EBS9M

1. Introduction:

The software EBS9M is a cheap and comfortable data acquisition-software which supports the following data acquisition systems:

bus system	modules	converter
EASYBus	EBT, EBH, EASYLog, EBN	EBW1, EBW64E, EBW240 EB2000
GRS485	GIA10, GIAxxxx, GIRxxxx	GRS485 , GRS485 ISO
MODBUS	THP 84	GRS485 , GRS485 ISO
GMH series	GMH 3xxx	GRS3100, GRS3105

The measurings are transmitted via the serial interface COM1, COM2, ... , COM8 of your PC so that no additional PC slot is needed. If You're using an EASYBus-System, it's also possible to transfer data via modem. For this you'll need additionally an analog modem and an industry modem, which has to be a specialized device, adopted to the EASYBUS data transfer.

The EBS9M software includes two functional modules, i.e. 'EBS9M-Recorder' and 'EBS9M- Data Display'. It also includes a setup program to choose the language.
Furthermore there is a conversion program, which translates the recorder files in a data format for importing into programs like Microsoft EXCEL.
The MODKonfig software serves for the configuration of the industry modems.

Module 'Recorder'
Measuring values displayed as y/t diagram or digital display.
scan rate can be set to: 0.5s, 1s, 2s, 5s, 10s, 30s, 1min, 2min, 5min, 10min, 30min, 1h, 2h, 5h
t-axis (time):
       display in minutes, hours or days
       autoscaling
       scrolling function

y-axis (measuring value):
       autoscaling
       axis label

Miscellaneous:
       comment line may be entered
       automatic system initialisation
       names for the various diagrams can be entered
       storing of measuring values on floppy or hard disk
       start and stop condition selectable
       remote module connection for EASYBUS-systems

Module 'Data Display':
Read in of stored measuring values and display as y/t diagram

t-axis (time):
        autoscaling can be switched on or off
        range of display adjustable
        selectable grid

y-axis (measuring value):
        autoscaling can be switched on or off
        range of display adjustable
        selectable grid

Line:
        line thickness and colour selectable
        marking of measuring points selectable

Miscellaneous:
        hardcopy of diagram

2. Installation:

System Requirements:
        Computer 486 / 33MHz (we recommend 486 / 66MHz or higher)
        8MByte main memory or larger
        approx. 7MByte free space on hard disk
        VGA graphics card with a resolution of 800*600 or higher
        Serial interface COM1, COM2, ... COM8
        CD-Rom drive (required for installation only)
        Mouse
        MS Windows 95 or higher

Installation:

To install the EBS9M software on your computer, please start the installation program 'SETUP' on the EBS9M CD.

1. Insert CD-Rom in your drive.
2. Start windows and select 'Execute'.
3. Choose your CD-Rom drive and start 'setup.exe'.
4. The setup program will guide you through the steps of the installation:

Following steps will be done:
a. The directory will be generated on your hard disk, the contents of the EBS9M CD will be copied.
b. The windows program group 'EBS9M' will be generated, containing the icons for the software modules.

5. Start the program 'EBS9M - Setup' (by double clicking the icon).
6. Choose language. Acknowledge by pressing 'Exit'.

The installation of the EBS9M software is now completed. The chosen language can be changed by starting the setup program again.

Start EBS9M:
The various program modules can be started by simply double clicking on the refering icon.

3. The Module 'Recorder'

Configure Sensor Module Connections

1. Connect your measuring equipment and your converter to serial interface COM1, COM2, COM3 or COM4 of your personal computer.

2. Start the recorder software by double clicking on the program icon 'EBS9M-Recorder'. The screen will show the window 'EBS9M-Recorder'.

3. Click on the button 'Interface'. Select your interface and converter used by clicking on them. Click on the button 'OK'.

