measuring values per second
- Response time inside the EASYBus-system approx. 1 s; but approx. 20 ms by using a local controlling system



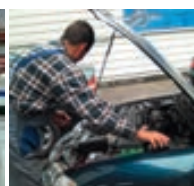
Temperature monitoring and regulation:
Cooling chambers
Laboratory + utility rooms
Storage rooms



Relative humidity / dew point / temperature monitoring:
Storage rooms, Heating systems/air condition, Museums/exhibition rooms/Libraries, Laboratories/utility rooms

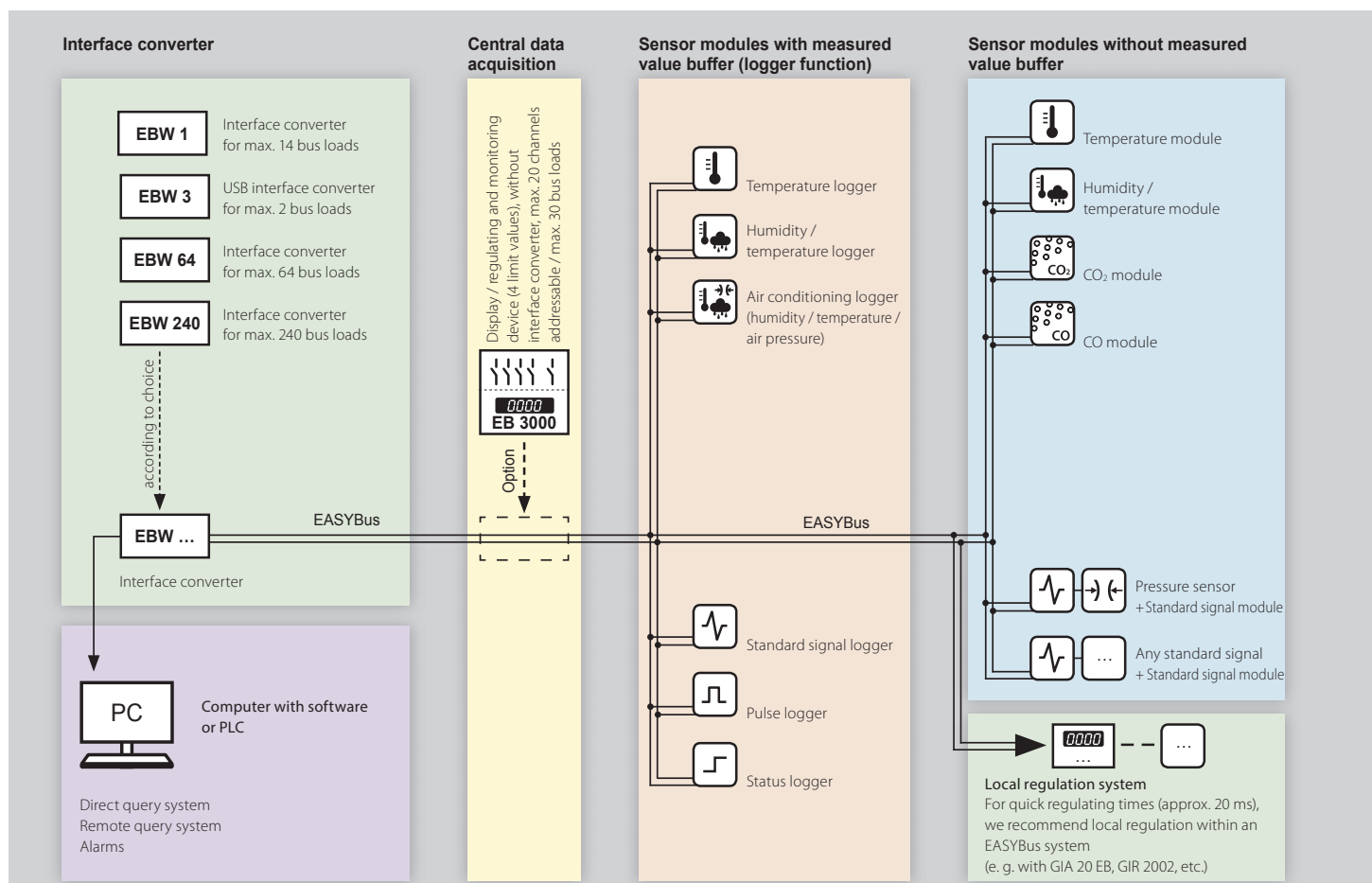


Relative humidity / atmospheric pressure, CO2 monitoring:
Manufacturing rooms/storage rooms, Office rooms (to condition the air of the room), Greenhouses



CO monitoring:
Underground garages / Parking garages
Motorcar garage / car repair
Indoor go-kart tracks

Further information you find in our brochure
'Measurement data acquisition systems'
and on www.greisinger.de.





NEW!

EBW-1

Product-ID: 601136
interface converter

General:

for connection of max. 7 EASY-Bus-modules to the RS232-interface (9-pin Dsub) of your PC.

EBW-3

Product-ID: 601137
interface converter

General:

for connection of one EASYBus-module (e.g. EASYLOG) to the USB-interface of your PC. (Power supply: via USB)

EBW-64

Product-ID: 601139
interface converter

General:

For connection of max. 64 EASY-Bus-modules to the RS232-interface of your PC.

Specifications:

Voltage supply:	230 V AC / 50Hz, 12 / 24 V DC on request	not necessary	230 V AC / 50Hz
Power consumption:	approx. 5 W	max. 0.5 W	approx. 15 W
Max. permissible sensor modules:	7 (depending on type of the used sensor modules)	1 (depending on type of the used sensor modules)	64 (depending on type of the used sensor modules)
Permissible cable length:	200 m (depending on type of cable and wiring)	10 m (depending on type of cable and wiring)	1000 m (depending on type of cable and wiring)
Baud rate:	4800 Baud	4800 Baud	4800 Baud
Serial connection:	RS232	USB	RS232
Electrical isolated:	yes	yes	yes
Overload display:	no	no	yes
Short-circuit proof:	yes (limited: 30 s)	no	yes (passiv)
Operating temperature:	0 ... +50 °C	-25 ... +50 °C	0 ... +50 °C
Humidity:	20 ... 80 % RH, non-condensing	20 ... 80 % RH, non-condensing	20 ... 80 % RH, non-condensing
Storage temperature:	-20 ... +70 °C	-25 ... +70 °C	-20 ... +70 °C
Dimensions:	112 x 80 x 45 mm (H x W x D)	56 x 31 x 24 mm (H x W x D)	100 x 75 x 110 mm (H x W x D)
Bit-Recovery	no	no	yes
Scope of supply:	interface converter, 9-pin Dsub extension cable	interface converter	interface converter, 9-pin Dsub extension cable

Assessories:

USB-Adapter

Product-ID: 601109

for connection of an interface converter to the USB-interface of your PC

GSA 9S-25B

Product-ID: 601107

connection-adapter: 9-pin Dsub-plug <=> 25-pin Dsub-socket



LAN 3100



WLAN 3100

LAN 3100

Product-ID: 602842

Gigabit Ethernet to USB converter

General:

For inquiring EASYBus modules, GMH handheld devices with interface or GDUSB 1000 via network. 2 USB ports for direct connection of EBW 3, USB 3100N or GDUSB 1000 (up to 15 with USB hub). Connection of EBW 1, EBW 64 or EBW 240 via USB adapter (included to scope of delivery)

Scope of supply: LAN 3100, power supply unit, USB adapter, manual, driver CD

WLAN 3100

Product-ID: 606061

Wireless or Gigabit Ethernet to USB converter

General:

To request EASYBus modules, GMH handheld instruments with interface or GDUSB 1000 network or radio network. With 2 USB ports, a right or more EBW 3 USB 3100N or GDUSB 1000 be connected (up to 15 with USB hub). For EBW 1, EBW 64 or EBW 240 is a USB adapter included.

Scope of supply: WLAN 3100, power adapter, USB adapter, manual, CD

GSM-3000

Art-Nr: 607638

Alarm device

General:

Sending SMS when alarms occur. Connectivity: e.g. for EB 3000, the GIA 20 EB or other devices with relay output or NPN switching output.

Specifications:

LCD-Display:	with text display
Inputs:	6
Outputs:	4
	SMS or call for up to 9 phone numbers
	Emergency battery
	SMS at power failure
Scope of supply:	GSM alarm device, antenna for Screw on SMA connector, Fastening material, 9 V battery, Power supply, manual, connection instructions



GWH 40K



GWH 10

GWH 40K

Product-ID: 601166

wall suspension with lock as protection against theft suitable for all **EASYlog** (except **EASYlog 40NS W**), **EBN/K** - ..., **GIA0420WK** and **GRA0420WK**

GWH 10

Product-ID: 601169

simple wall suspension, made of stainless steel, suitable for all **EASYlog** (except **EASYlog 40NS W**).

EBSK 01

Product-ID: 601173

special plug with approx. 1 m of cable for connection of one **EASYlog**, **EBN...** to the EASYBus

TRANSMITTER

Application:	GTMU ..	GTP-SG / GNTTP-SG	GTMU - IF ..	T03 BU ..	RT420 ..	GITT01 ..	MU 500 ..	ST 500 ..	IR-CT 20	GRHU .. MP	GHTU .. MP	GSMU ..	GMUD-MP-..	A-10 / S-10 .. / S-11 .. / S-20 ..	WM 500	GT1-CO / GT10-CO2-1R	GBS ..	LC...	TS 125 / 225	CVC-02/0201	TSA PWR
Temperature	•	•	•	•	•	•	•	•	•	•	•										
Air humidity										•	•										
Flow												•									
Pressure													•	•							
Carbon monoxide / -dioxide																•					
Level																	•	•			
Power															•						
Switching contact / Namur																			•		
Electricity / Voltage																				•	•
 - Protection						•	•	•									•		•		

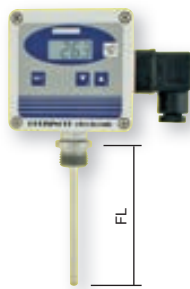
Device information:

Catalogue page	115	116	117	117	118	119	120	120	121	122	123	127	124	125	137	128	126	136	141	144	144
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Application:	OXY 36 .. MP	GPHU .. / GRMU ..	GLMU .. MP	EFF-...	FCM ..	FH... / FHK... / EPI	VISION 2008 / VTH 25 ..	GEE 771C-DN...	GODOX 200-...	CT 500	CVT 500	VT 500	AF 500	CVG 500	BW 500	TV 500 / ST 500	TV 125 L	GS 125	FT 500	CT 500 P	pH 40
Oxygen	•								•												
pH / Redox		•																			•
Conductivity			•																		
Rotational speed				•																	
Flow					•	•	•	•													
Electricity										•	•			•		•	•	•		•	
Voltage											•	•		•	•	•	•	•			
Potentiometer																		•			
Frequency													•						•		

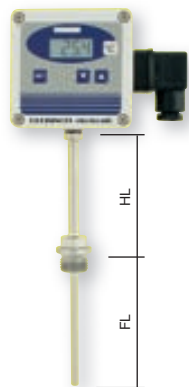
Device information:

Catalogue page	129	130	132	136	135	134	131	126	130	137	138	138	142	139	139	140	140	141	143	142	143
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GTMU-MP-AP1
for direct screw connection
probe with threaded stem „G“

Standard type:
G = 1/2", FL = 100 mm, D = 6 mm



GTMU-MP-AP2
for high temperatures
threaded stem at a distance of
HL (collar tube) from housing

Standard type:
G = 1/2", HL = 100 mm,
FL = 100 mm, D = 6 mm



GTMU-MP-AP3
indoor / outdoor probe
for direct wall mounting

Standard type:
FL = 50 mm, D = 3 mm



GTMU-MP-AP4
duct probe
centrally mounted sensor tube
pointing downwards (for clamping
ring screw connection p.r.t. p. 141)

Standard type:
FL = 100 mm, D = 6 mm



GTMU-MP-SHUT
with heat-
protective shield

GTMU-MP-AP1

Product-ID: 607145

GTMU-MP-AP2

Product-ID: 602820

GTMU-MP-AP3

Product-ID: 602214

GTMU-MP-AP4

Product-ID: 606675

GTMU-MP-SHUT

Product-ID: 605012

General:

The transducer brings more flexibility thanks to state of the art digital microprocessor technology. Due to the many different design types and a measuring range of -50 ... +400 °C nearly all kinds of applications can be covered.

- on site temperature display
- output signal freely scalable
- user-adjustment possible

Specifications:

Measuring range: -50.0 ... +400.0 °C, free scaleable
The probe length FL has to be chosen long enough, that the allowable temperature of the case and the electronics of 70 °C is not exceeded!

Accuracy: (at 25 °C)

Display - temperature: ±0.4 % of measuring value ±0.2 °C

output signal: ±0.2 % FS (compared to display)

Probe: Pt1000, 2-wire, DIN class B (standard)

Output signal: standard: 4-20 mA (2-wire), freely scaleable

Connection: 4-20 mA (2-wire) (Standard)

Auxiliary energy: 12 ... 30 VDC or 18 ... 30 VDC (for output: 0- ... V)

Reverse voltage protection: 50 V, permanently

Permissible impedance (at 4-20 mA): $R_A [Ω] ≤ (U_V [V] - 12V) / 0.02 A$

Permissible load (at 0-1(10)V): $R_L [Ω] > 3000 Ω$

Display: approx. 10 mm high, 4-digit LCD-display

Working temperature: -25 ... +70 °C (electronic)

Storage temperature: -25 ... +70 °C

Relative humidity (electronic): 0 ... 95 % RH (non-condensing)
If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (option).

Type SHUT: Heat protective shield / weather protective shield
Application: The weather protective shield is designed for highly precise outdoor measurements. Strong solar radiation or rain does not influence the measurement values.
Design: Weather protective shield made of plastic, Ø 110 mm, heights approx. 140 mm. Additionally there is a wall mounting panel made of stainless steel with 3 mounting holes for screws with maximal shaft diameter 5 mm. Largest overhang 160 mm.

Housing:	ABS (IP65)
Probe tube:	stainless steel
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope digital adjustable, output signal freely scalable (without tools)

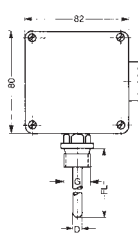
Ordering code:

GTMU-MP - [1] - [2] - [3] - [4] - [5] - [6] -GE

Greisinger		
1. Design type		
AP1	With process connection for direct screw	
AP2	For higher temperatures, with process connection and neck tube	
AP3	Indoor/outdoor temperature sensor for direct wall mounting	
AP4	Duct sensor with sensor tube outlet centrally and perpendicularly down	
SHUT	Heat protective hat	
2. Output signal		
-AA1	Analog output 4 ... 20 mA, Standard	
-AV1	Analog output 0-10 V	
-AV01	Analog output 0-1 V	
3. Fitting length EL		
-050	50 mm (AP3)	
-100	100 mm (AP1/2/4)	
	surcharge each further 100 mm	
4. Probe diameter D		
-D03	Ø 3 mm (AP3)	
-D04	Ø 4 mm	
-D05	Ø 5 mm	
-D06	Ø 6 mm (AP1/2/4)	
-D08	Ø 8 mm	
5. Thread		
-G1	G 1/2 (AP1/2)	
-G2	G 1/4	
-G3	G 3/4	
-G5	G 3/8	
-M8	M8	
6. Length of neck tube		
-100	100 mm	
	each further 100 mm	

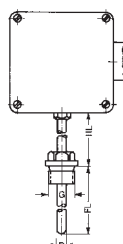
others on request

TEMPERATURE TRANSDUCER GTMU COMPLETE WITH PT100 OR NICR-NI (TYPE K) SENSOR



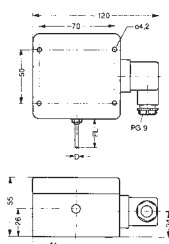
Design type 1
for direct screw connection

Standard type:
G = 1/2", FL = 100 mm,
D = 6 mm



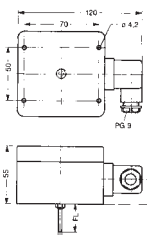
Design type 2
for high temperatures

Standard type:
G = 1/2", HL = 50 mm,
FL = 100 mm, D = 6 mm



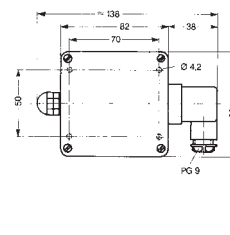
Design type 3
indoor / outdoor probe
for direct wall mounting

Standard type:
FL = 50 mm, D = 3 mm



Design type 4
duct probe

Standard type:
FL = 100 mm, D = 6 mm



Design type 5
for external probes

upon request

GTMU-AP1

GTMU-AP2

GTMU-AP3

GTMU-AP4

GTMU-AP5

General:

The types 1 - 4 are supplied complete with sensor, measuring transducer etc., calibrated and thus ready for use. Type 5 does not include sensor which is either already existing at your works or will have to be ordered separately according to your specifications.

Specifications:

Practical sensor elements:

resistance thermometer: Pt100 class B, potential-free

thermocouple: NiCr-Ni class 1, not potential-free

Max. measuring ranges: (not available for every design type)

Pt100: -200 ... +800 °C

NiCr-Ni: -200 ... +1150 °C

Standard measurings ranges:

Pt100: 0 ... 100 °C, 0 ... 200 °C, -50 ... +50 °C, -50 ... +150 °C

NiCr-Ni: 0 ... 100 °C, -50 ... +150 °C, -200 ... +300 °C, 0 ... 600 °C, 0 ... 1150 °C

Accuracy electronics: ±0.2 % FS (Pt100) or ±0.2 % ±0.5 °C (NiCr-Ni)

Output signal:

Standard: 4 - 20 mA (2-wire)

Auxiliary energy: U_v = 12 ... 30 V DC (at 0-10 V: U_v = 18 ... 30 V DC);
(for special types GTMU/GITT and GTMU/RT420: 8 ... 30 V)

Reverse voltage protection: 50 V permanently

Allowable burden (for 4-20 mA): R_A [Ω] ≤ (U_v [V] - 12V) / 0.02 A
(for special types GITT and RT420 refer to this pages)

Allowable load (for 0... Volt): R_L > 3000 Ω

Ambient temperature electronics: 0 ... +70 °C (-40 ... +85 °C at .../RT420 and .../GITT)

Temperature coefficient:

Pt100: 0.01 % / °C

NiCr-Ni: 0.05 % / °C

Storage temperature: -20 ... +70 °C

Housing: ABS (IP65)

Probe tube: stainless steel

Mounting: with holes for wall mounting
Mounting distance: 70 x 50 mm (W x H),
Fixing screws: max. shaft-Ø 4 mm

Electric connection: elbow plug acc. to EN 175301-803/A (IP65)

Ordering code:

GTMU - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 11 - 12

Greisinger		
1.	Design type	
	AP1	Channel /duct design with thread

AP2	For higher temperatures, with process connection and neck tube	
AP3	Indoor / outdoor temperature sensor	
AP4	Duct sensor	
AP5	For external sensor connection	
SHUT	Heat protective hat	
2.	Sensor element	
-P	Resistance thermometer Pt100	
-K	NiCr-Ni Type K	
3.	Measuring range (MB)	
-MB1	0 ... 100 °C, PT100/Type K	
-MB2	-50 ... +150 °C, Type K	
-MB3	0 ... +200 °C, PT100	
-MB4	-50 ... +50 °C, PT100	
-MB5	-200 ... +300 °C, Type K	
-MB6	0 ... +600 °C, Type K, AP5	
-MB7	0 ... +1150 °C, Type K, AP5	
	others on request	
4.	Signal output	
-A1	4-20 mA (Standard)	
-V1	0-1 V	
-V3	0-2 V	
-V4	0-5 V	
-V2	0-10 V	
5.	Fitting length EL	
-050	50 mm (Standard for AP3)	
-100	100 mm (Standard for AP1/2/4)	
	each further 100 mm	
6.	Probe diameter D	
-3	3 mm (Standard for AP3)	
-4	4 mm	
-5	5 mm	
-6	6 mm (Standard for AP1/2/4)	
-8	8 mm	
7.	Process connection	
-G1	G 1/2 (Standard for AP1/2)	
-G2	G 1/4	
-G3	G 3/4	
-G5	G 3/8	
8.	Length of neck tube	
-050	50 mm	
	each further 100 mm	
9.	Option	
-00	Without option	
-VO	On site display	
11.	Option	
-GITT	Electrically isolated transducer	
-RT420	Transmitter designed for outdoor phrases	
12.	Option	
-POT	Electrically isolated NiCr-Ni-probe	

TEMPERATURE-MEASURING TRANSMITTER IN SNAP-ON HOUSING



GTP-SG

Temperature-measuring transmitter in snap-on housing

General:

Design-type: PC board completely ready for operation (sensor not included) with any measuring range and any output. 3-pin connection terminal for Pt 100 in 2 or 3-wire technology. Connection terminal for output in 2-, 3-, or 4-wire technology - depending on type desired.

Specifications:

Sensorelement:	for Pt 100 resistance thermometer acc. to DIN IEC 751. suitable sensor can be supplied custom-designed according to your specifications or in standard design from stock (p.r.t. pages 148-151).
Sensor connection:	2- or 3-wire connection. Automatic line resistance compensation for 3-wire connection.
Auxiliary energy:	U _v = 12 ... 30 V DC (at 0-10 V: U _v = 18 ... 30 V DC)
Reverse voltage protection:	50 V permanent
Permissible impedance (at 4-20 mA):	$R_A [\Omega] \leq (U_v [V] - 12 V) / 0.02 A$
Permissible load (at 0-__ Volt):	$R_L > 3000 \Omega$
Operating temperature electronics:	0 ... +70 °C
Accuracy electronics:	±0.2 % FS
Temperature coefficient:	0.01 % / °C
Storage temperature:	-20 ... +70 °C
Relative humidity:	0 ... 80 % RH, non-condensing (standard)
Type option:	for top-hat rail (panel mounting), Width of housing (pitch) 22.5 mm
Mounting:	4 holes, 3.5 mm Ø each
Mounting distance:	43.5 x 58 mm (W x H)
Miscellaneous:	potentiometer for zero point and scale
Electric connection:	screw-type terminals with wire protection and drill holes for testing pin, wire Ø max. 1.5 mm². option: screw-type/plug-in terminal

Ordering code:

GTP - 1 - 2 - 3 - 4 - 5

Greisinger	
1.	Model
SG	Temperature transmitt in snap-on housing
2.	Sensor element
P	Pt100
-T	Pt1000
3.	sensor connection
...	2- or 3-wire
4.	Measuring range
-0100	0 ... 100 °C
-0200	0 ... 200 °C
-5050	-50 ... +50 °C
-5015	-50 ... +150 °C
MB	Any measuring range desired
5.	Output signal
-AA1	Analog output 4 ... 20 mA (Standard)
-AV02	0-2 V
-AV010	0-10 V

TEMPERATURE-MEASURING TRANSMITTER IN SNAP-ON HOUSING



GNTP-SG

Temperature-measuring transmitter in snap-on housing

General:

Design-type: PC board completely ready for operation (sensor not included) with any measuring range and any output. 2-pin connection terminal for NiCr-Ni-sensor or compensation line. Connection terminals for output 2- to 4-pin (depending on output in 2-, 3- or 4-wire technology).

Specifications:

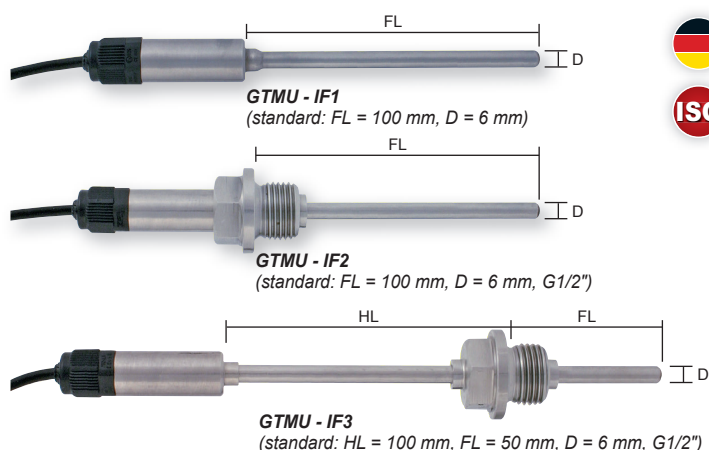
Sensor element:	for NiCr-Ni (type K) acc. to DIN IEC 584, suitable sensor can be supplied custom-designed according to your specifications or in standard design from stock (p.r.t. pages 20-22, 146-147)
Auxiliary energy:	U _v = 12 ... 30 V DC (at 0-5 V, 0-10 V: U _v = 18 ... 30 V DC)
Reverse voltage protection:	50 V permanently
Permissible impedance (at 4-20 mA):	$R_A [\Omega] \leq (U_v [V] - 12V) / 0.02 A$
Permissible load (at 0-__ Volt):	$R_L > 10 k\Omega$
Operating temperature electronics:	0 ... +70 °C
Accuracy electronics:	±0.2 % FS ±0.5 °C
Temperature coefficient:	0.05 % / °C
Storage temperature:	-20 ... +70 °C
Relative humidity:	0 ... 80 % RH (non-condensing) (standard)
Type option:	for top-hat rail (panel mounting). Width of housing (pitch) 22.5 mm
Mounting:	4 holes, 3.5 mm Ø each
Mounting distance:	43.5 x 58 mm (W x H)
Miscellaneous:	potentiometer for zero point and scale
Electric connection:	screw-type terminals with wire protection and drill holes for testing pin, wire Ø max. 1.5 mm². option: screw-type/plug-in terminal

Ordering code:

GNTP - 1 - 2 - 3 - 4 - 5

Greisinger	
1.	Model
SG	Tempeprature transmitt in snap-on housing
2.	Sensor element
-K	NiCr-Ni Type K
3.	Measuring range
-0100	0 ... 100 °C
-0600	0 ... +600 °C
-01200	0...+1200 °C
-5015	-50 ... +150 °C
-2030	-200 ... +300 °C
MB	Any measuring range desired
4.	Output signal
-AA1	Analog output 4 ... 20 mA
-AV010	0-10 V
-AV05	0-5 V
5.	Option
-LACK	Encapsulated PC Board

TEMPERATURE TRANSMITTER PT 1000

**GTMU-IF1**

Product-ID: 602688
Temperature transmitter

GTMU-IF2

Product-ID: 604409
Temperature transmitter

GTMU-IF3

Product-ID: 603774
Temperature transmitter

General:

High precision transmitter with compact design.

Specifications:

Measuring range:	The probe length FL has to be chosen long enough, that the allowable temperature range of the electronics situated in the tube sleeve is not exceeded.
GTMU – IF1 (standard):	-30.0 ... +100.0 °C
GTMU – IF2 (standard):	-30.0 ... +100.0 °C
GTMU – IF3 (standard):	-70.0 ... +400.0 °C
	other measuring ranges (max. -200 ... +500 °C) upon request
Measuring probe:	internal Pt1000-sensor, DIN class B
Accuracy: (at nominal temperature = 25 °C)	
Electronic:	±0.2 % of measuring value ±0.2 °C
Measuring probe:	standard: DIN class B optionally higher sensor accuracy available
Output signal:	4 ... 20 mA (2-wire)
Auxiliary energy:	U _v = 10 ... 30 V DC
Permissible burden:	$R_A \leq (U_v - 10 \text{ V}) / 0.022 \text{ A}$ [R_A in Ohm, U _v in V]
Scaling:	the transducer can be scaled freely within the measuring ranges via GTMU-IF programming tool.
Working temperature of electronic (in tube sleeve):	-25 ... +60 °C
Housing:	stainless steel housing
Dimensions:	depending on sensor construction
tube sleeve:	Ø 15 x 35 mm (without screwing)
Electric connection:	approx. 1 m long 4-pin cable (2 x current loop, 2 x interface)

Option:

FL=...:	longer tube
HL=...:	longer collar tube
D=...:	other tube diameter
G=...:	other thread
MB=...:	other measuring ranges, set by factory
M12:	electric connection: M12 plug

ANALOG PT100-TRANSMITTER

**T03BU/WE *1**

Analog Pt100-transmitter (transmitter 0-10 V, set by our works)
*1 = please specify design-type desired on your order.
e.g. T03BU, Pt100 3-wire, 0 ... 10 V = 0 - 250 °C

General:

These transmitter are designed for industrial applications and are used to measure the temperature through Pt100 resistance thermometers in 2-/3-wire circuits connections. The 0 ... 10 V output signal is linear with temperature. The advantages of a continuous analog signal path and those of digital adjustment have been combined in the realization of this transmitter series.

Specifications:

Measurement input:	Pt100 (DIN EN60751)
Range limits:	-200 ... +850 °C, with digital adjustment
Measuring span:	40 ... 1050 K
Zero shift:	at span < 75 K: -40, -20, 0, 20 or 40 °C at span = 75 K: ± 50 °C at span > 75 K: ± (span * 0.2 + 35 °C)
Sensor connection:	2- or 3-wire connection
Measuring current:	< 0.5 mA
Max. perm. line resistance (3-wire):	11 Ohm per conductor
Sampling time:	continuous because of analog signal path
Output signal:	0 ... 10 Volt, 3-wire technology
Setting time on a temperature change:	≤ 10 ms
Transfer characteristic:	linear with temperature
Transfer accuracy:	±0.2 % FS
Calibration accuracy:	≤ ±0.2 °C or ±0.2 % of measuring span
Supply voltage: U_B	15 ... 30 V DC
Supply voltage error:	±0.01 % FS / V
Permissible load R_L:	R _L ≥ 10 kOhm
Load error:	≤ ±0.1 % FS
Operating temperature:	-40 ... +85 °C
Relative humidity:	0 ... 95 % RH (non condensing)
Storage temperature:	-40 ... +100 °C
Electromagnetic compatibility (EMC):	conforming to acc. to DIN EN 61326
Electric connection:	via terminals, cross section of connection terminals max. 1.75 mm²
Housing:	PC-housing, suitable for installation in connection head acc. to DIN 43729 form B.
Operating position:	unrestricted
Dimensions:	Ø 44 mm x 21 mm
IP-rating:	housing: IP54, connection terminals: IP00
Weight:	approx. 45 g

Accessories and spare parts:**Rail adapter**

Product-ID: 603659
rail adapter for snap-on to top-hat rail

Ordering code:

T03BU/WE - 1 - 2

Greisinger			
1.	Sensor connection		
	P2	Pt100 (2-wire)	
	P3	Pt100 (3-wire)	
2.	Measuring range		
	...	-200 ... +850 °C	
	MB	Any measuring range desired	

ISO



FOR HEAD AND RAIL CASE MOUNTING

RT420 with rail adapter

RT420-00/WE

head transmitter, set by our works

RT420-SG/WE

set by our works and mounted in snap-on rail housing

Specifications:	
Measuring range:	-200 ... +850 °C
Measuring span:	25 ... 1050 K
Zero shift:	-200 ... +825 °C
Resolution:	14 bit
Sensor connection:	2-, 3- or 4-wire connection
Measuring current:	< 0.3 mA
Permitted resistance of connection cable:	max. 20 Ohm / wire
Compensation for cable error:	±0.02 K / Ohm (at 3-wire)
Sensor monitoring:	monitoring for sensor damage and short-circuit
Measuring cycle:	< 700 ms
Linearisation:	linear to temperature acc. to IEC/DIN/EN 60 751-2
Accuracy:	±0.25 °C or ±0.1 % of measuring span
Temperature effect:	< ±0.01 % / 1 K
Analog output:	4 ... 20 mA, 2-wire technology
Accuracy output:	<0.1 % of signal span
Auxiliary energy: U _B	8 ... 35 V DC (max. ripple factor: 3 Vss @ 50/60 Hz)
Permitted burden R _A :	R _A ≤ (U _B - 8 V) / 0.023 A [R _A in Ohm, U _B in V]
Effect of auxiliary energy:	±0.01 % / V
Power-on time:	10 s
Damping:	adjustable from 0 ... 30 s
Output limits:	3.5 mA, 23 mA
Signal for sensor damage:	3.5 mA or 23 mA
Operating temperature:	-40 ... +85 °C
Relative humidity:	0 ... 98 % RH (non condensing)
Storage temperature:	-55 ... +90 °C
Electromagnetic compatibility (EMC):	conforming to CE acc. to DIN EN 61326
Housing:	housing suitable for head mounting
Dimensions:	Ø 44 mm x 19 mm
IP rating:	Housing: IP40, connection terminals: IP10
Electric connection:	via screw-type terminals
Weight:	approx. 35 g

Accessories and spare parts:**Rail adapter**

Product-ID: 603659

for snap-on the RT420 to top-hat rail

HIGHLIGHTS:

- low-price and robust (complete sealed - no pots, therefore vibration resistant and long time stable)
- selectable probe connection as 2- / 3- or 4-wire
- high accuracy (0.1 %)
- large ambient temperature range (-40 ... +85 °C)
- error message in case of sensor damage or sensor short-circuit
- functional warranty 5 years

Ordering code:RT420 - **1** - **2** - **3** - **4** -GE

Greisinger	
1.	Design type
	00/WE Head transmitter
	SG/WE Head transmitter in snap-on housing
2.	Sensor connection
	-P2 Pt100 (2-wire)
	-P3 Pt100 (3-wire)
	-P4 Pt100 (4-wire)
3.	Measuring range
	-MB1 -200 ... +850 °C
	-MBS -50 ... +50 °C
	-MBS -200 ... +50 °C
	-MBS 0 ... +100 °C
	-MBS 0 ... +170 °C
	-MBS 0 ... +200 °C
	-MBS -50 ... +200 °C
	MB Any measuring range desired
4.	Sensor break signal
	-FBU 3.5 mA
	-FBO > 23 mA

