OBSOLÈTE

TECHNICAL INFORMATION

BMS 10/BMS 20
Bus Connection Module Interbus-S

for one bar code scanner
from the CLV 21x/22x/43x/44x
and CLV 23x/25x/28x/265/295/490 series

SICK

Note on this technical information

This document describes the function of and the procedure for setting up the BMS 10/20 bus connection module which is used to integrate a bar code scanner in the INTERBUS-S field bus system. In the document the connection module is referred to simply as "BMS".

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1 Important operating information

1.1 Specified used

The BMS connection module is used to integrate SICK CLV bar code scanners into the INTERBUS-S field bus system.
The reading results recorded by a bar code scanner are transferred to the BMS via the host interface. The BMS forwards the received data via the PCP channel (*P*eripheral *C*ommunication *P*rotocol) of the INTERBUS-S to the bus interface module or the connected programmable logic controller (PLC). The BMS represents a *communications partner* in the remote bus segment of the INTERBUS-S. The data is exchanged between the bar code scanner and the bus master via the defined PCP services of the INTERBUS-S. When selecting the master interface module in the host computer, ensure that it is PCP-capable.

The BMS must be permanently installed on site and supplied with a line voltage of AC 230 V (option: AC 115 V). The device does not require maintenance.

The module is available in two versions:

- BMS 10 used to connect the CLV 21x / 22x/ 43x/ 44x
- BMS 20 used to connect the CLV 230/ 250/ 280/ 265/ 295/ 490

> The equipment should be assembled and electrically installed on site by trained technicians only. The relevant safety instructions regarding work in electrical plants must be observed!

1.2 System requirements and application conditions

The following items are required to connect and commission the BMS:

- PCP compatible master connection module in higher-order computer
- Bus connection cable (e.g. from PHOENIX Contact)
- Line voltage of AC 230 V (optionally 115 V)
- A CLV bar code scanner with **RS 232** host interface
- A separate data connection cable for the CLV 230/ 250/ 280 (e.g. Order No. 2 013 568), the CLV 265/ 295/ 490 (e.g. Order No. 2 013 568), not required for CLV 21x/ 22x/ 43x/ 44x.
- A terminal/ PC with terminal emulation program and an RS 232 data connection cable (e.g. Order No. 2 014 054) to allow access to the terminal interface of the CLV.

The BMS is designed for use in industrial environments (*Table 1.1)*.

Parameter	**Permissible value**
Ambient operating temperature	0 ... +40°C
Storage temperature[1)]	-20 ... +70°C
Rel. air humidity	max. 90%, non- condensing
EMC test	in accordance to IEC 801 T1-5
1) In original packaging to protect against dust	

Table 1.1

The BMS has electrical protection class 2 and maximum enclosure rating IP 54 (downward-facing cable outlet).

Information regarding bar code scanners with integrated heating:

The output of the BMS is not sufficient to supply power to CLV bar code scanners with integrated heating. A power supply with a continuous output of approx. 80 W must be used (see also the operating instructions for the CLV).

2 Device description

2.1 Features

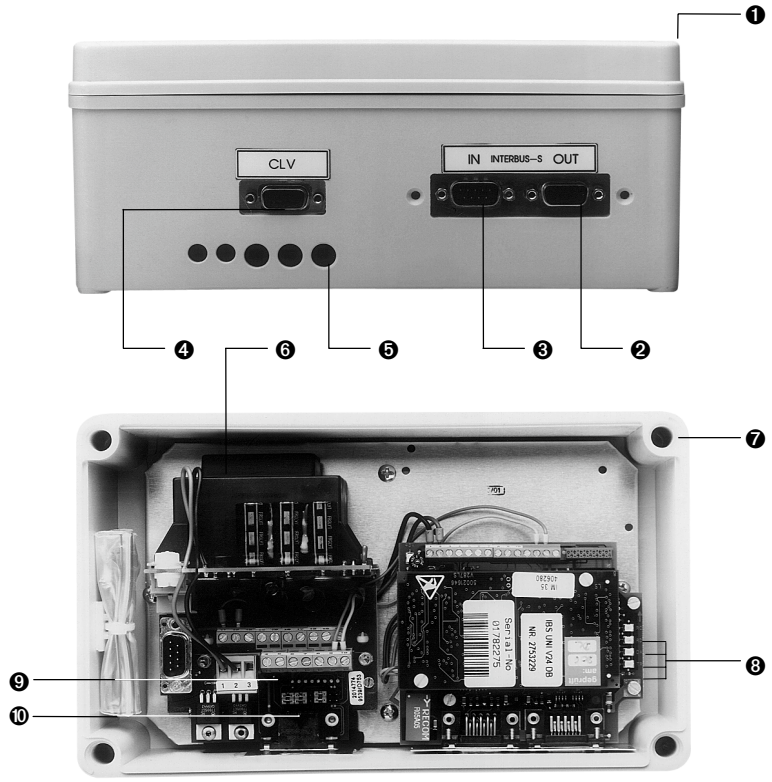
- Data transmission in the INTERBUS-S via PCP channel
- INTERBUS-S-compatible plug connections for 2-wire remote bus technology
- LED indicators showing status of the INTERBUS-S
- Integrated power supply DC 24 V (AMS) for the bar code scanner
- D Sub connector for the bar code scanner with RS 232 host interface
- Auxiliary interface RS 232 of the bar code scanner available in the module
- Digital inputs and outputs for triggering the control signals of the bar code scanner (option: with electrical isolation)

