meM-LOG-SE Data logger

bmc messsysteme gmbh

Features

- saving in *continuous mode* or *alarm mode*
- scan frequency up to 100Hz per channel
- *sleep mode* (energy-saving mode)
- 512kB memory, *loop mode* (optional)
- saving with real time information
- external power supply +5V/100mA
- direct operation via pushbutton
- USB- or serial (RS232) connection
- accumulator or mains operation
- alarm function
- remote control and data inquiry via modem

Features

- 16 analog inputs, 12 Bit, ±5V
- 2 digital inputs (TTL)
- 1 digital alarm output
  (as high/low active + relay output)

Applications

- long-term measurements
- field applications
- supervision of breakdowns
- mobile use

With the **meM-LOG-SE**, BMC Messsysteme GmbH introduces a data logger, that offers entirely new possibilities for many measuring applications.

It is a completely self-sufficient device, which is especially suitable for long-term measurements.

Unlike a classic data logger recording for a long time but with very low frequencies, the **meM-LOG-SE** reaches

... sampling rates of up to 100Hz ... .

Equipped with an integrated accumulator, the **meM-LOG-SE** can be placed even in hardly accessible locations where neither any power supply nor PC connection is possible.

So it is no problem, to realize measuring applications which require

... mobility and flexibility ...

in a high degree. In order to extend the operating time of the accumulator, the device changes into an energy-saving mode after 1 minute (*Sleep Mode*) and just "wakes up" occasionally, e.g. shortly before scanning the next measuring value.

Via

... 16 analog input channels in the measuring range of ±5V ...

with a resolution of 12 Bit or via

... 2 digital input channels (TTL) ...,

the measured signals are written to the 512kB-size memory. The channels to be saved can be defined explicitly.

The scan usually proceeds until the memory is full. If *Loop Mode* is selected, however, the **meM-LOG-SE** uses a loop memory where previous measuring values are overwritten as soon as the storage capacity is reached.

In addition,

... alarm values can be set ...

for each channel separately. If measuring values are beyond this range, either all channels or only channels whose alarm values have exceeded the normal range are recorded with real time information. When leaving the alarm area, storage is automatically interrupted (*Alarm Mode*). This is a great advantage for the

..documentation of breakdowns..

Besides that, a

... digital alarm output ...

is provided as a high and a low active digital output channel and as a relay output so that in case of emergency e.g. machines are automatically stopped or sirens are turned on.

A scan is started by pressing a pushbutton, at a defined date, by a programming command or by a digital signal.
It is finished either by another programming command, by turning off the device or when the storage capacity is reached (not in *Loop Mode*).
Afterwards, the measuring data are read out and sent to the PC for processing.

Unlike the *Continuous Mode*, you can also interrupt a scan in *Alarm Mode* by turning off the device and continuing afterwards.

As a device of the meM-series, the **meM-LOG-SE** is provided with a USB connection, which means

... high transmission rates of the measuring data ...

from the data acquisition system to the PC. In addition, the logger features a serial connection (RS232) so that the device can be used together with all operating systems supporting the serial interface (even Linux!). That means that also

... transmission by modem ...

is possible.

If not only voltages are measured but other physical quantities with sensors, the carrier board *BP16* from BMC Messsysteme GmbH supplied with the *MAL* miniature measuring amplifiers is ideal for the combination with the data logger.
This is realized via a 1:1 connection of the 37-pole Sub-D sockets at the front of the two devices.
Besides that, the *BP16* can be operated with the external power supply provided at the Sub-D socket of the logger.

The control of the **meM-LOG-SE** takes place by programming via the serial interface or by means of the operating software ST-meM-LOG SE included with delivery.
Since ST-meM-LOG SE supports the same file format as the modern software

... NextView®4 ...

for data acquisition and processing, measuring files created with ST-meM-LOG SE can be displayed in NextView®4 as graphic signal curves and then be analyzed.
NextView®4 is also available as a stripped-down "Analysis" version. A free demo of the software is included with delivery.

The instruction set for programming the **meM-LOG-SE** is compatible to the ADAM4000 series.

For further information please visit our homepage at:

www.bmcm.de/us

1 Starting up the device and using the accumulator

Plug the two red frames onto the short sides of the device with the feet looking downwards as illustrated in the product picture.