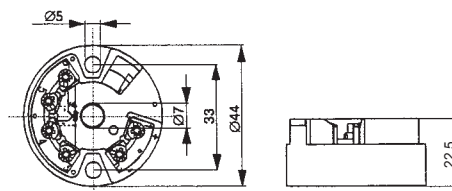
PROGRAMMABLE, ELECTRICALLY ISOLATED, 4-20 mA UNIVERSAL TRANSMITTER GITT01



RESISTANCE THERMOMETERS /
THERMOCOUPLES
RESISTANCE SENSOR / VOLTAGE SENSOR

HIGHLIGHTS:

- electrically isolated
- output linear to temperature
- high accuracy for the entire ambient temperature range (-40 ... 85 °C)
- available with - protection

**GITT01** *1

electrically isolated, 4-20 mA universal transmitter

GITT01 - Ex *1electrically isolated, 4-20 mA universal transmitter
(Ex-protection: ATEX II 1G Ex ia IIC T6/T5/T4)

Specifications:				
Input signal: can be universally programmed to				
- Resistance thermometer:		max. meas. range		min. meas. span
Pt100	acc. to IEC 751	-200 ...	+850 °C	10 K
Pt500	acc. to IEC 751	-200 ...	+250 °C	10 K
Pt1000	acc. to IEC 751	-200 ...	+250 °C	10 K
Ni100	acc. to DIN 43760	-60 ...	+250 °C	10 K
Ni500	acc. to DIN 43760	-60 ...	+150 °C	10 K
Ni1000	acc. to DIN 43760	-60 ...	+150 °C	10 K
- Thermocouples:		max. meas. range		min. meas. span
Typ B	PtRh30-PtRh6	0 ... +1820 °C		500 K
Typ C	W5Re-W26Re (ASTME 988)	0 ... +2320 °C		500 K
Typ D	W3Re-W25Re (ASTME 988)	0 ... +2495 °C		500 K
Typ E	NiCr-CuNi	-270 ... +1000 °C		50 K
Typ J	Fe-CuNi (acc. to IEC 584)	-210 ... +1200 °C		50 K
Typ K	NiCr-Ni	-270 ... +1372 °C		50 K
Typ L	Fe-CuNi (acc. to DIN 43710)	-200 ... + 900 °C		50 K
Typ N	NiCrSi-NiSi	-270 ... +1300 °C		50 K
Typ R	Pt13Rh-Pt	-50 ... +1768 °C		500 K
Typ S	Pt10Rh-Pt	-50 ... +1768 °C		500 K
Typ T	Cu-CuNi (acc. to IEC 584)	-270 ... + 400 °C		50 K
Typ U	Cu-CuNi (acc. to DIN 43710)	-200 ... + 600 °C		50 K
	MoRe5-MoRe41	0 ... +2000 °C		500 K
- Resistance-type sensor:		max. meas. range		min. meas. span
Resistance		10 ... 400 Ohm		10 Ohm
Resistance		10 ... 2000 Ohm		10 Ohm
- Voltage sensor:		max. meas. range		min. meas. span
Voltage		-10 ... 100 mV		5 mV
Resistance thermometer:				
Sensor connection:	2-, 3- or 4-wire connection			
Meas. current:	< 0.6 mA			
Max. perm. line resistance:	11 Ohm / line			
Accuracy:				
Pt100, Ni100:	±0.2 °C or ±0.08 % of measuring span			
Pt500, Ni500:	±0.4 °C or ±0.16 % of measuring span			
Pt1000, Ni1000:	±0.2 °C or ±0.08 % of measuring span			
Temperature effect:	Td = ± (15ppm/K * max. meas. range + 50ppm/K * meas. span)			

Thermocouples:	
Sensor connection:	2-wire connection
Sensor current:	< 350 nA
Accuracy (typ.):	±0.5 K (Type: K, J, E, L, U), ±1.0 K (Type: N, C, D), ±2.0 K (Type: S, B, R, MoRe5-MoRe41)
CJC:	Pt100 internal or external (0 ... 80 °C)
CJC accuracy:	±1 °C
Temperature effect:	Td = ± (50ppm/K * max. meas. range + 50ppm/K * meas. span)
Output signal:	4 ... 20 mA or 20 ... 4 mA, 2-wire technology
Linearisation:	temperature linear, resistance linear or voltage linear
Auxiliary energy: U _B	8 ... 30 V DC (max. ripple factor: 5 Vss for U _B >13 V)
Electr. isolation (E/O):	U _{eff} = 2 KV AC
Permitted load R _A :	R _A ≤ (U _B - 8 V) / 0.022 A [R _A in Ohm, U _B in V]
Supply effects:	≤ ±0.01 % / V deviation from 24 V
Load effect:	≤ ±0.02 % / 100 Ohm
Digital filter:	0 ... 60 s, configurable
Switch-on delay:	approx. 4 s
Response time:	1 s
Output limits:	3.8 ... 20.5 mA
Signal in case of sensor damage:	3.6 mA or ≥21.0 mA, configurable
EMC:	Interference immunity and emission acc. to EN 61326-1 and NAMUR NE21
Operating temperature:	-40 ... +85 °C
Climate class:	acc. to EN 60654-1, class C; condensation permissible
Vibration strength:	4 g / 2 ... 150 Hz acc. to IEC 60 068-2-6
Electric connection:	via terminals, cross section of connection terminals max. 1.75 mm ²
Housing:	PC-housing, suitable for installation in connection head acc. to DIN 43729 form B.
Dimensions:	Ø 44 mm x 22.5 mm
IP-rating:	housing: IP54, connection terminals: IP00
Weight:	approx. 40 g
Ex-approved:	ATEX II 1G Ex ia IIC T6/T5/T4
Power supply set:	U _i ≤ 30 V DC, I _i ≤ 100 mA, P _i ≤ 750 mW C _i , L _i = negligibly small
Measuring circuit:	U _o ≤ 8.2 V DC, I _o ≤ 4.6 mA, P _o ≤ 9.35 mW
Max. connection values:	L _o = 4.5 mH (ia IIC), 8.5 mA (ia IIB) C _o = 974 nF (ia IIC), 1900 nF (ia IIB)
Accessories and spare parts:	
Rail adapter Product-ID: 603659 (rail adapter for snap-on to top-hat rail)	

TEMPERATURE TRANSMITTER (ELECTRICALLY ISOLATED)



MU500-51-...

Product-ID: 602611 (MU500-51-0-00-GN)

Product-ID: 604331 (MU500-51-5-00-GN)

Temperature transmitter (Pt100)

MU500-53-...

Product-ID: 602613 (MU500-53-0-00-GN)

Temperature transmitter (Pt1000)

MU500-Ex-51-...

Product-ID: 603257 (MU500-EX-51-0-00-GN)

Product-ID: 604830 (MU500-EX-51-5-00-GN)

Temperature transmitter (Pt100)

MU500-Ex-53-...

Temperature transmitter (Pt1000)

General:

- Electrically isolated: between input / output / supply voltage
- 2 power-supply-designs with wide range of allowed supply voltage:
10 ... 30 V DC / 10 ... 42 V AC or 85 ... 265 V AC / 110 ... 125 V DC
- 22.5 mm standard case for rail mounting TS35
- Several measuring ranges, selectable via rotary switch at front panel
(13 for Pt100, 16 for Pt1000)
- Offset and span adjustable

For Ex-designs:

- Input intrinsically safe ATEX II (1) G [Ex ia] IIC, II (1) D [Ex iaD]
- Burden max. 1000 Ω



Specifications:

Measuring ranges:	selectable via rotary switch
Pt100:	-50 ... 0, -50 ... +50, -30 ... +20, -30 ... +70, -20 ... +30, -20 ... +80, 0 ... 50, 0 ... 100, 0 ... 150, 0 ... 200, 0 ... 300, 0 ... 450, 0 ... 600 $^{\circ}\text{C}$
Pt1000:	-50 ... 0, -50 ... +50, -30 ... -20, -30 ... -10, -20 ... -10, -20 ... 0, -10 ... 0, -10 ... +10, 0 ... 10, 0 ... 20, 0 ... 30, 0 ... 40, 0 ... 50, 0 ... 100, 0 ... 150, 0 ... 200 $^{\circ}\text{C}$
Offset adjust:	offset: approx. $\pm 8 \Omega$ ($\triangle 20 \text{ }^{\circ}\text{C}$ for Pt100, $\triangle 2 \text{ }^{\circ}\text{C}$ for Pt1000) span: approx. $\pm 20 \%$
Sensor connection:	2- or 3-wire connection
Sensor current:	approx. 1 mA (Pt100), approx. 0.25 mA (Pt1000)
Output signal:	0 - 20 mA, 4 - 20 mA, 0 - 10 V or 2 - 10 V (selectable via DIP switch)
max. load:	burden $\leq 1 \text{ k}\Omega$ (at mA), load: max. 15 mA (at V)
Basic accuracy:	$\leq 0.2 \%$ of measuring range
Temperature coefficient:	$\leq 0.01 \%$ /K
Output accuracy:	$\leq 0.1 \%$ of measuring range
Power supply:	... - 0 - 00: 85 ... 265 V AC / 110 ... 125 V DC ... - 5 - 00: 10 ... 42 V DC / 10 ... 30 V AC
Power consumption:	max. 2.2 W / 3.3 VA
Isolation voltage:	500 V AC, according to VDE 0110 Gr. 2 between input/output/supply voltage
Test voltage:	4 kV DC between input/output/supply voltage
Working temperature:	-10 ... +60 $^{\circ}\text{C}$
Electrical connection:	screw-terminals with pressure plates, max. 2.5 mm ²
Dimensions:	22.5 x 75 x 110 mm (W x D x H)
Protection:	IP 30 (case), IP 20 (terminals)
Ex-certification:	TÜV 03 ATEX 2283, II (1) G [Ex ia] IIC, II (1) D [Ex iaD]
Connection data:	
MU 500-ex-ia-51-...	U ₀ = 1.3 V, I ₀ = <3 mA, P ₀ = <3 mW, C ₀ = 29 μF , L ₀ = 100 mH, C _i = 5 nF, L _i = 0 mH
MU 500-ex-ia-53-...	U ₀ = 4.9 V, I ₀ = <3 mA, P ₀ = <3 mW, C ₀ = 2.2 μF , L ₀ = 100 mH, C _i = 5 nF, L _i = 0 mH

ISOLATING SIGNAL CONVERTER



ST500-10-0-00

Product-ID: 603442

Isolating signal converter (230 V AC)

ST500-10-5-00

Product-ID: 603483

Isolating signal converter (10 ... 30 V DC/AC)

ST500-Ex-10-0-00

Product-ID: 603440

Isolating signal converter (230 V AC)

ST500-Ex-10-5-00

Product-ID: 603627

Isolating signal converter (10 ... 30 V DC/AC)

General:

- Isolating signal converter with integrated transmitter supply. It allows the direct connection of active 2-wire sensors (4 ... 20 mA) and 3-wire sensors in the Ex-area.
 - 2 power-supply-designs with wide range of allowed supply voltage:
10 ... 30 V DC / AC or 85 ... 253 V AC
 - Electrically isolated: between input / output / supply voltage
 - 22.5 mm standard case for rail mounting TS35
 - Universal inputs/outputs for (0)4 ... 20 mA and (0)2 ... 10 V
- For Ex-designs:**
- Input intrinsically safe ATEX II (1) G [Ex ia] IIC, II (1) D [Ex iaD]

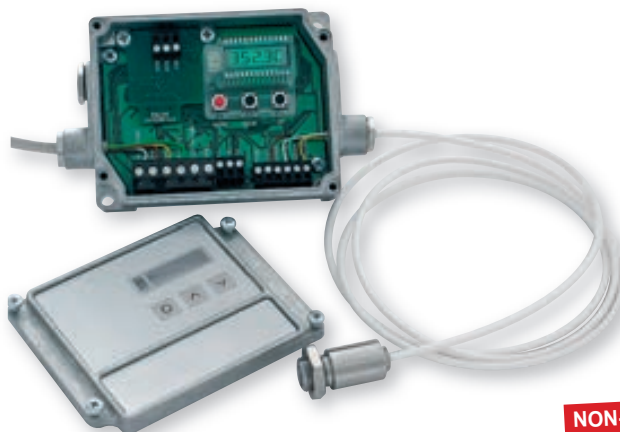


Specifications:

Measuring ranges:	selectable
Current input:	0 ... 20 mA or 4 ... 20 mA (R _i = 25 Ω , max. 100 mA overload)
Voltage input:	0 ... 10 V or 2 ... 10 V (R _i = $\sim 40 \text{ k}\Omega$, max. 100 V overload)
Offset adjust:	approx. $\pm 20 \%$, adjustable
Transmitter supply:	approx. 20 V DC, R _i = approx. 300 Ω
Output signal:	0 - 20 mA, 4 - 20 mA, 0 - 10 V or 2 - 10 V (selectable via DIP switch)
max. load:	burden $\leq 1 \text{ k}\Omega$ (at mA), load: max. 15 mA (at V)
Basic accuracy:	$\leq 0.3 \%$ of measuring range
Temperature coefficient:	$\leq 0.01 \%$ /K
Repeat accuracy:	$\leq 0.1 \%$ of measuring range
Rise time:	T ₉₀ = < 100 ms
Power supply:	... - 0 - 00: 85 ... 253 V AC ... - 5 - 00: 10 ... 30 V DC / AC
Power consumption:	max. 3.5 VA
Isolation voltage:	500 V AC, according to VDE 0110 Gr. 2 between input/output/supply voltage
Test voltage:	4 kV DC between input/output/supply voltage
Working temperature:	-10 ... +55 $^{\circ}\text{C}$
Electrical connection:	screw-terminals with pressure plates, max. 2.5 mm ²
Dimensions:	22.5 x 75 x 110 mm (W x H x D)
Protection:	IP 30 (case), IP 20 (terminals)
Ex-certification:	TÜV 97 ATEX 1150, II (1) G [Ex ia] IIC, II (1) D [Ex iaD]
Connection data:	U ₀ = 25.2 V, I ₀ = 95 mA, P ₀ = 600 mW, C ₀ / L ₀ (ia/IIC) = 47 nF / 2 mH or 107 nF / 0.2 mH, C ₀ / L ₀ (ia/IIB) = 370 nF / 15 mH or 430 nF / 1 mH, C _i , L _i = negligible

The intrinsically safe circuit is electrically isolated from the non-intrinsically safe circuits up to a sum of the peak values of the nominal voltage of 375 V.

INFRARED - MEASURING TRANSDUCER



HIGHLIGHTS:

- small infrared sensor heads with 22:1 optical resolution
- rugged and applicable without cooling up to 180 °C ambient
- adjustable emission factor
- freely scaleable analogue output
- illuminated liquid crystal display

NON-CONTACT TEMPERATURE

MEASURING FROM -50 ... +975 °C

IRCT20

Product-ID: 602832

-50 ... +975 °C, optic 22:1

Precision infrared transducer

Application:	
Glass, paper, plastic industries, automotive industry, metal industry, quality assurance / maintenance	
Specifications:	
Measuring range:	-50 ... +975 °C freely scaleable via programming keys
Spectral sensitivity:	8 - 14 µm
Optic resolution:	22:1 (precision glass optics)
System accuracy:	± 1% or ± 1 °C (higher value applicable)
reproducibility:	± 0.5 % or ± 0.5 °C (higher value applicable)
Nominal temperature:	23 ± 5 °C
Temperature coefficient:	0.05 % or 0.05 °C/K (higher value applicable)
Temperature resolution:	0.1 °C
Response time:	150 ms (95%)
Emission-, transmission factor:	adjustable from 0.100 ... 1.100
Output signals:	0-20 mA, 4-20 mA, 0-5 V, 0-10 V, thermocouple type J or K
Output impedance:	
mA	max. 500 Ohm (at 8-36 VDC)
V	min. 100 kOhm load resistance
Thermo couple:	20 Ohm
Supply voltage:	8-36 VDC
Power consumption:	max. 100 mA
Cable length:	1 m (standard), 3 m, 15 m
IP rating:	IP65 (NEMA-4)
Ambient temperature:	
Measuring head:	-20 ... +180 °C
Electronic box:	0 ... +65 °C
Storage temperature:	
Measuring head:	-40 ... +180 °C
Electronic box:	-40 ... +85 °C
Relative humidity:	10 - 95 % RH, non condensing
Vibration (meas. head):	
IEC 68-2-6:	3G, 11-200 Hz, each axis
Shock (meas. head):	
IEC 68-2-27:	50G, 11 ms, each axis
Weight (meas. head / elec. box):	40 g / 420 g
Dimensions electronic box:	120 x 70 x 30 mm
Scope of supply:	electronics-box with LCD, stainless steel sensor head (M12) incl. screw nut, 1 m high temperature sensor head cable, manual

Options:

CB3
3 m sensor head cableCB15
15 m sensor head cableCF
auxiliary lens for measuring of smallest objects
measuring zone dia 0.6 mm @10 mm, in long distance 1.5:1

Accessories and spare parts:

MW

Product-ID: 604567
mounting bracket, fixed

MB

Product-ID: 604568
mounting bolts with M12x1 thread

MG

Product-ID: 603711
mounting fork, adjustable in 2 axis with M 12x1 mount

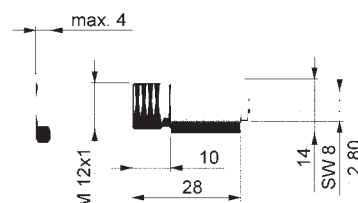
FVS

Product-ID: 603138
standard blow clear header

FVL

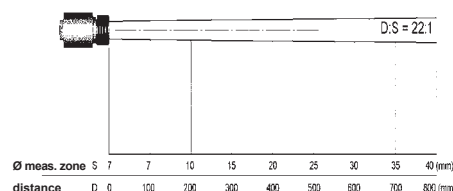
Product-ID: 603712
laminar blow clear header

ISO-WPS-IRCT

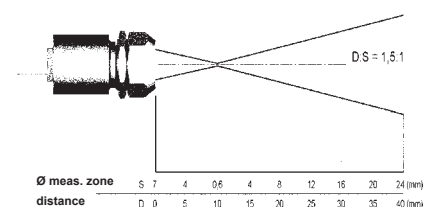
Product-ID: 604967
calibration certificate 23 °C, 110 °C, 510 °C

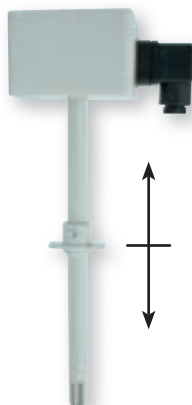
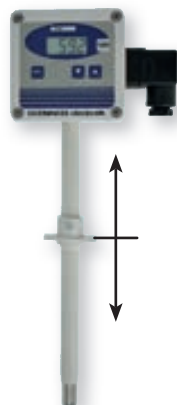
Further special design types (e.g. for metal processing, or with other optics) up on request

Optic resolution (standard)



Optic resolution (with option CF)





HUMIDITY TRANSDUCER

GRHU-1R-MP Wall version

Standard version:
Probe length: 50 mm

GRHU-1K-MP Wall / channel version

Standard version:
Probe length: 220 mm

GRHU-2K-MP Channel version

Standard version:
Probe length: 220 mm

GRHU-SHUT-MP absorption hat / weather protection

GRHU-KABEL-MP wall version with cable and high humidity sensor

GRHU-1R-MP

Product-ID: 602938

GRHU-1K-MP

Product-ID: 602941

GRHU-2K-MP

Product-ID: 602943

GRHU-SHUT-MP

Product-ID: 603953

GRHU-KABEL-MP

Product-ID: 608043

General:

The humidity transducer offers even greater possibilities to compensate the special sensor characteristics due to the newest microprocessor technology. Regarding precision, temperature stability and functionality a new dimension is entered. The transducer can be used for almost all applications due to the different types (e.g. wall or channel mount, with separated probe or with heat absorption hat) and the wide temperature range (electronic: -25 °C ... +50 °C; sensor: -40 ... +120 °C).

Specifications:

Measuring ranges:

Humidity: 0.0 ... 100.0 % RH (temperature compensated)

Temperature: -40.0 ... 120.0 °C or -40.0 ... 248 °F

Recommended humidity range: 20.0 ... 80.0 % RH (standard)
5.0 ... 95.0 % RH (with option high humidity)

Display options: with option UNI an alternative display unit can be shown instead of the humidity measuring value. The unit selection will be done via keyboard.

Wet bulb temperature -27.0 ... +60.0 °C

Dewpoint temperature -40.0 ... +60.0 °C

Enthalpy -25.0 ... +999.9 kJ/kg

Atmospheric humidity 0.0 ... 640.0 g/kg

Absolute humidity 0.0 ... 200.0 g/m³

Accuracy: (at 25 °C and in recommended range)

Display: humidity: ±2.5 % RH
temperature: ±0.4 % of measuring value ±0.2 °C

Additional output signal: ±0.2 % FS

Temperature compensation: automatically

Auxiliary energy: 12 ... 30 VDC or 18 ... 30 VDC (for output: 0-10 V)

Reverse voltage protection: 50 V, permanently

Perm. impedance (at 4-20 mA): $R_A [\Omega] \leq (U_V [V] - 12V) / 0.02 A$

Permissible load (at 0-1(10)V): $R_L [\Omega] > 3000 \Omega$

Display: approx. 10 mm high, 4-digit LCD-display, alternating humidity and temperature display

Working temperature: -25 ... +50 °C (electronics)

Sensor head and tube: -40 ... +100 °C - for short time up to 120 °C

Storage temperature: -25 ... +70 °C

Relative humidity (electronic): 0 ... 95 % RH (non-condensing); If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (optionally available).

Housing:	ABS (IP65)
Sensor tube:	tube 14 mm Ø, with screw-type protection cap
Design type Kabel:	with separated sensor tube, sensor head (Ø14x 68 mm) connected to device via 1 m teflon cable. Inclusive option high-humidity sensor
Design type Shut:	heat absorption hat / weather protection shield Application: The heat absorption hat is especially designed for measurements in the open air. The measuring results that can be achieved will not be influenced by either sun or rain. Design: Heat absorption hat made of plastic, Ø 110 mm, approx. 140 mm high. Additionally equipped with a stainless steel base for wall mounting, with 3 fixing holes for screws with a max. shaft Ø of 5 mm. Large projection approx. 160 mm.
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope adjustable, output signal scaleable

Ordering code:

GRHU - **1** - **2** - **3** - **4** - **5** -GE

Greisinger		
1.	Design type	
	1R-MP	Surface design
	1K-MP	Surface / duct design
	2K-MP	Duct design
	KABEL-MP	Surface design with cable and high humidity sensor
	SHUT-MP	Weather protective shield / heat-protective hat incl. Option LACK and HO
2.	Options Sensor	
	-00	Standard sensor
	-HO	High humidity sensor
3.	Fitting length EL	
	-050	50 mm (Standard for 1R)
	-220	220 mm (Standard for 1K/2K)
	-300	300 mm
	-400	400 mm
	-500	500 mm
4.	Output signal	
	...	4-20 mA (Standard)
	-AV1	Analog output 0-10 V
	-AV01	Analog output 0-1 V
5.	Option	
	-LACK	Encapsulated PC Board
	-UNI	Selectable humidity display instead of the standard humidity values

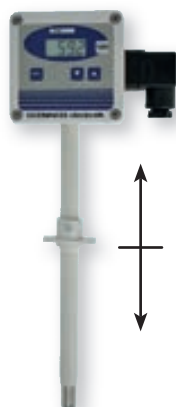
HUMIDITY & TEMPERATURE TRANSDUCER



**2-CHANNEL HUMIDITY/-
TEMPERATURE
TRANSDUCER**

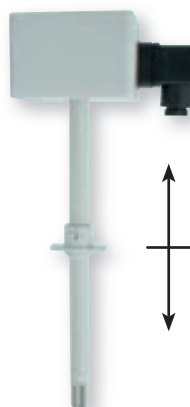
GHTU-1R-MP
Wall version

Standard version:
Probe length: 50 mm



GHTU-1K-MP
Wall / channel version

Standard version:
Probe length: 220 mm



GHTU-2K-MP
Channel version

Standard version:
Probe length: 220 mm



GHTU-SHUT-MP
absorption hat /
weather protection



GHTU-KABEL-MP
wall version with
cable and high
humidity sensor

GHTU-1R-MP

Product-ID: 602585

GHTU-1K-MP

Product-ID: 602587

GHTU-2K-MP

Product-ID: 602592

GHTU-SHUT-MP

Product-ID: 603896

GHTU-KABEL-MP

Product-ID: 604436

General:

The humidity & temperature transducer offers even greater possibilities to compensate the special sensor characteristics due to the newest microprocessor technology. Regarding precision, temperature stability and functionality a new dimension is entered. The transducer can be used for almost all applications due to the different types (e.g. wall or channel mount, with separated probe or with heat absorption hat) and the wide temperature range (electronic: -25 °C ... +50 °C; sensor: -40 ... +120 °C), 2 standard signal outputs.

Specifications:

Measuring ranges:

Humidity:	0.0 ... 100.0 % RH (temperature compensated)
Temperature:	-40.0 ... +120.0 °C or -40.0 ... +248 °F
Recommended humidity range:	20.0 ... 80.0 % RH (standard) 5.0 ... 95.0 % RH (with option high humidity)
Display options:	with option UNI an alternative display unit can be shown instead of the humidity measuring value. The unit selection will be done via keyboard.
Wet bulb temperature	-27.0 ... +60.0 °C
Dewpoint temperature	-40.0 ... +60.0 °C
Enthalpy	-25.0 ... +999.9 kJ/kg
Atmospheric humidity	0.0 ... 640.0 g/kg
Absolute humidity	0.0 ... 200.0 g/m³
Accuracy: (at 25 °C and in recommended range)	
Display:	humidity: ±2.5 % RH temperature: ±0.4 % of measuring value ±0.2 °C
Output signal:	humidity ±0.2 % FS, temperature ±0.2 % FS
Temperature compensation:	automatically
Auxiliary energy:	12 ... 30 VDC or 18 ... 30 VDC (for output: 0-10 V)
Reverse voltage protection:	50 V, permanently
Perm. impedance (at 4-20 mA):	$R_A [\Omega] \leq (U_V [V] - 12V) / 0.02 A$
Permissible load (at 0-1(10)V):	$R_L [\Omega] > 3000 \Omega$
Display:	approx. 10 mm high, 4-digit LCD-display, alternating humidity and temperature display
Working temperature:	-25 ... +50 °C (electronics)
Sensor head and tube:	-40 ... +100 °C - for short time up to 120 °C
Storage temperature:	-25 ... +70 °C
Relative humidity (electronic):	0 ... 95 % RH (non-condensing); If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (optionally available).

Housing:	ABS (IP65)
Sensor tube:	tube 14 mm Ø, with screw-type protection cap
Design type Kabel:	with separated sensor tube, sensor head (Ø14x 68 mm) connected to device via 1 m teflon cable. Inclusive option high-humidity sensor
Design type Shut:	heat absorption hat / weather protection shield Application: The heat absorption hat is especially designed for measurements in the open air. The measuring results that can be achieved will not be influenced by either sun or rain. Design: Heat absorption hat made of plastic, Ø 110 mm, approx. 140 mm high. Additionally equipped with a stainless steel base for wall mounting, with 3 fixing holes for screws with a max. shaft Ø of 5 mm. Large projection approx. 160 mm.
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope adjustable, output signal scaleable

Ordering code:

GHTU - 1 - 2 - 3 - 4 - 5 - 6 -GE

Greisinger		
1.	Design type	
	1R-MP	Surface design
	1K-MP	Surface / duct design
	2K-MP	Duct design
	KABEL-MP	Surface design with cable and high humidity sensor
	SHUT-MP	Weather protective shield / heat-protective hat incl. Option LACK and HO
2.	Fitting length EL	
	-050	50 mm (Standard for 1R)
	-220	220 mm (Standard for 1K/2K)
	-300	300 mm
	-400	400 mm
	-500	500 mm
3.	Output signal	
	...	4-20 mA (Standard)
	-AV01	0-1 V
	-AV01G	0-1 V (galvanically isolated)
	-AV10	0-10 V
	-AV10G	0-10 V (galvanically isolated)
4.	Options Sensor	
	-00	Standard sensor
	-HO	High humidity sensor
5.	Option	
	-LACK	Encapsulated PC Board
6.	Option	
	-UNI	Selectable humidity display instead of the standard humidity values

PRESSURE MEASURING TRANSDUCER FOR ABSOLUTE PRESSURE OR OVER/UNDER PRESSURE AND PRESSURE DIFFERENCE



FREELY SCALABLE



HIGHLIGHTS:

- change between 4-20 mA / 0-10 V
- with display
- switching output
- Configuration protected by code lock

GMUD-MP-S

Pressure measuring transducer for pressure difference or absolute pressure (pressure range > 25 mbar)

GMUD-MP-F

Pressure measuring transducer for pressure difference (fine pressure range ≤ 25 mbar)

General:

Microprocessor controlled, digital pressure transducer with display and operation via 3 buttons. With freely scalable analog output that can be switched between 4-20 mA and 0-10 V. Code lock for input, after code input parameters can be changed (code permanently stored).

Application:

Suitable for: air and non-aggressive gases

Area of application:

controlling, measuring and monitoring, climate and ventilation, environmental and medical technology

Measuring ranges:

Difference fine pressure range:

GMUD MP-F-MD0: Product-ID: 602483	Measuring ranges: 0,000 ... 1,000 mbar Overload: 150 mbar, Burst pressure: 200 mbar
GMUD MP-F-MD1: Product-ID: 602485	Measuring ranges: 0,00 ... 10,00 mbar Overload: 150 mbar, Burst pressure: 200 mbar
GMUD MP-F-MD2: Product-ID: 602487	Measuring ranges: 0,00 ... 20,00 mbar Overload: 150 mbar, Burst pressure: 200 mbar
GMUD-MP-F-MD3: Product-ID: 605958	Measuring ranges: -1,999 ... +2,500 mbar Overload: 250 mbar, Burst pressure: 500 mbar
GMUD-MP-F-MD4: Product-ID: 604355	Measuring ranges: -19,99 ... +20,00 mbar Overload: 150 mbar, Burst pressure: 200 mbar

Difference pressure range:

GMUD MP-S-MD0: Product-ID: 602482	Measuring ranges: 0,0 ... 100,0 mbar Overload: 1000 mbar, Burst pressure: 1500 mbar
GMUD MP-S-MD1: Product-ID: 602491	Measuring ranges: 0,0 ... 500,0 mbar Overload: 1000 mbar, Burst pressure: 1500 mbar
GMUD MP-S-MD2: Product-ID: 602493	Measuring ranges: 0 ... 1000 mbar Overload: 2000 mbar, Burst pressure: 3000 mbar
GMUD MP-S-MD3: Product-ID: 602495	Measuring ranges: 0 ... 2000 mbar Overload: 4000 mbar, Burst pressure: 6000 mbar
GMUD MP-S-MD4: Product-ID: 602497	Measuring ranges: 0 ... 5000 mbar Overload: 7000 mbar, Burst pressure: 7000 mbar
GMUD-MP-S-MD5 Product-ID: 607278	Measuring ranges: -100,0 ... +100,0 mbar Overload: 1000 mbar, Burst pressure: 1500 mbar
GMUD-MP-S-MD6 Product-ID: 607925	Measuring ranges: -500 ... +500 mbar Overload: 1000 mbar, Burst pressure: 1500 mbar
GMUD-MP-S-MD7 Product-ID: 607252	Measuring ranges: -1000 ... +1000 mbar Overload: 2000 mbar, Burst pressure: 3000 mbar

Absolute pressure range:

GMUD MP-S-MA0: Product-ID: 602499	Measuring ranges: 0 ... 1100 mbar abs. Overload: 2000 mbar, Burst pressure: 3000 mbar
GMUD MP-S-MA1: Product-ID: 602501	Measuring ranges: 0 ... 2000 mbar abs. Overload: 4000 mbar, Burst pressure: 6000 mbar

Types of pressure:

Types of pressure: Absolute pressure is the pressure related to vacuum (zero pressure). When no pressure is applied (pressure port open), the ambient pressure is displayed.

Examples: meteorological measurements (eg 1013 hPa abs), vacuum processes

Differential pressure is the pressure difference between 2 Press. Mostly both pressures are connected to a respective side of the measuring membrane, the sensor must have two pressure connections.

Examples: ventilation technology / filters, dynamic pressure measurements

The relative pressure is the pressure difference between a pressure / vacuum and the ambient pressure. For relative pressure measurement with a differential pressure sensor (2 pressure ports) one of the terminals is left open.

Examples: pneumatic, tire pressure, hydraulic

Specifications:

Sensor element:	piezoresistive pressure sensor with integrated temperature
Typ. accuracy:	depends on type (see manual) ± 0.15 % (linearity) ± 0.6 % FS (hysteresis and temperature 0 ... 70 °C)
Output signal:	4 ... 20 mA / 0 ... 10 V (selectable in menu)
Auxiliary energy:	only needed if 0 ... 10 V output signal is selected (18 ... 30 V DC / 24 V AC)
Permissible burden:	(4 ... 20 mA): $R_L [Q] \leq (U_v [V] - 12 [V]) / 0.02 A$
Permissible load:	(0 ... 10 V): $\geq 3000 Q$
Operating temperature:	-20 ... +70 °C
Storage temperature:	-40 ... +70 °C
Display / operation:	4-digit 7-segment display and 3 buttons
Display range:	-1999 ... 9999 digit
Pressure connection:	universal pressure connecting pieces for 6 x 1 mm or 8 x 1 mm plastic tubes (4 or 6 mm inner pipe diameter)
Mounting position:	any position (small influence of mounting position for low ranges)
Housing:	ABS (IP65): with fixing holes for wall mounting (accessible after cover has been removed)
Dimensions:	Housing 80 x 82 x 55 mm (without elbow-plug and pressure connecting pieces)
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65) max. wire cross section: 1.5 mm², wire/cable Ø: 4.5 ... 7 mm

Option:

LACK

card coated on both sides (for outdoor application)

OUT

switching output (max 28 V, 40 mA), switches if meas. value falls below or exceeds limit value connection via 2nd elbow-type plug

WE

default settings according to customer's specifications, includes: output signal, measuring range, default state in case of error (without upcharge if together with MBF / MBS)

MBF

option any fine pressure range < 25 mbar, please state desired measuring range

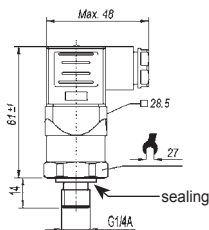
MBS

option any pressure range > 25 mbar ... 5000 mbar please state desired measuring range

Accessories and spare parts:

Tube and accessories: see page 62-63.