2.2 Construction

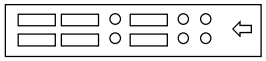
Fig. 2.1 shows the construction of the BMS. The device contains the tried and tested AMS connection module (left) with detachable connection board and two other boards (right) used for connection to the INTERBUS-S. The bar code scanner is connected via the 9-pin or 15-pin “CLV“ D-Sub socket of the BMS, external sensors via the cable glands and terminal strips on the connection board of the AMS. The bar code scanner's function switching inputs and outputs are also internally connected using the terminal strips. Detailed information can be find in the attached *AMV/ AMS Operating Instruction*.
The BMS is integrated in the INTERBUS-S ring via the INTERBUS-S „IN“ and „OUT“ connections.

Fig. 2.2 shows the common construction of a reading station with the BMS.

The integrated I/O interface can be used to transfer the control signals of the bar code scanner or of a photoelectric switch (trigger) via the process data channel of the INTERBUS-S. An electrically isolated output interface (additional I/O card) is available for connecting non-SICK devices.

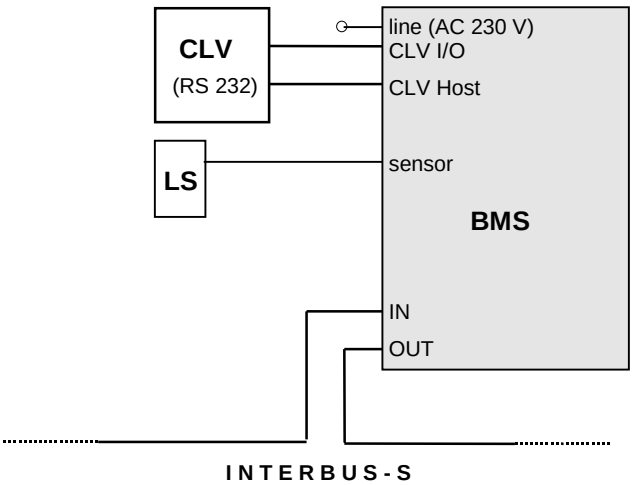


❶ Housing screws
❷ “OUT“connection to INTERBUS-S
❸ “IN“connection from INTERBUS-S
❹ “CLV“ connection
15-pole D-Sub HD socket for
CLV 21x/ 22x/ 43x/44x
9-pole D-Sub socket for
CLV 230/ 250/ 280/ 265/ 295/ 490
❺ Cable glands with cover film
❻ AMS power supply
❼ Screw hole
❽ “RC“ LED (green)
“RD“ LED (red)
“BA“ LED (green)
“TR“ LED (green)
❾ Terminal strips
❿ Plug-in jumpers
(position as shown)



For further details concerning the AMS:
see *AMV/ AMS Operating Instructions*
AMS shown here configured for
CLV 21x/22x

Fig 2.1. BMS for INTERBUS-S (standard model)



LS = photo reflex switch

Fig. 2.2. Reading station with the BMS in the INTERBUS-S

The BMS is integrated in the INTERBUS-S ring in the same way as any other INTERBUS-S device (*Fig. 2.3*). The BMS ensures that the bar code scanner is electrically isolated from the bus interface. The bar code scanner used requires an RS-232 interface as a host interface.