The power supply for the device (12V, 12W) is optionally available (*ZU-PW10W*) as accessory. In addition, an accumulator is integrated so that (depending on the load) the **meM-LOG-SE** can be operated between 30 hours and 7 weeks without external power supply. As soon as the external power supply is connected (green LED on), the accumulator is recharged. Charging is done within 3-4 hours approximately even during a scan. Before first use, charge the accumulator for about 1 hour. To prevent any loss of data, do not deeply discharge the accumulator. In this case, it has to be loaded with the device turned off. To keep the functioning of the accumulator, it should not stay unused for more than one year.

For controlling **meM-LOG-SE** and transmitting measuring data, connect the device to the PC with a serial interface cable (9-pole null modem cable) or USB cable (included with delivery) depending on the interface you want to use.

The logger is suitable for DIN rail mounting. The DIN rail set *ZU-SCHI* can be ordered optionally.

If using several measuring systems of the meM series or the amplifier system *BP16*, the red frames of the device can be fit together, so that the devices form a stable unit (see chapter 5).

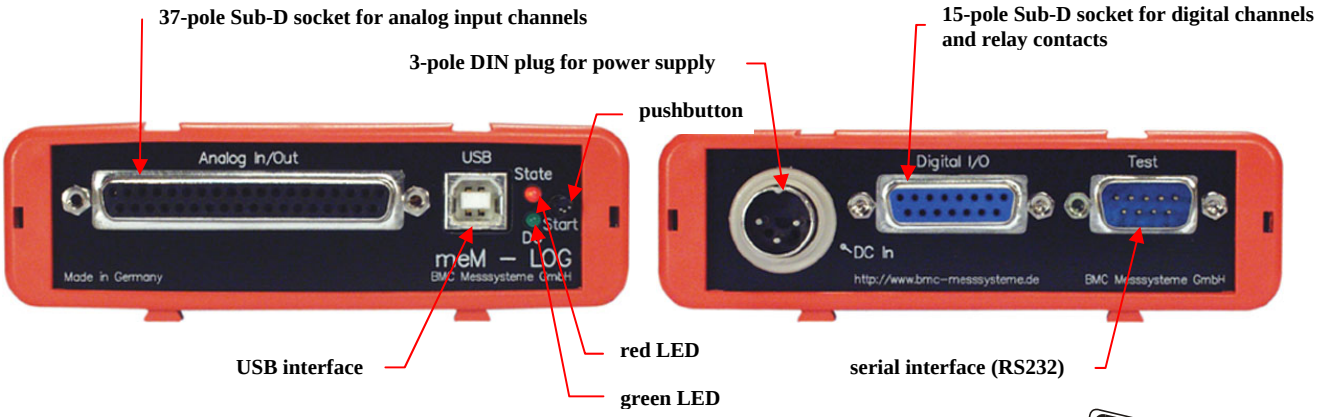
2 Functions of meM-LOG-SE

Various operation modes can be selected for the **meM-LOG-SE** concerning the scan frequency, the operation mode and the storage mode. These are explained in the following table:

Funktion / Betriebsart	Beschreibung
Normal Mode	- sampling in steps of seconds in the range of [1s, .. , 65535s (=18h 12min 15s)] - max. scan frequency: 1Hz per channel - device switches into *Sleep Mode* (see below) between sampling data
Fast Mode	- fine adjustment of sampling interval in steps of 1/100sec. in the range of [0.01s, .. , 655.35s (=10min 55s 350ms)] - max. scan frequency: 100Hz per channel (operating time of accumulator accordingly reduced) - device does not switch into *Sleep Mode* (see below)
Continuous Mode	- continuous storage of measuring data, next scan cannot be started before either measuring values have been transmitted, scan configuration has been changed or memory has been deleted - scan starting time is stored in UTC format (number of seconds since 1/1/1970) - required memory space: 2 Bytes/value (max. 262144 values = 512*1024 Bytes : 2 Bytes/value)
Alarm Mode	- storage starts as soon as the measuring values have reached or exceeded the limits of the set-up normal range (analog) or level (digital) - scan starting time and relative time referring to the start of the measurement is stored in UTC format (number of seconds since 1/1/1970) - required memory space: 7 Bytes/value (max. 74898 values = 512*1024 Bytes : 7 Bytes/value) - alarm values are set for each channel separately - storage of either all channels to be saved or only of channels which are in state of alarm - If measuring values are within their normal range again, the scan is temporarily interrupted. If not in *Loop Mode* (see below) the scan continues until memory is full or measurement is stopped. - even if a scan has been stopped with the device button it can be taken up again, the new measuring data and time values are correctly added to the previous measurement - in case of alarm the two digital outputs become active (Digital Out 1: 1→0; Digital Out 2: 0→1) and the relay is switched (alarm outputs, see chapter 3.2)
Loop Mode	- loop memory: if memory is full old measuring data are continuously overwritten, if reading out sampled data during a scan, they are removed from the memory - if *Loop Mode* is not selected, the scan is finished when reaching the memory capacity
Sleep Mode	- energy-saving mode: turns off the external power supply, the serial and USB interface and the alarm outputs - changes into *Sleep Mode* 1 minute after turning on the **meM-LOG-SE** - to "wake up" the device for 1min: shortly press (<0.5sec) the pushbutton at the front of the device ("Instant on", see chapter 4) or apply a "break"-signal at the serial interface (for at least 4sec) - If the **meM-LOG-SE** has a connection to the operating software ST-meM-LOG SE it does not fall into *Sleep Mode*. - Shortly before scanning the next value **meM-LOG-SE** wakes up, writes it to the memory (*Alarm Mode*: if in alarm) and falls asleep right away. The time before scanning can be set in steps of seconds within the range of [0sec, .. , defined scan period]. → only in *Normal Mode* possible, the device does not sleep in *Fast Mode*!

3 Connections

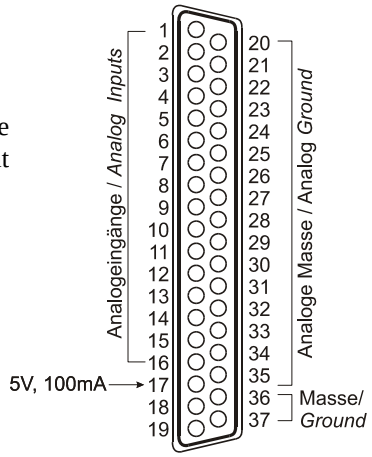
The connections for the analog input channels and for the USB interface are located at the front of the device. All other connections are accessible at the back of the device.



3.1 Analog connections

16 analog voltage inputs with ±5V measuring range (single-ended) are provided at the 37-pole Sub-D socket. The pin assignment of the 37-pole Sub-D female connector at the **meM-LOG-SE** is listed in the table below:

Pin (Sub-D37)	meM-LOG-SE
1..16	Analog In 1..16
17	V_{USB} (5V; 100mA)
18, 19	n. c.
20..35	Analog Ground (AGND)
36..37	Ground

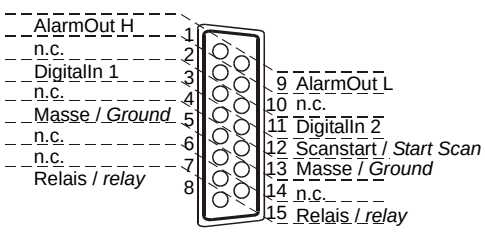


The maximum potentials against ground must not exceed ±7V. Any channel overload may influence measurements of other channels and may lead to wrong values.

3.2 Digital connections

Two digital input channels with CMOS level (*low*: 0V..1V; *high*: 3.0V..5V) are connectable at the **meM-LOG-SE**. The connections are realized as a 15-pole Sub-D socket at the back of the device. Open digital inputs are always *high*. The pin assignment of the 15-pole Sub-D socket is listed in the following table:

Pin (Sub-D15)	meM-LOG-SE
1	Alarm Out H (active high)
9	Alarm Out L (active low)
8, 15	Relay contact (alarm)
3	Digital In 1 (active low)
11	Digital In 2 (active low)
12	Scan start (active low)
5, 13	Ground
2, 4, 6, 7, 10, 14	n.c.