When using an EBW1, EBW64 or EBW240, EB2000 (=EASYBus)

4.1. Click on 'Configuration'. The configuration window will be opened.

4.2. Click on 'System Initialisation' or 'Read Out Installation' (dependent on Converter).
The software will now carry out a system initialisation. This may take a few minutes. As soon as the system initialisation has been completed a sensor modules list showing all sensor modules which were found will be displayed.

4.3. Select the desired sensor module, enter name and click on 'OK'.

4.4. Repeat 4.3 until no sensor modules are left on the list.If you don't like to configure any more channels, click on 'Terminate Sensor Configuration'. The window will be closed and the configuration will be shown.

4.5. Click on 'OK'

When using a GRS3100-converter for GMH 3xxx

4.1. Click on 'Configuration'. The configuration window will be opened.

4.2. Click on 'System Initialisation'.
The software will now read out all devices and channels supported by the GMH 3xxx.

4.3. Choose the requested device with the according channel and enter a name for this channel. Click on 'Accept'

4.5. Repeat 4.3 until no more devices are left on this list. If you don't like to configurate any more channels, click on 'Terminate Sensor Configuration'. The window will be closed and the configuration will be shown.

4.4. Click on 'OK'

When using a GRS485 for GIA10, GIAxxxx, GIRxxxx

Please note: The display and control devices must have different serial address numbers, beginning by number 1. For configuration of the address numbers please refer to the operating manual of the respective device.

4.1. Click on 'Configuration'. The configuration window will be opened.

4.2. Click on 'System Initialisation'.
The software will now read out all connected devices, beginning at address number 1.

4.3. If you want, you may change the channel names now.

4.4. Click on 'OK'

5. Click on the arrow in the field 'Scan Rate'. Choose a scan rate of 2 seconds.

6. If you wan't to store recording data click 'File' in the field 'save data in file' and enter a filename. If you only wan't to display data, click the button 'clear'.

You have now completed the required settings. Click on the button 'Start' to begin recording.

Change between the different kinds of displays (digital display, y/t diagram, zoomed y/t diagramm, user-defined y/t diagramm) by selecting the refering icon at the right of the display.

Data should once be recorded for a time of more than 16 minutes, so you can watch the time axis scrolling of the diagram. As soon as the recording time exceeds the limit of the x-axis, the entire diagram will be shifted to the left to ensure the current measuring values are visible on the display all the time.

Click on the button 'Stop' to finish the recording.

Configuration of a Remote Module Connection:

1. The sensor modules have to be connected by using a converter to a industry modem. This industry modem has to be a spezialized device, adopted to the EASYBUS data transfer (e. g. MODEM 1000, 2000 HS, 3000 GSM). Take notice of the manual of your industry modem.

2. Install your analog modem on your PC.

3. Start the recorder software by double clicking on the program icon 'EBS9M-Recorder'. The screen will show the window 'EBS9M-Recorder'.

4. Click on the button 'Interface'. Select the interface with the connection to your modem and the converter used between sensormodules and industry modem by clicking on them. Activate the check box 'remote connection via MODEM' and enter the telephone number to call your industry modem. Click on the button 'OK'.
Please note: If the analog PC modem is connected to a telephone equipment/central there maybe entered additional numbers/signs to get connected to the standard telephone net.

5. Click on 'Configuration'. The configuration window will be opened.

5.1 Click on 'Read Out Installation'.
The software will now establish a connection via phone and read out all devices. This may take a few minutes.

Please note: The display and control devices must have address numbers, in increasing order beginning at number 1. As long as sensor modules are connected via modem, there is a telephone connection active! To keep control over telephone bills keep in mind to hang up the phoneline after the operation. The state of a phoneline is displayed in the statusline at the bottom of the display. The connection can be interrupted by pushing the button 'close connection'.

5.2 If you want, you may change the channel names now.

5.3 Click on 'OK'

You have now completed the required settings. Click on the button 'Start' to begin recording.

Description of Input Fields

Start
Click on this button to start a new recording.

Stop
Click on this button to stop active recordings.

