

Operating manual

Temperature Transmitter

GTMU- IF



Company / brands of GHM
Members of GHM GROUP:

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Keep for later use.

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1 Safety

1.1 General Note

Read this document carefully and get used to the operation of the device before you use it. Keep this document within easy reach near the device for consulting in case of doubt.

Mounting, start-up, operating, maintenance and removing from operation must be done by qualified, specially trained staff that have carefully read and understood this manual before starting any work. The manufacturer will assume no liability or warranty in case of usage for other purpose than the intended one, ignoring this manual, operating by unqualified staff as well as unauthorized modifications to the device.

The manufacturer assumes no liability for print errors.

1.2 Intended Use

The device measures the temperature in liquids and gases. The safety guidelines of this operating manual have to be respected (see below).

The device may only be used under the conditions and for the purposes for which it was designed. The device must be handled with care and used according to the technical data (do not throw, hit, etc.). Protect against contamination.

1.3 Qualified personnel

For commissioning, operation and maintenance, the relevant personnel must have adequate knowledge of the measuring process and use of the measurements, for which purpose this document makes a valuable contribution. The instructions in this document must be understood, observed and followed.

In order to ensure that no risks arise from the interpretation of the measurements in the concrete application, the user must have additional technical knowledge, because the user is liable in case of damage/danger due to misinterpretation as a result of inadequate technical knowledge.

1.4 Safety signs and symbols

Warnings are labelled in this document with the followings signs:



Caution! This symbol warns of imminent danger, death, serious injuries and significant damage to property at non-observance.



Attention! This symbol warns of possible dangers or dangerous situations which can provoke damage to the device or environment at non-observance.



Note! This symbol point out processes which can indirectly influence operation or provoke unforeseen reactions at non-observance.

1.5 Foreseeable misuse



This device **must not be used** at potentially explosive areas!

Do not use these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury or material damage.

Failure to comply with these instructions could result in death or serious injury and material damage.

1.6 Safety guidelines

This device has been designed and tested in accordance with the safety regulations for electronic devices. However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using the device.



Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated under 6 Technical data.

If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting.

Operator safety may be a risk if:

- there is visible damage to the device
- the device is not working as specified
- the device has been stored under unsuitable conditions for a longer time.

In case of doubt, please return device to manufacturer for repair or maintenance.



When connecting the device to other devices the connection has to be designed most thoroughly as internal connections in third-party devices (e.g. connection GND with protective earth) may lead to undesired voltage potentials that can lead to malfunctions or destroying of the device and the connected devices.

2 Product Specification

2.1 Scope of supply

The scope of supply includes:

- Temperature Transmitter
- Operation manual

2.2 Job description

The Temperature Transmitter GTMU – IF ... is a compact temperature sensor with integrated Transmitter for the acquisition and conversion of temperature input signals. Integrated Transmitter converts the temperature signal from Pt1000 sensors into 4-20 mA output.

3 Start Operation

A qualified electrician may only install the device. The national and international regulations for the installation of electrical equipment of the respective operator country apply.

3.1 Commissioning

1. Check the tightness of the sleeve.
2. Make sure that the M12 plug or the cable gland is properly screwed in place.

3.2 Maintenance

When cleaning, make sure that the cleaning agent does not attack the housing surface and the seals. If high-pressure cleaning devices are used to clean the housing, it must be ensured that the spray jet is not directed directly at the electrical connection.

Deposits of cleaning agents on the thread should be avoided.

After removal and before reinstalling the unit, carefully clean the sensor and auxiliary tool with suitable tools and means to maintain tightness. A repair of a defective temperature sensor is not possible.

4 Bases for measurement

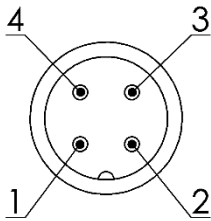
4.1 The Temperature Transmitter

All following GTMU transmitters are available with cable sleeve as well as M12 version. Instead of the cable sleeve, the transmitter then has an M12 version with 4 connection pins. The advantage of an M12 connector is the flexibility of the cable to be connected, which can be conveniently changed or replaced.



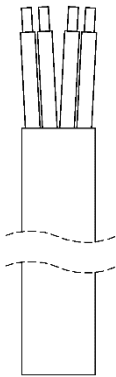
All information about length and diameter are standard. Accommodations are possible on request.