In case of alarm, the alarm outputs and the relay contact at pin 1,9 or 8,15 become active at the same time as long as the signal values exceed the defined range: Alarm Out H changes from *low* to *high*, Alarm Out L from *high* to *low* and the relay is switched (Attention: The logger must not be in *Sleep Mode*!). That means, it is possible to connect a signal transmitter to the logger. As soon as the measuring values leave the normal range, it is turned on indicating the state of alarm by an acoustic or visual signal. It is also conceivable that in case of alarm a machine is turned off automatically.

Pin 12 features all functions of the device button (see chapter 4). That means if you connect pin 12 to ground, a scan will be started. In this case, the pin must be short-circuited for more than 0.5sec and less than 4sec.

- **The digital input and output channels are protected with 1kΩ resistors. If the input voltage is not within the admitted voltage range of 0V..5V, the device may be damaged.**
- **The signals of digital input channels are "hidden" among the analog measuring values, so that always at least one analog input channel must be saved!**
- **To prevent any damages of the device, ensure that no voltages are connected to pin 12!**

3.3 Connection to the PC

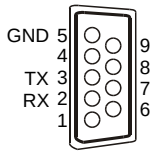
If connecting **meM-LOG-SE** to a PC, it can be controlled via programming and measuring data stored in the logger memory can be read out. The connection is possible either via USB interface or via the serial interface RS232.

Interface	Description
USB:	- fast transmission of measuring data - to be used with operating systems Windows® 2000/XP/Vista
serial (RS232):	- universal use on all operating systems supporting the serial interface, e. g. all Windows® operating systems, Linux and Mac OS - transmission over great distances, connection of a modem

3.3.1 Serial connection (RS232)

The serial connection requires a 9-pole, cross-wired null modem cable, not electrically isolated, which is connected to the two 9-pole Sub-D plugs of the logger and the PC (to be ordered under: *ZUKA-SER9*). The serial connection of the logger is located at the back of the device. If your PC only provides a 25-pole serial connection, you need an adapter 9-pole to 25-pole in addition. The pin assignment of the 9-pole Sub-D plug for the serial interface is listed in the table below:

Pin (Sub-D9)	meM-LOG-SE
2	RX
3	TX
5	GND (Ground)



- **Programming of the meM-LOG-SE can only be done via the serial interface!**
- **Serial commands and data can only be sent between logger and PC if the transmission rates (baudrate) of the RS232 interface and the meM-LOG-SE are the same.**

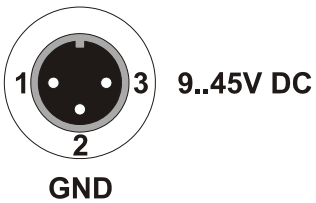
3.3.2 USB

If using the USB interface, connect the included USB cable *ZUKA-USB* to the USB connections both at PC and measuring system. The socket for the USB interface is located at the front of the logger.

3.4 Power supply connection

The device is supplied with power via the 3-pole DIN plug at the back of the device. The input voltage must be in the range of 9..45V DC.

External power supply is also required if using the USB interface of the PC! Optionally available as accessory is the power supply *ZU-PW10W* (12V, 12W).



4 Functions of the pushbutton and states of the LED

The pushbutton at the front of the device must be pressed to turn the **meM-LOG-SE** on or off. Besides that, the pushbutton features various functions, depending on how long it is pressed and in which state and operating mode the logger is.

The two LEDs give useful information about the current device status. As soon as the power supply is connected and the **meM-LOG-SE** is provided externally with power, the green LED is on. In this case, the integrated accumulator is charged at the same time. The red LED indicates different states, being on or off or flashing in varying speed or duration.