Exit
Click on this button to close the complete recorder program.

Interface
Opens window for interface and converter selection.

Interface
The EBS9M software is able to read data via one of the serial interfaces COM1, COM2, ...COM8 of your computer. Please choose the interface to which the EASYBus converter is connected.

Converter
Choose the converter which is used.

Remote Connection via Modem
(only by using converter EBW 1 / EBW 64 / EBW 240 or EB 2000 MC)
Activate this checkbox when using a modem-connection.

Phonenumber
(only by using converter EBW 1 / EBW 64 / EBW 240 or EB 2000 MC)
Enter here the phonenumber of the industry modem, which is connected to your sensor modules. If the analog PC modem is connected to a telephone equipment/central there maybe entered additional numbers/sign to get connected to the standard telephone net.

Channels
This field shows the number of channels, which were set by the last configuration.

Scan Rate
The scan rate indicates at which intervals data are read in from the sensor modules. If you're choosing a short scan rate, it may be that's not possible to do the recording in this short intervals. This may happen if you'r using a computer with a slow clock rate or there are communication errors. In this case the recordings will be automatically done in the shortest possible interval.

Please note: A short scan rate means a large number of data values per time unit. During long-term recordings this may result in insufficient storage or computing capacity .

Enter Comment
This button provides the possibility of describing the recorder diagram by entering a comment line. To do this click on the button 'Enter Comment'. A line will be displayed giving the prompt 'Please enter comment'. Click on this line and enter the desired text. Save your input by clicking on the button 'Acknowledge Input'. The comment will now be displayed in the comment line.

Save data in
The 'EBS9M-Recorder' software provides the possibility to simultaneously display and store either on hard or on floppy disk. Click on the button 'File' and enter file name for storing the measuring data. To delete a file name once entered click on the button 'Clear'.

Please note: The file name may contain none special-sign.

The file extension '.dat' is added to all EBS9M data files.

Always all configured channels will be stored also if they were not displayed (also look at configuration - display).

Close Connection (only during modem operation)
As long as modules are connected via modem, a telphone connection is active! To avoid unnececessary telephony costs, please take care that the connection should be closed after the operation. Active telephone connections are displayed in the status line. The connection will be closed by clicking button 'close connection'.

Configuration
Opens the configuration window.

Each channel displayed can be given its own name. To do so click on the button 'Configuration'. The window ' EBS9M-Recorder: Configuration' will appear. Within this window you are provided with one other window per channel to enter a name. For further informations like serial number, unit and type of connected sensor modules will be shown.

Name
Each channel can be named separately. To do so click on the field 'Name' corresponding to the refering channel and enter the text desired. After start up the text will be displayed on the left hand side of the diagram.

Serial Nr
Shows the serial number of the sensor module.

Unit
Shows the unit of the sensor module, display or control device, GMH 3xxx.
If the connected device has no unit be set (e. g. display and control devices with standard signals), the unit may be set here. If the connected device has a constant unit (e. g. EASYLog 40K or GIA 1000 Pt '°C'), this field can't be changed.
Please note: The unit of EASYLog 40NS will be set at the EBxKonfig software.

Type
Shows the type of the sensor module.

Display
Click on this field, if you want to show this channel at the display during the measurements recording. The less channels you display, the larger the display of activated channels will be. At least you have to activate one channel.

Starting Condition
If you like to start a recording at a fixed measuing value, choose the according channel in the starting condition list and enter the range in the field right beside. When your configuration is complete click the button **Start** and the recording will be started as soon as the measuring value of the start condition channel is within the entered range.

Stopping Condition
If you like to stop a recording at a fixed measuring value, choose the according channel in the stopping list and enter the range to stop the recording in the fields right beside. A active recording will be stopped if the measuring value of the significant channel is within the entered range. You can also stop the recording by clicking on the button **Stop**.

OK
Click on this button to close the configuration window.