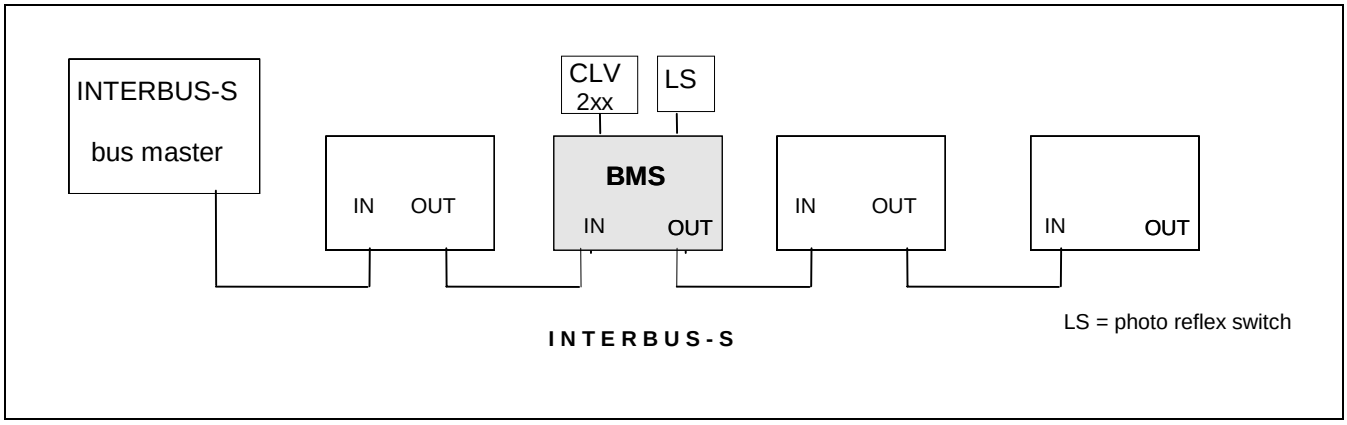


Fig. 2.3. Integration of BMS into a remote bus segment

The BMS operated as a remote bus partner (2-wire technology). It is connected to the upstream and downstream devices by means of 9-pin D SUB plugs and sockets. The required cables can be obtained from PHOENIX Contact, for example.

2.3 Functional description

2.3.1 INTERBUS-S interface

2.3.1.1 Representation of data in the INTERBUS-S

All of the data is transferred via the INTERBUS-S interface. The bus module occupies 4 bytes in the common frame telegram of the INTERBUS-S. Two of these 4 bytes are used for the PCP channel and 2 for the process data channel (*Fig. 2.4*). The PCP channel is used to transmit communications services. The status signals and I/O signals are transmitted on the process data channel. Each byte contains the information for both transmission directions.

	Communication channel (PCP)	Process data channel
IN (to the Master)	15 data 0	15 status IN 0
OUT (to the CLV)	15 data 0	15 status OUT 0

Fig. 2.4. Division of the INTERBUS-S interface into communications and process data channels

One byte of useful data can be transmitted via the PCP channel for each bus cycle. The other byte on the PCP channel controls PCP communication. The status of the data buffer is transmitted to the host computer in the status byte on the process data channel. The host computer responds to this with READ calls to the BMS via the PCP channel. The signals from the I/O interface are also transmitted in the status byte.

The bits in the receive word are evaluated by the host computer. Their meaning is shown in *Fig. 2.5*:

status IN															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Bit	**Value**	**Meaning**
0	1	Error (parametrization, parity check)
1	0 or 1	Receive buffer empty (0); input buffer contents data (1)
2	0 or 1	Receive buffer contents more (0); less (1) than 64 free storage locations
3	0 or 1	Send buffer full (0); more (1) than 16 byte free
4...7		reserved
8	0 or 1	High level (0)/ Low level at input IN3 (inverted signal!)
9		" IN2
10		" IN1
11		" IN0
12...15		reserved

Fig. 2.5. Meaning of the bits in the host receive word

The data in the output word is output by the host computer and has the following meaning (*Fig. 2.6*):

status OUT															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Bit	**Value**	**Meaning**
0...7		reserved
8	0 or 1	Output of LOW (0)**/** HIGH level (1) at OUT 0
9	0 or 1	Output of LOW (0)**/** HIGH level (1) at OUT 1
10	0 or 1	Output of LOW (0)**/** HIGH level (1) at OUT 2
11	0 or 1	Output of LOW (0)**/** HIGH level (1) at OUT 3
12...15		reserved

Fig. 2.6. Meaning of the bits in the host output word

2.3.1.2 Data transmission via PCP communication channel

The READ/WRITE services transmit blocks with a length of 17 data bytes. Exactly 1 character is transmitted during an INTERBUS-S cycle.
Transmission from the CLV to the bus interface module is completed if the READ service has been processed after 28 INTERBUS-S cycles (16 bytes CLV data, 12 bytes PCP overhead) and the data string output by the CLV is less than 17 bytes.
If no more data is pending after the READ service has been executed, the BMS resets bit 1 in the BMS status again. No further READ services are activated by the application program. The READ service transmits the data which has been received in the BMS for executing the READ service. Data that arrives later must be requested by the application program with a further service.

In the case of a WRITE service from the host to the BMS, data telegrams with a length of 17 bytes are sent to the BMS module. The string length of the telegram output by the BMS to the bar code scanner corresponds to the length specified in the bus telegram (1st byte).

The READ/WRITE services are available for the PLC modules as functional modules for the bus interface modules used (with PCP functionality) from the various PLC manufacturers. The data transmission between the BMS and the bus master is then controlled by these software drivers.