The following table helps to get an overview of the various functions of the pushbutton depending on the current device status, of possible settings and the resulting state of the red LED:

Description of the function	Press pushbutton for ...	Device status before	Status of red LED
• turn on device	[1.5sec;4.5sec]	off	after 1.5sec LED on (flashing if memory empty, shining if data available)
• turn off device	at least 5sec	on	fast flickering after 0.5sec, after 5sec LED off
• delete memory (→ measuring data deleted, scan settings are kept, device ready for scan)	>7sec	off	after 1.5sec LED on, after 4.5sec fast flashing for app. 2.5sec, then slow flashing
• start scan	[0.5sec;5sec[	on, flashing LED, device ready for scan	fast flashing after 0.5sec, during scan short and repeating flashing
• end scan (→ turn off device, measuring values are saved up until the point of turning off)	at least 5sec	Scan running, repeated and short flashing of LED	fast flickering after 0.5sec, after 5sec LED off
• "Instant On", temporarily interrupt energy-saving mode	<0.5sec	*Sleep Mode*	not changing

If you start a scan with the device button or a digital signal at the digital connector, the memory must be empty. This does not apply to the operating software ST-meM-LOG SE, which displays a warning in this case.

All states of the red LED and their meaning for the current device status is listed below:

Status of red LED	Device status	Indication	Pushbutton operation
permanently off	off	device turned off or accumulator empty → turn on device, charge accumulator	turn on device: press pushbutton for [0.5sec;4.5sec]
permanently on	on, *Continuous Mode*	measuring data stored in memory, no scan possible → first read out data, delete memory or change scan configuration before next scan	delete memory: turn device off and on (see above), when turning on press pushbutton for >7sec
permanently on	on, *Alarm Mode*, *Loop Mode* off	memory full, no scan possible → first read out data, delete memory or change scan configuration before next scan	delete memory: turn device off and on (see above), when turning on press pushbutton for >7sec
flashing	on	device ready for scan → start scan (if desired)	start scan: press pushbutton for [0.5sec;5sec[
repeated and short flashing	on	scan running → end scan (if desired)	end scan: press pushbutton for at least 5sec
permanently off	off	device turned off or accumulator empty → turn on device, charge accumulator	turn on device: press pushbutton for [0.5sec;4.5sec]

5 Using the BP16

If not only voltages are measured but also other physical quantities like temperature, acceleration, resistance etc. using sensors, measuring amplifiers are necessary for signal conditioning.

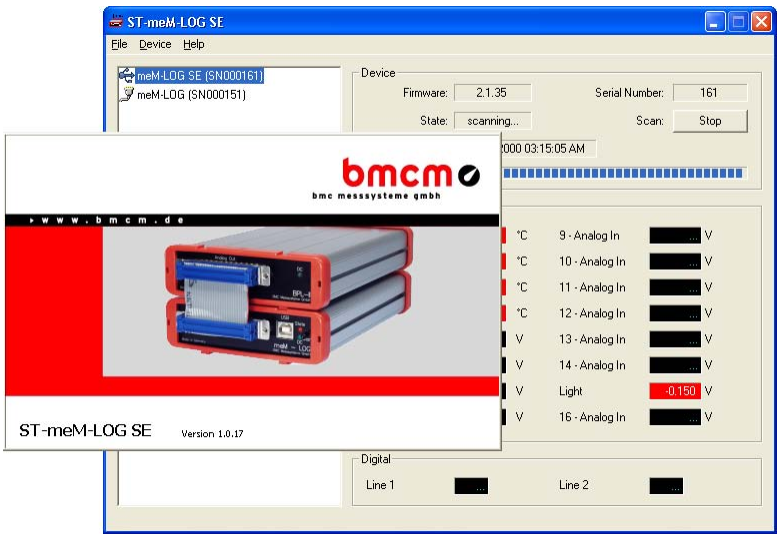
Especially comfortable is the connection of a *BP16* to the data logger, since the carrier board for measuring amplifiers is mounted into the same housing. If you fit the devices at the red frames together, they form a stable unit. The connection of a BP16 to the **meM-LOG-SE** is directly possible via a 1:1 connection of the two 37-pole Sub-D female connectors with a 37-pole ribbon cable.

The 5V auxiliary voltage, led out at pin 17 of the 37-pole Sub-D socket of the logger, supplies the *BP16* with power and turns it on and off.

6 Operating software ST-meM-LOG SE

With the configuration software **ST-meM-LOG SE**, you can easily test the functions of the logger via USB or RS232 interface, configurate the device, start scans or read out measuring data.

For further help, please have a look at the respective user manual, which is also included, or the integrated online help. When developing the second version, (SE: "Second Edition") great emphasis was put on user-friendliness and reliability.