PRESSURE TRANSMITTER

**A10**

Pressure transmitter (relative pressure, zero output at atmospheric pressure)

Application:

Suitable for all applications in machine and systems engineering, automotive technology as well as cooling and air conditioning technology.

Specifications:

Measuring range (MR), Overload limit (OL), Burst pressure (BP):

MR:	1, 40,	1.6, 60,	2.5, 100,	4, 160,	6, 250,	10, 400,	16, 600,	25, 1200
OL:	2, 80,	3.2, 120,	5, 200,	8, 320,	12, 500,	20, 800,	32, 1200,	50, 2400
BP:	5, 400,	10, 550,	10, 800,	17, 1000,	34, 1200,	34, 1700,	100, 2400,	100, 2400

Output signal: 4-20 mA, 2-wire, $R_A [\Omega] < (U_V [V] - 8V) / 0.02 A$
0-10 V, 3-wire, $R_L > 10 k\Omega$
(other output signals upon request)

Auxiliary energy U_V : 8 ... 30 VDC (for output 4-20 mA)
14 ... 30 VDC (for output 0-10 V)

Accuracy: * $\leq 1.0 \% FS$ (optional: $\leq 0.5 \% FS$), * = including non-linearity, hysteresis, zero point and scale error. Corresponds to error of measurement per IEC 61298-2. Sensor adjusted in vertical mounting position with lower pressure connection

Non-Linearity: $\leq 0.5 \% FS$ (optional: $\leq 0.25 \% FS$)

Zero Offset: $\leq 0.5 \% FS$ (typ.), $\leq 0.8 \% FS$ (max.),
(Optional: $\leq 0.15 \% FS$ (typ.), $\leq 0.4 \% FS$ (max.))

Hysteresis: $\leq 0.16 \% FS$

Repeatability: $\leq 0.1 \% FS$

Long-term drift: $\leq 0.1 \% FS$ (according to IEC 61298-3)

Response time: T_{90} $\leq 4 ms$

Permitted temperature of measurement media: 0 ... +80 °C (optional: -30 ... +100 °C)

Ambient temperature: 0 ... +80 °C (optional: -20 ... +100 °C)

Storage temperature: -20 ... +80 °C

Temperature compensated area: 0 ... +80 °C

Temperature error in compensated area: $\leq 1.0 \% FS$ (typ.), $\leq 2.5 \% FS$ (max.)

Material: Parts coming into contact with pres. media

Pressure connection: 316 L

Pressure sensor: 316 L (as of 10 bar rel. 13-8 PH)

Housing: 316 L

Pressure connection: G 1/4 A, DIN 3852-E with NBR sealing

Protection rating: IP65 or IP67 with cable

Electric connection: elbow-type plug acc. to EN 175301-803/A or connection cable, cable length 2 m

Electric protections: reverse voltage and short-circuit protection

Weight: approx. 80 g

Optionen:

Absolute pressure
(0 ... 1 bar abs. to 0 ... 25 bar abs.)

Under pressure
(-1.0 ... +1.5 bar, -1.0 ... +3.0 bar, -1.0 ... +9.0 bar)

G2
Higher sensor accuracy (class 0.5)

T2
Extended temperature range: -30 ... +100 °C

V2
Output signal 0-10 V

Fixed connecting cable
2 m with bend protection (instead of elbow-type plug, IP67)

PRESSURE MEASURING TRANSDUCER
FOR OVER/UNDER AND ABSOLUTE PRESSURE

S10



S11



S20

**S10 REL**

Pressure measuring transducer (Standard, zero output at ambient pressure)

S11 REL

Pressure measuring transducer (Flush, zero output at ambient pressure)

S20 REL

Pressure measuring transducer (Standard, zero output at ambient pressure)

S10 ABS

Pressure measuring transducer (Standard, absolute, zero output at vacuum)

S11 ABS

Pressure measuring transducer (Flush, absolute, zero output at vacuum)

S20 ABS

Pressure measuring transducer (Standard, absolute, zero output at vacuum)

General:

Piezoresistive pressure sensor with temperature compensation. Completely welded and stainless steel design, filled food safe (up to 16 bar), thin film strain (above 25 bar).

Specifications:

Measuring ranges: in bar (other values upon request)

S-10 / S-11 REL: 0.1, 0.16, 0.25,

S-11 / S-20 REL: 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60, 100, 160, 250, 400, 600, **only S-20 REL:** 1000, 1600

S-10 / S-11 ABS: 0.25,

S-11 / S-20 ABS: 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10, 16, **only S-20 ABS:** 20, 40

S-10 ABS: 0.8 ... 1.2,

Available overload 3-fold at measuring range <10 bar (150 psi)

pressure limits: 2-fold at measuring range ≥ 10 bar (150 psi)

Output signal: 4-20 mA (0-10 V - refer to options; others upon request)

Permissible impedance: $R_A [\Omega] \leq (U_V [V] - 10 V) / 0.02 A$ (for output 4-20 mA)

Permissible load: $R_L > 10 k\Omega$ (for output 0-10 V)

Auxiliary energy: 10 ... 30 V DC (14 ... 30 V DC for output 0-10 V)

Accuracy:

deviation from ≤ 0.5 (setting of cut-off point)

parameter (% of Span): ≤ 0.25 (setting of tolerance band, BFSL)

Repeatability (% of Span): $\leq 0.1 \%$

Stability/year (% of Span): ≤ 0.2 (at reference conditions)

Hysteresis (% of Span): ≤ 0.1

Permissible temperature of media: -30 ... +100 °C (refer to options)

Operating temperature ambient: -20 ... +80 °C

Compensated temperature range: 0 ... +80 °C

Temperature coefficient: $\leq 0.02 \% FS / K$ (or $\leq 0.04 \% FS$ for MB ≤ 0.25 bar)

Housing: stainless steel 1.4435 (IP65)

Pressure connection: (other upon request)

Type S-10/-20... : G 1/2 B, other upon request

Type S-11... : G 1 B (up to 1.6 bar), G 1/2 B (from 2.5 ... 600 bar)

Mounting position: any

Electric connection: standard via elbow-type plug EN 175301-803/A

Electric protections: reverse voltage protection, over voltage and short-circuit protection.

Options:

Special measuring range

Media temperature: -40 ... +125 °C (S-10/-20 only)

Media temperature: -30 ... +125 °C (S-11 only)

Media temperature: -20 ... +150 °C
(S-11 only with cooling section)

Output signal 0-10 V (other upon request)

Ex-protection

WATER LEVEL / WELL PROBE TANK CONTENTS MEASURING PROBE



**FOR SIMPLE AND INEXPENSIVE
APPLICATIONS**

GBS01

Product-ID: 603059
Water level / well probe

General:

Suitable for permanent level measuring in tanks, rivers, lakes, drinking-water wells, drilling holes, waste water plants...

GBS02

Product-ID: 603146
Tank contents measuring probe for difficult measuring conditions

General:

For measuring the level of fuel and other aggressive media. The sensor is highly precise, insensitive to lateral flow and offers optionally lightning protection and other output signals (e.g. 0-10 V). For measuring of gasoline please order ex-design.

Beschreibung:

Piezoresistive pressure sensor with temperature compensation. Welded, non-corrosive design with integral and additionally sealed water-proof connecting cable. The pressure compensation is done via a cable-integrated air path to the atmosphere. A special feature is the lateral flow resistance, which prevents media ingress.

Specifications:

Measuring ranges:	0.1 bar (100 mbar) ... 10 bar = 1 ... 100 m water column
Available ranges:	0.1, 0.25, 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10
Overload (bar):	1 2 2 3 5 8 8 10 10 10
Output signal:	4-20 mA (option: 0-10 V only for GBS02)
Permissible impedance:	4-20 mA: $R_A [\Omega] < (U_V [V] - 10 V) / 0.02 A$
Permissible load:	0-10 V: $R_L [\Omega] > 100 k\Omega$
Auxiliary energy:	10 ... 30 V DC (14 ... 30 V DC at 0-10 V)
Accuracy:	accuracy (% of span):
GBS01:	≤ 0.5 setting of cut-off point) resp. ≤ 0.25 (BFSL)
GBS02:	accuracy (% of span):
	≤ 0.25 (setting of cut-off point) resp. ≤ 0.125 (BFSL);
	(at 0.1 bar: ≤ 0.5 setting of cut-off point) resp. ≤ 0.25 (BFSL))
Hysteresis (% of span):	≤ 0.1
Repeatability (% of span):	≤ 0.05
Stability per year (% of span):	≤ 0.2 (at reference conditions)
Operating temperature:	-10 ... +50 °C (GBS01) or -10 ... +85 °C (GBS02)
Temperature coefficient (% of span):	$\leq 0.02 / K$ (for meas. range > 0.4 bar)
Filling:	KN77, food safe
Housing:	chromium-nickel alloy 1.4571. Male thread G 1/2" accessible after removal of plastic protection cap.
Probe dimensions:	Ø 27 mm, length of metal body: approx. 100 mm (GBS01), approx. 147 mm (GBS02), cable Ø approx. 7.5 mm
Connection:	10 m stationary casted PUR cable (GBS01) resp. FEP-cable (GBS02), loose ends. Glass-fibre screen protects cable against tearing. (Extra long cable against upcharge - please specify when ordering)

Options GBS01:

extra long connection cable (PUR)
till max. 300 m

Options GBS02:

extra long connection cable (FEP, teflon)
till max. 100 m

output signal 0-10 V

lightning protection, -protection, meas. range 16 and 25 bar

INLINE COMPRESSED AIR FLOWMETER FOR COMPRESSED AIR CONSUMPTION MEASUREMENTS



GEE771C-DN15

Product-ID: 602917
Flowmeter with DN15 sensor and assembly ball valve DN15

GEE771C-DN20

Product-ID: 602918
Flowmeter with DN20 sensor and assembly ball valve DN20

GEE771C-DN25

Product-ID: 602919
Flowmeter with DN25 sensor and assembly ball valve DN25

Application:

Leakage detection: Consumption of compressed air despite of shut-down installations is a serious hint for a leak in one of the pipes (even a 1.5 mm sized hole can already yet energy costs of € 1.500!)

Improvement in efficiency: Compressed air is one of the most expensive form of energy in many plants! Therefore the knowledge about the consumption is essential for the application of an energy management system (e.g. acc. to DIN50001)

General:

The inline flowmeter is based on the thermal mass flow measuring principle and is well suited for flow measurements in pipes DN15 till DN25. It allows measuring the consumption of compressed air (optionally also nitrogen, CO₂, oxygen, helium or other non-corrosive, incombustible gases).

The device sets standards in terms of accuracy and repeatability, its unique mounting concept as well as its close-to-application adjustment at a pressure of 7 bar. The mounting in a measurement assembly ensures easy installation and removal of the sensor for regular calibration and assures at the same time an exact and reproducible positioning of the flow sensor in the pipe. There are two signal outputs to read-out the measured values. Depending on the application the outputs can be configured as analog output (current or voltage), switching output or pulse output for consumption measurement.

Configuration software

The flow meter can be configured to its desired use by means of its integrated USB interface and a software included in shipping.

Functions of the software:

- configuration of outputs (range / switching points)
- 2 point adjustment for flow and temperature
- read-out of consumption meter
- reset of min-/max- values and consumption meter

Specifications:

Measuring unit:	Volume flow acc. to DIN1343
Measuring range:	DN15: 0,32 ... 63 Nm³/h DN20: 0,57 ... 113 Nm³/h DN25: 0,90 ... 176 Nm³/h
Meas. range temperature:	-20 ... +80 °C
Output 1:	Analog output 0(4) ... 20 mA or 0 ... 10 V
Output 2:	Pulse output or switching output
Power supply:	18 - 30 V AC/DC, max. 200 mA
Working temperature:	-20 ... +60 °C
Media temperature:	-20 ... +80 °C
Working pressure:	max. 16 bar

Accessories and spare parts:

GEE-KH-DN15

Product-ID: 604559
Assembly ball valve DN15

GEE-KH-DN20

Product-ID: 604560
Assembly ball valve DN20

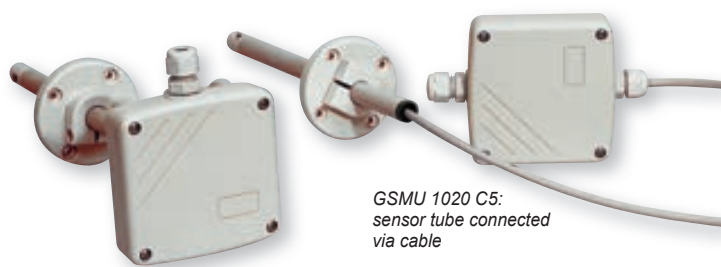
GEE-KH-DN25

Product-ID: 607966
Assembly ball valve DN25

GEE-AK-2m

Product-ID: 607967
Connection cable transmitter ↔ sensor, 2 m

AIR FLOW MEASURING TRANSDUCER



GSMU 1020 B5:
sensor tube permanently connected

GSMU 1020-B5

Product-ID: 601623

Air flow measuring transducer

GSMU 1020-C5

Product-ID: 601796

Air flow measuring transducer

General:

- 3 measuring ranges integrated in each device
- selection between 2 different response times
- high accuracy
- almost independent of flow direction
- shock resistant
- resistant to pollution

Application:

Air conditioning and ventilation technology, process and environmental technology
Measuring principle:
no moving parts. Hot-film anemometer principle.

Specifications:**Measuring range flow:**

GSMU 1020..: 0 ... 10 m/s, 0 ... 15 m/s and 0 ... 20 m/s
Measuring range can be set by means of jumper.

Output signal: 0 - 10 Volt (Iout < 1.0 mA) or
4 - 20 mA ($R_i < 450 \text{ Ohm}$)
Output signal can be set by means of jumper.

Measuring accuracy: (at 20 °C, 45 % RH, 1013 hPa)

0 ... 10 m/s: $\pm 0.2 \text{ m/s} \pm 3 \%$ of measured value
0 ... 15 m/s: $\pm 0.2 \text{ m/s} \pm 3 \%$ of measured value
0 ... 20 m/s: $\pm 0.2 \text{ m/s} \pm 4 \%$ of measured value

Response time: T_{90}
(at 10 m/s) typ. 4 s or 0.2 s
Response time can be set by means of jumper.

Dependency on flow direction: < 3 % of measured value at $\Delta\alpha < 10^\circ$

Voltage supply: 24 V AC / DC $\pm 20 \%$, max. 150 mA

max. load: 500 Ohm

Connection: screw-type terminals up to 1.5 mm²

Operating temperature: -10 ... +50 °C

Storage temperature: -20 ... +60 °C

Housing: 80 x 80 x 35 mm (H x W x D)

Material: ABS

Protection rating: IP65 (electronic box)

Sensor tube: length = 200 mm (+18 mm for sensor head), Ø 12 mm

GSMU...B5: sensor tube permanently connected to housing

GSMU...C5: sensor tube connected to housing via cable (approx. 1 m long); Other tube or cable lengths upon request.

Electromagnetic Compatibility (EMC): Conforming to  acc. to DIN EN 50081-1 and DIN EN 50082-2

Accessories and spare parts:**GNG 24/150**

Product-ID: 600275

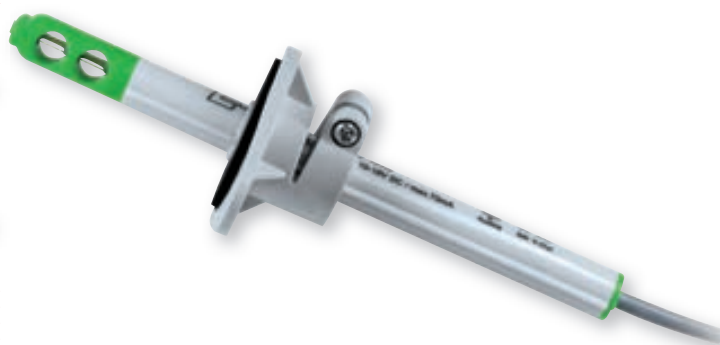
power supply: 24 VDC, 150 mA

GNT 0520

Product-ID: 603810

mains transformer: 230 V~ to 24 V~, with mounting clamp and screw-type terminals.
Dimensions approx. 62 x 56 x 32.5 mm

MINIATURE AIR VELOCITY TRANSMITTER

**GSMU 575**

Product-ID: 601625

Miniature Air Velocity Transmitter

General:

The transmitter is for measuring air velocity. The measurement method is based on the hot-film anemometer principle, for that purpose, a special thin-film sensor element has been developed. An accurate and reliable determination of the air velocity depends on the correct positioning of the sensor probe in the air stream. Accurate measurements are only possible if the sensor probe is installed where there is no turbulence.

Application:

- heating, ventilating
- air conditioning technology
- supply air control of ovens

Specifications:

Working range: 0 ... 20 m/s
other upon request

Output signal: 0 ... 10 V (max. 1 mA)

Accuracy: at 20 °C / 45 % RH, 1013 hPa, at 1 ... 20 m/s
 $\pm(0.4 \text{ m/s} + 6 \%$ of measured value)

Response time:
(at 10 m/s T_{90}) typ. 4 s

Power supply: 19 ... 29 V DC

Power consumption: max. 70 mA

Temperature range: working temperature: -20 ... +60 °C
storage temperature: -30 ... +60 °C

Connection: 0.5 m cable, PVC 3 x 0.25 mm², wire end ferrule

Electromagnetic Compatibility (EMC): EN61326-1

EN61326-2-3

Housing: Polycarbonate, length: 120 mm, Ø 12 mm

Protection class: IP20 (measuring head), IP40 (housing)

Accessories and spare parts:**GNG 24/150**

Product-ID: 600275

power supply: 24 VDC, 150 mA

CO-TRANSDUCER



GT1-CO

Product-ID: 602858
CO-Transducer

General:

High quality, TÜV certified CO transmitter for detection of carbon monoxide in underground garages, parking garages, boiler plants, heating systems, garages as well as in the ambient air. The CO transducer has a very long-lasting electrochemical measuring cell and could be easily integrated in existing CO surveillance systems (without loss of validity of existing TÜV certificates). Via two-wire system, displays, controller and alarm devices with 4-20 mA input could be connected without any problem.

Highlights:

- TÜV certification according to VDI 2053
- also suitable as replacement sensor for existing CO surveillance systems
- long-lasting electrochemical measuring cell
- automatic zero calibration
- 3 years warranty for the CO sensor element

Application:

- underground garages, parking garages
- boiler plant and heating systems
- motorcar garage

Specifications:

Measuring range:	0 ... 300 ppm CO (carbon monoxide)
Measuring principle:	electrochemical, permanent measuring
Reproducibility:	< 3 ppm according to VDI 2053
Response Time T_{90}:	< 60 s
Cross sensitivity:	$\leq 2\%$ of 300 ppm CO (acc. to VDI 2053)
Linearity error:	$\leq 2\%$ of 300 ppm CO (acc. to VDI 2053)
Offset adjustment:	automatically
Output signal:	4 - 20 mA, 2 wire, max. burden = 500 Ohm
Power supply:	12 - 28 V DC (at option VO: 16 - 28 V DC)
Permissible burden:	$R_A [Q] \leq (U_v [V] - 12 V \text{ or } 16 V) / 0.02 A$
Working condition:	-10 ... +40 °C, 15 ... 95 % RH (non-condensing)
Option: on site display	approx. 13 mm high, 3½-digit LC-display
EMC:	according to EN 50 081-1, EN 50 082-2 B
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Housing:	ABS, 82 x 80 x 55 mm (without elbow-type plug)
Mounting:	with fixing holes for wall mounting
Mounting distance:	70 x 50 mm (W x H)
Fixing screws:	max. shaft-Ø 4 mm
Weight:	approx. 190 g

Variante:

GT1 - CO VO

Product-ID: 607965
CO Transducer with on site display

Accessories and spare parts:

GZ-01
Product-ID: 603122
test gas cap GT (for controlled flow with test gas)

GZ-02
Product-ID: 603569
gas bottle with 12l test gas: 30 ppm CO

GZ-03
Product-ID: 603123
gas bottle with 12l test gas: 300 ppm CO

GZ-04
Product-ID: 603570
gas valve unit MiniFlo for gas bottles with 12l

GSN-24
Product-ID: 604386
plug-in power supply (230 VAC => 24 VDC/300 mA)

CO₂-TRANSDUCER



GT10-CO2-1R

Product-ID: 602599
CO₂-Transducer

General:

Due to the fact, that CO₂ is an important indicator for the quality of air in rooms, it's super important to measure the CO₂ content. The recommended CO₂ limit value for ambient air is 1000 ppm. An exceeding of this limit causes tiredness and a loss of concentration. The high quality and precise CO₂-transducer works according to the infrared principle (NDIR). An auto-calibration procedure compensates aging effects and is responsible for an excellent long term stability of this CO₂ transducer. Due to the freely adjustable output signal the transmitter could be used for nearly each existing controller input etc. Additionally, there is a local display which shows beside the actual CO₂ concentration, the minimum and maximum values as well as an optical alarm.

Highlights:

- excellent long term stability
- auto-calibration procedure
- for surveillance of the recommended CO₂ concentration in ambient air
- output signal free scaleable

Specifications:

Measuring range:	standard: 0 ... 2000 ppm CO ₂ (carbon dioxide) optional: 0 ... 5000 ppm CO ₂ (carbon dioxide)
Measuring principle:	infrared principle (NDIR)
Accuracy:	standard: ± 50 ppm $\pm 2\%$ of meas. value (at 20 °C, 1023 mbar) opt. /5000: ± 50 ppm $\pm 3\%$ of meas. value (at 20 °C, 1023 mbar)
Output signal:	4 - 20 mA (3-wire), standard 0 - 1 V or 0 - 10 V (3-wire), upon upcharge
Output scaling:	free scaleable, by entering display range
Auxiliary energy:	12 ... 30 V DC, max. 600 mA (at option 0-10 V: 18 ... 30 V DC, max. 600 mA)
Permissible burden (at 4-20 mA):	$R_A < 200 \Omega$
Perm. load (at 0-10V):	$R_L > 3000 \Omega$
Display:	approx. 10 mm high, 4-digit LC-display
Working condition:	-10 ... +50 °C, 5 ... 95 % RH, 850 ... 1100 hPa
Storage condition:	-25 ... +60 °C, 5 ... 95 % RH, 700 ... 1100 hPa
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Housing:	ABS, 82 x 80 x 55 mm (without elbow-type plug)
Mounting:	with fixing holes for wall mounting
Mounting distance:	70 x 50 mm (W x H)
Fixing screws:	max. shaft-Ø 4 mm
Weight:	approx. 225 g
Features:	- min-/max-value memory, - optical alarm, - input of offset and scale for adjusting

Option:

MB2:
measuring range: 0 ... 5000 ppm CO₂

AV01:
output signal 0-1 V

AV010:
output signal 0-10 V

Accessories and spare parts:

GSN 24-750
Product-ID: 604387
plug-in power supply (230 V_{AC} => 24 V_{DC}/750 mA)

AIR OXYGEN MEASURING TRANSDUCER

**OXY 3690 MP**

Product-ID: 602027

Air oxygen measuring transducer incl. sensor

Specifications:**Measuring ranges:**

oxygen concentration: 0.0 ... 100.0 % O₂ (gaseous)
 temperature: -20.0 ... +50.0 °C

Accuracy device (at nominal temperature 25 °C):

oxygen: ±0.1 % ± 1 digit
 temperature: ±0.1 °C ± 1 digit

Output signal (only O₂): 4 - 20 mA (2-wire - standard), 0 - 10 V (3-wire - option)

Electric isolation: input electrically isolated

Auxiliary energy: 12 ... 30 V DC (at output 4-20 mA)
 18 ... 30 V DC (at output 0-10 V - option)

Perm. impedance (at 4-20 mA): $R_A [\Omega] \leq (U_v [V] - 12 V) / 0.02 A$ Permissible load (at 0-10 Volt): $R_L > 3000 \Omega$

Working condition: 0 ... +50 °C, 0 ... +95 % RH (non-condensing)

Storage temperature: -20 ... +70 °C

Reverse voltage protection: 50 V permanently

Display: approx. 10 mm high, 4-digit LCD-display

Housing: ABS (IP65 - with the exception of sensor plug)

Dimensions: 82 x 80 x 55 mm (without elbow-type plug and sensor plug)
 Electric connection: elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm

Sensor connection: 5-pin jack connector, screwable

Calibration: 1-point calibration in atmospheric air.

Air pressure compensation: 500 ... 2000 hPa abs., manually input

Oxygen sensor:

Sensor type: GGO 370 / MU

Measuring range: 0.0 ... 100.0 % O₂Response time T₉₀: <10 s, depending on temperature

Warranty: 12 months
 (assuming appropriate usage according to the manual)

Application area: suitable for air and pure oxygen,
 suitable for high CO₂-concentrations

Temperature compensation: integrated in sensor housing

Connection cable: approx. 1.3 m, with 5-pin plug, screwable

Operating pressure: 500 ... 2000 hPa (static).

For air and gas-stream use the option GOO.../MU.

Working condition: 0 ... +45 °C, 0 ... +95 % RH (non-condensing)

Storage temperature: -15 ... +60 °C

Dimensions of housing: approx. Ø 40 x 103 mm (153 mm incl. anti-buckling glanding),
 housing with M16x1-screw thread (sensor can be connected to
 line tubes by means of an included adapter piece)

Weight: approx. 135 g

Option:

AV010:
 output signal 0-10V

GOO:
 oxygen sensor GOO 370 / MU, open sensor type, suitable for air and
 gas-stream. (further information p.r.t. page 56)

KL10:
 sensor connection cable 10 m

LO:
 design type for fast measurements of low oxygen contents (0-25 %) with sensor element
 GOEL 380

Accessories and spare parts:**GOEL-370**

Product-ID: 601490

spare sensor element for GGO 370 / MU

OXYGEN MEASURING TRANSDUCER
FOR DISSOLVED OXYGEN IN LIQUIDS**OXY 3610 MP**

Product-ID: 602029

oxygen measuring transducer incl. sensor

Specifications:**Messbereiche:**

oxygen concentration: 0.00 ... 25.00 mg/l (dissolved)
 temperature: 0.0 ... 50.0 °C

Accuracy device (at nominal temperature 25 °C):

oxygen: ±1.5 % of m.v ± 0.2 mg/l
 temperature: ±0.1 °C ± 1 digit

Output signal (only O₂): 4 - 20 mA (2-wire - standard), 0 - 10 V (3-wire - option)

Electric isolation: input electrically isolated

Auxiliary energy: 12 ... 30 V DC (at output 4-20 mA)
 18 ... 30 V DC (at output 0-10 V - Option)

Perm. impedance (at 4-20 mA): $R_A [\Omega] \leq (U_v [V] - 12 V) / 0.02 A$ Permissible load (at 0-10 Volt): $R_L > 3000 \Omega$

Working condition: 0 ... +50 °C, 0 ... +95 % RH (non-condensing)

Storage temperature: -20 ... +70 °C

Reverse voltage protection: 50 V permanently

Display: approx. 10 mm high, 4-digit LCD-display

Housing: ABS (IP65 - with the exception of sensor plug)

Dimensions: 82 x 80 x 55 mm (without elbow-type plug and sensor plug)

Electric connection: elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm

Sensor connection: 5-pin jack connector, screwable

Calibration: 1-point calibration: simple quick calibration in atmospheric air.

Oxygen sensor (GWO3600MU):

Type: active membrane type, with integrated NTC-resistor

Response time: 95 % in 10 s, depending on temperature

Operation life: 3 years or more, depending on maintenance

Operating pressure: max. 3 bar.

Flow rate: min. 30 cm/s

Build in diameter: Ø 12.0 ±0.2 mm (suitable for ½" screw connection)

Overall length: approx. 220 mm (with anti-buckling glanding)

Build in length: approx. 110 mm

Connection cable: approx. 4 m, with 5-pin plug, screwable

Warranty: 12 months

Working temperature: 0 ... +40 °C

Scope of supply: device incl. electrode, GWOK01 and KOH100

Variant:**OXY3610MP-V2**

Product-ID: 602720

output signal 0-10 V

Accessories and spare parts:**GWO 3600-L04-MU**

Product-ID: 603895

Spare electrode with 4 m cable

GWO 3600-L10-MU

Product-ID: 603258

Spare electrode with 10 m cable

GWO 3600-L30-MU

Product-ID: 603259

Spare electrode with 30 m cable

GSKA 3600

Product-ID: 601414

protection cap for depth measuring

GAS 3600

Product-ID: 603497

working set (consisting of 3 spare diaphragm heads and 100 ml KOH-electrolyte)

GWOK 01

Product-ID: 601411

spare diaphragm head

KOH 100

Product-ID: 603356

spare electrolyte KOH, 100 ml-bottle

OPTICAL OXYGEN CONVERTER



HIGHLIGHTS:

- Two 4-20 mA (or 0-5 V) outputs: concentration and saturation
- Fully pressure and temperature compensated
- Calibration in many applications once per year!
- No flow required

GODOX-200-ST

Product-ID: 608019

Optical Oxygen Transmitter for universal applications, stainless steel

GODOX-200-PS

Product-ID: 608020

Optical Oxygen Transmitter for continuous measurements in salt water

General:

The oxygen transmitter GODOX-200 is a robust measuring system for the low-maintenance continuous use. Compared to electrochemical sensors, it comes without electrolyte, measured with a fluorescence-maturity method. Together with the complete data preparation including automatic ambient pressure and temperature compensation it provides a free package for continuous measurements. Measurement in depth up to 30 m is possible. The life of the replaceable measuring membrane is generally 2 years.

Specifications:

Measuring ranges (both can be used simultaneously)

Oxygen concentration:	0-20 mg/l (=ppm)
Oxygen saturation:	0-200 % O ₂
Output signal:	4-20 mA or 0-5 V respectively (changeable)
Accuracy:	±0.1 mg/l less than 1 mg/l, ±0.2 mg/l more than 1 mg/l
Response time T ₉₀ :	<30 s
Operating temperature:	0 ... 65 °C
Supply:	5 ... 15 V DC, approx. 160 mA

Material:

Housing:	PVC / stainless steel, option „marine“: PVC
Diaphragm:	PET

Dimensions sensor:

Length:	225 mm length
Mounting length:	70.5 mm
Diameter:	42.1 mm
Mounting diameter:	28.0 mm
Process connection:	1" NPT front / rear (others on request)

connection

Loose cable ends:	No	color	description
	1	red	supply +
	2	black	supply -
	3	green	output O ₂ concentration
	4	white	output O ₂ saturation

Cable length: 5 m

Scope of supply: Transmitter (consisting of sensor body and evaluation, connected via cable), storage cap

Option:

Cable length 10 m
Cable length 15 m
Cable length 30 m

Accessories and spare parts:

GSKA 200

Product-ID: 607992

Metal cap steel (Mechanical protection / browsing protection)

EMS 200

Product-ID: 607990

Spare membrane head - Set

GNG 12/300

Product-ID: 600274

Power Supply

PH-MEASURING TRANSDUCER WITH ON SITE DISPLAY

HIGHLIGHTS:

- automatically and manually temperature compensation
- external Pt1000-temperature probe connectable

WITH ELECTRICALLY ISOLATION



GPHU 014 MP-BNC

Product-ID: 601985

pH-measuring transducer with on site display without electrode, BNC-connection

GPHU 014 MP-Cinch

Product-ID: 601989

pH-measuring transducer with on site display without electrode, Cinch-connection

Specifications:

Measuring range:	0.00 ... 14.00 pH
Accuracy:	0.02 pH ±1 digit (at nominal temperature = 25 °C)
Output signal:	4 - 20 mA (2-wire), standard; 0 - 10 V (3-wire), upon upcharge
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (for option 0-10 V: 18 ... 30 V DC)
Perm. impedance (at 4-20 mA):	$R_A [\Omega] \leq (U_v [V] - 12 V) / 0.02 A$
Permissible load (at 0-10 Volt):	$R_L > 3000 \Omega$
Electrode:	any standard pH electrode is suitable (not in scope of supply)
Input resistance:	10 ¹² Ohm
Electrode socket:	BNC-socket or Cinch-socket
Temperature compensation:	-30 ... +150 °C, manually via 3 keys or automatically via external Pt1000 sensor, banana plug
Adjustment:	via 3 keys and integrated LCD
Temp. sensor socket:	2 x banana socket Ø 4 mm, for Pt1000 probe
Display:	approx. 10 mm high, 4-digit LCD-display
Working temperature:	0 ... +50 °C (electronic)
Storage temperature:	-20 ... +70 °C
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Housing:	ABS (IP65), with the exception of electrode and temperature connection sockets. (cpl. IP65 upon request)
Dimensions:	82 x 80 x 55 mm (H x W x D)
Mounting:	with fixing holes for wall mounting (accessible after removal of cover), Mounting distance: 70 x 50 mm (W x H) Fixing screws: max. shaft-Ø 4 mm

Option:

- V2: output signal 0 - 10 V
- MB...: limited measuring range (please state the desired range) (i.e.: 2.00 ... 10.00 pH)

Accessories and spare parts:

GTF 2000-B-WD

Product-ID: 601884

water proof Pt1000-temperature probe, with 2 banana plugs Ø 4 mm

GE 100-BNC

Product-ID: 600704

standard electrode, BNC-plug (thread adapter PG 13,5 optional available)

GE 100-Cinch

Product-ID: 600702

standard electrode, Cinch-plug (thread adapter PG 13,5 optional available)

GE 117-BNC

Product-ID: 600730

pH electrode with integrated Pt1000-sensor, 1 x BNC-plug and 1 x banana plug Ø 4 mm, thread PG13.5, pressure resistant up to 6 bar

GE 173-BNC

Product-ID: 600735

process electrode for continuous operation, with thread PG 13.5, pressure resistant up to 6 bar, BNC-plug

GE 173-Cinch

Product-ID: 600734

process electrode: see above, Cinch-plug

GAK 1400

Product-ID: 603523

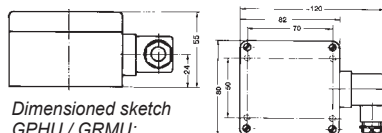
working and calibration set (p.r.t. page 47)

for add. electrodes and accessories p.r.t. p. 48, Pt1000 probes p.r.t. page 13 and from 148.