The usable string length (useful data length) is always transmitted as the 1st character in the bus telegram (*Fig. 2.7*). This is transmitted as a hexadecimal character. The BMS enters the length of the telegrams transmitted from the BMS to the host automatically.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
length	useful data															

Example: Output data of the bar code scanner: “STX 12345 ETX“

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
07h	02h	32h	33h	34h	35h	36h	03h	38h	39h	00h	00h	bbh	bbh	cch	ddh	aah

Example: Command string to the bar code scanner (“start reading gate“)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
04h	02h	32h	31h	03h	aah	cch	ffh	22h	55h	99h	11h	bbh	bbh	cch	ddh	aah

Fig. 2.7. Structure of the bus telegram on the PCP communication channel

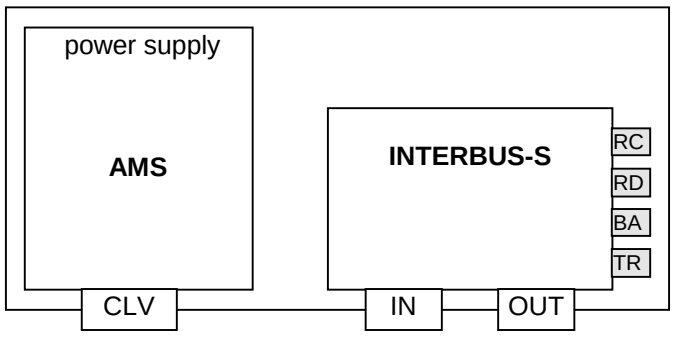
The PCP services of the INTERBUS-S software are used to transmit the data for the READ/WRITE functions. These functions are provided by the manufacturers of the bus interface modules.

Name	Access	INDEX	Data type	Value range
SIO_SEND	WRITE	0x4002	FELD8[17] w	max. 16 useful data
SIO_RECV	READ	0x4003	FELD8[17] r	max. 16 useful data

Tab. 2.1

2.3.1.3 LED indicators

The BMS indicates the device status with respect to the INTERBUS-S features by means of LEDs. The LEDs are located inside the device on the bottom right of the electronics board. The LEDs can be accessed by opening the cover of the device (*Fig. 2.8*).



LED	Color	Meaning
RC	green	Remote Bus Check
RD	red	Remote Bus Disabled (Error)
BA	green	Bus Active
TR	green	Transmit/ Receive (PCP channel busy)

Table 2.1

Fig. 2.8. Position of LED indicators in the BMS

2.3.2 Interface to the bar code scanner

2.3.2.1 Parametrization

The data interface to the bar code scanner operates with the following standard parameters:

Baud rate	Data bit	Parity	Stop
9600 Bd	8	no	1

Table 2.2

The interface can be parameterized with WRITE services after the bus module has been initialized. The special parameter indices for the SER_MODE and SER_BAUD variables are used for this purpose.

Name	Access	INDEX	Data type	Value range
SER_MODE	READ/ WRITE	0x4000	UNSIGNED_16	00 00 hex : 8 data bit, no parity, 1 stop bit 00 01 hex : 8 data bit, odd parity, 1 stop bit 00 02 hex : 8 data bit, even parity, 1 stop bit the rest: reserved
SER_BAUD	READ/ WRITE	0x4001	UNSIGNED_16	09 60 hex : 2 400 Bd 12 c0 hex : 4 800 Bd 25 80 hex : 9 600 Bd 4b 00 hex : 19 200 Bd the rest: reserved

Table 2.3

2.3.2.2 Data transmission

After each read, the bar code scanner transfers the reading result to the BMS via its host interface. The BMS buffers this string and sets the corresponding status (bit1 = 1) in the process data word. The bus master receives the BMS status information via the process data channel after each bus cycle. This information is evaluated in the application program and a READ service is initiated. The data is transferred to the bus master via the PCP channel. The application program initiates write procedures. Their execution is managed by a WRITE service. The data and usable string lengths are entered here.

2.3.3 I/O interface

The bus module is equipped with an I/O interface (*Fig. 2.9*). A total of 4 inputs and 4 outputs are available. The I/O interface of the bar code scanner can be operated directly with the signals. The inputs are implemented as opto-coupler inputs. The outputs are designed for the system components of the CLV 2xx bar code scanner series. An optional, electrically isolated output port (additional I/O board) is available for connecting non-SICK components.