- **Administration of USB and the serial interface in one program**

  The connection between PC and data logger is realized via the serial (RS232) as well as the USB interface so that the advantages of both interfaces are available to the user (see chapter 3.3). ST-meM-LOG SE manages both interfaces so that one device (or several) can be connected to USB and another to the serial interface at the same time.

- **Connection of several devices**

  Using the USB interface, up to 127 devices can be operated with ST-meM-LOG SE. To connect more than one logger, the serial interface RS485 must be used. This requires a converter between RS232 and RS485. In this case 255 devices at the most can be used.

- **Live display**

  Incoming live data of the analog and digital inputs of the selected device are continuously displayed as numerical values or digital levels (0 = *low*, 1 = *high*). The 16 analog channels are presented as physical quantities within their adjusted measuring range with physical unit and channel name.

  NEW! Analog input values are displayed as physical quantities if adjusted and not as simple voltages. Saved measuring values are shown in the live display during a scan in *Continuous Mode* or in *Alarm Mode* (saving all channels in alarm). Channel values that are not scanned are removed from the display. Alarm states are signalized by a red marking.

- **Continuous Mode, Alarm Modus, Loop Mode ... – and even more**
  ST-meM-LOG SE supports or even extends all functions integrated in the data logger (see chapter 2). For example in *Alarm Mode*, you can either save all selected channels or only the ones that exceeded the normal range.

- **Configuration in one dialog**
  NEW! All scan settings are directly entered in one dialog.

- **Offset adjustment**
  NEW! You can set an offset to calibrate the logger at 0V for each channel separately.

- **Manual or automatic scan start**
  In ST-meM-LOG SE, you can start a measurement either by pressing a button or automatically at a certain date and time making personal presence at scan start unnecessary.

- **Showing the memory usage**
  NEW! A progress bar on the user interface continuously indicates the used space of the meM-LOG-SE memory even during a scan.

- **Alarm outputs optionally always on**
  NEW! In *Sleep Mode*, the alarm outputs of the data logger optionally keep their full functionality.

- **Read out measuring data in the background**
  Even a measurement, which is still running, can be read out up to the present moment. In *Loop Mode*, the memory is deleted in this case. Scanning for a long period of time is possible without any loss of data if measuring values are regularly read out.
  NEW! Reading out measuring data during a running scan is now possible in all operating modes.

- **Store measuring data with different file format**
  When reading out measuring data from the memory of the data logger, ST-meM-LOG SE writes files in `*.txt` or `*.lfx` file format, which can be displayed as table values and analyzed in various programs for word processing (Notepad®, Wordpad®, Word® etc.) and spreadsheet (e.g. Excel®). Especially to mention is the storage as an `*.lfx` file, the file format of the professional measuring software NextView®4 (free demo version on the "Software Collection"-CD or at www.bmcm.de). Here signals runs are graphically displayed and can be processed by means of extensive analysis functions.
  NEW! The conversion from `txt`-format into an `lfx`-file is not necessary anymore. The measuring data are directly written into the selected file.

7 Software installation

All the software for Windows® 2000/XP/Vista and documentation available for **meM-LOG-SE** is integrated on the "Software Collection"-CD included with delivery. When inserting the CD a CD starter opens automatically (otherwise: start **`setup.exe`**).


meM-LOG-SE

Change to the product page of **meM-LOG-SE** by selecting the entry "Products" in the CD starter and then the device ("meM-LOG-SE") listed under the interface "USB".

For detailed information about installing or operating the software please see the corresponding manuals. To open the documentation in PDF format the Adobe Acrobat Reader is required.

You can run any installation directly from CD. If your browser prevents this first save the setup program to hard disc before running it separately afterwards.