REDOX-MEASURING TRANSDUCER



WITH ELECTRICALLY
ISOLATION



GRMU 2000 MP-BNC

Product-ID: 602019

Redox-measuring transducer without electrode, BNC-connection

GRMU 2000 MP-Cinch

Product-ID: 602021

Redox-measuring transducer without electrode, Cinch-connection

Specifications:	
Measuring range:	±2000 mV or special limited measuring ranges acc. to customer specification!
Accuracy:	0.2 % FS (at nominal temperature = 25 °C)
Output signal:	4 - 20 mA (2-wire), standard 0 - 10 V (3-wire), upon upcharge
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (for option 0-10 V: 18 ... 30 V DC)
Perm. impedance (at 4-20 mA):	$R_A [Ω] ≤ (U_V [V] - 12 V) / 0.02 A$
Permissible load (at 0-10 Volt):	$R_L > 3000 Ω$
Input resistance:	10 ¹² Ohm
Electrode socket:	BNC-socket or Cinch-socket
Option: on site display	approx. 10 mm high, 4-digit LCD-display
Working temperature:	0 ... +50 °C (electronic)
Storage temperature:	-20 ... +70 °C
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Housing:	ABS (IP65) with the exception of electrode connection sockets. (cpl. IP65 upon request)
Dimensions:	82 x 80 x 55 mm (H x W x D)
Mounting:	with fixing holes for wall mounting (accessible after removal of cover), Mounting distance: 70 x 50 mm (W x H) Fixing screws: max. shaft-Ø 4 mm

Option:	
VO:	on site display
V2:	output signal 0-10 V
MB...:	limited measuring range (please state the desired range)

Ordering example:

GRMU 2000 MP-BNC-VO:

GRMU2000MP with BNC electrode socket and on site display

Accessories and spare parts:

GR 105-Cinch

Product-ID: 600738

Redox electrode with cinch-plug

GR 105-BNC

Product-ID: 600740

Redox electrode with BNC-plug

GR 175-S7

Product-ID: 607802

Redox electrode with S7-plug

GR 175-BNC

Product-ID: 607801

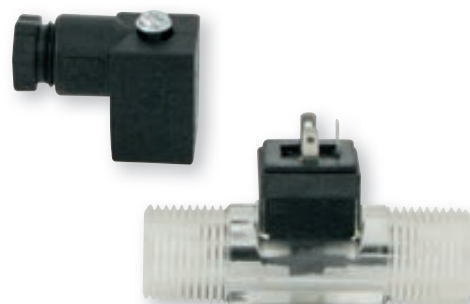
Redox electrode with BNC-plug

PG 13,5

Product-ID: 603205

plug on thread adapter for pressureless use, with external thread PG 13.5 (suitable for any electrode with shank diameter 12 mm)

For additional electrodes and accessories p.r.t. page 48/49

FLOW MEASURING TRANSDUCER
WITH HALL-EFFECT SENSOR

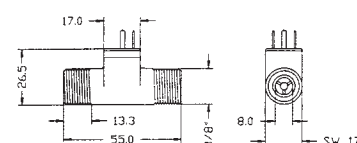
FOR LOW VISCOSITY,
NON AGGRESSIVE LIQUIDS

VISION 2008

Product-ID: 603492

Flow measuring transducer with hall-Sensor incl. elbow-type plug

General:	
• minimum size, maximum accuracy	
• easy installation	
• installation in any position possible	
• optimum-quality due to high-quality materials used	
• no maintenance	
Application:	
• manufacturing of oil and gas burners, flow heaters or cooling systems	
• for dish washers and washing machines	
• automotive technology (measuring of petro consumption, etc.)	
• laboratories, chemical works, pharmaceutical industry	
• agriculture and horticulture	
Specifications:	
Rotor-position scanning:	hall sensor
Measuring range:	1.5 ... 25 l/min
Resolution:	approx. 1000 pulses/l
Measuring agent:	clean liquids, we recommend filtering with approx. 20 ... 40 micron
Viscosity:	up to approx. 15 cSt.
Accuracy:	±3 % ranging from 10 - 10 %
Repeatability:	< 0.5 %
Working temperature:	-20 ... +100 °C
Operating pressure:	25 bar
Electric connection:	elbow-type plug acc. to EN 175301-803/A, type C industrial
Auxiliary energy:	5 - 24 V DC, approx. 8 mA
Multiplier (R):	1 - 2.2 kOhm
Output signal:	frequency 5 - 416 Hz, open collector NPN
Output current:	max. 20 mA
Material:	
Housing:	Grilamid TR55 (PA12)
Rotor:	Grilamid (PA12 Ferrit)
Bearings:	PTFE 15 % graphite
Delivery connection:	G 3/8" thread
DN:	8 mm
Dimensions:	approx. 55 x 17 x 30 mm
Weight:	approx. 15 g
Scope of supply:	Device, manual





HIGHLIGHTS:

- Compact measuring cells
- Freely scalable
- Adjustable cell constant
- Local display
- Integrated temperature compensation
- Measuring cell included, pre-adjusted

Laboratory measuring cells
best value
Standard cable length: 1 m

Optional PG (with PG 13.5 thread)
up to 6 bar (@ 22 °C)
Standard cable length: 1 m

Professional, field installation M12,
G 1/2 A fitting, max. 16 bar (@ 22 °C)
Standard cable length: 5 m

GLMU 200 MP-TR

Conductivity measuring transducer,
incl. 2-pole measuring cell

General:

2-pole measuring cells,
suitable for use in clean / potable / fresh
water
Recommended usage range:
up to 2000 µS/cm
4 Measuring ranges:
0.1 µS/cm ... 200.0 mS/cm



GLMU 200 MP-TR
Product-ID: 607814

Ø 12 mm 2-pole measuring cell LFE 202
Graphite, C=1.0; -5 ... +80 °C

PG 13,5 THREAD



GLMU 200 MP-TR-PG
Product-ID: 607815

Ø 12 mm 2-pole measuring cell LFE 202-PG
Graphite, C=1.0; -5 ... +80 °C



GLMU 200 MP-TRP*)
Product-ID: 607816

Ø 16 mm 2-pole measuring cell LFE 230
Graphite, C=0.9; 0 ... +60 °C (higher
available on request)

GLMU 400 MP-SW

Conductivity measuring transducer,
incl. 4-pole measuring cell

General:

4-pole measuring cells,
especially well-suited for use above
2000 µS/cm, applications susceptible to
contamination, sea water, etc.
5 Measuring ranges:
0.1 µS/cm ... 500 mS/cm



GLMU 400 MP-SW
Product-ID: 607819

Ø 12 mm 4-pole measuring cell LFE 400
Graphite, C=0.55; -5 ... +80 °C

PG 13,5 THREAD



GLMU 400 MP-SW-PG
Product-ID: 607820

Ø 12 mm 4-pole measuring cell LFE 400-RW
Graphite, C=0.55; -5 ... +80 °C



GLMU 400 MP-SWP*)
Product-ID: 607821

Ø 16 mm 4-pole measuring cell LFE 430
Graphite, C=0.4; 0 ... +60 °C (higher
available on request)

GLMU 200 MP-RW

Clean/cleanest water measuring
system

General:

2-pole measuring cells,
recommended usage range up to 200 µS/cm
Usage range up to 200 µS/cm
3 Measuring ranges: 0.01 ... 200.0 µS/cm



GLMU 200 MP-RW
Product-ID: 607817

Ø 12 mm 2-pole measuring cell LFE 240
stainless steel/ PEEK; C=0.1, -5 ... +80 °C



GLMU 200 MP-RWP*)
Product-ID: 607818

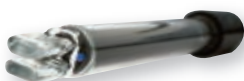
Ø 12 mm 2-pole measuring cell LFE 220
stainless steel/ PEEK; C=0.1; -10 ... +100 °C

GLMU 200 MP-LTG

Measuring transducer with 2-pin
electrode

General:

2-pole measuring cells,
suitable for use in organic substances
(alcohol, benzene, diesel)
Usage range up to 1000 µS/cm
2 Measuring ranges:
0.1 µS/cm ... 2000 µS/cm



GLMU 200 MP-LTG
Product-ID: 607641

Ø 12 mm 2-pole measuring cell LFE 210
Platinum glass; C=1.0

*) Attention:

A special cable is supplied with the professional version.
The measuring cell can be unscrewed locally without having to change the
wiring!

CONDUCTIVITY MEASURING TRANSDUCER

General:

Cheap conductivity measurement in drinking water, sea water, process water and waste-water, operational.

Specifications: GLMU 400 MP GLMU 200 MP GLMU 200 MP-RW

Measuring ranges: (customer-selectable)

Conductivity:	0.0 ... 200.0 µS/cm 0 ... 2000 µS/cm 0.00 ... 20.00 mS/cm 0.0 ... 200.0 mS/cm 0 ... 500 mS/cm	0.0 ... 200.0 µS/cm 0 ... 2000 µS/cm 0.00 ... 20.00 mS/cm 0.0 ... 200.0 mS/cm	0.0 ... 200.0 µS/cm 0.00 ...20.00 µS/cm
specific Resistance:	0.0 ... 200.0 kOhm*cm 0.00 ... 20.00 kOhm*cm 1 ... 5000 Ohm*cm 1.0 ... 500.0 Ohm*cm 1.00 ... 50.00 Ohm*cm	5.0 ... 100.0 kOhm*cm 0.50 ... 10.00 kOhm*cm 50 ... 1000 Ohm*cm 5.0 ... 100.0 Ohm*cm	0 ... 200 kOhm*cm 0 ... 2000 kOhm*cm
TDS:	0.0 ... 200.0 mg/l 0 ... 500.0 mg/l 0 ... 2000 mg/l 0.0 ... 20.0 g/l 0 ... 200 g/l	0.0 ... 200.0 mg/l 0 ... 2000 mg/l	0.0 ... 200.0 mg/l 0.00 ... 20.00 mg/l
Salinity:	0.0 ... 70.0 (PSU)	0.0 ... 70.0 (PSU)	
Temperature measurement:	5.0 ... +140.0 ° C (device) permissible temperature of the measuring cell note!		
Measuring cell:	4-pole. measuring cell	2-pole. measuring cell	2-pole.measuring cell
Standard measuring cell:	conductivity measuring cell with integrated temperature sensor. Cell constant determined from the factory and preset.		
Accuracy: (at nominal temperature = 25 °C)			
Conductivity:	0.5% of reading ± 0.3% FS (-RW: ±1 % v. MW ±0.3 % FS)		
Temperature measurement:	±0.2 °C ±1 Digit		
Cells Connection:	7-pin DIN socket		
Cell constant:	K = 0.30 ... 1.20, adjustable (-RW: 0.03 ... 0.12)		
Temperature compensation: (customer-selectable)	off: no compensation Lin: linear compensation (of 0.3 ... 3.0 % / K) nLF: non-linear function of natural water according toEN27888 (ISO 7888) in salinity: automatically after IOT		
Display:	approx. 10 mm high, 4-digit LCD display		
Output signal:	4 - 20 mA (2-wire), standard 0 - 1 V or 0 - 10 V (3-wire), surcharge		
Galvanic isolation:	input electrically isolated		
Power supply:	12 ... 30 V DC (for option 0-10 Volt: 18 ... 30 V DC)		
Reverse polarity:	50 V continuous		
perm. burden (4-20 mA):	$R_A [Ω] ≤ (U_v [V] - 12 V) / 0.02 A$		
perm. load (0-10 volts):	$R_L > 3000 Ω$		
Working temperature:	-25 ... +50 °C (transmitter), 0 ... +80 °C (measuring cell)		
Storage temperature:	-25 ... +70 °C		
Electrical connection:	Angle connector according to EN 175301-803 / A (IP65)		
Housing:	ABS (IP65) except electrode connection sockets		
Dimensions:	82 x 80 x 55 mm, without angle plug and socket		
Warranty:	12 months		
Mounting:	with fixing holes for wall mounting Mounting distance: 70 x 50 mm (W x H)		
Scope of supply:	Device, measuring cell, manual		

Options:

AV010:
Output signal 0-10 V

AV01:
Output signal 0-1 V

KL=..:
longer measuring cell cable (recommended max. 5 m)

Accessories and spare parts:

GLMU 400 MP-UNI-AV010

Product-ID: 608006

GLMU 400 MP-UNI-AV01

Product-ID: 608053

GLMU 400 MP-UNI-AV420

Product-ID: 608052

Transmitter without measuring cell, suitable for 2- and 4-pol. measuring cells to create your own conductivity measuring system with special measuring cells. Different standard systems:

- Area selection of cell constant 0.01; 0.1; 1.0; 10, for example, 1.0 corresponds to 0.300 ... 1.200, 0.1 corresponds to 0.0300 ... 0.1200
- Depending on this measuring range selection without limitations (5 regions)
- selection of temperature input Pt1000 or NTC10 k



Note: The measuring accuracy of the overall system strongly from the measuring cell used and the dependent on the area of application

LFE-202

Product-ID: 604344

2-pole spare measuring cell (for GLMU 200 MP-TR)

LFE-202-PG

Product-ID: 603594

2-pole spare measuring cell (for GLMU 200 MP-TR-PG)

LFE-230

Product-ID: 607825

2-pole spare measuring cell (for GLMU 200 MP-RWP)

LFE-400

Product-ID: 604635

4-pole spare measuring cell (for GLMU 400 MP)

LFE-400-PG

Product-ID: 603565

4-pole spare measuring cell (for GLMU 400 MP-PG)

LFE-430

Product-ID: 607827

4-pole spare measuring cell (for GLMU 400 MP-Pro)

LFE-240

Product-ID: 607828

2-pol. Replacement measuring cell (for GLMU 200 MP-RW)

LFE-220

Product-ID: 607829

2-pol. Replacement measuring cell (for GLMU 200 MP-RW-Pro)

LFE-210

Product-ID: 606991

2-pol. Replacement measuring cell (for GLMU 200 MP-LTG)

PG 13.5

Product-ID: 603205

Plug on thread adapter for pressureless use, for electrodes with 12 mm shank diameter



GWA12

Product-ID: 602914

Thread adapter PG13.5 to G1", plastics



GKL 100

Product-ID: 601396

Conductivity control solution

100 ml bottle with 1413 µS / cm, according to DIN EN 27888

GKL 101

Product-ID: 601398

Conductivity control solution (250 ml bottle with 84 µS / cm)

GKL 102

Product-ID: 601400

Conductivity control solution (100 ml bottle containing 50 mS / cm)

FLOW SENSORS



FH Messing-Flach

Product-ID: 602853

Flow sensors

General:	
- highly accurate measurements - lead-free brass, food safe	
Application:	
Food industries, industry, machine and equipment building, dosing	
Specifications:	
Meas. range: *	approx. 0.2 - 8.3 l/min
Nozzle: *	D = 4 mm
Number of pulses:	approx. 409 pulses / liter
Pressure range:	max. 20 bar (at 20 °C)
Medium viscosity:	< 50 cSt.
Accuracy:	±2 %
Repeatability:	<0.25 %
Power supply:	3.8-24 V DC; max. 8 mA
Output signal:	Open collector, NPN,
Flow connections:	2 x G1/4" IG parallel
Working temperature:	-10 ... +100 °C
Material housing:	brass (lead-free)
Nozzle:	Inox 1.4305
Magnets:	ceramic SrFeO (in contact with medium)
Sealing:	silicone
Dimensions:	approx. 50 x 40 x 39 mm (w/o plug)
Scope of supply:	device, manual

* = other nozzles and meas. ranges upon request

FLOW SENSORS



EPI

Product-ID: 603661

Flow sensors

General:	
- suitable for higher viscous media - calibratable	
Application:	
chemicals, oil, sirup, liquid soap, catchup, mayonnaise, cleaning agent concentrate	
Specifications:	
Meas. range:	approx. 0.06 - 5.35 l/min (depends on viscosity)
Nozzle:	D=7 mm
Number of pulses:	approx. 462 pulses/liter
Pressure range:	max. 10 bar (at 20 °C)
Medium viscosity:	approx. 5 - 8000 cSt.
Accuracy:	±1 % (depends on viscosity)
Repeatability:	<0.25 %
Power supply:	4.5-24 V DC; max. 13 mA
Output signal:	Open collector, NPN
Flow connections:	2 x G3/4" IG parallel
Working temperature:	-10 ... +65 °C
Material housing:	PEEK, sealing: Viton
Magnets:	neodymium (not in contact with medium)
Dimensions:	approx. 88 x 68 x 57 incl. plug

M12 - CONNECTION CABLE



KM4P-G02

Product-ID: 606224

straight connector, 4-pole, 2 m cable

KM4P-G10

Product-ID: 604518

straight connector, 4-pole, 10 m cable

KM4P-W02

Product-ID: 604104

90° connector, 4-pole, 2 m cable

KM4P-W10

Product-ID: 607963

90° connector, 4-pole, 10 m cable

KM4P-GL

Product-ID: 607964

connector for self-tailoring, 4-pole

General:	
Screened PUR-connection cable with moulded M12x1-connector (and loose ends). Available in straight and angular design.	

AXIAL TURBINE FLOW SENSOR FOR LIQUIDS



VTH 25 MS - 180

Product-ID: 602848

Axial turbine flow sensor for liquids cpl. with 2 m of cable, ready for plug-in.

General:	
The flow sensor VTH25MS-180 is a measuring transducer used for measuring the volume flow or for dosing. It is suitable for a wide range of applications due to its compact design, large measuring range and high measuring accuracy.	
Application:	
- cooling water measurements, tapping installations, dosing units - medical technology, plastics industry, laboratory - solar systems, heating application, heat quantity measurement - bakery machines, kitchen machines - machine tools	
Specifications:	
Sensor:	Hall-effect-sensor
Measuring range:	4 ... 160 l / min, max. 80 l/min with continuous operation (signal emission as of 1 l / min)
Resolution:	approx. 65 pulses / litre
Measuring agent:	liquids
Max. particle size:	0.5 mm
Measuring accuracy:	±3 % of measured value
Repeatability:	±0.5 %
Working temperature:	T _{max} = 85 °C
Max. operating pressure:	10 bar
Auxiliary energy:	10 - 30 V DC
Output signal:	frequency, open collector NPN
Output current:	max. 20 mA
Material:	
Duct:	brass
Turbine cage:	PPO Noryl GFN 3V 960
Rotor:	PPO Noryl GFN 2V 73701, with solenoids
Bearings:	saphir / PA
Shaft:	CrNi-steel (1.4436)
Delivery connection:	R 1 1/4" - outer thread
Nominal width:	DN 25

FLOW SENSORS FOR VARIOUS APPLICATIONS (SUITABLE EVALUATION DEVICES: GIA20EB, GIR230FR, GIA2000, GIR2002)



FHK - Ryton - xx

General:

- exact measurements of fluid volumes
- long lifetime, higher temperatures

Application:

non-alcoholic and alcoholic beverages, chemicals, water, wine, etc.

FHK - PVDF - xx

General:

- all part in contact with medium: made of plastic
- adequate for chemical media (request)

Application:

chemical industry: products containing tensides, alkaline products, acids
industry: monitoring of cooling medium circuits of machines, dosing and consumption quantity measurements

Specifications:

	... - 10	... - 20	... - 33
Nozzle*:	1.0 mm	2.0 mm	3.3 mm
Meas. range	0.05 ...	0.11 ...	0.20 ...
(l/min)*:	0.50	2.30	5.00

Number of pulses (pulses/l):

FHK-Ryton	~ 2223	~ 1013	~ 509
FHK-PVDF	~ 4962	~ 2078	~ 1033

Pressure range: max. 20 bar (at 20 °C)

Medium viscosity: < 50 cSt.

Meas. accuracy: ±2 %

Repeatability: < 0.25 %

Power supply: 3.8-24 V DC; max. 8 mA

Output signal: Open collector, NPN

Flow connections: 2 x G $\frac{1}{4}$ " IG parallel

Working temperature: -10 ... +100 °C

Housing:	FHK-Ryton	FHK-PVDF
Material:	PPS (Ryton)	PVDF
Nozzle:	1.4305	PTFE
Turbine:	PVDF	PVDF
Sealing:	Viton	Viton
Magnets:	ceramic SrFeO (in contact with medium)	ceramic SrFeO (not in contact with medium)

Dimensions:	approx. 55 x 40 x 66 mm (incl. plug)	
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* = other nozzles and meas. ranges upon request

PRODUCT-IDS:

FHK - Ryton - 10: Product-ID: 604000
FHK - Ryton - 20: Product-ID: 604443
FHK - Ryton - 33: Product-ID: 605840
FHK - PVDF - 10: Product-ID: 602851
FHK - PVDF - 20: Product-ID: 604417
FHK - PVDF - 33: Product-ID: 606888



FHKU - Arnite - xx

General:

- highly accurate measurements of liquid media
- long lifetime, food safe

Application:

Water and water-like media in machine and equipment building

FHKU - Ryton - xx

General:

- all part in contact with medium: made of plastic and stainless steel
- better chemical compatibility than arnite
- higher temperatures

Application:

Measuring of low-viscous media, cooling, machine and equipment building

Specifications:

	... - 10	... - 20	... - 30	... - 40
Nozzle:	1.0 mm	2.0 mm	3.0 mm	4.0 mm
Meas. range:	0.05 ...	0.10 ...	0.12 ...	0.15 ...
(l/min)	0.50	2.30	5.60	8.30

Number of pulses: ~ 2063 ~ 988 ~ 565 ~ 381

Pressure range, medium viscosity, accuracies, current supply and output signal see FHK.

Flow connections: 2 x G $\frac{1}{4}$ " A

Working temperature: -10 ... +65 °C -10 ... +100 °C

Housing:	FHKU-Arnite	FHKU-Ryton
Material:	PBT (Arnite)	PPS (Ryton)
Nozzle:	PPS (ryton) (1 and 2 mm) 1.4305 (3 and 4 mm)	
Turbine:	PVDF	PVDF
Magnets:	ceramic SrFeO	ceramic SrFeO
(in contact with medium)		
Sealing:	silicone	silicone
Dimensions:	77 x 43 x 61 mm	77 x 43 x 67 mm

ARTIKELNUMBERS:

FHKU - Arnite - 40: Product-ID: 607010
FHKU - Ryton - 10: Product-ID: 605327
FHKU - Ryton - 20: Product-ID: 607920
FHKU - Ryton - 30: Product-ID: 607215
FHKU - Ryton - 40: Product-ID: 604772

FHKU - 100

Product-ID: 603102

General:

for larger flow volumes

Specifications:

Nozzle:	D=10 mm
Meas. range:	approx. 3 - 26.7 l/min
Number of pulses:	approx. 65 pulses/liter
Flow connections:	2 x G $\frac{1}{2}$ " A
Housing:	PPS (Ryton), nozzle: Ryton, sealing: Viton
<i>other specifications see FHKU-Ryton.</i>	



FCM - 6 (2,5 l/min)

Product-ID: 603120

Flow switch incl. DIN plug

FCM - 3 (6 l/min)

Product-ID: 603121

Flow switch incl. DIN plug

General:

- FCM flow switch has been designed to offer a very simple and safety control against the missing flow passage.
- No setting required
- Easy and fast replacement of the switch head
- Low pressure loss
- Horizontal and vertical mounting
- Liquid applications

Specifications:

Body:	Brass		
Process connection:	G $\frac{1}{2}$ "		
Sensing element (Piston):	Polypropylen		
Accuracy:	± 15 %		
Temperature max.:	90 °C		
Pressure loss :	0.5 bar at max. flow rate		
Flow rate max.:	25 l/min		
Weight:	170 g		
Reed contact	N.O. / No flow condition		
Contact rating	300 V, 70 VA, 0.5 A		
Wiring:	Angle plug		
Protection class:	IP65		
Mounting:	Horizontal and vertical		
Set point l/min	Nominal	ON	OFF
FCM - 6	2.5	2.8	1.7
FCM - 3	6	6.3	4.1

ROTATIONAL SPEED SENSOR



EFF-...

Rotational speed sensor

Design types:

- **V**: magnetic field sensor (magneto-resistive)
- **H**: preloaded hall sensor
- **I**: inductive sensor

General:

The EFFI and EFFU combine a proximity switch with the signal processing to standard signals in one device. The scaling of the standard signal output can be done at face. Programming:

- The value for 0 Hz is fixed: 4 mA or 0 V
- For programming the upper output limit (20 mA or 10 V) you have to adjust the max. frequency in the system. By connecting two contacts the device is programmed to this value.

Specifications:

3 different measuring principles:

design type:	magnetic field sensor (magneto-resistive)
design type:	preloaded hall sensor
design type:	inductive sensor
Sensing distance:	4 mm
Measuring range:	1 ... 4095 Hz (EFFC: 2000 Hz)
Sampling interval:	periods measurement, output update 50 ms
Output accuracy:	±0.25 % of full scale
Auxiliary energy:	10 ... 30 V DC (at EFFU: 15 ... 30 V DC)
Idle current:	max. 20 mA (without load)
Electrical connection:	4-pole locking plug M12 x 1 (connection cable see below)
Working temperature:	0 ... 70 °C
Protection class:	IP 67
Housing materials:	nickel plated brass, PA66
Dimensions:	~ Ø 10 x 66.5 mm
Weight:	approx. 25 g

Ordering code:

EFF - **1** - **2** - **3** -GN

Greisinger			
1.	Sensor		
	H	Magnetic field sensor	
	V	Preloaded hall sensor	
	I	Inductive sensor	
2.	Output signal		
	-I	4 ... 20 mA	
	-U	0 ... 10 V	
	-F	Frequency output	
	-P	Direct puls output	
3.	Programming		
	-P	Programmable (Teach-In possible)	
	-N	non programmable (no teach-in)	

LEVEL TRANSMITTER



LC-S45HM...

Level transmitter (brass)

LC-S44HM...

Level transmitter (brass)

LC-K52HK...

Level transmitter (stainless steel)

Final prices depend on type, see price table below

General:

A magnet equipped float activates a reed chain inside a tube which is connected to resistors comparable to a potentiometer. The gapless positioning of the sensors provides a continuous signal with good resolution (up to 10-20 mm) and repeatability.

- top assembly
- selectable material combinations
- optional: with user-specific characteristic (for adjustment to tank design)

Application:

Sensor suitable for: Water, oil, aggressive substances (only LC-K52K...)

Specifications:

Tube length:	250 mm, 500 mm, 750 mm, 1000 mm, 1500 mm and 2000 mm					
Float travel:	..0250	..0500	..0750	..1000	..1500	..2000
LC-S45M... :	190 mm	440 mm	690 mm	940 mm		
LC-S44M... :				930 mm	1430 mm	1930 mm
LC-K52K... :	160 mm	410 mm	660 mm	910 mm	1410 mm	1910 mm
Division (resolution):	10 mm (LC-S45..., LC-K52K0250) or 20 mm					
Output signal:	4 - 20 mA (2-wire)					
Optional:	0 - 10 V (3-wire)					
Auxiliary energy:	10 ... 30 V DC (at option Flex: 18 ... 30 V DC)					
Electrical connection:	elbow-type plug acc. to DIN 43650-A/ISO 4400 (at option Flex: 4-pole locked plug M12 x 1)					
Working temperature:	0 ... 85 °C					
Working pressure:	max. 20 bar (LC-S...), max. 40 bar (LC-K..)					
Density medium:	>0.34 g/cm³ (LC-S45...), >0.44 g/cm³ (LC-S44...), >0.66 g/cm³ (LC-K52..)					
Mounting position:	vertical, float pointing downwards					
Protection class:	IP 65					
Dimensions:	LC-S45..	LC-S44..			LC-K52..	
Sensor head:	~50 x 50 x 78 mm		~60 x 58 x 78 mm		Ø 69 x 78 mm	
Tube length:	according to design type					
Mounting SW:	SW 40		SW 46		SW 46	
Screw-in threat:	G1 A		G1 1/2 A		G2 A	
Float:	Ø 30 x 45 mm		Ø 44 x 50 mm		Ø 52 x 70 mm	
Materials:						
Housing:	Ms58		Ms58		stainl. steel 1.4571	
Tube:	Ms58		Ms58		stainl. steel 1.4571	
Float:	Spansil		Spansil		stainl. steel 1.4571	

Option:

AV010:
output signal 0-10 V

Flex:

Transmitter with Flex-head (M12-connection) user-specific characteristic possible

Types:

Tube length:	..0250	..0500	..0750	..1000	..1500	..2000
LC-S45HM...	•	•	•	•		
LC-S44HM...				•	•	•
LC-K52HK...	•	•	•	•	•	•

ACTIVE POWER TRANSMITTER

NEW!**HIGHLIGHTS:**

- For 1- and 3-phase power systems with symmetric load
- Current measuring range 1 A or 5 A
- Power-factor ($\cos \phi$) selectable 0.72 or 1
- Frequency range 45 ... 400 Hz

WM 500

Active Power Transmitter

General:

Active-power transmitter WM 500 converts active-power of symmetric 1-3 phase power supply systems into proportional industry standard signals. Devices without compensating circuits can be used to measure active-power of phase-angle controlled equipments or electric motor drives controlled by frequency inverters.

Specifications:**Power supply:**

Supply voltage:	230 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$
Frequency AC:	47 ... 63 Hz
Power consumption:	< 3 VA
Working temperature:	-10 ... +50 °C
CE-conformity:	EN 55022, EN 60555, IEC 61000-4-4/5

Inputs:

Current:	0 ... 1 A: $R_i = 82\text{ m}\Omega$, over load 2-times, 4-times for max. 5 s 0 ... 5 A: $R_i = 10\text{ m}\Omega$, over load 2-times, 4-times for max. 5 s
Frequency range:	45 ... 400 Hz, Crest-factor: 3
Curve shape:	insignificant
Voltage:	0 ... 440 V, $R_i = .4\text{ k}\Omega/\text{V}$, over load max. 700 V
Frequency range:	45 ... 400 Hz
Curve shape:	insignificant, without compensating circuit
Curve shape:	sinusoidal, with compensating circuit
End value:	adjustable -30 ... 5 % for factory adjustment

Outputs: Voltage/current

Current:	0/4 ... 20 mA selectable, burden $\leq 500\ \Omega$
Burden error:	< 0.1 % ($R_L = 0 \dots 200\ \Omega$), < 0.2 % ($R_L = 0 \dots 500\ \Omega$)
Voltage:	0/2 ... 10 V selectable, load max. 10 mA
Adjustment:	$P = U \times I \times \sqrt{3} \times \cos \phi = 20\text{ mA (10 V)}^* (* \cos \phi = 1)$
Rise time (T_{90}):	< 500 ms

Housing:

Connection:	screw terminals, max. 2.5 mm ²
Protection class:	Housing IP30, terminals IP20 acc. to BGV A3

Ordering code:WM500 - 1 - 2 - 3 - 4 - 5

Greisinger		
1.	Power supply system	
	1	1-phase
	3	3-phase
2.	Measuring voltage	
	100	100 V AC
	110	110 V AC
	230	230 V AC
	400	400 V AC
	440	440 V AC
3.	Measuring current	
	1	1 AAC
	5	5 AAC
4.	Model	
	1	without compensating circuit
	2	with compensating circuit
5.	Supply voltage	
	0	230 V AC $\pm 10\%$
	5	24 V DC $\pm 15\%$

Important:

For the factory provided settings please specify the measurement range of the effective power and the primary current range of the upstream current transformer in the purchasing order.

AC CURRENT TRANSMITTER

NEW!**HIGHLIGHTS:**

- 12 measuring ranges selectable 0 ... 6 A / 0 ... 60 A AC
- Average function selectable
- Frequency range 40 ... 2000 Hz

CT 500

AC Current Transmitter

General:

AC current transmitter CT 500 converts true r.m.s. current measuring values of all types of waveform into industry standard signals for process control systems. For example, the load current of an frequency converter can be detected and converted. The universal limit interpretation of the inputs and outputs and the wide auxiliary voltage ranges the variety of types in 2 versions.

Specifications:**Power supply:**

Supply voltage:	85 ... 265 V AC or 10 ... 30 V AC/DC
Frequency AC:	40 ... 400 Hz
Power consumption:	< 3 VA
Working temperature:	-10 ... +60 °C
CE-conformity:	EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input:

Current:	
Terminals:	0 ... 1 / 2 / 3 / 4 / 5 / 6 AAC, over load max. 9 A
Bushing connection:	0 ... 10 / 20 / 30 / 40 / 50 / 60 A, over load max. 90 A, cable diameter max. 8 mm
R_i:	< 20 m Ω
Frequency:	40 ... 2000 Hz fundamental wave, 16 ₂₃ Hz on request
Start value:	adjustable $\pm 5\%$
End value:	adjustable $\pm 35\%$

Output:

Current:	0/4 ... 20 mA, selectable, burden $\leq 1\text{ k}\Omega$
Voltage:	0/2 ... 10 V DC, selectable, load max. 15 mA, short circuit proof (parallel with the voltage output max. 5 mA)
Rise time (T_{90}):	$\leq 150\text{ ms}$
Accuracy:	$\leq 0.5\%$; single adjustment $\leq 0.2\%$
Housing:	Polycarbonate, UL94V-0, TS 35 acc. to DIN EN 60715:2001-09
Weight:	approx. 200 g
Connection:	terminals, max. 2.5 mm ²
Protection class:	housing IP30, terminals IP20, acc. to BGV A3

Accessories and spare parts:**KA-VT**

terminal cover for measuring voltages >400 V AC

Ordering code:CT500- 1 - 2

Greisinger		
1.	Measuring ranges	
	30	0 ... 1 / 2 / 3 / 4 / 5 / 6 and 0 ... 10 / 20 / 30 / 40 / 50 / 60 AAC
		custom range on request
2.	Supply voltage	
	0	85 ... 265 V AC
	5	10 ... 30 V DC

CURRENT AND VOLTAGE TRANSMITTER

NEW!