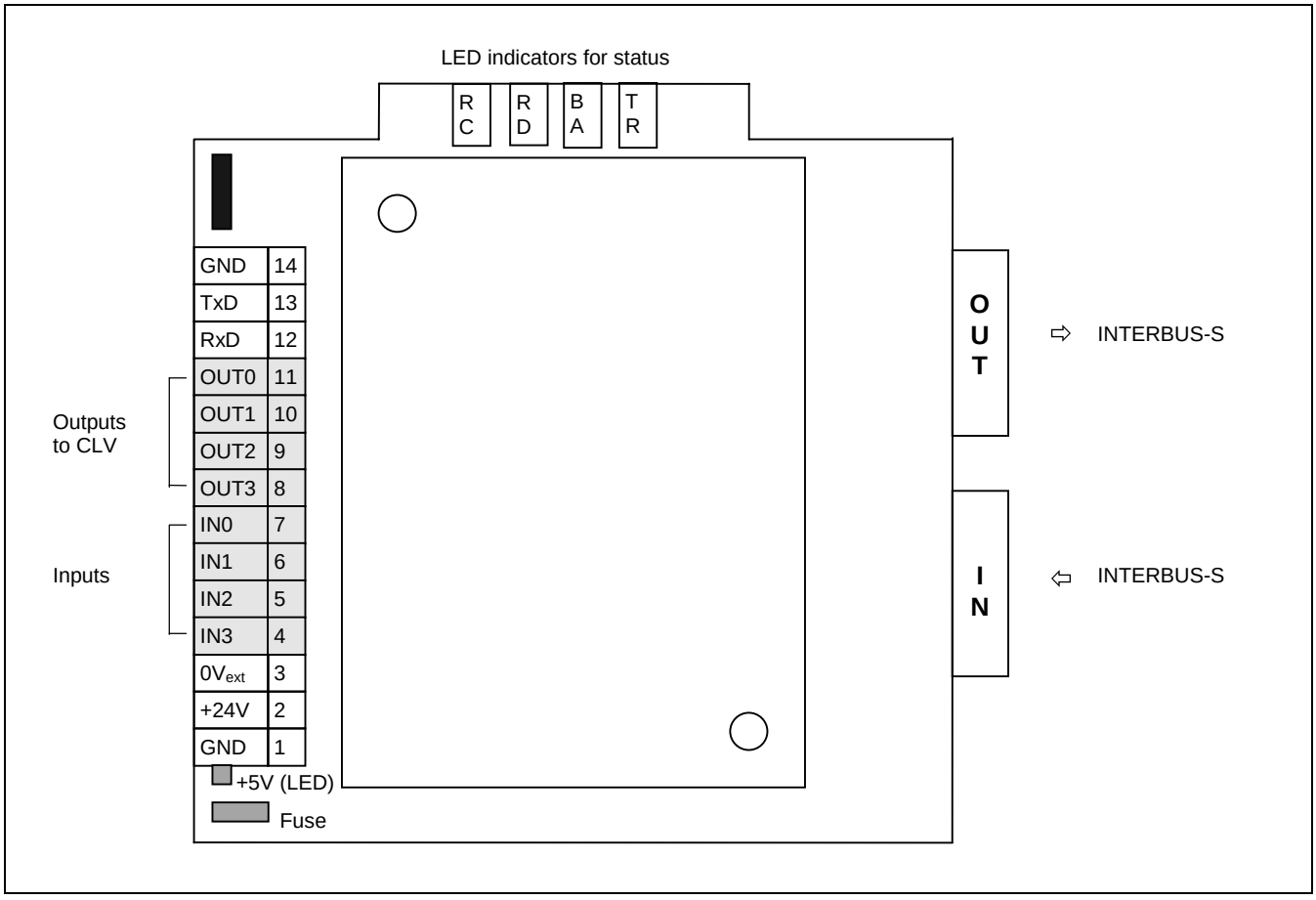


Fig. 2.9. I/O interface of the BMS without optional output board (standard model)

The signals are connected via the terminal strip in the device. The green "+5V" LED indicates that the supply voltage for the electronics in the device is present. The electronics are protected by a fuse in the event of a malfunction.

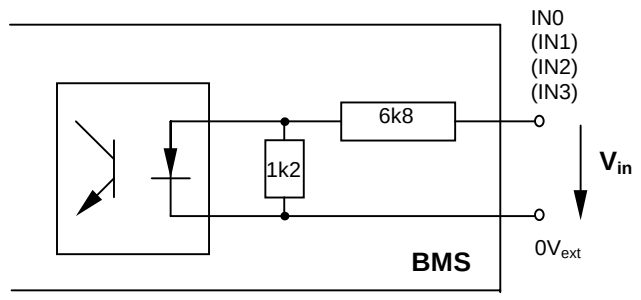
Table 2.4 shows the pin assignment of the I/O interface (standard model)

Pin	Signal	Meaning
1	GND	Reference point for supply voltage to INTERBUS-S module
2	DC 24V	Supply voltage of INTERBUS-S module
3	$0V_{ext}$	Reference point for electrically isolated inputs IN0...IN3
4	IN 3	Input signal 4
5	IN 2	Input signal 3
6	IN 1	Input signal 2
7	IN 0	Input signal 1
8	OUT 3	Output signal 4 for activating the bar code scanner
9	OUT 2	Output signal 3 for activating the bar code scanner
10	OUT 1	Output signal 2 for activating the bar code scanner
11	OUT 0	Output signal 1 for activating the bar code scanner
12	RxD/ R+	Positive receive signal on standard interface
13	TxD	Positive send signal on standard interface
14	GND	Reference point for supply voltage to INTERBUS-S module

Table 2.4

2.3.3.1 Signal inputs IN 0...IN 3

The signal inputs are realized with opto-couplers (*Fig. 2.10*). When a voltage is applied, the current flows through the opto-coupler. This status is transferred as a LOW word in the process data word.



V_{in}	Bit status
< 8 V	HIGH
> 12 V	LOW

Table 2.5

Permissible voltage range:
$0\ V \leq V_{in} \leq 28\ V$

Fig. 2.10. Signal inputs of the BMS

2.3.3.2 Signal outputs OUT 0...OUT 3

The signal outputs of the standard output board are exclusively intended for connecting SICK bar code scanners.