System Initialisation

The software will carry out a system initialistaion resp. read out the data of the connected devices. Then the current address settings will be changed. Then, the window 'Sensor Modules List' will be opened, if the connected devices are EASYBus sensor modules.

Read Out Installation
Click this button if You want to connect to an already configured system or having connected or removed sensor modules, displays or control devices resp. GMH3xxx without changing the current address settings. Then, the window 'Sensor Modules List' will be opened, if the connected devices are EASYBus sensor modules.
Attention Remote Connection and EB2000MC: It has to made sure that all connected modules have addresses in increasing order, starting from 1. (1,2,3,..)"
Fast search (only with EB3000)
Fast search activated:
All addresses are searched in climbing up order 1,2,3 ... until to the first gap is detected.
The modules found are arranged for the selection.
Fast search deactivated:
All addresses of 1... 239 are scanned. The modules found are arranged for the selection.

Serial Number
Select the desired sensor module for the refering channel of this list.

Name
Enter a short description of the selected sensor module.

Type
Displays the type of selected sensor module.

OK
The selected sensor module is taken over into the configuration list.

Save Configuration
Click on this field, if you want to store the actual configuration. The information about interface, converter, comment, filename and channel configuration (name and units if applicable) will be saved. The extension '.cfg' is added to all EBS9M-configuration files.

Load Configuration
Click on this field, if you like to restore an earlier configuration.
Please note, EASYBus sensor modules mustn't have changed their address. This may happen if you have used other programs e. g. EBxKonfig or GSOFT40K. In this case you have to carry out a new system initialisation.

Data Display
The loaded measuring values can be displayed in three different ways. The choice of the way to display can be done by clicking the refering symbol at the right of the display.

Digital display
The data display shows the last measurement value read in. In case of alarm the display color switches from yellow to red.

y/t-diagram
The last 300 to 600 values (it depends on the channels activated) are shown as y/t diagram. The y-axis is scaled to the whole display range of the sensor module.

Zoomed y/t-diagram
Same as y/t-diagram. The y-axis is scaled to the largest possible resolution of the measurements display.

User-defined y/t-diagram
Same as y/t-diagram. The y-axis is scaled to the user settings.

Settings (only with y/t-diagram)
-display alarm
 Click on the square field at the left hand side of 'display alarm' to switch on alarm borders in the display

Please note:
The following settings are only for user defined y/t-diagram.

-from
 to
 Use these fields to enter the y-range to be displayed in the recorder diagram.
 (Auto Scaling must be switched off)

-Grid Size
 For ease of evaluation of the recorder diagram a grid system can be introduced in the
 background. To do so enter grid distance in y-direction.
 (Auto Scaling must be switched off)

-Auto Scaling
 Click on the square field at the left hand side of 'Auto Scaling' in order to switch the auto scaling
 function for the y-axis

4. The 'Data Display' Module

How to quickly read in and display data

1. Start 'Data Display' module by double clicking the program icon 'EBS9M-Data Display'. The window 'EBS9M-Data Display' will appear on the screen.

2. Click on the button 'File' and enter name of file from which data are to be read in.

3. The field 'Starting Time' displays the date and time at which the recording has been started. If a comment have been stored, it will be displayed as well.

Description of input fields

Read data from
This field displays the file from which the data displayed have been read in. In order to read in new data, click on the button 'File' and enter new file name. The new data will be loaded automatically.

EBS9M data files have the file extension '.dat'.

Exit
Click on this button to stop complete data display program.

Print
Use this function to print the diagram displayed on the screen on the windows standard printer.

Starting Time
The date and time at which the recordings have been started are displayed.

Comment
Any comment that has been entered during data recording will be displayed in this window.

Channel
Use this function to select channel when viewing multi channel recordings.

Line
Click on the button 'Line' to display the 'EBS9M-Data Display:Line' window. You have a choice between three different parameters to alter the shape of the graph displayed.

Line Colour
Click on the arrow and select one of the four colours available.