HIGHLIGHTS:

- Measuring input for DC- and sinusoidal AC-signals
- Arithmetic average value measurement RMS calibrated
- Frequency range 40 ... 200 Hz

CVT 500

Current and Voltage Transmitter

General:

Transmitter CVT 500 convert current or voltage signals to proportional industry standard signals. Currents up to 5 AAC / DC and voltages up to 400 V AC / DC can go directly to the transmitters. For larger AC currents is a current transformer or for larger AC voltages ahead one voltage transformer.

Specifications:

Power supply

Supply voltage:	230 V AC $\pm 10\%$ (47 ... 63 Hz) or 24 V DC $\pm 15\%$
Power consumption:	< 3 VA
Working temperature:	-10 ... +50 °C
CE-conformity:	EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Inputs

Accuracy:	$\leq 0.5\%$ ($\leq 0.2\%$ single adjustment)
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Standard measuring ranges

Current:	0 ... 1 A and 0 ... 5 A sinusoidal or DC
R _i :	20 mΩ (5 A-) or 100 mΩ (1 A-input)
Overload:	2-times, 4-times max. 5 s

Voltage

measuring ranges:	0 ... 125 V and 0 ... 250 V AC or DC
R _i :	600 kΩ (125 V-) or 1.2 MΩ (250 V-input)
Overload:	max. 500 V AC/DC

Custom measuring ranges

Voltage:	end value in range 0.1 ... 400 V AC/DC, R _i 4.8 kΩ/V
Overload:	5-times UN, max. 500 V AC/DC
Current:	end value in range 0.001 ... 5 AAC/DC, R _i 100 mΩ
Overload:	2-times, 4-times max. 5 s

Output

Output changing

Voltage/current:	link between terminal 8 and 9
Current output:	0/4 ... 20 mA selectable, burden $\leq 500\ \Omega$
Rise time (T ₉₀):	< 650 ms
Burden error:	< 0.1 % (R _L = <200 Ω), < 0.2 % (R _L = <500 Ω)
Voltage:	0/2 ... 10 V selectable, load max. 10 mA

Housing

Connection:	screw terminals, max. 2.5 mm ²
Protection class:	Housing IP30, terminals IP20 acc. to BGV A3

Ordering code:

CVT500- **1** - **2** - **3**

Greisinger		
1. Current ranges		
0	not installed (custom measuring range voltage)	
1 / 5	standard device 0 ... 1 A and 0 ... 5 AAC / DC	
X	please specify custom measuring range	
2. Voltage ranges		
0	not installed (custom measuring range current)	
125 / 250	standard device 0 ... 125 V and 0 ... 250 V AC/DC	
X	please specify custom measuring range	
3. Supply voltage		
0	230 V AC $\pm 10\%$	
5	24 V DC $\pm 15\%$	

AC VOLTAGE TRANSMITTER

NEW!



HIGHLIGHTS:

- 6 measuring ranges selectable 0..600 V AC
- Average function selectable
- Frequency range

VT 500

AC Voltage Transmitter

General:

AC Transmitter VT 500 convert the true RMS AC voltage arbitrary waveform into proportional standard signals. For example, the load voltage of a frequency converter can be detected and converted. The universal interpretation of the inputs and outputs and the wide auxiliary voltage ranges limit type diversity on 2 versions. The small housing width enables a space-saving montage.

Specifications:

Power supply

Supply voltage:	85 ... 265 V AC or 10 ... 30 V AC/DC
Frequency AC:	40 ... 400 Hz
Power consumption:	<3 VA
Working temperature:	-10 ... +60 °C
CE-conformity:	EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Input

Voltage AC:	0 ... 100 / 200 / 300 / 400 / 500 / 600 V AC, overload max. 1200 V max. 5 s
R _i :	720 kΩ
Frequency:	40 ... 2000 Hz fundamental wave, 16 ₂₃ Hz on request
Start value:	adjustable $\pm 5\%$
End value:	adjustable $\pm 35\%$

Output

Current:	0/4 ... 20 mA, selectable, burden $\leq 1\ \text{k}\Omega$
Voltage:	0/2 ... 10 V DC, selectable, load max. 15 mA, short-circuit-proof (parallel with the voltage output max. 5 mA)
Rise time (T ₉₀):	$\leq 150\ \text{ms}$
Accuracy:	$\leq 0.5\%$; single adjustment $\leq 0.2\%$
Housing:	Polycarbonat, UL 94 V-0, TS35 nach DIN EN 60715:2001-09
Weight:	approx. 200 g
Connection:	screw terminals, max. 2.5 mm ²
Protection class:	Housing IP30, terminals IP20 acc. to BGV A3

Accessories and spare parts:

KA-VT

terminal cover for measuring voltages >400 V AC

Ordering code:

VT500- **1** - **2**

Greisinger		
1. Measuring ranges		
30	0 ... 100 / 200 / 300 / 400 / 500 / 600 V AC	
	custom range on request	
2. Supply voltage		
0	85 ... 265 V AC	
5	10 ... 30 V DC	

CURRENT AND VOLTAGE MONITORING RELAY

NEW!



HIGHLIGHTS:

- Arithmetic average value measuring RMS calibrated (AC) or DC
- Contact function min/max selectable
- Hysteresis and time delay adjustable

CVG 500

Current and Voltage Monitoring Relay

General:

CVG 500 monitoring relays can be used for monitoring current or voltage levels. The standard model is designed for input 0 ... 1/5 A and 0 ... 125/250 V AC/DC. Models with inputs in range of 0 ... 1 mA/ 5 A AC/DC or 0 ... 50 mV/400 V AC/DC are available.

Specifications:

Power supply

Supply voltage:	230 V AC $\pm 10\%$ (47 ... 63 Hz) or 24 V DC -30/+40 %
Working temperature:	-10 ... +50 °C (-25 °C ... +70 °C on request)
CE- conformity:	EN 55022, EN 60555, IEC 61000-4-3/4/5/11/13

Inputs

Scale error:	$\leq 2\%$
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Standard ranges

Current:	0 ... 1 A and 0 ... 5 A AC (sinusoidal) or DC
R _i :	20 mΩ (5 A input) or 100 mΩ (1 A input)
Overload:	2-times, 4-times for max. 5 s
Voltage:	0 ... 125 V and 0 ... 250 V sinusoidal or DC
R _i :	600 kΩ (125 V input) or 1.2 MΩ (250 V input)
Overload:	max. 300 V AC/DC

Custom ranges

Voltage:	end value in the range 0.05 ... 400 VAC/DC
R _i :	4.8 kΩ/V
Overload:	5-times nominal voltage, max. 500 V AC / DC
Current:	end value in the range 0.001 ... 5 A AC/DC
R _i :	= 100 mΩ + (measuring range [A])
Overload:	2-times, 4-times for max. 5 s

Output

Relay SPDT:	250 VAC < 250 VA < 2 A; 100 V= < 50 W < 1 A
Switching function:	min. / max. selectable
Hysteresis:	1 ... 25 %
Time delay:	0.1 ... 8 s

Housing

Protection class:	Housing IP30, terminals IP20, (BGV A3)
Connection:	screw terminals, max. 2.5 mm ²

Ordering code:

CVG500- 1 - 2 - 3

Greisinger		
1.	Current measuring ranges	
0	not installed (at custom range voltage)	
1/5	standard range 0 ... 1 A and 0 ... 5 A AC/DC	
X	custom range state in clear text	
2.	Voltage measuring ranges	
0	not installed (at custom range current)	
125/250	standard range 0 ... 125 V and 0 ... 250 V AC/DC	
X	custom range state in clear text	
3.	Supply voltage	
0	230 V AC $\pm 10\%$	
5	24 V DC -30 ... 40 %	

BATTERY VOLTAGE GUARD

NEW!



HIGHLIGHTS:

- Monitoring of battery voltages 12 V, 24 V, 48 V or 60 V
- Alarm function under-voltage / over-voltage selectable
- Time delay adjustable
- Measuring voltage and supply voltage are identical

BW 500

Battery Voltage Guard

General:

The BW500 is designed for monitoring of battery voltages. Undervoltage or over-voltage can be selected.

Under-voltage:

The relay switches off, if the voltage falls under the limit value and if the delay time ran off. If the voltage exceeds the limit value + hysteresis, the relay will be activated.

Over-voltage:

The relay switches on, if the voltage exceeds the limit value and if the delay time ran off. If the voltage falls under the limit value - hysteresis, the relay will be deactivated.

Specifications:

Power supply

Battery voltage:	12 V, 24 V, 48 V or 60 V DC, -30 ... +40 %
Current consumption:	14 mA (24 mA at 12 V type) with activated relay
Working temperature:	-10 ... +60 °C
CE- conformity:	EN 50022, EN 60555, IEC 61000-4-4/5/11/13 vibration,- shock- and jolt-inspection acc. to IEC 68-2-6/27/29

Measuring input/measuring range

12 V:	11 ... 14 V
24 V:	22 ... 28 V
48 V:	44 ... 56 V
60 V:	55 ... 70 V
Scale error:	$\leq 2\%$

Output

Relay SPDT:	250 VAC < 250 VA < 2 A; 300 V= < 50 W < 2 A
Alarm function:	under-voltage/over-voltage selectable
Hysteresis:	2 ... 16 % adjustable (related to the nominal battery voltage)
Time delay:	in 2-steps switch selectable 1 ... 60 s or 5 ... 300 s adjustable
Housing:	standard case polycarbonate 8020 UL 94 V-1 acc. to DIN EN 60715:2001-09
Weight:	approx. 100 g
Protection class:	Housing IP30, terminal IP20, (BGV A3)
Connection:	screw terminals, max. 2.5 mm ²

Ordering code:

BW500- 1 - 2 - 3

Greisinger		
1.	Measuring input	
1	1 input	
2.	Battery voltage / measuring scale	
12V	11 ... 14 V	
24V	22 ... 28 V	
48V	44 ... 56 V	
60V	55 ... 70 V	
3.	Option	
00	without option	

ISOLATING SIGNAL CONVERTER

NEW!



TV500 / ST500

Isolating signal Converter

General:

Isolating signal converter of the series TV 500/ST 500 are suitable for potential isolation or for conversion of unit signals. The universal design of the in- and outputs and the wide range of supply voltage limits the devices into 2 models. The ST 500 provides an isolated transmitter supply for direct connection of active 2-wire sensors (4 ... 20 mA) and 3-wire sensors.

Specifications:

Power supply

Supply voltage:	100 ... 265 V AC or 10.8 ... 30 V AC/DC
Frequency AC:	47 ... 63 Hz
Power consumption:	< 3.5 VA
Working temperature:	-10 ... +60 °C
CE-conformity:	EN 55022, EN 60555-2, IEC 61000-4-4/5/11/13

Inputs

Current:	0/4 ... 20 mA selectable, $R_i = 25 \Omega$, overload max. 100 mA
Voltage:	0/2 ... 10 V DC selectable, R_i approx. 40 k Ω , overload max. 100 V
Span and start value 4 mA/2 V:	adjustable approx. $\pm 5 \%$
Transmitter supply: (only ST500)	approx. 24 V DC, R_i approx. 150 Ω , short-circuit current approx. 35 mA

Outputs

Current:	0/4 ... 20 mA selectable, burden max. 1 k Ω
Voltage:	0/2 ... 10 V selectable, load max. 15 mA, short-circuit-proof (parallel with the current output max. 5 mA)
Rise time (T_{90}):	model 10: < 20 ms, max. frequency 18 Hz model 11: < 100 μ s, max. frequency 1 kHz
Accuracy:	$\leq 0.2 \%$ (single range adjustment $\leq 0.1 \%$)
Housing:	standard case polycarbonate 8020 UL94V-1 acc. to DIN EN 60715:2001-09
Weight:	approx. 200 g
Connection:	screw terminals, max. 2.5 mm ²
Protection class:	Housing IP30, terminals IP20 acc. to BGV A3

Ordering code:

1 - 2 - 3

Greisinger		
1.	Model	
	TV500	signal converter
	ST500	power feed signal converter
2.	Measuring range	
	10	inputs 0/4 ... 20 mA and 0/2 ... 10 V outputs 0/4 ... 20 mA and 0/2 ... 10 V
	11	as 10, but rise time $T_{90} < 100 \mu$ s
3.	Supply voltage	
	0	100 ... 265 V AC
	5	10.8 ... 30 V AC/DC

UNIVERSAL ISOLATING AMPLIFIER

NEW!



HIGHLIGHTS:

- Safe galvanic isolation
- Step response T_{90} 40 ms
- Output deviation < 0.2 % of the limit value
- Operating display and status messages via two-colour LED
- Configuration via front DIP switches
- Narrow installation width of 12.5 mm for carrier rail

TV125L

Universal Isolating Amplifier

General:

Isolating amplifiers of the series TV125L are suitable for potential isolation or for conversion of unit signals. The universal layout of the inputs and the output enables a broad range of applications with only one type of device. The plug-in terminal strips enable simple and time-saving wiring. The configuration is also quick and easy with the front DIP switches.

Specifications:

Auxiliary power

Auxiliary voltage:	18 ... 30V DC
Power consumption:	< 0.5 VA
Conformity:	CE, Directive 2004/108/EG
EMC:	DIN EN 61326-1: 2013-07, Class A
Standards:	DIN EN 61010-1: 2011-07, DIN EN 61010-2: 2011-07
Rated voltage:	300 V AC/DC in accordance with DIN EN 61010-1
Test voltage:	3 kV AC, 50 Hz, 1 min

Input / Output / Auxiliary power

Environmental conditions

Working temperature:	-10 ... +60 °C
Storage temperature:	-20 ... +60 °C
Air humidity:	< 95 % (no condensation)

Inputs

Voltage input:	Switchable, 0 ... 10 V or 2 ... 10 V., $R_i = 47 \text{ k}\Omega$. Max. overload 32 V AC
Current input:	Switchable, 0 ... 20 mA or 4 ... 20 mA. $R_i = 48 \Omega + 15 \Omega$ (RiPTC). Max. overload 32 V AC/DC in accordance with DIN EN 61010-2-30

Output

Current output:	Switchable, 0 ... 20 mA or 4 ... 20 mA. Load < 150 Ω
Step response:	40 ms
Standard error:	< 0.2 % of final value
Temperature coefficient:	< 0.01 % / K

Housing

Material:	Polyamide (PA) 6.6, UL94V-0
Weight:	91 g
Protection rating:	Housing IP30, terminals IP20 BGV A3
Colour:	light grey
Installation width:	12.5 mm
Dimensions (HxD):	108 x 114 mm
Installation:	Carrier rail mounting TS35 DIN EN 60715

Ordering code:

TV125L - 10 - 5 - 00

SWITCH AMPLIFIER

NEW!



HIGHLIGHTS:

- 1 or 2 channel version
- Safe galvanic isolation between input / output / auxiliary voltage
- Functional safety up to SIL2 EN61508
- Inputs for switching contacts, Namur initiators, or optocouplers



TS125 und TS225

Switch amplifier

General:

Switch amplifiers of the series TS 125 and TW 255 are used in switch cabinets for the conversion and isolation of digital switching signals, as well as in explosion-prone areas. The devices are available in one- or two-channel versions. Passive sensors, such as switching contacts, Namur initiators, or passive electronic outputs of third-party devices, can be connected to the intrinsically safe inputs. The TS125 series in 12.5 mm wide carrier rail housing offers relay outputs with output make circuit. The TW225 series in 22.5 mm wide carrier rail housing offers relay outputs with changeover function. The plug-in terminal strips enable simple and time-saving wiring. The configuration is also quick and easy with the front DIP switches.

Specifications:

Auxiliary voltage:	20 ... 125 VDC and 20 ... 250 VAC, (47 ... 63 Hz), max. 1.5 W
Auxiliary voltage:	24 V DC +/- 15 % max. 1.5 W
Test voltage:	3kV AC between input / output / auxiliary voltage
Working temperature:	-10 ... +60 °C
Storage temperature:	-20 ... +80 °C
Air humidity:	10 ... 90 % (non-condensing)
Measuring inputs (in accordance with EN60947-5-6 Namur)	
Open circuit voltage:	approx. 8 V
Short circuit voltage:	approx. 8 mA
Switching points:	inactive <= 1.2 mA, active >= 2.1 mA, hyst. < > 0.5 mA
Error recognition:	Wire break: <0.2 mA, short circuit: >7 mA
Relay outputs:	
Switching voltage:	<250 V AC <2 A <500 VA, <125 V DC <0.2 A <25 W, <30 V DC <2 A <60 W
Switching frequency:	max. 5 Hz
Delay:	max. 30 ms
Housing:	
Dimensions (W x D x H):	TS125: 12.5 x 114 x 108 mm, TS225: 22.5 x 114 x 108 mm
Protection rating:	IP20
Terminals:	0.2 ... 2.5 mm ² , AWG 24 ... 14, removable coded terminals
Explosion protection:	specific data on request
Functional safety:	SIL2 in accordance with EN61508

Ordering code:

TS- 1 - 2 - 3

Greisinger		
1. Device version		
125L	Housing width 12.5 mm, Relay NO contacts, Auxiliary voltage 24 V DC +/- 15 %	
125M	Housing width 12.5 mm, Relay NO contacts, Wide-range mains adapter	
225M	Housing width 22.5 mm, Relay changeover contacts, Wide-range mains adapter	
2. Explosion protection		
00	Installation of the device TV125L in Zone 2 permitted, in accordance with ATEX ignition protection rating „n“	
Ex	With installation of the devices outside the Ex area: Inputs intrinsically safe in accordance with ATEX ignition protection rating „ia“ for Zones 0 and 20. The device TS125L may be installed in Zone 2 in accordance with ATEX ignition protection rating „ic“.	
3. Number of channels		
1	Single channel	
2	Dual channel	
F	Single channel with additional error relay or parallel relay	

LIMIT VALUE SWITCH

NEW!



HIGHLIGHTS:

- Universal input for unit signals,
- Pt100, thermocouple, potentiometer, switchable via front-side DIP switch
- 2-colour illuminated scales for limit value adjustment, colour depends on switch status



colour depends on switch status

GS125

Limit value switch

General:

Limit value switches of the series GS125 are used in switch cabinets for process monitoring or for simple process regulation. Both temperatures and derived variables such as voltage, current and resistance are used as control signals. In the process, 1 or 2 limit values can be monitored. For assignment of the measuring unit to the scale labelling, 24 transparent adhesive labels are supplied. They can be glued between the adjusting wheels on the front panel.

Specifications:

Measurement inputs	Switchable via DIP switch
Unit signals:	0/2 ... 10 V, 0/4 ... 20 mA
Potentiometer:	500 Ω ... 20 kΩ
Pt100:	-50 ... +50 °C, 0 ... 50 °C, 0 ... 100 °C, 0 ... 150 °C, 0 ... 200 °C, 0 ... 300 °C, 0 ... 500 °C
Thermocouple:	FeCuNi, Type J: 0 ... 250 °C, 0 ... 500 °C NiCrNi, Type K: 0 ... 500 °C, 0 ... 750 °C, 0 ... 1000 °C PtRhPt, Type S: 0 ... 1500 °C
Wide-range power supply:	
24 V power supply	
Rated voltage:	253 V AC
Test voltage:	3 kV AC between input/relay output/auxiliary voltage
Working temperature:	-10 ... +60 °C
Storage temperature:	-20 ... +80 °C
Air humidity:	10 ... 90 % (non-condensing)
Relay outputs	
Switching voltage:	<250 V AC <2 A <500 VA, <125 V DC <0.2 A <25 W, <30 V DC <2 A <60 W
Switching frequency:	max. 5 Hz
Switching hysteresis:	approx. 1 %
Functional safety:	SIL2 in accordance with EN61508 (specific data available on request)
Setpoint setting:	Scale precision: 2 %
Actual value output:	4 ... 20 mA, burden max. 120 Ω, no galvanic isolation from the input signal

Ordering code:

GS - 1 - 2 - 3 - 4

Greisinger		
1. Device version		
125L	Power supply 24 V DC +/- 15 %	
125LP	Power supply 24V DC +/-15% with carrier rail bus connection *)	
125M	Wide-range power supply 20 ... 125 VDC / 20 ... 253 V AC	
2. Limit value contacts		
1	1 relay (changeover contact)	
2	2 relays (universal connection)	
3	2 relays (potential-free n.o. contacts)	
3. Actual value output		
0	not provided	
1	Output 4 ... 20 mA	
4. Options		
00	No options	
01	Push-in terminals (plug-in)	

*) see also separate information sheet Power-Rail

AC CURRENT TRANSMITTER

NEW!



HIGHLIGHTS:

- 1- and 2-channel device
- Measuring ranges 0 ... 1 A / 0 ... 5 A AC
- Arithmetic average value measurement RMS calibrated
- Frequency range 45 ... 400 Hz
- Loop voltage 14 ... 30 V DC

CT500P

AC Current Transmitter

General:

The transmitter converts AC current from 0 ... 1 A or 0 ... 5 A to the proportional standard signal 4 ... 20 mA. The measurement method is calibrated an arithmetic averaging on RMS. The CT 500 P operates like an 2-wire transmitter, which is supplied from the measuring device (e.g. SPS input circuit board). Small housing width allows a space-saving installation.

Specifications:

Power supply

Loop voltage: 14 ... 30 V DC

Working temperature: -10 ... +60 °C

CE-conformity: EN55022, EN60555, IEC61000-4-4/5

Input: 1- or 2-channels

Current: 0 ... 1 A or 0 ... 5 A AC, overload max 10 A

R_i: < 20 mΩ

Frequency: 45 ... 400 Hz fundamental wave, 16_{2/3} Hz on request

End value: adjustable ± 5 %

Output

Current: 4 ... 20 mA, burden R_{max} = (UB - 14 V) ÷ 20 mA

Rise time (T₉₀): ≤ 1 s

Accuracy: ≤ 0.2 %

Housing: Polycarbonate, UL94V-0 TS 35 acc. to DIN EN 60715:2001-09

Weight: approx. 200 g

Connection: screw terminals, max. 2.5 mm²

Protection class: Housing IP30, terminals IP20 acc. to BGV A3

Accessories and spare parts:

KA-500

terminal cover for measuring voltages > 400V AC

Ordering code:

CT500P- 1 - 2 - 3

Greisinger		
1.	Number of channels	
	1	
	2	
2.	Input direct connection / via transformer	
	0	1 A
	5	5 A
3.	Options	
	00	without option

ANALOG FREQUENCY TRANSMITTER

NEW!



HIGHLIGHTS:

- Output frequency from 0 ... 0.01 Hz/20 kHz programmable
- Inputs for 0/4 ... 20 mA, 0/2 ... 10 V DC
- Teach-in programming for analog start- and end value
- Outputs transistor and relay SPDT
- Power- and programming indicator via 2-color LED

AF500

Analog Frequency Transmitter

General:

Analog frequency transmitter AF 500 converts standard industry signals 0/4 ... 20 mA or 0/2 ... 10 V DC into a proportional frequency. The output frequency is programmable with rotary switches at the case side.

Specifications:

Power supply

Supply voltage: 230 V AC ±10 % or 24 V DC ±15 %

Frequency AC: 47 ... 63 Hz

Power consumption: < 3 VA

Working temperature: -10 ... +60 °C

CE-conformity: EN 55022, EN 60555, IEC 61000-4-4/5/11/13

Input

Current: 0/4 ... 20 mA, switch selectable

- internal resistance: R_i = 51 Ω

Voltage: 0/2 ... 10 V DC, switch selectable

- internal resistance: R_i = 20 kΩ

Start value: via software programmable 0 ... +25 %

End value: via software programmable -15 ... +10 %

Output

Transistor: max. 30 V DC, load max. 30 mA

- Frequency range: 0 ... 0.01 Hz, 0 ... 20 kHz duty cycle 0.5

Relay SPDT: 250 V AC < 250 VA < 2 A, 100 V = < 50 W < 1 A

- Frequency range: 0 ... 0.01 Hz, 0 ... 9.9 Hz, duty cycle 0.5

Accuracy: 0.1 % of the end value

Housing: Polycarbonate, UL94V-0 TS 35 acc. to DIN EN 60715:2001-09

Weight: approx. 140 g

Connection: screw terminal, max. 2.5 mm²

Protection class: Housing IP30, terminals IP20 acc. to BGV A3

Ordering code:

AF500- 1 - 2 - 3

Greisinger		
1.	Measuring range	
	10	0/4 ... 20 mA, 0/2 ... 10 V DC output frequency from 0 ... 0.01 up to 20 kHz
2.	Supply voltage	
	0	230 V AC ±10 %
	5	24 V DC ±15 %
3.	Options	
	00	without option

FREQUENCY ANALOG TRANSMITTER

NEW!**HIGHLIGHTS:**

- Frequency ranges from 0 ... 0.01Hz/ 20 kHz programmable
- start- and end value of the measuring range programmable
- Multipurpose inputs for 24 V sensors, switching contacts and Namur actors
- Integrated transmitter supply

FT500

Frequency Analog Transmitter

General:

Frequency transmitter FT 500 are used to convert an impulse frequency range into industry standard signals. The transmitter accepts impulses from proximity switch, contact switch, light barriers and Namur proximity switches. Start- and end value will be programmed with 5 rotary switches. The setting of intermediate values occurs at the front trim. Increasing or decreasing output characteristic is therefore programmable.

Specifications:**Power supply**

Supply voltage: 85 ... 265 V AC or 10 ... 30 V AC / DC

Frequency AC: 47 ... 63 Hz

Power consumption: < 4 VA

Working temperature: -10 ... +60 °C

CE- conformity: EN 55022, EN 60555, IEC 61000-4-4/5/11/13

Input

Frequency range: 0 ... 0.01 Hz / 20 kHz

Pulse cycle

pulse/stop: min. 20 µs (electronic) and min. 5 ms (contacts)

Start value: programmable 0 ... +25 %

End value: programmable -15 ... +5 %

Impulse input

(Terminals 2, 3): Low-Signal -30 V ... +3 V, High-Signal +10 V ... +35 V

input resistance: $R_i > 10 \text{ k}\Omega$

Transmitter supply

(Terminal 1): approx. 20 V DC, 25 mA short circuit current

Namur input

(Terminals 4, 5): acc. to DIN 19234, Namur

input resistance: approx. 1 kΩ

Output

Current: 0/4 ... 20 mA selectable, burden $\leq 1 \text{ k}\Omega$

Voltage: 0/2 ... 10 V DC, load max. 10 mA, short-circuit-proof (parallel with current output, 5 mA)

Accuracy: 0.1 % Measuring end value

Rise time (T_{90}): < 130 ms

Housing: Polycarbonate, UL94V-0 TS 35 acc. to DIN EN 60715:2001-09

Weight: approx. 140 g

Connection: screw terminals, max. 2.5 mm²

Protection class: case IP30, terminals IP20, acc. to BGV A3

Ordering code:FT500- 1 - 2 - 3

Greisinger	
1. Measuring range	
70	0 ... 0.01 Hz up to 20 kHz, output 0/4 ... 20 mA and 0/2 ... 10 V DC
2. Supply voltage	
0	85 ... 265 V AC
5	10 ... 30 V AC / DC
3. Options	
00	without option

PH HEAD-TRANSMITTER

NEW!**HIGHLIGHTS:**

- Measuring range -1 ... +15 pH
- 2-wire transmitter 4 ... 20 mA
- Error free measurement up to 100 m

pH40

pH Head-Transmitter

General:

The head transmitter PH 40 provides a cost-effective way of pH measurement. It is simply plugged on the pH sensor with „Überwurfmutter“. The electrical connection is via the 8-pole. Circular Connectors. Depending on the execution is the signal from the pH sensor issued with either a low output impedance or available as galvanically isolated 4 ... 20 mA signal is available.

Specifications:**Power supply**

Supply voltage: 5 ... 30 V DC output 0

10 ... 30 V DC output 2

Working temperature: -10 ... +60 °C

Input pH/ORP

Measuring range: -1 ... +15 pH / $\pm 1500 \text{ mV}$

Input resistance: $> 10^{12} \Omega$

Output

Type 1: 1:1 transfer of the pH-signal with low output impedance, error free measurement up to 100 m

Type 2: 4 ... 20 mA, 2-wire technology in the range -1 ... +15 pH depending at 25 °C, zero-point pH 7.0, slope 59.2 mV/pH, not compensated

Accuracy: type 0 = 0.01 %, type 2 = 0.2 %

Housing

Material: PVC-U

Weight: approx. 100 g

Process connection: S7

Electrical connection: 8 pole round socket

Protection class: IP65

Accessories and spare parts:**SKM8E-02**

2 m IP67, connection cable terminated with 8-pin. Cable socket and open on one side with ferrules, PU cable

SKM8E-05

5 m IP67, connection cable terminated with 8-pin. Cable socket and open on one side with ferrules, PU cable

SKM8E-10

10 m IP67, connection cable terminated with 8-pin. Cable socket and open on one side with ferrules, PU cable

SKM8E-25

25 m IP67, connection cable terminated with 8-pin. Cable socket and open on one side with ferrules, PU cable

Ordering code:

pH40 - 0 - 2 - 00

Output: -1 ... +15 pH, 1:1 signal transfer

pH40 - 2 - 2 - 00

Output: 4 ... 20 mA = -1 ... +15 pH

**CVC-02/0201**

CVC-amplifier

General:

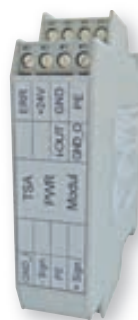
The CVC-amplifier is used for potential-free signal processing and filtering of currents. For this, two channels per board are available. About pluggable filter modules, the signal can be filtered in any specified frequency range. For an input current range of ± 2 A, the output voltage is ± 1 V. The functionally reliable supply voltage range is 6 ... 18 V DC.

Specifications:

Supply voltage	12 V DC
Specified range	6 ... 18 V DC
Power consumption at nominal voltage (without sensor / without load)	45 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy (typ.):	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical):	0.02 %
Input – Current	± 2 A
Input range	
Output – Voltage	
Output range	± 1 V
max. Current output	± 10 mA
short circuit proof	yes
Residual ripple @	
$f_g = 1$ kHz	typ. 10 mV _{pp}
$f_g = 10$ kHz	typ. 15 mV _{pp}
Environmental temperature:	0 ... +50 °C
Plug-in filter	10, 30, 50, 100, 300, 500,
Standard frequencies in Hz:	1 k, 3 k, 5 k, 10 k
Connectivity	Spring-loaded terminals
Rated Current IN	9 A
Wire Gauge flexible	0.2 ... 1 mm ²
Wire Gauge solid	0.2 ... 1.5 mm ²
Housing:	100 x 33 x 21 mm (W x H x D)
Scope of supply:	Device, manual

Ordering code:CVC- 1 - 2 - 3 - 4 - 5

Greisinger	
1.	Model
02	2 Channels
2.	Input
02	± 2 A
3.	Output
01	± 1 V
4.	Output filter frequencies (Hz)
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k
YY	Enter non-standard value: 1 ... 30 k
5.	Filter characteristics
BW	Butterworth 4th order
BS	Bessel 4th order

**TSA-PWR**

TSA-PWR module

General:

The TSA-PWR module is used for control of loads up to a power of 2 W at a current of up to 200 mA. Depending on the application, the required configuration must be specified.