Software	Software product	Notes	Documentation
Device driver (USB)	BMCM-DR (driver package)	1. install driver package to hard disc 2. Windows® Plug&Play installation	BMCM-DR-IG (driver installation manual)
Operating program	ST-meM-LOG SE	software to configure and operate the hardware, read out stored measurement data	ST-meM-LOG SE (user manual)
	NV4	measuring software NextView®4 (requires license number, no freeware!) to display and analyze `lfx` signal files created with ST-meM-LOG SE; stripped-down "Analysis" version provided	NV4-IG (installation Stand-alone version) NV4-UM (user manual) "First steps" in the NextView®4 demo project (displayed at first start of the software)
	NV4-DEMO	free demo version of NextView®4	

7.1 Driver installation

If connected to USB, a driver installation is required for **meM-LOG-SE** in contrast to a serial RS232 connection. Only then additional software can be installed. To make sure that the installation is done correctly, please follow the instructions in the order as described below.

7.1.1 Install driver package

The prior installation of the bmcm driver package BMCM-DR to the hard disc of your PC makes the driver search for Windows® much easier. Especially in case of driver updates, only the new driver package has to be installed, the hardware automatically uses the new version. The link to install the driver package is located on the **meM-LOG-SE** product page of the "Software Collection"-CD.

7.1.2 Plug&Play installation

As soon as the **meM-LOG-SE** is connected to the PC, the system announces the new hardware. Start the automatic hardware detection by selecting the following option:

- **Windows® XP**: "Install the software automatically" (SP2: do not connect with Windows® Update!)
- **Windows® 2000**: "Search for a suitable driver for my device"

Under Windows® Vista, no selections have to be made. The driver is found and installed automatically upon connection of the hardware, because the driver package has been installed on hard disc before. For the same reason, no additional location needs to be entered for the driver search under Windows® 2000.

7.1.3 Check installation

In the Windows® Device Manager, the entry "Data Acquisition (BMC Messsysteme GmbH)" is included after successful installation displaying the installed bmcm hardware. To open the Device Manager, proceed as follows:

- **Windows® Vista**: Start / Control Panel/ System / "Device Manager"
- **Windows® XP**: Start / Control Panel / System / TAB "Hardware" / button "Device Manager"
- **Windows® 2000**: Start / Settings / Control Panel / System / TAB "Hardware" / button "Device Manager"

Double click the **meM-LOG-SE** to open its properties. For general information, any existing device conflicts and possible sources of error see TAB "General".

7.2 Installation of ST-meM-LOG SE and NextView®4

Install the operating program "ST-meM-LOG SE" for configuring and operating the data logger. The setup program is available on the product page of the **meM-LOG-SE**. The device can be connected both via USB or via the serial interface (RS232).

Install the demo version of the professional software NextView®4 for measurement data acquisition and processing to graphically display and analyze the signal files created with ST-meM-LOG SE. The setup program NV4-DEMO is available in the section "NextView® 4.x".

When you open the software, you get first instructions about how to operate the program. For detailed information, an online help is provided.

With NextView®4 DEMO, signals cannot be stored. The full version NextView®4 is no freeware and requires a license number! A stripped-down "Analysis" version is available.

8 Important notes for using meM-LOG-SE

- The device is only suitable for extra-low voltages – please observe the relevant regulations! For reasons relating to EMC, the device must only be operated with housing closed. ESD voltages at open lines may cause malfunction during operation. Only use an electrically isolated power supply unit (with CE).
- For cleaning the device use water and mild detergent only. The device is designed to be maintenance-free.
- At the 37- and 15-pole Sub-D socket signal cables are connected – use shielded cables only. For best possible interference suppression connect shield at one end only. Close open inputs if necessary.
- The device ground and the chassis are electrically connected to the chassis of the PC, which is usually also connected to ground. Be sure to avoid ground loops, since they will cause measuring errors!
- PCs (notebooks), which are not grounded often produce high potentials to earth at the USB socket, so that safe operation cannot be guaranteed. In this case connect the data logger to earth.
- The Gain is adjusted to even values. Therefore only 4000 (with 12 Bit) values of the full range of the converter are used. As a result, the measuring ranges are slightly larger (±5.12V) than the indicated measuring ranges, so that overranges can be recognized. The AD converter of **meM-LOG-SE** has a code noise of up to ±1 LSB.
- If the device has not been used for longer (>3 months), the integrated accumulator must be recharged .
- The device must not be used for safety-relevant tasks. With the use of the product the customer becomes manufacturer by law and is therefore completely responsible for the proper installation and use of the product. In the case of improper use and/or unauthorized interference our warranty ceases and any warranty claim is excluded.