3 Installation

3.1 Scope of delivery

The BMS package for INTERBUS-S contains the following items:

- The BMS connection module in the ordered version
- The technical information regarding the BMS for INTERBUS-S (German/ English)
- The AMV/ AMS operating instructions (German/ English)

The connection cables for the INTERBUS-S must be purchased separately, e.g. from PHOENIX Contact.

3.2 Mounting

- BMS mounted to wall on installation fixtures attached by means of the four holes (dia. 4.4 mm) in the screw shafts (⑦, *Fig. 2.1*). *Fig. 7.1, Page 22,* shows the position of the holes.
- To provide enclosure rating IP 54, the device must be positioned with the connections vertical and facing downward.
- Position the BMS next to the bar code scanner (max. distance 10 m).

4 Electrical installation

4.1 Pin assignment of connections

	CLV 21x/22x 15-pole D-Sub HD socket			CLV 43x/44x 15-pole D-Sub HD Socket			CLV 265/295/490 15-pole D-Sub HD socket		
PIN	Function-interface	Terminal-interface	Host-interface	Function-interface	Terminal-interface	Host-interface	Function-interface	Terminal-interface	Host-interface
1	DC24V	DC24V	DC24V	DC24V	DC24V	DC24V	The function-interfaces are on the I/O socket of the CLV (second cable)	DC24V	DC24V
2		RxD			RxD			RxD	
3		TxD			TxD			TxD	
4				Sensor 2					
5	GND	GND	GND	GND	GND	GND		GND	GND
6									
7						RxD			RxD
8									
9						TxD			TxD
10			RxD						
11			TxD						
12	Dev Rdy			Result 1					
13	Result			Result 2					
14	Sensor			Sensor 1					
15	SensGND			SensGND					

CLV 230/250/280 9-pole D-Sub socket			
PIN	Function-interface	Terminal-interface	Host-interface
1	The function-interfaces are on the I/O socket of the CLV (second cable)	DC24V	DC24V
2		RxD	
3		TxD	
4			
5		GND	GND
6			RxD
7			
8			TxD
9			

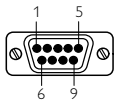
Connector "IN" Interbus-S 9-pin D-Sub plug	
PIN	**Function**
1	DO
2	DI
3	GND
4	
5	
6	DO
7	DI
8	
9	

Connector "OUT" Interbus-S 9-pole D-Sub socket	
PIN	**Function**
1	DO
2	DI
3	GND
4	
5	+5V
6	DO
7	DI
8	
9	RBST

The potentials of the INTERBUS-S interface are galvanical separated to the power supply of the BMS.

Fig. 4.1. Pin assignments of the external BMS connections

“Service“ connection



9-pin D-Sub plug

Pin	Function
2	RxD (CLV)
3	TxD (CLV)
5	GND

Table 4.5

Fig. 4.2. Pin assignment of the internal "Service" connector on the electronics board of the AMS (left-hand side in BMS)

4.2 Installations instructions

The bus module can be installed at any position in an INTERBUS-S remote bus segment. The bar code scanner and INTERBUS-S cables are connected via the plug connections at the front of the BMS.
The control signals ("Sensor", "Dev.Rdy.", ...) of the bar code scanner are connected in accordance with the device variant of the BMS. In the case of the BMS with optional I/O output board, these signals must be connected via the terminals on the additional board.

The BMS must not be opened unless it has been de-energized!

Description identical to the AMV/AMS operating instructions,

- Connect the power cable (with PE connection) to the internal AMS ⑥ (with the power supply switched off)
- Connect the bar code scanner to the BMS ("CLV" socket ④), max. cable length 10 m
- Connect the function inputs and outputs of the bar code scanner to the peripheral equipment using the I/O interface of the INTERBUS-S board (*Fig. 2.9*)
- For the RS 232 interface version, apply the ex-factory settings to the plug-in jumpers ⑩ (incorrect configuration could destroy the interface module in the bar code scanner!)
- Connect the bus cable of the INTERBUS-S (“IN“ plug/ “OUT“ socket).
- Do not lay the data cables to the bar code scanner with the power cables
- Switch on the power supply of BMS