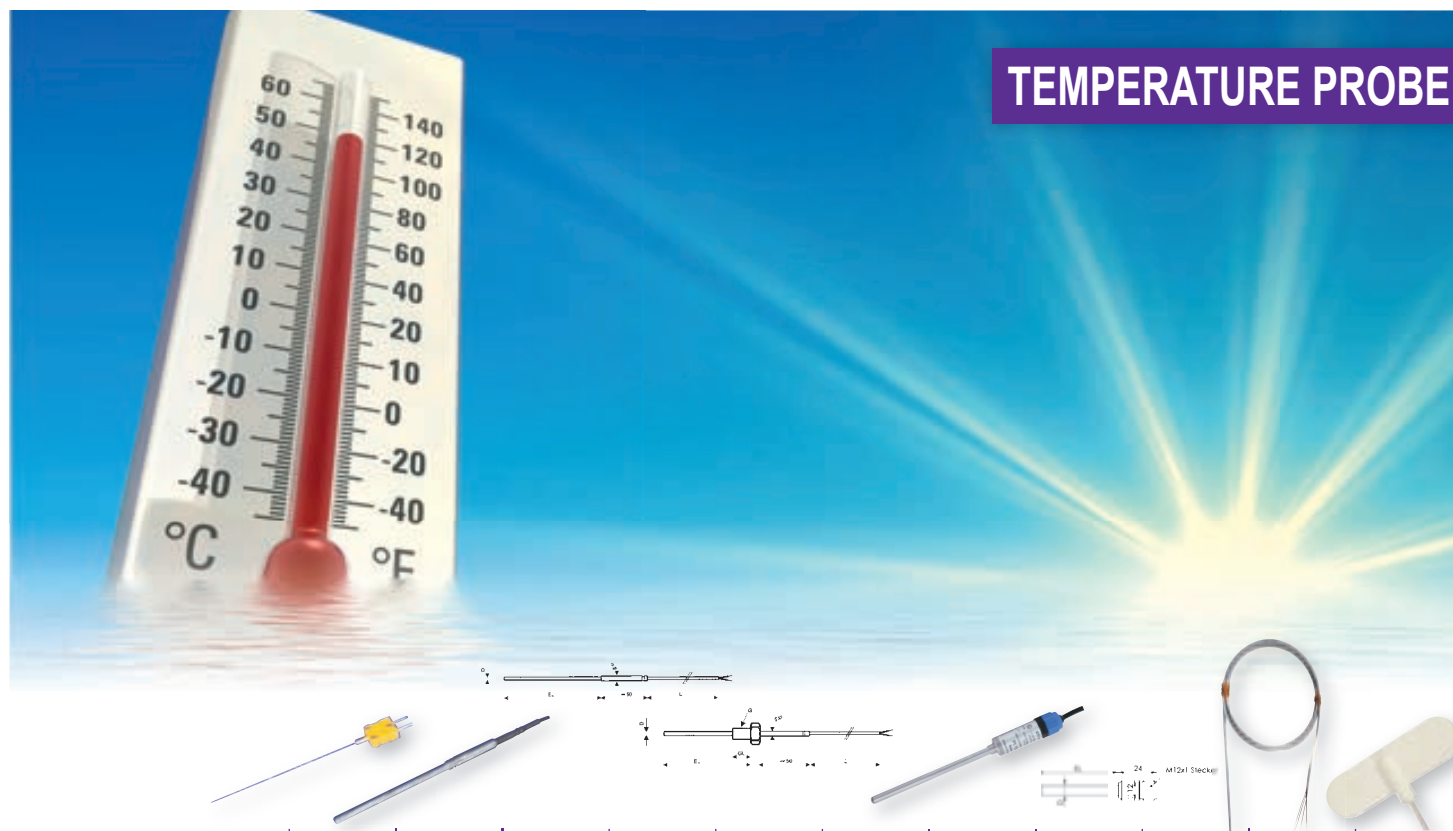
Specifications:

Supply voltage:	24 V DC (10-30 V DC)
Power consumption at nominal voltage (without sensor / without load)	100 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0.02 %
Input – Voltage	
Input range (V1 / V2)	± 10 V / 0 ... 10 V
Input resistance	10 M Ω
Input – Current	
Input range (A1 / A2 / A3)	± 20 mA / 0 ... 20 mA / 4 ... 20 mA
Input resistance	50 Ω
Output – Voltage	
Output range (V10)	± 10 V / 0 ... 10 V
Output – Current	
Output range (A5 / A6)	± 200 mA / 0 ... 200 mA
Max. load current (U output)	± 200 mA
Residual ripple @	
$f_g = 1$ kHz	typ. 10 mV _{pp}
$f_g = 10$ kHz	typ. 15 mV _{pp}
Environmental temperature	0 ... 50 °C
Plug-in filter	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k
Standard frequencies in Hz	
Housing:	ME 22.5: 22.5 x 99 x 114.5 mm (B x H x T)
Scope of supply:	Device, manual

Ordering code:TSA-PWR- 1 - 2 - 3 - 4 - 5

Greisinger	
1.	Model
1	1 Output
2.	Input (not all combinations with output feasible)
V1	± 10 V
V2	0 ... 10 V
A1	± 20 mA
A2	0 ... 20 mA
A3	4 ... 20 mA
3.	Output filter frequencies (Hz)
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k
YY	Enter non-standard value: 1 ... 30 k
4.	Filter characteristics
BW	Butterworth 4th order
BS	Bessel 4th order
5.	Output (not all combinations with input feasible)
V10	± 10 V (I = max. ± 200 mA)
A5	± 100 mA
A6	± 200 mA

TEMPERATURE PROBE



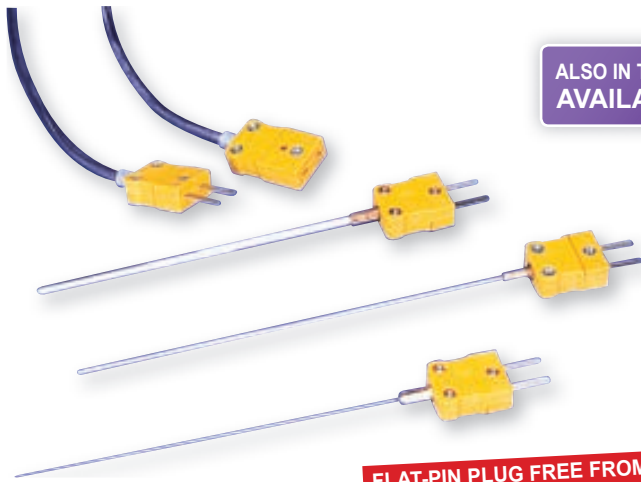
Application:

	GTT ..	GTF 101-5...	GTF 101-N...	GTF 101...	GTF 102 ..	GTF 103 ..	GTF 10x-Ex	GTF 111	GTF 112	TF 101 ..	GOF 1xx ...
NiCr-Ni (Type K)	•	•		•	•	•				•	•
NiCrSi-NiSi (Type N)			•								
Freely customized probes (Pt100 / Pt1000)				•	•	•		•	•	•	•
Miniature flat-pin plug	•	•	•	•	•					•	•
Loose ends	•	•	•	•	•		•			•	•
M12-plug, 4-pol.								•	•		
Sensor head						•	•				
 - Protection							•				
Thermo elements	•	•									
permanent high temperatures			•								
Industrial probes, process connection without thread	•	•	•	•		•	•	•			
Industrial probes, process connection with thread					•	•	•		•		
Hermetically sealed probe										•	
Self-adhesive probes											•

Device information:

Catalogue page	146	147	153	148	150	151	154	152	152	156	157
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STANDARD - JACKET THERMO ELEMENTS NICR-NI NICR-NI, TYPE K



ALSO IN TYPE N
AVAILABLE

FLAT-PIN PLUG FREE FROM
THERMAL E.M.V.



GTT-xx-xxxx

Jacket thermo elements NiCr-Ni (type K) complete with miniature flat-pin plug NST1200 (free from thermal e.m.f.)

Specifications:

Jacket material:	Inconel 600, flexible - other materials upon request
Insulation:	highly compressed pure MgO
Thermo wires:	NiCr-Ni, DIN IEC 584, welding insulated (volt-free)
Accuracy:	optimum accuracy (cl. 1) = $\pm 1.5^{\circ}\text{C}$ or $\pm 0.4\%$ of measuring value (Almost double accuracy as compared to class 2. As a comparison with class 2: $\pm 2.5^{\circ}\text{C}$ or $\pm 0.75\%$ of measuring value)
Temperature application range:	-220 ... +1150 $^{\circ}\text{C}$ (Probe tip and front part; wire outlet: max. 200 $^{\circ}\text{C}$) (Accuracy class 1 applicable from -40 ... +1000 $^{\circ}\text{C}$)

Recommended upper temperature limit for continuous use:

Ø	0.5	1.0	1.5
$^{\circ}\text{C}$	700	700	920

Accessories and spare parts:

NKU1200
Product-ID: 602737
coupling free from thermal e.m.f.

NKU12000
Product-ID: 602738
U-coupling free from thermal e.m.f.

VKA-1m
Product-ID: 602909
plug-in extension cable

HIGHLIGHTS:

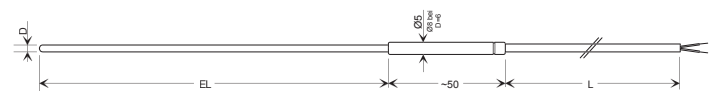
- Same material for contacts and thermo elements
- No incorrect temperature values due to different materials
- Polarity cannot be mixed up
- One plug size for Ø from 0.5 ... 6.0 mm
- Any extension possible
(extension cable VKA-1m or length per customers' requests)
- Sensor elements can be exchanged easily

Type:	Ø mm	EL mm	
GTT-05-0150 Product-ID: 607542	0.5	150	
GTT-05-0250 Product-ID: 607543		250	
GTT-05-0500 Product-ID: 607544		500	
GTT-05-1000 Product-ID: 607545		1000	
GTT-05-1500 Product-ID: 607546		1500	
GTT-10-0150 Product-ID: 607547	1.0	150	
GTT-10-0250 Product-ID: 607548		250	
GTT-10-0500 Product-ID: 607549		500	
GTT-10-1000 Product-ID: 607550		1000	
GTT-10-1500 Product-ID: 607551		1500	
GTT-15-0150 Product-ID: 607552	1.5	150	
GTT-15-0250 Product-ID: 607553		250	
GTT-15-0500 Product-ID: 607554		500	
GTT-15-1000 Product-ID: 607555		1000	
GTT-15-1500 Product-ID: 607556		1500	
GTT-30-0150 Product-ID: 607557	3.0	150	
GTT-30-0250 Product-ID: 607558		250	
GTT-30-0500 Product-ID: 607559		500	
GTT-30-1000 Product-ID: 607560		1000	
GTT-30-1500 Product-ID: 607561		1500	
GTT-60-0150 Product-ID: 607562	6.0	150	
GTT-60-0250 Product-ID: 607563		250	
GTT-60-0500 Product-ID: 607564		500	
GTT-60-1000 Product-ID: 607565		1000	
GTT-60-1500 Product-ID: 607566		1500	

Special sizes upon request.

All thermo elements accuracy class 1
(Almost double accuracy than class 2!)

MECHANICALLY SOUND



GTF101-5-xx-xxxx

2. Jacket thermo elements NiCr-Ni (type K) complete with cable sleeve and 1 m silicone cable (compensation line), loose wire ends

Specifications:

Jacket material:	Inconel 600, flexible - other materials upon request and against upcharge
Insulation:	highly compressed pure MgO
Thermo wires:	NiCr-Ni, DIN IEC 584, welding insulated (volt-free)
Accuracy:	optimum accuracy (cl. 1) = ± 1.5 °C or ± 0.4 % of measuring value (Almost double accuracy as compared to class 2. As a comparison with class 2: ± 2.5 °C or ± 0.75 % of meas. value)
Connecting cable:	silicone compensation line, 1 m long (max. 200 °C), loose ends. (Longer line or other material against upcharge)
Temperature application range:	-220 ... +1150 °C (Probe tip and front part; wire outlet: max. 200 °C, for cable p.r.t. accessories) (Accuracy class 1 applicable from -40 ... +1000 °C)

Recommended upper temperature limit for continuous use:

Ø	0.5	1.0	1.5
°C	700	700	920

Accessories and spare parts:

Clamping screw connection

Clamping screw connection
Ø 1.5, 3.0 or 6.0 mm, see accessories

NST1200 „K“

Product-ID: 602566

Prefabricated flat connector

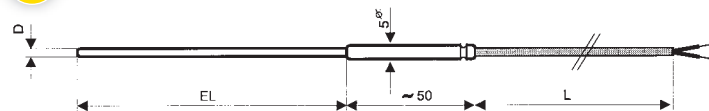
HIGHLIGHTS:

- Can be subjected to high temperatures and pressures
- Resistant to aggressive atmospheres
- Minimum dimensions, therefore short response times
- Flexible (the smaller the diameter the smaller the bending radii)
- Potential-free (thermoelement wires have no connection to the outer jacket)
- Optimum accuracy acc. to DIN IEC584 class 1

Type:	Ø mm	EL mm	
GTF101-5-05-0150 <i>Product-ID: 607596</i>	0,5	150	
GTF101-5-05-0250 <i>Product-ID: 607597</i>		250	
GTF101-5-05-0500 <i>Product-ID: 607598</i>		500	
GTF101-5-05-1000 <i>Product-ID: 607599</i>		1000	
GTF101-5-05-1500 <i>Product-ID: 607600</i>		1500	
GTF101-5-10-0150 <i>Product-ID: 607601</i>	1,0	150	
GTF101-5-10-0250 <i>Product-ID: 607602</i>		250	
GTF101-5-10-0500 <i>Product-ID: 607603</i>		500	
GTF101-5-10-1000 <i>Product-ID: 607604</i>		1000	
GTF101-5-10-1500 <i>Product-ID: 607605</i>		1500	
GTF101-5-15-0150 <i>Product-ID: 607606</i>	1,5	150	
GTF101-5-15-0250 <i>Product-ID: 607607</i>		250	
GTF101-5-15-0500 <i>Product-ID: 607608</i>		500	
GTF101-5-15-1000 <i>Product-ID: 607609</i>		1000	
GTF101-5-15-1500 <i>Product-ID: 607610</i>		1500	
GTF101-5-30-0150 <i>Product-ID: 607611</i>	3,0	150	
GTF101-5-30-0250 <i>Product-ID: 607612</i>		250	
GTF101-5-30-0500 <i>Product-ID: 607613</i>		500	
GTF101-5-30-1000 <i>Product-ID: 607614</i>		1000	
GTF101-5-30-1500 <i>Product-ID: 607615</i>		1500	
GTF101-5-60-0150 <i>Product-ID: 607616</i>	6,0	150	
GTF101-5-60-0250 <i>Product-ID: 607617</i>		250	
GTF101-5-60-0500 <i>Product-ID: 607618</i>		500	
GTF101-5-60-1000 <i>Product-ID: 607619</i>		1000	
GTF101-5-60-1500 <i>Product-ID: 607620</i>		1500	

Special sizes and other connection cables see industry temperature probe type GTF 101 K

**All thermo elements accuracy class 1
(Almost double accuracy than class 2!)**



GTF 101 P

Temperature probe

General:

The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with resistance temperature sensors (Pt100 or Pt1000)

Specifications:

Probe diameter D:	3 mm, 4 mm, 5 mm, 6 mm, 8 mm, other diameters upon request
Cable sleeve:	for probe diameters D 3 mm, 4 mm, 5 mm, 6 mm, 8 mm: there is a cable sleeve Ø 5 mm x 50 mm in addition to the fitting length for probe diameters D 6 mm and MB3 or MB4: there is a cable sleeve Ø 8 mm x 35 mm with taper to Ø 5 mm x 17 mm in addition to the fitting length Note: The temperature of the cable sleeve must not exceed the permitted temperature of the cable.
Accuracy:	DIN class B, DIN class A, 1/3 DIN class B, 1/10 DIN class B
Tube material:	V4A stainless steel (1.4404)

Ordering code:

GTF 101 P

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1. Sensor element

P	Pt100
T	Pt1000

2. Sensor element connection

2L	2-wire
3L	3-wire
4L	4-wire

3. Accuracy

A	DIN class A
B	DIN class B (standard)
D	1/3 DIN class B
Z	1/10 DIN class B (validity area: -50 ... +100 °C)

4. Measuring range MB

MB1	-50 ... +400 °C
MB2	-200 ... +400 °C
MB3	-70 ... +600 °C (jacket thermo element)
MB4	-50 ... +850 °C (jacket thermo element)

5. Probe diameter D

D30	3.0 mm
D40	4.0 mm
D50	5.0 mm
D60	6.0 mm
D80	8.0 mm
Dxx	other diameter in mm

6. Fitting length EL

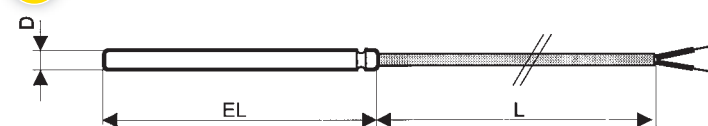
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
xxxx	any length in mm

7. Cable length L

L01	1 m silicone cable (standard)
Lxx	any length in m

8. Type of cable

P	PVC cable up to max. 105 °C (surcharge per 1 m cable length L)
S	silicone cable up to max. 200 °C (surcharge per 1 m cable length L)
T	Teflon cable up to max. 250 °C (surcharge per 1 m cable length L)
G	glass silk cable up to max. 400 °C (surcharge per 1 m cable length L)



GTF 101 P-OKH

Temperature probe

General:

The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with resistance temperature sensors (Pt100 or Pt1000)

Specifications:

Probe diameter D:	3 mm, 4 mm, 5 mm, 6 mm, 8 mm, other diameters upon request
Accuracy:	DIN class B, DIN class A, 1/3 DIN class B, 1/10 DIN class B
Tube material:	V4A stainless steel (1.4404 or 1.4571)

Ordering code:

GTF 101 P- OKH

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1. Sensor element

P	Pt100
T	Pt1000

2. Sensor element connection

2L	2-wire
3L	3-wire
4L	4-wire

3. Accuracy

A	DIN class A
B	DIN class B (standard)
D	1/3 DIN class B
Z	1/10 DIN class B (validity area: -50 ... +100 °C)

4. Measuring range MB

MB1	-50 ... +200 °C
MB2	-50 ... +250 °C (only with Teflon or glass silk cable)
MB3	-50 ... +400 °C (only with glass silk cable)
MB4	-200 ... +250 °C (only with Teflon cable)
MB5	-20 ... +105 °C (only with PVC-cable)

5. Probe diameter D

D30	3.0 mm (only with Teflon cable)
D40	4.0 mm (only with Teflon cable)
D50	5.0 mm
D60	6.0 mm
D80	8.0 mm
Dxx	other diameter in mm

6. Fitting length EL

0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
xxxx	any length in mm

7. Cable length L

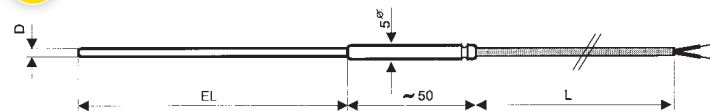
L01	1 m silicone cable (standard)
Lxx	any length in m

8. Type of cable

P	PVC cable up to max. 105 °C (surcharge per 1 m cable length L)
S	silicone cable up to max. 200 °C (surcharge per 1 m cable length L)
T	Teflon cable up to max. 250 °C (surcharge per 1 m cable length L)
G	glass silk cable up to max. 400 °C (surcharge per 1 m cable length L)

Special lengths, special sheath materials, etc. upon request.

INDUSTRY - TEMPERATURE PROBE

**GTF 101 K**

Temperature probe

General:

The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with thermocouple wires (NiCr-Ni).

Specifications:

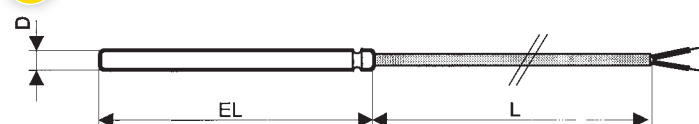
Sensor element:	NiCr-Ni (type K)
Measuring range:	-200 ... +1150 °C
Probe diameter D:	1.5 mm, 3 mm, 6 mm other diameters upon request
Cable sleeve:	for probe diameters D 0.5 mm, 1 mm, 1.5 mm, 3 mm: there is a cable sleeve Ø 5 mm x 50 mm in addition to the fitting length for probe diameters D 6 mm: there is a cable sleeve Ø 8 mm x 35 mm with taper to Ø 5 mm x 17 mm in addition to the fitting length Note: The temperature of the cable sleeve must not exceed the permitted temperature of the cable.
Accuracy:	class 1
Tube material:	Inconel 600

Ordering code:GTF 101 K

1	2	3	4
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1. Probe diameter D	
D15	1.5 mm
D30	3.0 mm
D60	6.0 mm
Dxx	other diameter in mm
2. Fitting length EL	
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
xxxx	any EL in mm (e.g.: 0100 = 100 mm)
3. Cable length L	
L01	1 m silicone cable (standard)
Lxx	any length in m (e.g.: L03 = 3 m)
4. Type of cable	
S	silicone cable up to max. -50 ... +200 °C (standard) (surcharge per 1 m cable length L)
T	Teflon cable up to max. -200 ... +250 °C (surcharge per 1 m cable length L)
G	glass silk cable up to max. -50 ... +400 °C (surcharge per 1 m cable length L)

Standard types see standard jacket thermo element GTF 101-5-xx-xxxx.

**GTF 101 K-OKH**

Temperature probe

General:

The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with thermocouple wires (NiCr-Ni).

Specifications:

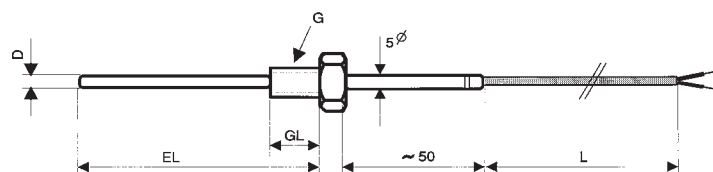
Sensor element:	NiCr-Ni (type K)
Probe diameter D:	3 mm, 5 mm, 6 mm, other diameters upon request
Accuracy:	class 1
Tube material:	V4A stainless steel

Ordering code:GTF 101 K

1	2	3	4	5
---	---	---	---	---

1. Probe diameter D	
D30	3.0 mm only with Teflon cable
D50	5.0 mm
D60	6.0 mm
Dxx	other diameter in mm
2. Fitting length EL	
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
xxxx	any EL in mm (e.g.: 0100 = 100 mm)
3. Measuring range	
MB1	-50 ... +200 °C
MB2	-50 ... +250 °C only with Teflon or glass silk cable
MB3	-50 ... +400 °C only with glass silk cable
4. Cable length L	
L01	1 m silicone cable (standard)
Lxx	any length in m (e.g.: L03 = 3 m)
5. Type of cable	
S	silicone cable up to max. -50 ... +200 °C (standard) (surcharge per 1 m cable length L)
T	Teflon cable up to max. -200 ... +250 °C (surcharge per 1 m cable length L)
G	glass silk cable up to max. -50 ... +400 °C (surcharge per 1 m cable length L)

Special lengths, special sheath materials, etc. upon request.



HIGHLIGHTS:

- Pt100, Pt1000, NiCr-Ni (type K)
- complete with thread and cable (loose ends)
- very robust

GTF 102

Temperature probe

General:

The GTF 102 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 102 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids.

The temperature is measured with either thermocouple (NiCr-Ni) or resistance temperature sensors (Pt100 / Pt1000). The probe is provided by default with thread, cable sleeve and 1 m silicone cable (compensation line with loose ends).

Specifications:

Sensor element:	Pt100 (2- / 3- or 4- wire) Pt1000 (2- / 3- or 4- wire) NiCr-Ni
Accuracy (standard):	Pt100 / Pt1000: DIN class B NiCr-Ni: class 1
Tube material:	V4A (1.4404)
Thread material:	stainless steel
Connection cable:	standard: silicone compensation line, loose ends, length: 1 m (up to max. 200)

GTF 102

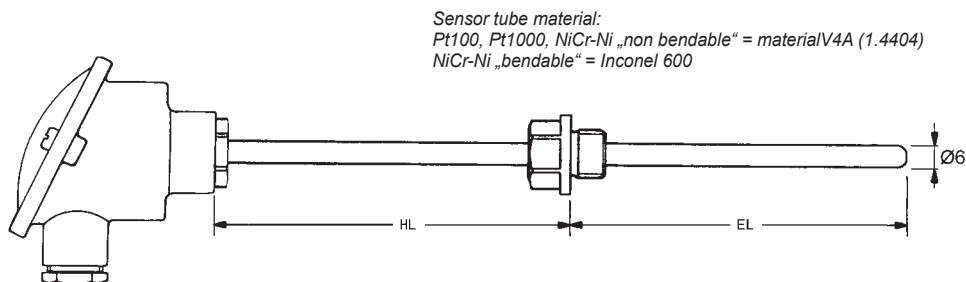
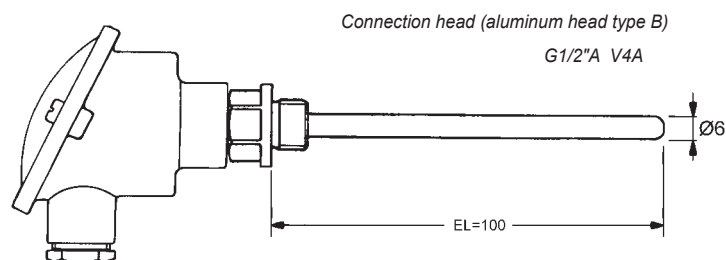
1	2	3	4	5	6	7	8
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Ordering code:

1. Sensor element	
P2	Pt100 (2-wire)
P3	Pt100 (3-wire)
P4	Pt100 (4-wire)
T2	Pt1000 (2-wire)
T4	Pt1000 (4-wire)
K	NiCr-Ni
2. Accuracy	
1	class 1 only for NiCr-Ni
A	DIN class A only for Pt100 / Pt1000
B	DIN class B (standard) only for Pt100 / Pt1000
D	1/3 DIN class B only for Pt100 / Pt1000
Z	1/10 DIN class B only for Pt100 (validity area: -50 ... +100 °C)
3. Measuring range	
MB1	-50 ... +200 °C
MB2	-50 ... +400 °C
MB3	-50 ... +600 °C
MBS	other measuring range
4. Probe diameter D	
15	1.5 mm only with sensor element NiCr-Ni (K)
22	2.2 mm rigid
30	3.0 mm (standard)
40	4.0 mm
50	5.0 mm
60	6.0 mm
80	8.0 mm
5. Fitting length EL	
0100	100 mm (standard)
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
xxxx	any length in mm (e.g. 0700 = 700 mm)
6. Thread	
G1	G ½ (standard)
G2	G ¼
G5	G ¾
M5	M5 max. D = 3.0 mm
M6	M6 max. D = 3.0 mm
M8	M8 max. D = 5.0 mm
M0	M10 max. D = 6.0 mm
xxx	other thread
7. Cable length L	
L01	1 m silicone cable (standard)
Lxx	any length in m (e.g.: L03 = 3 m)
8. Type of cable	
P	PVC cable up to max. -20 ... +105 °C (surcharge per 1 m cable length L)
S	silicone cable up to max. -50 ... +200 °C (standard) (surcharge per 1 m cable length L)
T	Teflon cable up to max. -200 ... +250 °C (surcharge per 1 m cable length L)
G	glass silk cable up to max. -50 ... +400 °C (surcharge per 1 m cable length L)

Special lengths, special sheath materials, etc. upon request.

INDUSTRY - TEMPERATURE PROBE



Sensor tube material:
Pt100, Pt1000, NiCr-Ni „non bendable“ = material V4A (1.4404)
NiCr-Ni „bendable“ = Inconel 600

GTF 103

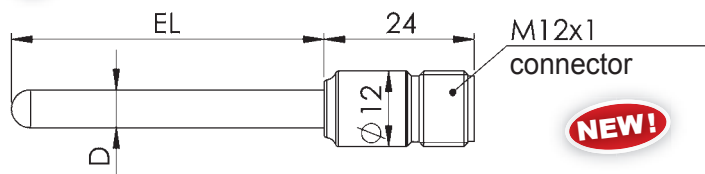
Temperature probe

GTF 103 1 2 3 4 5 6 7 8 9 10 11 12 13

Ordering code:	
1. Normsignal	
O	without output signal
G	with output signal 4-20 mA, 2-wire, RT420 (Pt100 only)
G	with output signal 4-20 mA, 2-wire, GITT 01 (Pt1000 or NiCr-Ni)
GV	with output signal 0 ... 10 V, 3-wire, T03 BU (Pt100 only)
Technical specifications Transmitter T03 BU, RT 420, GITT01, see chapter Transmitters	
2. Sensor element	
P	Pt100
T	Pt1000
K	NiCr-Ni Typ K
3. Accuracy class	
B	DIN class B (Pt100 or Pt1000)
A	DIN class A (Pt100 or Pt1000)
D	1/3 DIN class B (Pt100 or Pt1000)
Z	1/10 DIN class B (only Pt100) (validity area: -50 ... +100 °C)
1	class 1 NiCr-Ni type K
4. Sensor element connection	
2L	2-wire
3L	3-wire
4L	4-wire
5. Connection head	
A	sensor head made of aluminum (DIN B head)
E	sensor head made of stainless steel
K	sensor head made of plastic
S	small sensor head (design type DE)
6. Measuring insert	
O	without process connection
MA	with process connection (standard for transmitter)
7. Process connection	
N	without process connection
J	with process connection
8. Neck tube	
K	no neck tube
M	with neck tube
9. Size of process connection	
G1	G 1/2
G2	G 1/4
G5	G 3/8
M14	M14x1,5
xxx	other thread

10. Length of neck tube	
000	no neck tube
050	50 mm
100	100 mm
xxx	other neck tube length
11. Probe diameter	
30	3 mm
40	4 mm
60	6 mm
80	8 mm
xxx	other diameter
12. Fitting length	
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
xxxx	any length in mm (e.g. 0600 = 600 mm)
13. Measuring range	
MB1	-50 ... +200 °C
MB2	-50 ... +400 °C
MB3	-50 ... +600 °C
MBS	other measuring range (Specification required with standard signal)

Special designs can be ordered only in written form (fax/letter/email) and are excluded from exchange!



GTF 111

Temperature probe

General:

The GTF 111 is a temperature sensor without thread with a practical M12 connector. The measurement is carried out by means of resistance temperature sensors Pt100 or Pt1000.

Specifications:

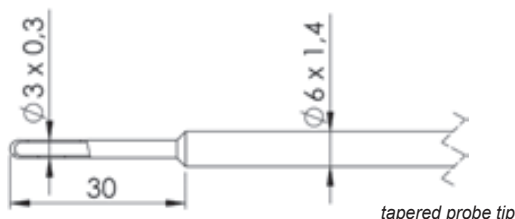
Sensor element:	Pt100 or Pt1000 (4-wire)
Temperature range:	-50 ... +250 °C (probe tip)
Accuracy:	Class B, Class A, Class AA, Class 1/10 DIN B
Response time:	FS Ø 3 mm: $T_{90} \leq 1.5$ s FS Ø 6 mm: $T_{90} \leq 7.4$ s
Process pressure:	max. 50 bar
Electrical connection:	M12 connector, 4-pole
Thermowell and tip:	1.4404 (V4A)
Protection:	IP67 / IP69K
Ambient temperature:	-20 ... +85 °C

GTF 111

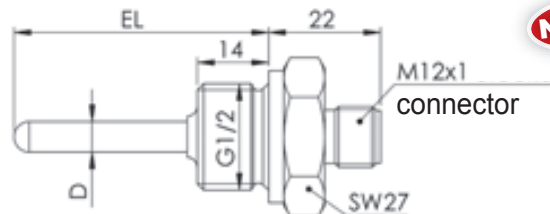
1	2	3	4	5	6
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Ordering code	
1. sensor element	
P	Pt100
T	Pt1000
2. Accuracy	
B	class B (Standard)
A	class A
D	class AA (1/3 class B)
Z	1/10 DIN cl. B only for Pt100
3. Measuring range	
MB1	-50 ... +250 °C (M12 does not exceed 85 °C)
MBS	other measuring ranges
4. Installation length EL	
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
xxxx	any installation length in mm
5. Probe diameter D	
D60	Ø 6 mm, without taper
D30	Ø 6 mm, with tapered probe tip Ø 3 mm L = 30 mm
Dxx	other diameters in mm
6. Option	
00	without option

M12 connecting cable see page 134



Special lengths, special sheath materials, etc. upon request.



GTF 112

Temperature probe

General:

The GTF 112 is a temperature sensor with threaded process with a practical M12 connector. The measurement is performed by means of resistance temperature sensors Pt100 or Pt1000.

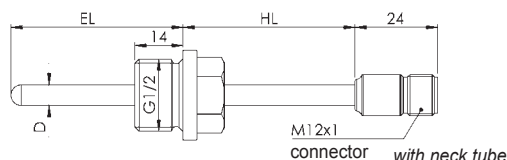
Specifications:

Sensor element:	Pt100 or Pt1000 (4-wire)
Temperature range:	-50 ... +250 °C (probe tip)
Accuracy:	Class B, Class A, Class AA, Class 1/10 DIN B
Response time:	FS Ø 3 mm: $T_{90} \leq 1.5$ s FS Ø 6 mm: $T_{90} \leq 7.4$ s
Process pressure:	max. 50 bar
Electrical connection:	M12 connector, 4-pole
Thermowell and tip:	1.4404 (V4A)
Protection:	IP67 / IP69K
Ambient temperature:	-20 ... +85 °C

GTF 112

1	2	3	4	5	6	7
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Ordering code	
1. Sensorelement	
P	Pt100
T	Pt1000
2. Accuracy	
B	class B
A	class A
D	class AA (1/3 class B)
Z	1/10 DIN cl. B only for Pt100
3. Measuring range	
MB0	-50 ... +100 °C
MB1	-50 ... +250 °C (with neck tube HL = 50 mm)
MBS	other measuring ranges
4. Installation length EL	
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
xxxx	any installation length in mm
5. Probe diameter D	
D60	Ø 6 mm, without taper
D30	Ø 6 mm, with tapered probe tip Ø 3 mm L = 30 mm
Dxx	other diameters in mm
6. thread	
G1	G ½ (standard)
G2	G ¼
xxx	other threads
6. neck tube	
000	No neck tube (only up to 100 °C, only with MB0)
050	50 mm
7. Option	
00	without option



INDUSTRIAL PROBES FOR FOOD-, BEVERAGE- AND PHARMA INDUSTRY

**GTL ...**

Probes according to customer specification

Specifications:	
Measuring range:	-40 ... +200 °C (depending on probe construction)
Sensor:	Pt 100
Process connection:	M12 / G1/2" / without thread
Probe head:	probe head Ø 59 mm probe head Ø 18 mm Long (with transmitter) probe head Ø 18 mm Short (without transmitter)
Material:	sensor head: V2A, protection tube and peak: V4A
Probe length:	50, 100, 150, 250 or according to customer specification (in mm)
Diameter:	Ø 6 mm without contraction Ø 4 mm without contraction Ø 6 mm with offset probe peak Ø 3 mm
Response Time:	Ø 6 mm: $T_{90} \leq 8.0$ s Ø 4 mm: $T_{90} \leq 6.5$ s Ø 3 mm: $T_{90} \leq 1.5$ s
Protection class:	IP69K / IP67

Option:

- Neck tube
- Electr. connection:
fixed cable (PG) or M12-plug
- Transmitter
- Higher accuracy (1/3 DIN cl. B or 1/10 DIN cl. B)
- Display of temperature

In casw of interest, please ask for the **GHM** industrial probes brochure
or www.ghm-messtechnik.de

NICRSI-NISI (TYPE N) - MEASURING PROBE (CLASS 1)

HIGH TEMPERATURES
COST-EFFICIENT MEASUREMENTS

**GTF101-N03250**

Product-ID: 602770

-50 ... +1300 °C, (short-term up to 1330 °C), FL = 250 mm

GTF101-N03500

Product-ID: 602771

as above, but FL = 500 mm

GTF101-N031000

Product-ID: 602772

as above, but FL = 1000 mm

General:**Measuring probe Ø 3 mm**

Mantle material: nickel-chromium-based stainless steel with extraordinary resistivity against oxidation at high temperatures and excellent corrosion resistance in chlorine and ammoniacal environments. A protective layer emerges at temperatures of approx. 980 °C and provides improved accuracy compared to other mantle materials.
The temperature can be applied to high temperatures for a longer period without noteworthy drift. The K-effect (near-order effect) is much smaller for type N thermocouples than for type K thermocouples.