Line Width
Click on the white field and enter a line width between 0 and 5.

Please note: It's only possible to print a hardcopy of the diagramm in case of line width 0.

Measuring Points
By clicking on the arrow you can choose wether the individual measuring points are either not to be marked at all or to be marked by a cross or circle.

OK
Click on this button to close the window.

Y-Axis
Click on the button 'Y-Axis' to display the 'EBS9M Data Display:Y-Axis' window. The window provides you with four fields to influence the display range and the mode of display.

Unit
Use this field to enter y-axis legend.

from
to
Use these fields to enter the y-range to be displayed in the recorder diagram.

Example: If you want to display a range of -40 to 120 enter -40 in the field 'from' and 120 in the field 'to'.

Grid Size
For ease of evaluation of the recorder diagram a grid system can be introduced in the background. To do so enter grid distance in y-direction.

Please note: We recommend to choose a grid of at least one tenth of the y-range set to ensure a clearly legible diagram.

Auto Scaling
Click on the square field at the left hand side of 'Auto Scaling' in order to switch the auto scaling function for the y-axis on (field ticked) or off (field empy).

Please note: For manual inputs, the autoscaling function must be off.

OK
Click on this button to close window.

X-Axis
Click on the button 'X-Axis' to display the 'EBS9M Data Display:X-Axis' window. The window provides you with four fields to influence the display range and the mode of display.

from
to
Use these fields to enter the x-range to be displayed in the recorder diagram.

Grid Size
For ease of evaluation of the recorder diagram agrid system can be introduced in the background. To do so, please enter grid distance in x-direction.

Please note: We recommend to choose a grid distance of at least one tenth of the x-range set to ensure a clearly legible diagram.

Auto Scaling
Click on the square field at the lefthand side of 'Auto Scaling' in order to switch the auto scaling function for the x-axis on (field ticked) or off (field empty):

Please note: For manual inputs, the autoscaling function must be off.

OK
Click on this button to close window.

Error codes

Code	Meaning
-1	Port number not valid and/or supported (OpenComm)
-2	Port already opened (OpenComm)
-3	Port not ready (OpenComm)
-4	Queue cannot be set up (OpenComm)
-5	Standard parameter error (OpenComm)
-6	Converter type not supported/valid (OpenComm)
-7	Error when trying to connect remote BUS
-10	Hardware (port) does not exist (OpenComm)
-11	Byte size not valid (OpenComm)
-12	Baud rate is not supported (OpenCom)
-20	DCB formation not possible (OpenComm)
-21	Interface initialisation not possible (OpenComm)
-22	Message could not be sent (WriteComm)
-23	Transmission error: sensor module not responding
-24	Transmission error: wrong message length
-25	Transmission error: CRC code wrong
-26	Transmission error: address wrong
-27	Closing of port not possible (CloseComm)
-28	Testcode
-29	Echo data not identical
-30	Invalid operation code
-31	Transmission error: decimal point information invalid
-32	Transmission error: F-field incorrect
-33	Value not within allowed area (-2040 bis +14000)
-34	Echo data not received
-35	Echo data not complete
-36	Return value is error code
-37	Message could not be sent: CTS Time Out (WriteComm)
-38	No acknowledge received (unknown operation call)
-39	Transmission error: control code F2 incorrect
-40	Transmission error: length-of-message-bits incorrect
-41	Data received within locked range
-42	Transmission error: CRC code for echo data incorrect
-44	Transmission error: value transmitted <> value received, CRC ok
-45	More than 240 sensor modules found
-46	Number of data to be read exceeds max value
-47	Error in system initialisation
-51	Modem does not respond
-52	Wrong Modem response
-53	Could not establish connection
-54	Could not establish connection, timeout during dial attempt
-55	Cannot read state of modem connection
-56	Wrong security access prompt received from modem
-57	Enter password
-58	Modem error during entering of password
-59	Password was wrong!