4.3 Connection diagrams

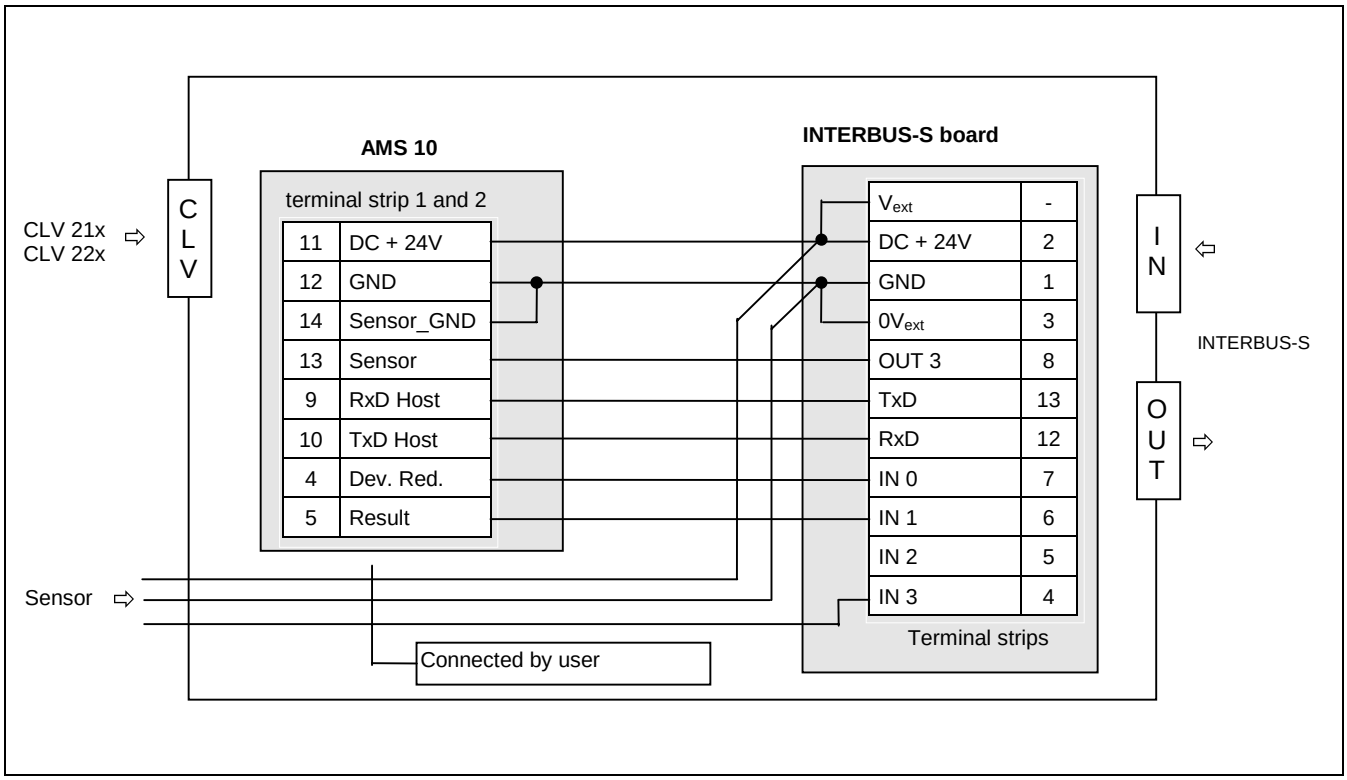


Fig. 4.3. BMS 10 connection diagram for CLV 21x/ 22x

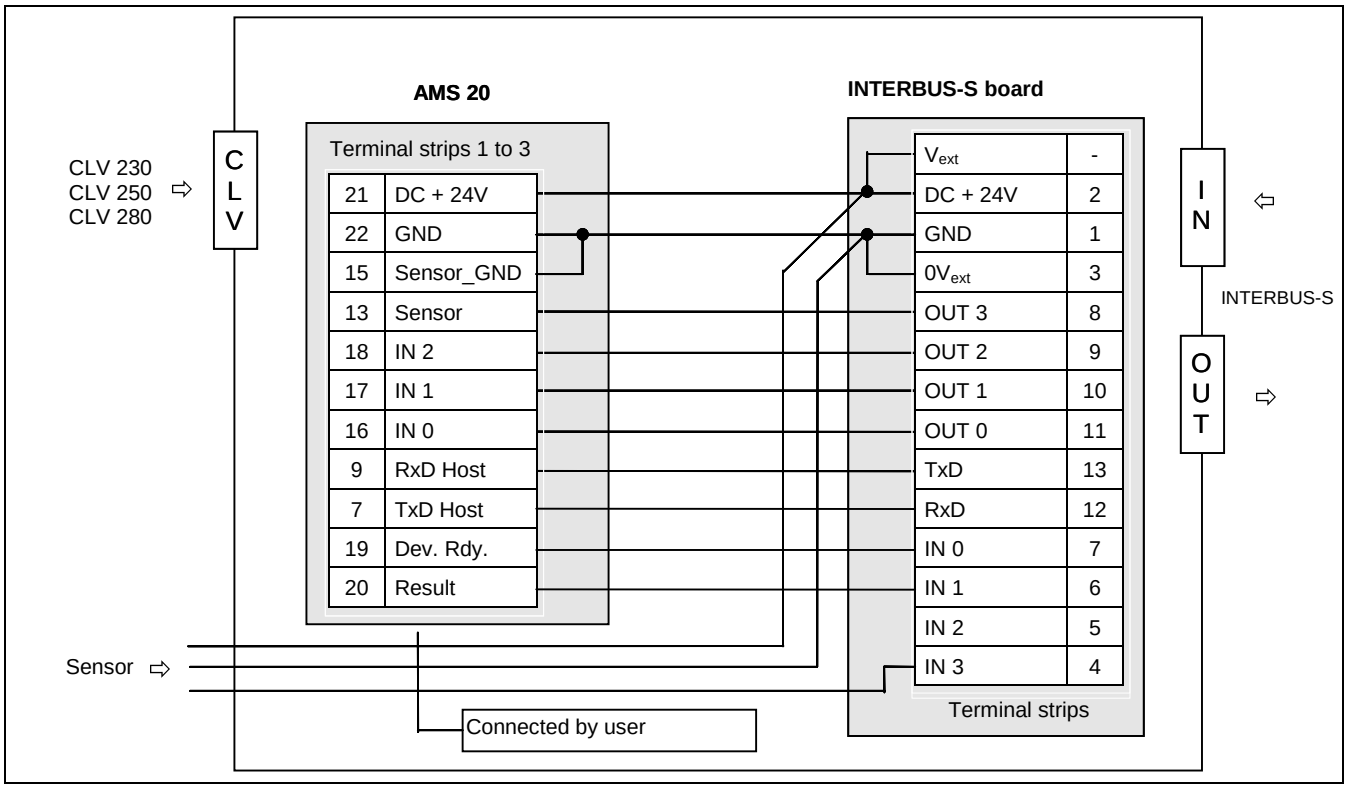