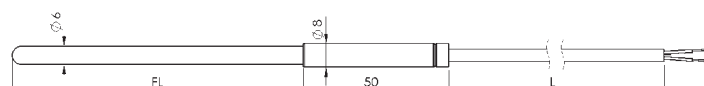
Application:

temperature measurement of exhaust fumes

Specifications:

Response time T_{90} :	approx. 5 s
Probe tube:	nickel-chromium-based stainless steel Ø 3 mm
Cable:	1 m silicone cable, loose ends

HIGH TEMPERATURES (PERMANENTLY UP TO 1300 °C)
COST-EFFICIENT MEASUREMENTS

**GTF101-N06250**

Product-ID: 602769

-50 ... +1300 °C, (short-term up to 1330 °C), FL = 250 mm;
more robust design with thicker protective cover

GTF101-N06500

Product-ID: 607634

as above, but FL = 500 mm

GTF101-N061000

Product-ID: 607635

as above, but FL = 1000 mm

General:**Measuring probe Ø 6 mm**

Probe for permanently high temperatures, other data as probe Ø 3 mm

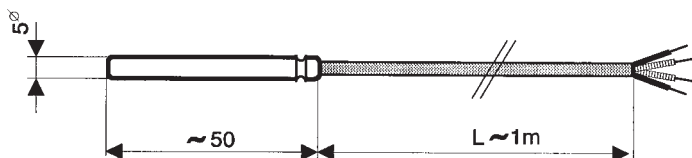
Specifications:

Response time T_{90} :	approx. 10 s
Probe tube:	nickel-chromium-based stainless steel Ø 6 mm
Cable:	1 m silicone cable, loose ends

INDUSTRIAL TEMPERATURE PROBES



INDUSTRIAL TEMPERATURE PROBES (ATEX 100)



GTF 200 Pt100

Product-ID: 600017

-50 ... +200 °C, Pt100, 4-wire

Specifications:

Sensor:	Pt100, DIN cl. B (± 0.3 °C at 0 °C)
Sensor sleeve:	made of stainless steel
Cable:	silicone (4 x 0.14 ²), approx. 1 m suitable for 2-/ 3- or 4-wire probe

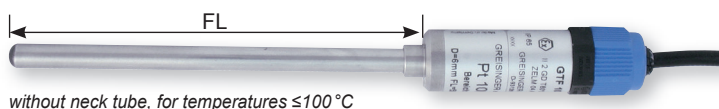
GTF 200 Pt100 WD

Product-ID: 600020

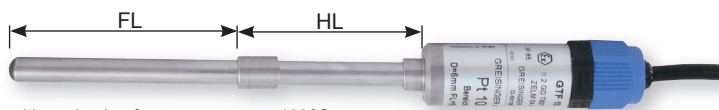
-20 ... +105 °C, Pt100, 4-wire, tube enclosed water proof

Specifications:

Sensor:	Pt100, DIN cl. B (± 0.3 °C at 0 °C)
Sensor sleeve:	made of stainless steel
Cable:	PVC (4 x 0.14 ²), approx. 1 m suitable for 2-/ 3- or 4-wire probe



without neck tube, for temperatures ≤ 100 °C



with neck tube, for temperatures > 100 °C

**FOR ALL POTENTIALLY EXPLOSIVE
ATMOSPHERES OF THE
EQUIPMENT-GROUP II
WITH THE PROTECTION (I) OR (E)**

GTF 101-Ex

-200 °C ... +100 °C (without neck tube)

-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel with connection cable. The sensor inset is not exchangeable. Mounting is done via separate clamping ring fittings GKV.

Upcharges:

Sensors:

Pt100 / Pt1000; mineral insulated element, 4-wire:

meas. range: -200 °C ... +100 °C (600 °C - with neck tube), DIN class B

Type K or N, mineral insulated thermocouple:

meas. range: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:

up to 100 mm (without upcharge)

upcharge per further starting 100 mm

Neck tube length:

without (without upcharge)

upcharge per starting 100 mm

Probe diameter:

3 mm, 4 mm, 5 mm, 6 mm or 8 mm (without upcharge)

Cable:

silicone cable, standard length 1 m

upcharge per further starting m cable

Ambient temperature:

-20 ... +60 °C (protection type „e“) or -20 ... +80 °C (protection type „i“)

Type of protection:

„i“ : intrinsic safety (without upcharge)

„e“ : increased safety

Potentially explosive atmospheres:

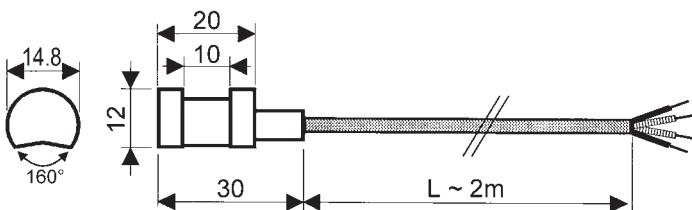
suitable for zone 1, zone 2, zone 21, zone 22

Clamping ring screw connection:

available at M8x1, M10x1, G1/4" and G1/2" for diameter 3 mm, 6 mm or 8 mm.

Please refer to page 158

To determine exact order name ask for our type list. Download via homepage possible (Products --> Ex-Protection --> Temperature probes).



GRO 200 Pt100

Product-ID: 600012

temperature probes

GRO 200 Pt1000

Product-ID: 600013

temperature probes, -50 ... +200 °C, DIN class B, 4-wire

GRO 200 K

Product-ID: 600011

temperature probes, -50 ... +200 °C, NiCr-Ni (Type K)

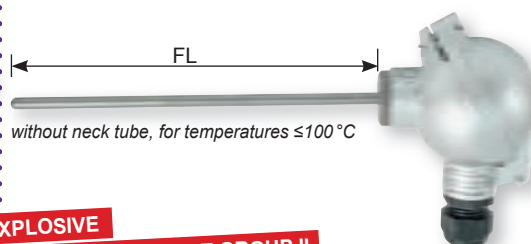
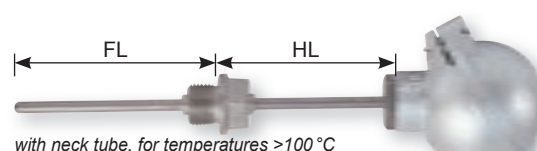
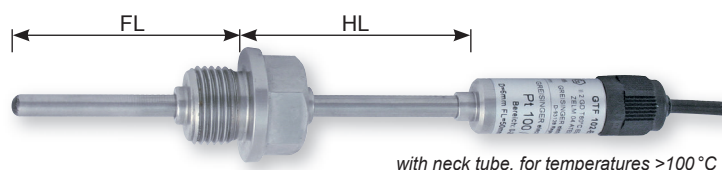
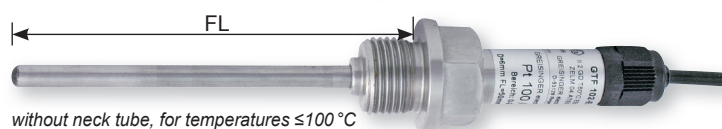
Specifications:

Sensor body:	made of aluminium
Probe:	can be mounted with cable clamp or similar constructions to pipes (any diameter)
Cable:	silicone, approx. 2 m For faster heat exchange we suggest our heat-conductive paste GWL10G Product-ID: 603267





INDUSTRIAL TEMPERATURE PROBES (ATEX 100)



**FOR ALL POTENTIALLY EXPLOSIVE
ATMOSPHERES OF THE EQUIPMENT-GROUP II
WITH THE PROTECTION (I) OR (E)**

GTF 102-Ex

-200 °C ... +100 °C (without neck tube)
-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel with connection cable. The sensor inset is not exchangeable. Thread is welded or brazed to the probe.

Upcharges:**Sensors:**

Pt100 / Pt1000, mineral insulated element, 4-wire:

meas. range: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B

type K or N, mineral insulated thermocouple:

meas. range: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:

up to 100 mm (without upcharge)

upcharge per further starting 100 mm

Neck tube length:

without (without upcharge)

upcharge per starting 100 mm

Probe diameter:

3 mm, 4 mm, 5 mm, 6 mm or 8 mm (without upcharge)

Thread:

G1/2" (standard) (without upcharge)

G1/8", G1/4", G3/8", G3/4", M8x1, M10x1

Cable:

silicone cable, standard length 1 m

upcharge per further starting m cable

Ambient temperature:

-20 ... +60 °C (protection type „e“) or -20 ... +80 °C (protection type „i“)

Type of protection:

„i“: intrinsic safety (without upcharge)

„e“: increased safety

Potentially explosive atmospheres:

suitable for zone 0/1, zone 1, zone 2, zone 20/21, 21, zone 22

To determine exact order name ask for our type list. Download via homepage possible (Products -->Ex-Protection-->Temperature probes).

GTF 103-Ex

-200 °C ... +100 °C (without neck tube)
-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel connection head and clamping block. The sensor inset is exchangeable. Thread is welded or brazed to the probe. Mounting is done via clamping ring fitting or thread welded / brazed to the probe tube. The connection head is also suitable to carry a head transmitter.

Upcharges:**Sensors:**

Pt100 / Pt1000; mineral insulated element, 4-wire:

meas. range: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B

type K or N, mineral insulated thermocouple:

meas. range: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:

up to 100 mm (without upcharge)

upcharge per further starting 100 mm

Neck tube length:

without (without upcharge)

upcharge per starting 100 mm

Probe diameter:

3 mm (the sensor inset is not exchangeable) (without upcharge)

4 mm, 5 mm, 6 mm or 8 mm (the sensor inset exchangeable)

Thread:

G1/2" (standard) or without thread

G1/8", G1/4", G3/8", G3/4", M8x1, M10x1

Ambient temperature:

-20 ... +60 °C (protection type „e“) or -20 ... +80 °C (protection type „i“)

Type of protection:

„i“: intrinsic safety (without upcharge)

„e“: increased safety

Potentially explosive atmospheres:

suitable for zone 0, zone 1, zone 2, zone 20, zone 21, zone 22

Transmitter GITT 01-Ex

(please refer to page 119), output signal 4-20 mA, measuring range on customers demands, protection type „i“ intrinsic safety.

Clamping ring screw connection:

available at M8x1, M10x1, G1/4" and G1/2" for diameter 3 mm, 6 mm or 8 mm. Please refer to page 158

To determine exact order name ask for our type list. Download via homepage possible (Products -->Ex-Protection-->Temperature probes).





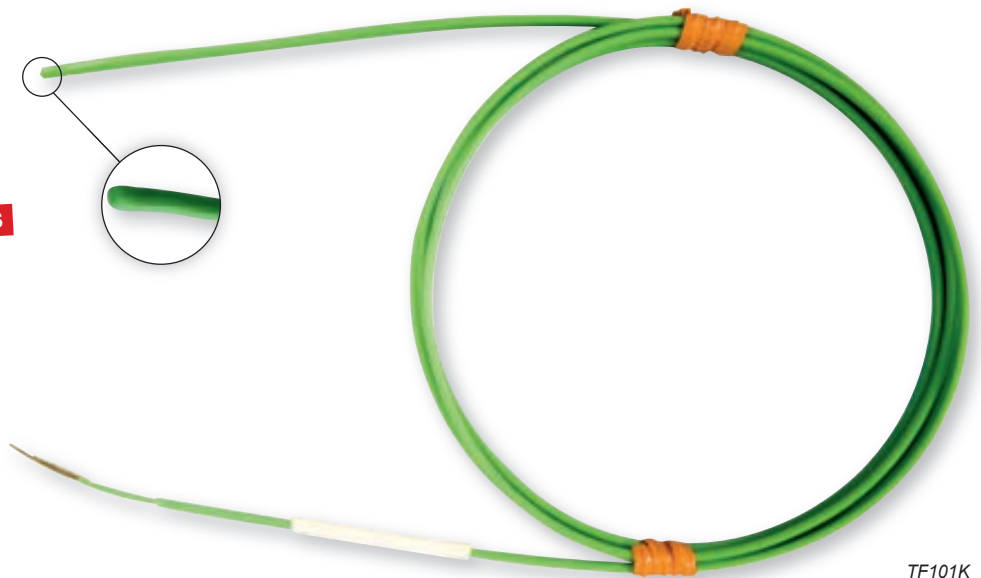
TF101P

HIGHLIGHTS:

- sealed against moisture and corrosion
- easily cleaned and sterilised
- small size provides a fast response
- also available in custom lengths
- optionally with mechanical protection (V4A-sleeve) and with thread or clamping ring screw connection available.

FOR USE IN AGGRESSIVE ENVIRONMENTS AND TIGHT PLACES

HIGHLY RESILIENT TO CHEMICALS AND OILS



TF101K

DESIGN TYPE PT100

TF101P-1m

Product-ID: 601687
Pt100, cable length 1 m

TF101P-2m

Product-ID: 601689
Pt100, cable length 2 m

TF101P-3m

Product-ID: 601691
Pt100, cable length 3 m

Specifications:

Probe:	flexible sealed PFA Pt100 sensor
Connection:	4-wire-connection (4 x 0.14 mm ² , nickel-plated copper)
nominal diameter:	2.1 mm
accuracy:	according to DIN class A
measuring range:	-60 ... +250 °C also available with Pt1000

Option:

V4A
robust design type with robust V4A protective tube Ø 3 mm, FL = 50 mm
not possible at type K, please specify when ordering!

DESIGN TYPE NiCr-Ni (TYPE K)

TF101K-1m

Product-ID: 601820
NiCr-Ni, cable length 1 m

TF101K-2m

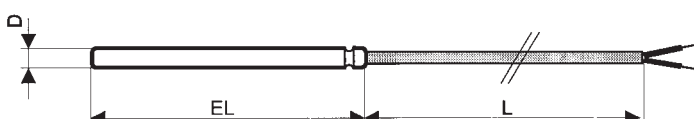
Product-ID: 601798
NiCr-Ni, cable length 2 m

TF101K-3m

Product-ID: 601797
NiCr-Ni, cable length 3 m

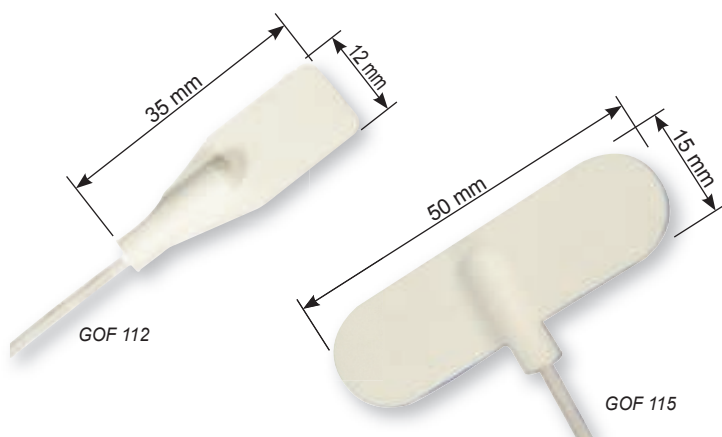
Specifications:

Probe:	These PFA insulated thermocouple wire sensors are hermetically seal-welded at the sensor tip to provide continuous PFA protection over the measurement junction. stranded NiCr-Ni-thermocouple wire (0.14 mm ²)
nominal cross section:	1.6 mm x 2.5 mm
measuring range:	-270 ... +250 °C IP68 seal-welded tip electrically-insulated junction also available with thermocouples type J, T and E



SELF-ADHESIVE TEMPERATURE PROBES

WITH MOULDED SILICONE DESIGN FOR SURFACE MEASUREMENT ON CURVED AND FLAT SURFACES

**GOF 112 Pt**

Product-ID: 603028

Pt100, adhesive back 35 x 12 mm, cable length 2 m, white

GOF 112 K

Product-ID: 604696

NiCr-Ni, adhesive back 35 x 12 mm, cable length 2 m, green

GOF 115 Pt

Product-ID: 603203

Pt100, adhesive back 15 x 50 mm, cable length 2 m, white

GOF 115 K

Product-ID: 603458

NiCr-Ni, adhesive back 15 x 50 mm, cable length 2 m, green

HIGHLIGHTS:

- sensor have adhesive back for easy mounting
- ultra-slim silicone rubber for maximum flexibility
- resistant to a variety of chemicals and oils
- PFA-insulated connection cable, 2 m long (other length up on request)
- 2 designs for flat (GOF 112) or curved (GOF 115) surfaces available

Design type Pt100:

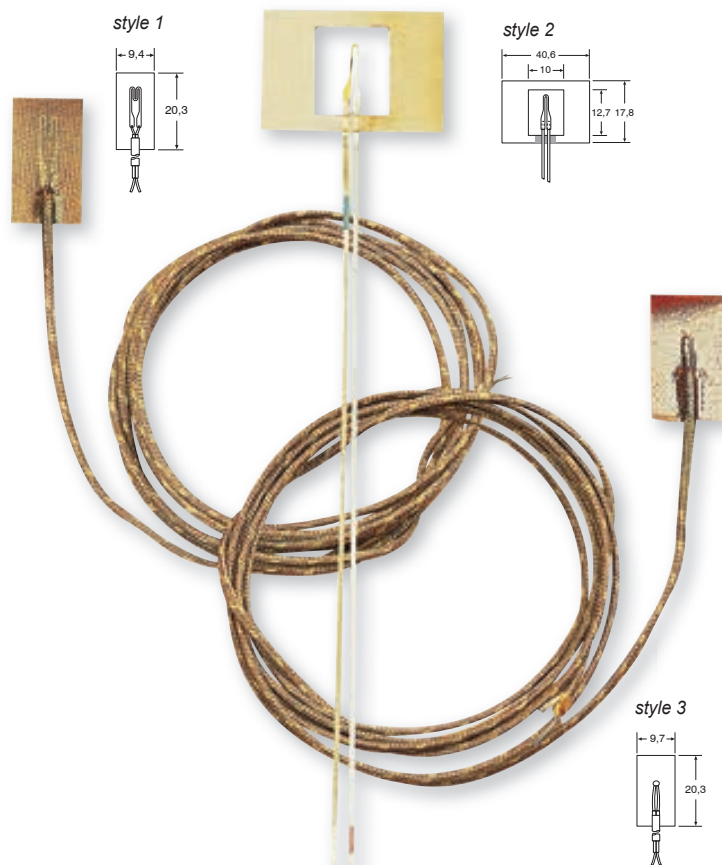
- precision Pt100-probe, DIN class A, 4-wire connection
- temperature range: -50 ... +200 °C
- also available with Pt1000

Design type NiCr-Ni (type K):

The integral thermocouple sensor is bonded onto the inner surface of the self adhesive aluminum foil strip, which is provided for fast response time

- stranded NiCr-Ni-thermocouple wire (0.14 mm²)
- temperature range: -50 ... +200 °C
- also available with thermocouples type J, T and E

„CEMENT-ON“ THERMOCOUPLES

**HIGHLIGHTS:**

- ultra fast response time:
(style 1: t_{63} = approx. 20 ms, style 2: approx. 5 ms, style 3: approx. 300 ms)
- also available with thermocouples type J (only design 3), T and E
- style 1 and 3 optionally available with other lengths

GOF 120 - K1

Product-ID: 604184

NiCr-Ni, cable length 90 cm, max. 260 °C (short-time: 370 °C)

GOF 120 - K2

Product-ID: 604334

NiCr-Ni, cable length 15 cm, max. 540 °C (short-time: 650 °C)

GOF 120 - K3

Product-ID: 603249

NiCr-Ni, cable length 90 cm, max. 260 °C (short-time: 370 °C)

General:

The series GOF 120 are a model line of Cement-On, fast response thermocouples for fast surface temperature measurement. The model line have 3 different styles. (Please order the high temperature cement separately)

The **design styles 1 and 2** are made from 0.01 mm thermocouple alloy foil by a special process where the butt welded thermocouple junction is 0.25 mm in thickness. The thermocouples are fabricated from class 1!

These styles are flat, extremely low inertia construction and are ideal means of measuring the temperature of both flat and curved metals, plastic and ceramic surfaces where very fast response is desired.

The **design style 3** is an economy version constructed from 0.25 mm diameter bead welded standard limit of error thermocouple wire. It should be used where extremely fast response time is not essential.

Accessories and spare parts:**OB-700**

Product-ID: 602883

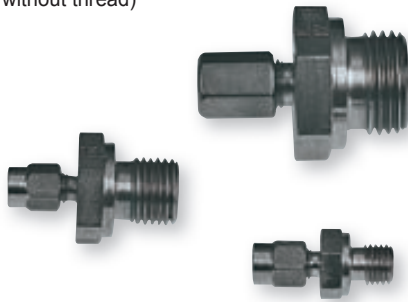
high temperature chemical set cement, 236 ml (max. 871 °C)

VERY LOW THERMAL INERTIA

Please note: cannot be used with high temperature cement
(will break down insulation)

CLAMPING RING SCREW CONNECTION GKV... STAINLESS STEEL

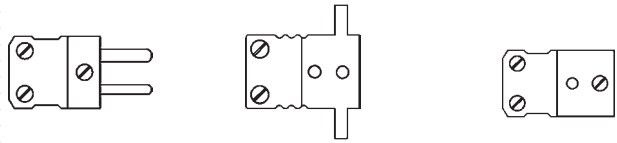
(for all probes without thread)



Type:	Outside thread	Clamp. ring-Ø (sensor tube-Ø)	Clamping ring
GKV1 Product-ID: 602888	M8 x 1	1.5 mm	teflon
GKV2 Product-ID: 602889			stainless steel
GKV3 Product-ID: 602890		3.0 mm	teflon
GKV4 Product-ID: 602891			stainless steel
GKV5 Product-ID: 602892	G1/4"	1.5 mm	teflon
GKV6 Product-ID: 602893			stainless steel
GKV7 Product-ID: 602894		3.0 mm	teflon
GKV8 Product-ID: 602895			stainless steel
GKV11 Product-ID: 602898	G1/2"	6.0 mm	teflon
GKV12 Product-ID: 602899			stainless steel
GKV9 Product-ID: 602896		8.0 mm	teflon
GKV10 Product-ID: 602897			stainless steel
GKV13 Product-ID: 602900	G1/2"	14.0 mm	teflon
GKV14 Product-ID: 602901			stainless steel
GKV15 Product-ID: 602902		6.0 mm	teflon
GKV16 Product-ID: 602903	M10x1		stainless steel

FLAT-PIN CONNECTIONS, FREE FROM THERMAL E.M.F.

(for type K, N, S)



NST 1200
NST 1300
NST 1700

NKU 1200 O
U-coupling for installation in
front panels

NKU 1200
NKU 1700

NST1200 "K"

Product-ID: 602566

NKU1200 "K"

Product-ID: 602737

NKU1200 O "K"

Product-ID: 602738
(max. 120 °C)

NST1300 "N"

Product-ID: 605762

NST1700 "S"

Product-ID: 603890

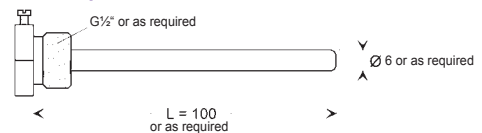
NKU1700 "S"

Product-ID: 603535

For higher temperatures use ceramic plug and coupling.

IMMERSION SLEEVE OF STAINLESS STEEL

Immersion sleeve for probes without thread



EST01

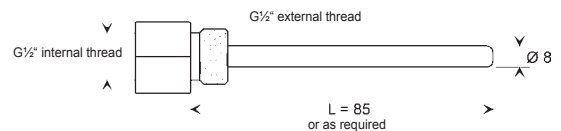
Product-ID: 602868

Basic price for 100 mm

General:

- Thread: G1/2 (external thread)
- Outer diameter immersion sleeve: Ø 6 mm
(for probes with outer diameter Ø 5 mm)
- length: L = 100 mm (suitable for e.g. GTF101 with FL = 105 mm, Ø 5 mm)
- Special lengths, diameters or threads upon request

Immersion sleeve for all probes with a G1/2"-thread



EST02

Product-ID: 603362

for 85 mm

General:

- Thread: G1/2 (internal/external)
- Outer diameter immersion sleeve: Ø 8 mm
(for probes with outer diameter Ø 6 mm)
- L = 85 mm (suitable for e.g. GTF103 with FL = 100 mm, Ø 6 mm)
- L = 100 mm (suitable for e.g. GTF103 with FL = 115 mm, Ø 6 mm)
- Special lengths, diameters or threads upon request

GWL10G

Product-ID: 603267

heat-conductive paste 10 g, in plastic gun, for faster heat exchange

ACCESSORIES

CABLES AND LINES

Silicone cable (-50 ... +200 °C) with teflon screened wires**S2P**

silicone cable, 2-pole (2 x 0.25 mm²), highly flexible, external diameter approx. 3.8 mm

S4P

silicone cable, 4-pole, 4 x 0.14 mm² cross section (insulation 2 x blue, 2 x white) (can also used as 3-wire), external diameter approx. 4 mm, price per meter

Glass silk insulated cable (-50 ... +400 °C) with stainless steel braiding**G4P**

glass silk insulated cable, 4-pole (4 x 0.22 mm²), external diameter approx. 4 mm, price per meter

Teflon insulated cable (-200 ... +250 °C) with individual teflon insulated wires**T2P**

teflon insulated cable, 2-pole (2 x 0.14 mm²), with additional cable screen, external diameter approx. 2.3 mm, price per meter

T4P

teflon insulated cable, 4-pole (4 x 0.14 mm²), with additional cable screen external diameter approx. 4 mm, price per meter

PVC-lines (-20 ... +70 °C)**P2P**

PVC cable, 2-pole (2 x 0.14 mm²), external diameter approx. 3.5 mm, price per meter

P4P

PVC cable, 4-pole (4 x 0.14 mm²), external diameter approx. 3.9 mm, price per meter

Extension cable for NiCr-Ni (Type K)**VKA 1m**

Product-ID: 602909

1 m Silicon-Compensation lines with DIN plug and DIN coupler
Upcharge per meter

Compensation lines for NiCr-Ni (type K), 2-wire**AGL1**

Silicone cable (2 x 0.22 mm²) (max. 200 °C), external diameter approx. 3.8 mm, price per meter

AGL3

Thermo wire (can also be used as thermo couple) glass silk (2 x 0.5 mm²) (max. 400 °C), external diameter approx. 4 mm, price per meter

AGL4

Teflon screened twisted thermo wire without joint outer sheath, wire Ø 0.2 mm (max. 250 °C), external diameter approx. 1.4 mm, price per meter

AGL5

Thermo wire, with glass silk braiding, wire-Ø 0.2 mm (max. 400 °C), external diameter 0.8 x 1.2 mm, price per meter

AGL6

Teflon cable, screened - can also be used as thermo couple (2 x 0.22 mm²) (max. 250 °C), with additional cable screen, external diameter approx. 4 mm, price per meter

Compensation lines for Pt10RH-Pt (Type S), 2-wire**AGL S2**

Silicone cable (max. 200 °C), external diameter approx. 3.9 mm
price per meter

Compensation lines for NiCrSi-NiSi (Type N), 2-wire**AGL N2**

Silicone cable (max. 200 °C), external diameter approx. 3.9 mm
price per meter

SENSOR ELEMENTS (PT100/1000, NTC, PTC)

**Pt100/1**

Product-ID: 602989

Ceramic lamina, 2 x 2.3 x 0.6 mm, -70 ... +500 °C, tolerance: B

Pt100/2

Product-ID: 602990

Ceramic lamina, 2.5 x 2.0 x 1.3 mm, -50 ... +500 °C, tolerance: 1/3 DIN

Pt100/3

Product-ID: 602991

Ceramic lamina, 2 x 5 x 0.9 mm, -196 ... +500 °C, tolerance: B

Pt100/4

Product-ID: 602993

Wound design, Ø 2 x 20 mm, -200 ... +600 °C, tolerance: B

Pt100/5

Product-ID: 602994

TO92-housing, -50 ... +150 °C, tolerance: B

Pt100/6

Product-ID: 602995

Ceramic lamina, 1 x 3 x 0.6 mm, -50 ... +500 °C, tolerance: B

Pt1000/1

Product-ID: 606368

Ceramic lamina, 2.1 x 4 x 0.9 mm, -50 ... +400 °C, tolerance: B

Pt1000/2

Product-ID: 602997

TO92-housing, -50 ... +150 °C, tolerance: B

Pt1000/3

Product-ID: 602998

Ceramic lamina, 1 x 3 x 0.6 mm, -50 ... +500 °C, tolerance: B

KTY 81-210

Product-ID: 607894

Replacement for KTY 11-6, -20 ... +110 °C

KTY 81-121

Product-ID: 607895

1 kOhm (25 °C), TO92-housing, -50 ... +150 °C

For larger quantities special prizes - upon request

SIMULATOR



AVAILABLE FROM 2. QUARTER 2016

The GHM sensor simulator is used for fast verification of metrological devices such as DMS and temperature measuring amplifiers. Even sensors with a voltage or current interface can be simulated. Instead of Sensor, a GHM sensor simulator is connected and thus the complete measurement chain from the sensor cable over the amplifier to digital detection tested. The simple and intuitive operation and the graphical display allow easy useage without training periods.

Due to battery operation and compact dimensions the GHM sensor simulator is suitable particularly for the mobile use on the test bench. The additional complete measurement of the voltage and current signals the GHM sensor simulator into a unique instrument for using the test bench as well as in the laboratory.

SIMULATOR



NEW!

HIGHLIGHTS:

- Simulation of various sensors, such as strain gauge, Pt100, TC
- Transmitter and measuring function for voltages and currents
- Simple, self-explanatory use in German and English
- Robust protective silicone case
- Graphic LCD
- Compact dimensions
- Battery-operated



FIRST AVAILABLE IN QUARTER 2 OF 2016

GHM SensorSimulator SIM-1

Product-ID: 201164
Simulator

General:

The GHM SensorSimulator issues various current and voltage signals. With additional return measurement of feed voltages and currents from connected measuring amplifiers, the GHM SensorSimulator can also provide optimal, true-to-the-original simulation of sensors like Pt100 and strain gauge sensors.

Application:

It can be used to compare and check displays and measuring transducers or transformers or complete measuring distances. Voltages and currents can also be measured with the device.

Specifications:

General:

Accuracy:	see under Sensors
Connections:	7-pin Binder socket for signal input and output Mini USB for voltage supply / charge function
Display:	Graphic LCD, monochrome, adjustable background light (180 x 128 pixels)
Operation:	Keypad
Supported languages:	German / English
Dimensions:	86 x 160 x 37 mm (W x H x D)
Weight:	250 g (including battery)
Supply voltage:	5 V DC (Mini-USB)
Battery:	NiMH battery
Ambient temperature:	0 ... +50 °C

Simulation function:

Voltage source:

Simulation range:	±10 V
Accuracy:	± 1 %

Signal current:

Measurement ranges:	±20 mA
Accuracy:	± 1 %

Strain gauge bridges:

Simulation ranges:	0.5, 1, 2, 4, 5, 10, 25, 50 mV/V
Accuracy:	± 1 %
Feed:	2.5 V, 5 V, 10 V

Thermocouples, type K (others optional)

Measurement ranges:	-100 ... +1000 °C (in 50 °C increments)
Accuracy:	± 1 %

Pt100

Measurement ranges:	-100 ... +850 °C (in 50 °C increments)
Accuracy:	± 1 %

Measurement function:

Voltage source:

Measurement range:	± 30 V
Accuracy:	± 0.1 %

Current

Measurement range:	± 30 mA
Accuracy:	± 0.1 %

Scope of supply: GHM SensorSimulator, battery, charger, manual

ALARM/PROTECTION, LEVEL



Application:

	ALSCHU 300 FG ALSCHU 300 SP	ALSCHU 485	ALSCHU 485 OE ALSCHU 485 OE / 3P	GEWAS 181 A GEWAS 183 A GEWAS 181 A - 1/2", - 3/4", - 1"	ALSCHU 480 ALSCHU 480 P	GEWAS 200	GEWAS 191 N	GEWAS 191 AN
Universal Application	•				•	•		
Level controller	•	•	•					
Water leak detector				•	•	•	•	•
Electrodes incl.		•		•			•	•
Alarm buzzer		•	•	•	•		•	•
Switching output	•	•	•	•	•	•		•
Water supply is switched of				•			•	•

Device information:

Catalogue page	163	164	164	165	166	166	167	167
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	GEWAS 300 FG GEWAS 300 SP	GNS-SCV-W GNS-SCV-Z	GNS-KIT	GNS-C1 GNS-C2	RWI-016 PPK RWI-016 PVK RW-015 HKL	GSS-F25	GNS 20E- ...	GMNV-1C
Universal Application	•							
Level controller			•					
Water leak detector	•							
Electrodes incl.	•	•		•	•	•	•	•
Alarm buzzer			•				•	
Switching output	• / -							
Water supply is switched of	•	•	•	•	•	•	•	•

Device information:

Catalogue page	168	168	169	170	170	170	169	169
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ELECTRODE CONTROLLER WITH TWO SIGNAL INPUTS



FIELD FRAME

2 DIFFERENT
MOUNTING FORMS

SNAP-ON HOUSING

**ALSCHU 300 FG**

Product-ID: 600476

Electrode controller in field frame for wall mounting, device without sensor

ALSCHU 300 SP

Product-ID: 600479

Electrode controller in snap-on housing for DIN rail mounting, device without sensor

Application:

Automatic control of drainage pumps and wastewater lifting plants, overflow and low liquid level control, automatic filling and draining of tanks, level control of liquid reservoirs, aquariums, storage tanks, etc.