Do not dispose of the product in the domestic waste or at any waste collection places. It has to be either duly disposed according to the WEEE directive or can be returned to bmcm at your own expense.

9 Technical data meM-LOG-SE (typical at 20°C, 5V, after 5min)

- **Analog inputs**

Channels // Meas. range // Resolution:	16 single-ended // ±5V // 12 bit (2.5mV)	
Abs. accuracy // Noise // Surge protection:	±5mV // ±1 LSB // max. ±35V (on), max. ±20V (off), max. ±20mA in total of all input channels!	
Input resistance // Input capacity:	1MΩ (with Logger turned off: 1kΩ) // 5pF	
Zero shift // Gain drop:	±50ppm/°C // ±50ppm/°C	
Frequency accuracy // Frequency drift:	±100ppm // ±50ppm/°C	
	Normal Mode	***Fast Mode***
Sampling rate:	$1.5*10^{-5}$Hz .. 1Hz / channel	$1.5*10^{-3}$Hz .. 100Hz / channel
Sampling period:	18h 12min 15sec .. 1sec (in steps of sec.)	10min 55sec 350msec .. 0.01sec (in steps of 1/100 sec.)
Total sampling rate*:	16Hz	1.6kHz

*** The total sampling rate is the sum of the sampling rates of the individual used channels (e.g. 5 channels à 100Hz => 500Hz total sampling rate). The values for accuracy always relate to the respective measuring range. Errors might add at worst.**

- **Digital inputs and alarm output**

Channels // Level // Surge protection:	2 input channels // CMOS level (low: 0V..1V; high: 3V..5V) // max. ±0.5V, protected with 1kΩ
Input resistance // Input capacity:	1MΩ (with PC turned off: 1kΩ) // max. 20pF
Output // Current pick-up digital output:	1 relay output: high-active, low-active // 1mA (with app. 4V level), max. 2.5mA (with app. 3V level)
Relay output:	potential-free relay contact 60V, 1A, response or fall time 10ms, live period >100000 cycles

- **Memory**

Storage capacity:	512kB, *Loop Mode* selectable
Required memory:	*Continuous Mode*: 2 Bytes/meas. value; *Alarm Mode*: 7 Bytes/meas. value

- **General data**

USB interface // Power supply:	USB 2.0 compatible (full speed) // 3-pole DIN plug, 9-45V max. 3W
Accumulator:	operating time: 30h-7weeks (dep. on configuration) // charging time: 3-4h
Serial connection // USB connection:	RS232 interface w. null modem cable (ZUKA-SER9) // on Windows® 2000/XP/Vista with USB cable
Analog connection // Digital connection:	all channels at a 37-pole // 15-pole Sub-D socket at the front // back of the device
CE standards:	EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit www.bmcm.de
ElektroG // ear registration:	RoHS and WEEE compliant // WEEE Reg.-No. DE75472248
Max. perm. potentials // Protection type:	**60V DC acc. to VDE**, max. 1kV ESD on open lines // IP30
Temperature range // Rel. humidity:	-20°C..+50°C // 0-90% (not condensing)
Housing // Delivery:	aluminum housing 167 x 113 x 30 mm^3 // device with aluminum housing, 1m USB connection cable, "Software Collection" CD with drivers, software and documentation, description
Available accessories:	DIN rail set ZU-SCHI, serial cable ZUKA-SER9 (3m), Sub-D plugs ZUST37, ZUST15, 3-pole socket ZU3DIN, USB extension cable ZUKA-USB, connecting cables ZUKA37SB, ZUKA37SS, connector boards ZU37BB, ZU37CB, ZU37CO, power supply ZU-PW10W (required for USB also!)
Guarantee:	2 years with effect from sales date, damages at product resulting from improper use excluded

- **Software support**

Software (included):	operating software ST-meM-LOG SE to display and control analog/digital processes; demo software NextView®4 DEMO for graphic display and analysis of signal files
NextView®4 Analysis (optional):	software to display signal files and analyze measurement data under Windows® 2000/XP/Vista

Manufacturer: BMC Messsysteme GmbH. Subject to change due to technical improvements. Errors and printing errors excepted. Rev. 4.0 03/03/2009