4.1.1 12 occupation



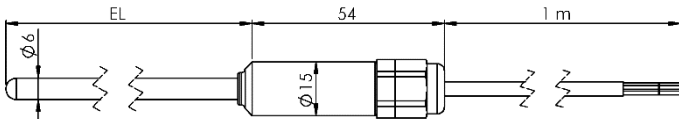
- 1: +Ub
- 2: -Ub
- 3: Data
- 4: GND

4.1.2 Cable occupation



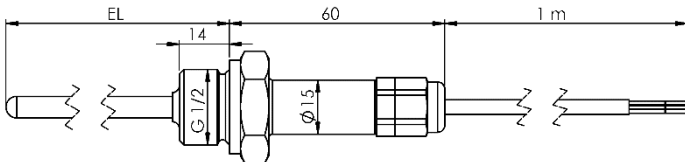
- Current loop: Green: +Ub
Yellow: -Ub
- Interface: Brown: GND
White: Data

4.1.3 GTMU-IF1 /-M12



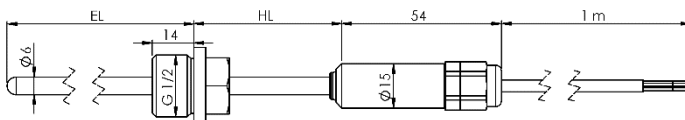
The length of the sensor tube is 100 mm, with a diameter of 6 mm, or after customer request. The measuring range is -30.0 .. +100.0 °C.

4.1.4 GTMU-IF2 /-M12



The length of the sensor tube is 100 mm, with a diameter of 6 mm and a thread of G 1/2, or after customer request. The measuring range is -30.0 .. +100.0 °C.

4.1.5 GTMU-IF3 /-M12



The length of the sensor tube is 50 mm and the throat tube 100 mm, with a diameter of 6 mm and a thread of G 1/2, or after customer request. The measuring range is -70.0 .. +400.0 °C.

5 Reshipment and Disposal

5.1 Reshipment



All devices returned to the manufacturer have to be free of any residual of measuring media and other hazardous substances. Measuring residuals at housing or sensor may be a risk for persons or environment



Use an adequate transport package for reshipment, especially for fully functional de-vices. Please make sure that the device is protected in the package by enough packing materials.

Add the completed reshipment form of the GHM website <http://www.ghm-messtechnik.de/downloads/ghm-formulare.html>.

5.2 Disposal instructions



The device must not be disposed in the unsorted municipal waste! Send the device directly to us (sufficiently stamped), considering the above if it should be disposed. We will dispose the device appropriate and environmentally sound.

6 Technical data

Measuring ranges	GTMU – IF1	-30.0 .. +100.0 °C
	GTMU – IF2	-30.0 .. +100.0 °C
	GTMU – IF3	-70.0 .. +400.0 °C
	optional	max. -200.0 .. +500.0 °C
Accuracy (nominal temperature 25 °C)		±0.2% from measured value ±0.2°C (GTMU-IF1, GTMU-IF2) ±0.3% from measured value ±0.2°C (GTMU-IF3)
Sensor		Internal Pt1000-Sensor
Internal resolution		0.025 °C
Output		4 – 20 mA (2-conductor)
Auxiliary energy		Uv = 10 .. 30 V DC
Permissible load		$RA < (Uv - 10 \text{ V}) / 0.022 \text{ A}$ [RA in Ohm, Uv in V]
Transmission accuracy		±0.2% from output value ±0.2% FS
Voltage influence		$\leq \pm 0.01 \% / \text{V}$
Temperature influence		$\leq \pm 0.01 \% / \text{K}$
Recommended min. measuring range		50 °C
Nom. temperature		25 °C
Working temperature		-25 to 70 °C
Relative humidity		0 to 100 %RH
Storage temperature		-25 to 70 °C

Housing		Stainless steel-Housing
Dimensions (dependent on sensor design)	Cable cover	Ø 15 x 35 mm (without screw connection)
	Sensor tube EL	100 mm bzw. 50 mm oder nach Kundenwunsch
	Sensor diameter D	Ø 6 mm or according to customer requirements (possible Ø: 4, 5, and 8 mm)
	Throat length HL	100 mm or according to customer requirements
	Threads	G1/2" or according to customer requirements (possible threads: M8x1, M10x1, M14x1.5, G1/8", G1/4", G3/8", G3/4")
	Protection class M12 Cable	IP67/69K IP67/IP69
Connected value		Connection via 4-pin, firmly connected connection cable (2 x current loop, 2 x interface), alternative M12-plug
	Cable length	1m or. according to customer requirements (not with M12)
	Cable occupation	Current loop: +Ub = green, -Ub = yellow Interface: GND = brown, Data = white
	M12 occupation	Current loop : +Ub = 1, -Ub = 2 Interface : GND = 4, Data = 3
Directives and standards		<p>The device confirm to following European directives:</p> <p>2014/30/EU EMV directive 2011/65/EU RoHS</p> <p>Applied harmonized standards:</p> <p>EN 61326-1:2013 Emission level: Class B EMI immunity according to table 2 Additional fault during perturbation: < 0.5 % FS</p> <p>EN 61326-2-1:2013 EN IEC 63000:2018</p> <p>The device is for the mobile application or for the stationary operation in the course of specified working conditions without further restrictions construed</p>