The ALSCHU 300 .. is especially suitable for detection of conducting media (water, etc.). It is less applicable for badly or non conducting media (oils or fatty liquids), conducting foaming liquids or media causing electrically isolating deposits on the electrodes.

Measuring method:

The measuring method for level detection is based on the conductive principle, i.e. the electrical conductivity of the media is monitored. If the switching amplifier detects a value below the set conductivity the state "media detected" is output, otherwise "no media". Depending on number and design of the connected level sensors the device can be used for level detection (min-/max-detection) or as 2-point controller.

Specifications:

Power supply:	18 V ... 250 V AC/DC wide-range power supply
Power consumption:	< 2 VA
2 signal inputs:	
Triggering level:	< 80 kΩ
Response time:	2 s
1 Relay output:	
Contact:	change-over contact, potential-free
Switching voltage:	≤ 250 V AC
Switching current:	≤ 5 A (ohmic load)
Protection class:	IP20 (ALSCHU 300 SP) and IP65 (ALSCHU 300 FG)
Electric connection:	
ALSCHU 300 SP:	connection via screw-type terminal
ALSCHU 300 FG:	connection via 3 PG cable glands and screw terminals

Working temperature:	-20 ... +60 °C
Storage temperature:	-40 ... +80 °C
Condensation:	not allowed
Functions / displays:	
Red / green LED:	display for switching state of relay, switching state of sensors, status (supply) of device
Housing:	
ALSCHU 300 SP:	snap-on housing for DIN rail mounting
Dimension:	22,5 x 75 x 110 mm (W x H x D)
ALSCHU 300 FG:	field frame
Dimension:	100 x 100 x 60 mm (W x H x D) without PG cable glands
Scope of supply:	device, manual

Accessories and spare parts:**GNS-3P**

Product-ID: 603170
3-pole level probe
(p.r.t. page 164)

GNS-3P-SLV

Product-ID: 604786

GNS-3P-SLK

Product-ID: 604016

GNS-3P-SLE

Product-ID: 603172

3-pole level probe with coating

GSS-1

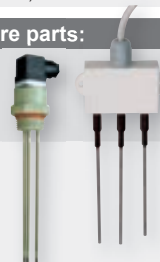
Product-ID: 606016

level sensor, 2 m cable (floating switch) for electrically non-conducting media

GNS-1

Product-ID: 602531

level sensor, 2-pole (stainless steel electrode)

3-PIN. PROBE FOR LEVEL
CONTROL (CONDUCTIVE)CAN BE
SHORTENED**GNS-3P-SLV**

Product-ID: 604786

- 3 electrodes with Poliolefin coating
- cooling water
- all conductive liquids

GNS-3P-SLK

Product-ID: 604016

- 3 electrodes with Kynar coating
- food and beverage industry
- chemical industry

GNS-3P-SLE

Product-ID: 603172

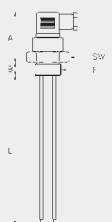
- 3 electrodes with PTFE coating
- aggressive conductive liquids

General:

- Coated electrodes
- Rugged construction, sealed
- Alarm or level regulation or dosage of liquids
- Combined with control electronics (ALSCHU 300, ALSCHU 485 OE / 3P) an accurate liquids level control system

Specifications:

Number of electrodes:	3 pieces
Length of electrodes:	500 mm, other lengths upon request, probes can be cutted to needed length
Electrical connection:	EN 175301-803/A plug
Process connection:	G 1", Polypropylen
Pressure max.:	6 bar
Temperature max.:	+100 °C
Protection class:	IP65
Dimensions:	SW: 40 mm A: 68 mm B: 20 mm L: 500 mm



Scope of supply: Device, manual

suitable for:

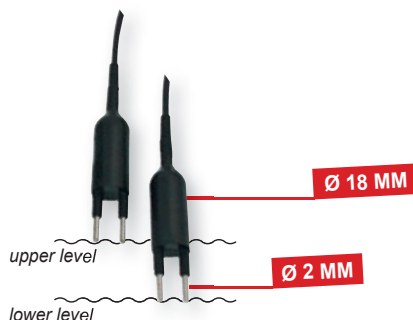
Alschu 300 FG, Gewas 300 SP, ALSCHU 485 OE / 3P

PLUG-IN LEVEL CONTROLLER



HIGHLIGHTS:

- no installation costs
- only plug-in connections
- trouble-free operation as no moveable float switches are used
- any electrode distance
- can be set by customer up to 2 m etc.



ALSCHU 485

Product-ID: 603479

Electrode control device for filling or emptying, incl. two 2-pin. electrodes

ALSCHU 485 OE

Product-ID: 603807

(as above, but without electrodes - connection for two 2-pin. electrodes)

ALSCHU 485 OE/3P

Product-ID: 603808

(as above, but without electrodes - connection for 3-pin electrodes)

We manufacture electrodes of any diameter and length according to your specifications.

Application:

Automatic control of drain pumps and sewage removal plants, overflow and dry running protection, automatic filling and emptying of containers, basins, tanks, control of liquid level in storage tanks, aquariums, etc.

Specifications:

Control device: Flashing LED indicating control state. Selector switch for emptying or filling. Plug-in socket for electrodes.

Power supply: control device 230 V 50 Hz (approx. 1 VA), automatic by connecting grounded adaptor plug.

Control output: via grounded adaptor plug with earthing and socket outlet with earthing, electrode control. Direct switching capacity approx. 1200 VA at 230 V 50 Hz (approx. 5 A ohmic load). Extra high protective capacity by external triggering of a contactor or semiconductor relay.

Electrodes:

ALSCHU 485: 2 x 2.5 mm jack sockets, 2 electrodes with stainless steel pins, plastic body with PVC cable (2 m long) included (any length available upon surcharge)

ALSCHU 485 OE: 2 x 2.5 mm jack sockets

ALSCHU 485 OE/3P: 3-pole screw terminal

Dimensions: housing 112 x 71 x 48 mm (L x W x D)

Scope of supply: Device, manual, only ALSCHU 485: 2 electrodes

Accessories and spare parts:

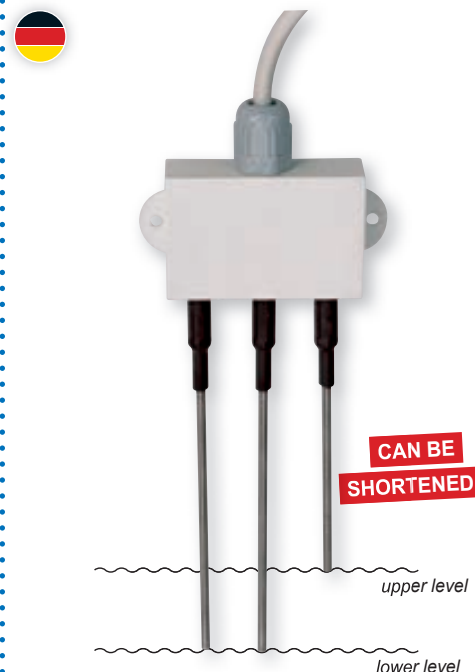
GNS-3P

Product-ID: 603170

level probe 3-pin
standard length: 15 cm,
switching distance: 1 cm, 2 m cable



3-PIN. PROBE FOR LEVEL CONTROL (CONDUCTIVE)



GNS-3P

Product-ID: 603170

3-pin. level probe

General:

- For all industrial applications
- Alarm-, Level- and Doseregulation
- Optional teflon covered staffs
- Combined with control electronics (ALSCHU 300, ALSCHU 485 OE / 3P or MINAL) an accurate liquids level control system

Specifications:

Number of electrodes: 3 pieces

Length of electrodes: 150 mm, other lengths upon request, probes can be cutted to needed length

Electrical connection: 2 m cable

Switching distance: 10 mm

Dimensions:

Electrode length: 150 mm

Electrode diameter: 3 mm

Electronics box: 55 x 35 mm (W x H)

Scope of supply: Device, manual

Option:

- other length available
Upcharge each beginning 10 cm
- Teflon covered staffs
only tip is uncovered
(for electrodes used in salt water, ...)

suitable for:

ALSCHU 485 OE / 3P

Product-ID: 603808

Electrode control device connection for 3-pin electrode

ALSCHU 300 FG

Product-ID: 600476

ALSCHU 300 SP

Product-ID: 600479

Electrode controller in 2 different mounting forms: field frame or snap-on housing (see previous page)

LEAK-WATER DETECTOR



Figure GEWAS 181 A

**GEWAS 181 A***Product-ID: 601734*

leak-water detector with ½" brass solenoid valve with ¾" connections for hand installation, water sensor, alarm buzzer and switch-off of connected units 16 A, 230 V~

GEWAS 183 A*Product-ID: 602999*

leak water detector without solenoid valve, with water sensor, alarm buzzer and switch-off of connected devices 16 A, 230 V~

GEWAS 181 A-½"*Product-ID: 601736*

leak water detector with ½" brass solenoid valve (flow quantity: approx. 20 l/min, installation length approx. 55 mm) for installation in the line, water sensor, alarm buzzer and switch-off of connected devices 16 A, 230 V~.

GEWAS 181 A-¾"*Product-ID: 601738*

leak water detector with ¾" brass solenoid valve (flow quantity: approx. 91.5 l/min, installation length approx. 80 mm) for installation in the line, water sensor, alarm buzzer and switch-off of connected devices 16 A, 230 V~

GEWAS 181 A-1"*Product-ID: 601740*

leak water detector with 1" brass solenoid valve (flow quantity: approx. 141.5 l/min, installation length approx. 95 mm) for installation in the line, water sensor, alarm buzzer and switch-off of connected devices 16 A, 230 V~

Application:

Any devices or machines with water connection. For direct mounting of solenoid valve in pipelines.

Mode of action:

If a water film of more than 0.5 mm occurs at the water sensor the control unit automatically gives an acoustic alarm and switches the solenoid valve and the device connected to the control unit off.

Solenoid valve:

Brass solenoid valve, energy-saving circuitry for hand installation (½" with ¾" glanding - suitable for any ½" tap or ½" tube) or with ½", ¾" or 1" internal thread on both sides for line installation. De-energised when closed, for pressure loads from 0.5 ... 10 bar. Servo-controlled, i.e. free water outlet has to be provided resp. infeed pressure has to exceed outfeed pressure by 0.5 bar (solenoid not suitable for closed circuits such as heating systems).

Specifications:

Power supply:	220/240 V 50/60 Hz (control unit)
Power consumption:	approx. 2,5 Watt (control unit, approx. 6 W incl. solenoid valve)
Control output:	via power socket of safety plug adapter
max. switching current:	max. 16 A (ohmic load)
Water sensor:	Highly sensitive, plug-in water sensor, 2 m of cable, alarm triggered as of ½ mm water film. Simultaneous plug in of several water sensors via socket-outlet adaptor GAZ1. Plug-in extension cable (2 m, 5 m or 10 m long) available.
Solenoid valve:	Hence, valve operable in permanent mode; due to energy-saving circuit valve will not run hot even without cooling agent. Valve permanently fixed to control device (approx. 1 m of connecting cable). Valve body can be removed from coil after loosening of one nut.
max. working pressure:	10 bar, servo-controlled (pressure difference inlet/outlet > 0.5 bar)
Working voltage:	200 V DC or 100 V DC in energy saving mode
Working temperature:	0 ... 50 °C
Dimensions:	control device: 110 x 65 x 45 mm (L x W x H), with suspension hook
Scope of supply:	Device, solenoid valve (not GEWAS 183 A), water sensor, manual

Accessories and spare parts:**GMV-½" L***Product-ID: 601645*

spare solenoid valve ½" for direct cable connection, approx. 1 m cable, loose ends

GMV-½" H*Product-ID: 601646*

spare solenoid valve ¾" manual mounting, approx. 1 m cable, loose ends

GMV-¾"*Product-ID: 601648*

spare solenoid valve ¾" for direct cable connection, approx. 1 m cable, loose ends

GMV-1"*Product-ID: 601655*

spare solenoid valve 1" for direct cable connection, approx. 1 m cable, loose ends

GMV-½" EZL*Product-ID: 601657*

add. solenoid valve 1/2" for direct cable connection, with power saving connector, approx. 2 W, for direct connection to 230 VAC, suitable for GEWAS 183A or mains operation

GMV-½" EZH*Product-ID: 601660*

like before, but ¾" valve for manual mounting

GMV-¾" EZ*Product-ID: 601662*

like before, but ¾" valve for direct cable connection

GMV-1" EZ*Product-ID: 601650*

like before, but 1" valve for direct cable connection

Plug-in water sensor, socket outlet adaptor, extension cable p.r.t. GEWAS 191



WITH SWITCHING OUTPUT
FOR ANY PURPOSE



AVAILABLE AS PLUG-IN

ALSCHU 480

Product-ID: 602921

Alarm protection device, plug-in for 230 V~ (with grounding contact adapter plug), with or without alarm transmitter and relay switching output (changeover contact)

ALSCHU 480 P

Product-ID: 602923

as above, but with volt-free switching output and looped socket

General:

The ALSCHU 480(P) is a versatile alarm and protection device. Its universal input (3.5 mm jack bush) allows a lot of different external sensors to be connected. That includes sensors with a switching threshold <100 kOhm like water sensors, float switches, level switches, magnetic contacts, safety shut-off mat etc. In case of an alarm the internal buzzer sounds and a connected device (i.e. pump, machine) is switched on or off via the Schuko adaptor plug (ALSCHU 480). The desired switching function can be set via selector switch I / II. ALSCHU 480P switches on/off external devices via a potential-free 2-pole switching output. The Schuko socket of ALSCHU 480P is always current-carrying.

Specifications:

Power supply:	220/240 V 50/60 Hz
Power consumption:	approx. 1 VA
Sensor input:	3.5 mm jack bush
Switching threshold:	input resistance <100 kOhm (e.g. NPN no active, relay, reed contact, etc.)
Switching output:	
480:	via isolated ground receptacle (Schuko)
480 P:	potential-free normally open/closed contact via 2-pole cable, brought out 0.5 m

Switching function:

I:	switching output current-carrying in alarm condition
II:	switching output currentless in alarm condition

Switching power:

480, 480 P:	250 VAC, 10 A (ohmic load), max. 2400 VA
480 P:	120 VDC, 2 A (ohmic load), max. 240 W

Controlling device: LED for operation display, device-on/off, selector switch I / II for switching function

Working conditions: -20 ... +50 °C; 0 ... 80 % RH

Dimensions: 112 x 71 x 48 (L x W x H)

Scope of supply: Device, manual

Accessories and spare parts:

GWF-1S

Product-ID: 601706

plug-in water sensor, 2 m



PANEL MOUNTED
DEVICE

WITH SWITCHING
OUTPUT

GEWAS 200

Product-ID: 600279

Panel-mounted alarm protection device with volt-free relay output (snap-on mounting for top hat rail in special snap-on housing), without sensor

General:

The GEWAS 200 is a versatile DIN rail alarm and protection device. Its universal input (screw terminals) allows a lot of different external sensors to be connected. That includes sensors with a switching threshold <100 kOhm like water sensors, float switches, level switches, magnetic contacts, etc. A connected device (i.e. pump, machine) is switched on or off via potential-free change-over contact in case of an alarm. The alarm is reset by the use of an internal / external reset button.

Specifications:

Power supply:	220/240 V 50/60 Hz
Power consumption:	approx. 3 VA
Sensor input:	2-pole screw terminal
Switching threshold:	input resistance < 100 kOhm (eg. NPN no active, relay, reed contact, etc.)
Switching output:	potential-free change-over contact
Switching power:	250 V AC, 10 A (ohmic load), max. 2400 VA 150 V DC, 2 A (ohmic load), max. 240 W
red / green LED:	LED (green) for operation display LED (red) for alarm condition
Mounting:	universal foot base for all common DIN EN rails
Working conditions:	-20 ... +50 °C and 0 ... 80 % RH
Dimensions:	49 x 96 x 59 mm (L x W x H)
Scope of supply:	Device, manual

Options:

GEWAS 200 KL:

Product-ID: 600306

Screw terminal (2-pole) to connect an external reset button

GEWAS 200 AL:

Product-ID: 601041

Automatic alarm reset

Accessories and spare parts:

GWF-1

Product-ID: 601712

water sensor without plug, 2 m

GSS-1

Product-ID: 606016

level probe (plug-in float switch), 2 m cable for electrically non-conductive media (normally open/normally closed function can be selected by customer)

GNS-1

Product-ID: 602531

plug-in level probe 2-pin (stainless steel electrodes)

WATER LEAK DETECTOR WITH SOLENOID VALVE

**GEWAS 191 N**

Product-ID: 601742

Water leak detector with solenoid valve, complete and ready for use

GEWAS 191 AN

Product-ID: 601744

Water leak detector with solenoid valve, complete and ready for use with switch-off mechanism for supervised device in case of alarm (up to 16 A, 230 V 50 Hz)

Application:

washing machine, dish washer, surgeries (e.g. dentists' surgeries, water-cooled devices etc.), hospitals, industry, research, laboratories, any other devices and machines with water connection (e.g. hot drinks dispensers, cooling devices etc.)

General:

If a water film of more than 0.5 mm occurs at the water sensor the control unit automatically gives an acoustic alarm and switches the solenoid valve off. The design type GEWAS 191 AN turns off additionally the device connected to the control unit, too.

Specifications:

Power supply: 220/240 V 50/60 Hz (control unit)

Power consumption: approx. 3 VA

Control output: via power socket at device housing (only for GEWAS 191 AN) the socket of GEWAS 191 N always provides mains voltage

max. switching current: max. 16 A (ohmic load)

Water sensor: highly sensitive plug-in water probe, 2 m cable. Alarm triggered as of ½ mm water film. Several water probes can be plugged-in and used simultaneously by means of socket outlet adaptor GAZ 1. 2 m, 5 m or 10 m plug-in extension cable available.

Solenoid valve: glass fiber reinforced polyamide (as customary for washing machines). Safety-low voltage 12 V DC. Connections: Screw connection ¼" for direct fastening to water tap and the standard dish washer / washing machine connection hose ½" with ¼" wing or coupling nut to the solenoid valve outlet. In case of power breakdown the valve closes automatically.
Working pressure: 6 bar servo-controlled; Minimal pressure difference between in- and outlet: inlet pressure min. 0.5 bar higher than outlet pressure

Device housing with electronics: enclosed case (not suitable for use in humid environment), electronics, signal buzzer, plug connections for valve and water sensor. Housing with earthing pin plug connection and socket outlet with earthing contact. Looping-in socket outlet with earthing contact used for GEWAS 191 N; alarm controlled socket outlet with earthing contact used for GEWAS 191 AN

Working conditions: 0 ... +50 °C, 0 ... 90 % RH (non-condensing)

Dimensions: control unit: 126 x 79 x 54 mm (L x W x H)
solenoid valve: 82 x 102 x 41 mm

Scope of supply: Water leak detector with solenoid valve, controller, water probe, signal buzzer, manual

Accessories and spare parts:**GMV191**

Product-ID: 601664
spare solenoid

GWF-1S

Product-ID: 601706
plug-in water sensor, 2 m

GWF-1S / 5m

Product-ID: 601708
plug-in water sensor, 5 m

GWF-1S / 10m

Product-ID: 601710
plug-in water sensor, 10 m

GAZ-1

Product-ID: 602748
branch adapter (required for each additional water sensor)

VEKA 2

Product-ID: 601726
extension cable 2 m

VEKA 5

Product-ID: 601728
extension cable 5 m

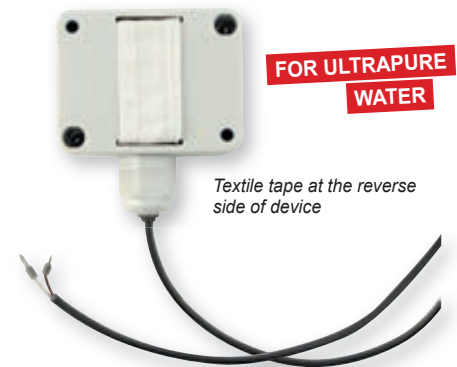
VEKA 10

Product-ID: 601731
extension cable 10 m

Note:

Not suitable for ultrapure water!

WATER SENSOR

**GWF-2**

Product-ID: 601778

Textile-tape water sensor, 2 m, without plug

General:

The GWF-2 detects smallest amounts of water due to the specially treated textile tape on its reverse side.

Application:

Washing machines and dishwashers, industry, research, laboratories, all machines and areas where a water leakage needs to be detected. In contrast to GWF-1 also suited for ultra-pure water and direct tube mounting.

Specifications:

Housing: made of ABS with two mounting holes and PG gland

Dimensions: 65 x 35 x 50 mm (L x W x H), without PG gland

Scope of supply: Device

suitable for:

Gewas 200, Gewas 300 FG, Gewas 300 SG

**GWF-1**

Product-ID: 601712

Water sensor, 2 m, without plug

Variants:**GWF-1/5m**

Product-ID: 601717
Water sensor without plug, 5 m cable

GWF-1/10m

Product-ID: 601723
Water sensor without plug, 10 m cable

suitable for:

Gewas 200, Gewas 300 FG

WATER MONITOR WITH ONE SIGNAL INPUT AND ONE RELAY OUTPUT



2 DIFFERENT
MOUNTING FORMS

FIELD FRAME

GEWAS 300 FG

Product-ID: 600472

Wasserwächter im Feldgehäuse für Wandmontage
Gerät ohne Sensor

GEWAS 300 SP

Product-ID: 600474

Wasserwächter im Schnappgehäuse für
Hutschienenmontage, Gerät ohne Sensor

Application:

Versatile alarm and protection device for DIN rail or surface mounting with universal input (screw-type terminals) for several external sensors. Sensors with switching threshold <100 kOhm can be connected (e.g. water probes, floating switches, level probes, magnetic contacts, etc.). In case of an alarm the connected device (e.g. pump, machine) is switched off by a change-over contact. The GEWAS 300 FG additionally provides an alarm. The internal or an external push-button resets the alarm state. The GEWAS 300 ... is especially suitable for detection of conducting media (water, etc.). It is less applicable for badly or non conducting media (oils or fatty liquids), conducting foaming liquids or media causing electrically isolating deposits on the electrodes.

Description:

The measuring method for level detection is based on the conductive principle, i.e. the electrical conductivity of the media is monitored. If the switching amplifier detects a value below the set conductivity the state "media detected" is output, otherwise "no media".

Specifications:

Power supply: 18 V ... 250 V AC/DC, wide-range power supply

Power consumption: < 2 VA

1 signal inputs:

Triggering level: < 80 kΩ

Response time: 2 s

1 Relay output:

Contact: change-over contact, potential-free

Switching voltage: ≤ 250 V AC

Switching current: ≤ 5 A (ohmic load)

external alarm output:

only GEWAS 300 FG: 8 V, 3 kHz, ≤ 5 mA

Protection class:

GEWAS 300 SP: IP20

GEWAS 300 FG: IP65



SNAP-ON HOUSING

Electric connection:

GEWAS 300 SP: connection via screw-type terminal

GEWAS 300 FG: connection via 3 PG cable glands and screw terminals

Working temperature: -20 ... +60 °C

Storage temperature: -40 ... +80 °C

Condensation: not allowed

Functions / displays:

Red / green LED: display for switching state of relay, switching state of sensors, status (supply) of device, status of battery

Acoustic alarm: internal alarm buzzer with battery back-up (only for GEWAS 300 FG)

Battery back-up: Monitoring and acoustic alarm are ensured even e.g. during power failures (only for GEWAS 300 FG)

Alarm reset: alarm reset by GEWAS 300 SP: connection for external push-button
GEWAS 300 FG: push-button at front side

Housing:

GEWAS 300 SP: snap-on housing for DIN rail mounting 22.5 x 75 x 110 mm (W x H x D)

GEWAS 300 FG: field frame 100 x 100 x 60 mm (W x H x D) without PG cable glands

Scope of supply: Device, manual

Accessories and spare parts:

GWF-1

Product-ID: 601712

water sensor without plug, 2 m cable

GWF-1/5m

Product-ID: 601717

water sensor without plug, 5 m cable

GWF-1/10m

Product-ID: 601723

water sensor without plug, 10 m cable

GSS-1

Product-ID: 606016

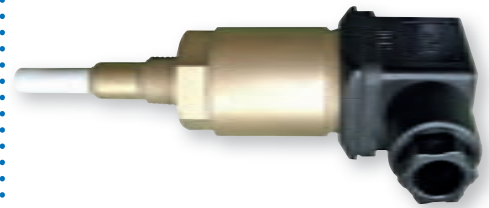
level sensor, 2 m cable (floating switch) for electrically non-conducting media

GNS-1

Product-ID: 602531

level sensor 2-pole (stainless steel electrode)

DEVICE FOR MONITORING THE LEVEL (CAPACITIVE)



GNS-SCV-W

Product-ID: 603168

Probe for application in water and all conductive liquids

GNS-SCV-Z

Product-ID: 603169

Probe for application in oil and all non-conductive liquids

General:

The GNS-SCV capacitive probes are the best way to monitor the level condition of liquids as water, oil gasoline and solid products as powder and granular.

- Sealed
- No moving parts
- very reliable

Application:

- Water
- Oil
- Gasoline
- Solid products as powder or granular

Specifications:

Power supply: 12 ... 35 V DC / 5 mA

Switch output: NPN no-active / max. 3 W

Electrical connection: elbow-type plug acc. to EN 175301-803/A

Process connection: 1/4" NPT, Brass

Switch delay: 4 s

Electrode: Cu-Zn

Electrode coating: PTFE

Electrode length: 50 mm

Switch point:

40 mm ± 2 mm vertical mounting

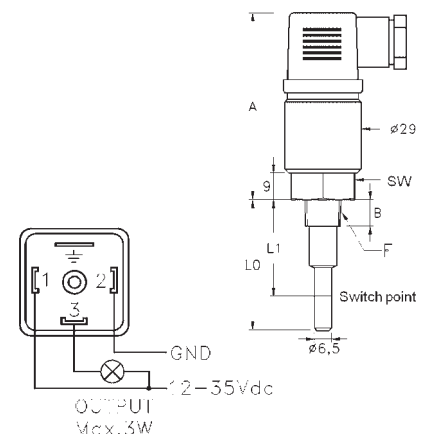
on the axis of SCV horizontal mounting

Pressure max.: 25 bar

Temperature max.: -30 ... +125 °C

Dimensions [mm]:

SW	A	B	L0	L1
24	74	10	50	40 ± 2



LEVEL MODULE CONDUCTIVE

LIMIT DETECTOR CONDUCTIVE

SINGLE CONTACT LEVEL SWITCH



Figure with option rail adapter

GMNV-1C

Product-ID: 605742

Level module conductive

General:

This module is used for evaluation of single levels with conductive level sensors. The module can be directly attached to the connection head of the level probes or snap on a hat rail with the optionally available rail adapter.

The GMNV-1C uses 3-wire connection technology and it converts the conducting connection between probe rod and ground to a DC switching signal. This signal can be directly interpreted and processed e.g. by a SPS.

- no additional level device needed at control cabinet
- low installation costs
- little amount of cabling
- high immunity

Specifications:**Electrode connection:** 2-wire**Sensitivity:** 0.1 / 1 / 10 / 100 kOhm (selectable by jumpers)**Auxiliary voltage:** 15 ... 36 V DC**Output:** active output**Output voltage:** auxiliary voltage -10 %**Max. output current:** 50 mA (short-circuit proof)**Switching function:** full / empty detector (selectable by jumpers)**Delay:** 0.5 s**Working conditions:** -10 ... +60 °C; 0 ... 95 % RH (non-condensing)**Storage temperature:** -20 ... +60 °C**Electric connection:** via screw-type terminals**max. wire diameter:** 2.5 mm²**Housing:** plastic**Dimensions:** Ø 44 x 20 mm (incl terminals)**Mounting hole:** Ø 4.5 mm**Mounting distance:** ~ 33 mm (suitable for DIN B head)**Weight:** 35 g**Scope of supply:** Device, manual**Option:****rail adapter**

Product-ID: 603659

**GNS 20E-200**

Limit detector conductive 200 mm

GNS 20E-500

Limit detector conductive 500 mm

General:

Conductive measuring principle, suitable for use with aqueous, conducting media. Less suited for low- or non-conducting media and for foaming, adhesive or coating media.

Application:

- full / empty detector in tanks
- overflow protection
- protection against dry running

Specifications:**Sensitivity:** 0.1 / 1 / 10 / 100 kOhm (selectable by jumpers)**Auxiliary voltage:** 15 ... 36 V DC**Output:** active output**Output voltage:** auxiliary voltage -10 %**Max. output current:** 50 mA (short-circuit proof)**Switching function:** full / empty detector (selectable by jumpers)**Delay:** 0.5 s**Working conditions:** -10 ... +60 °C; 0 ... 95 % RH (non-condensing)**Storage temperature:** -20 ... +60 °C**Pressure max.:** 10 bar**Electric connection:** via screw-type terminals**max. wire diameter:** 2.5 mm²**Cable feedthrough:** for cables with diameter 5 - 14 mm**Connection head:** aluminum DIN B head**Dimensions:** approx. 70 x 80 x 100 mm**Thread:** G ½ " (stainless steel)**Protection class:** IP54**Electrode:** stainless steel**Dimensions:** ...-200: Ø 4 x 200 mm

...-500: Ø 4 x 500 mm

Total length: ...-200: approx. 230 mm (till thread end)
 ...-500: approx. 530 mm (till thread end)
 Electrodes can be shortened.

Scope of supply: Device, manual**GNS-KIT**

Product-ID: 603164

level switch, without rod tube (state rod tube length when ordering)

General:

The user can add by himself the level switch in the desired length the rod tube between the process connection and the float contact unit. The float contact unit is under water protected.

- Sealed under water protected contact
- Rod tube in 500 mm / 1000 mm / 1500 mm available state when ordering
- IP65 protection class

Specifications:**Float-contact unit:** Nickel plated brass**Density:** > 0.35 g/cm³**Pressure max.:** 20 bar**Temperature max.:** 105 °C**Connection:** 1/8"**Reed-contact:** SPDT: 230 V, 60 VA, 1.0 A**Process connection:** Thread G1", Brass**Electrical connection:** Plug EN 175301-803/A**Protection Class:** IP65**Seal:** NBR, oil resistant**Rod-tube:** Ø 8 mm, brass**Accessories and spare parts:****GNS ROHR-0500**

Product-ID: 603165

Rod-tube for GNS KIT, 500 mm

GNS ROHR-1000

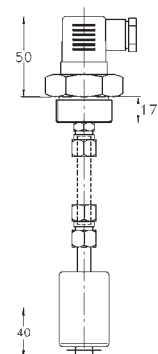
Product-ID: 603166

Rod-tube for GNS KIT, 1000 mm

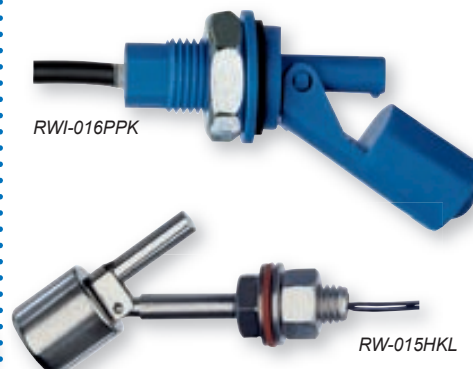
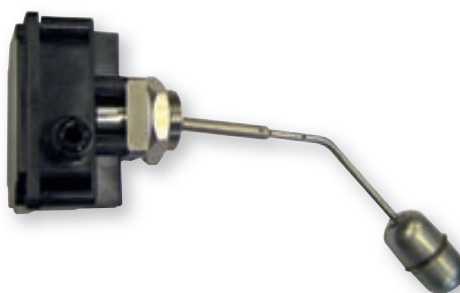
GNS ROHR-1500

Product-ID: 603167

Rod-tube for GNS KIT, 1500 mm



FLOAT SWITCH



Assembly externally:
Hole diameter Ø 23 mm



Quality
Made in Germany

Our commitment -
Your advantage

Flexibility
and Innovation

Competence
in Measurement

Handheld instrument

Display/Controller

Logger/EASYBus

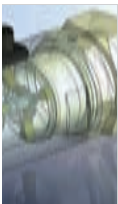
Transmitter

Temperature probe

Simulator

Alarm/Protection, Level

Portfolio of the GHM Group

			GREISINGER	HONSBERG	Martens	IMTRON	TA TELEMETRIE & AUTOMATION
	Laboratory Measurement (Handheld Instruments)	Temperature Humidity Pressure Conductivity pH / ORP Sensors	●●●●●●				
	Industrial Electronics / Control Technology	Switching relays Isolating converters Measurement transmitters Displays / Controller Monitoring relays Data logger / EASYBus	●●●●●		●●●●●	●●	●●●●●
	Process Engineering	Temperature Flow Level Pressure Conductivity pH	●●●●●	●●	●●●●●		●●
	Industrial Measurement	Flow Level Temperature Pressure Humidity Filtration	●●●●●	●●●●●	●		
	Test Bench Measurement					●	
	Customizing		●	●	●	●	

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Brochure for food industry applications



Measuring technology for application in ATEX
Brochure for applications in explosive areas



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Brochure for use in the Industrial Electronics



Measurement data acquisition systems
Brochure for applications ranging from test stands to climate control monitoring



Special publication
for Brau Beviiale/drinktec & sps ipc drives



Product compendium



Technical oils, engineering
Geräte für Öl-Applikationen



Product Guide E / F



Overview of brochures



- B** Industrial sensor and measuring technology
- C** Process technology "Hygienic Design"
- D** Laboratory measurement
- E** Industrial electronics
- F** Data logging

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Handheld instrument

Display / Controller

Logger / EASYBus

Transmitter

Temperature probe

Simulator

Alarm / Protection, Level



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