Fig. 4.4. BMS 10 connection diagram for CLV 230/ 250/ 280

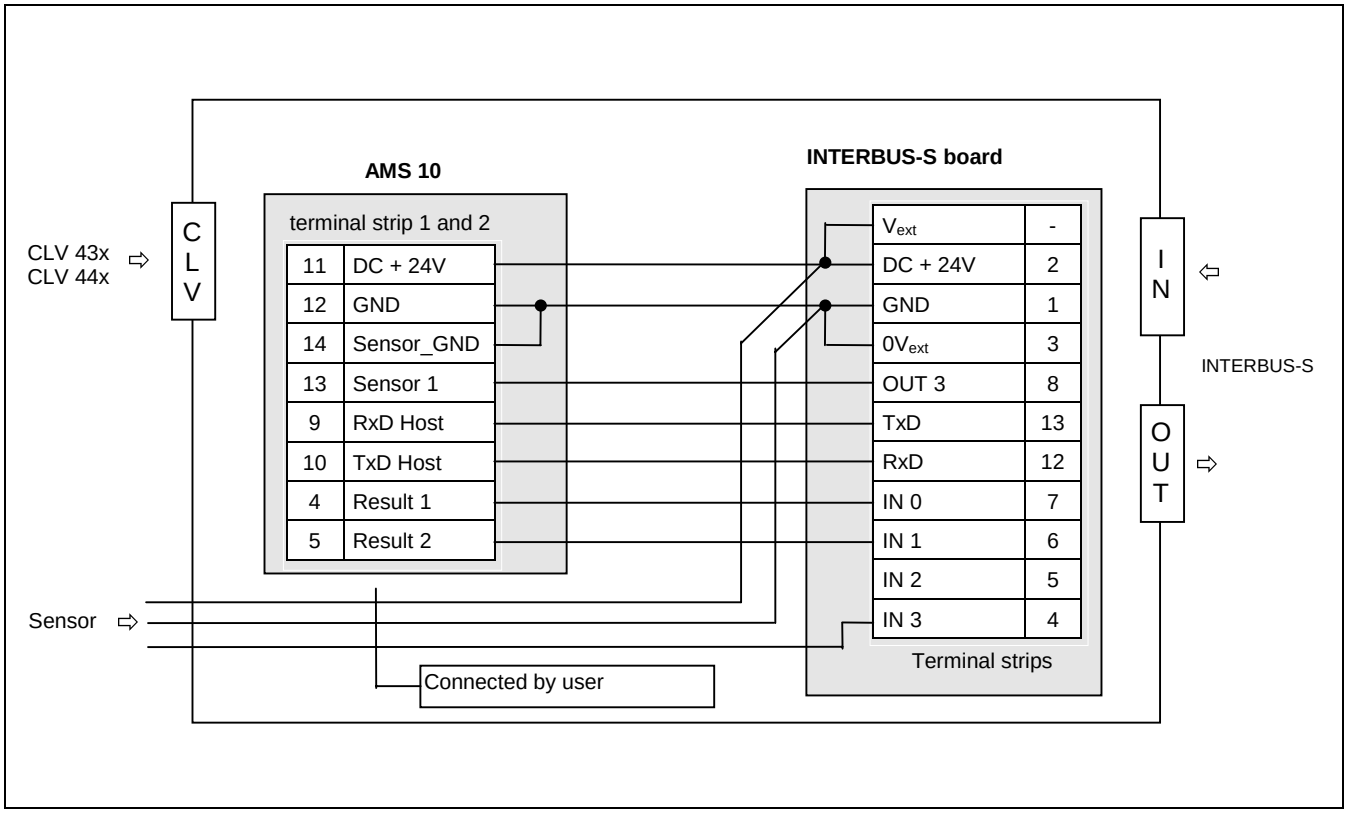


Fig. 4.5. BMS 20 connection diagram for CLV 43x/ 44x

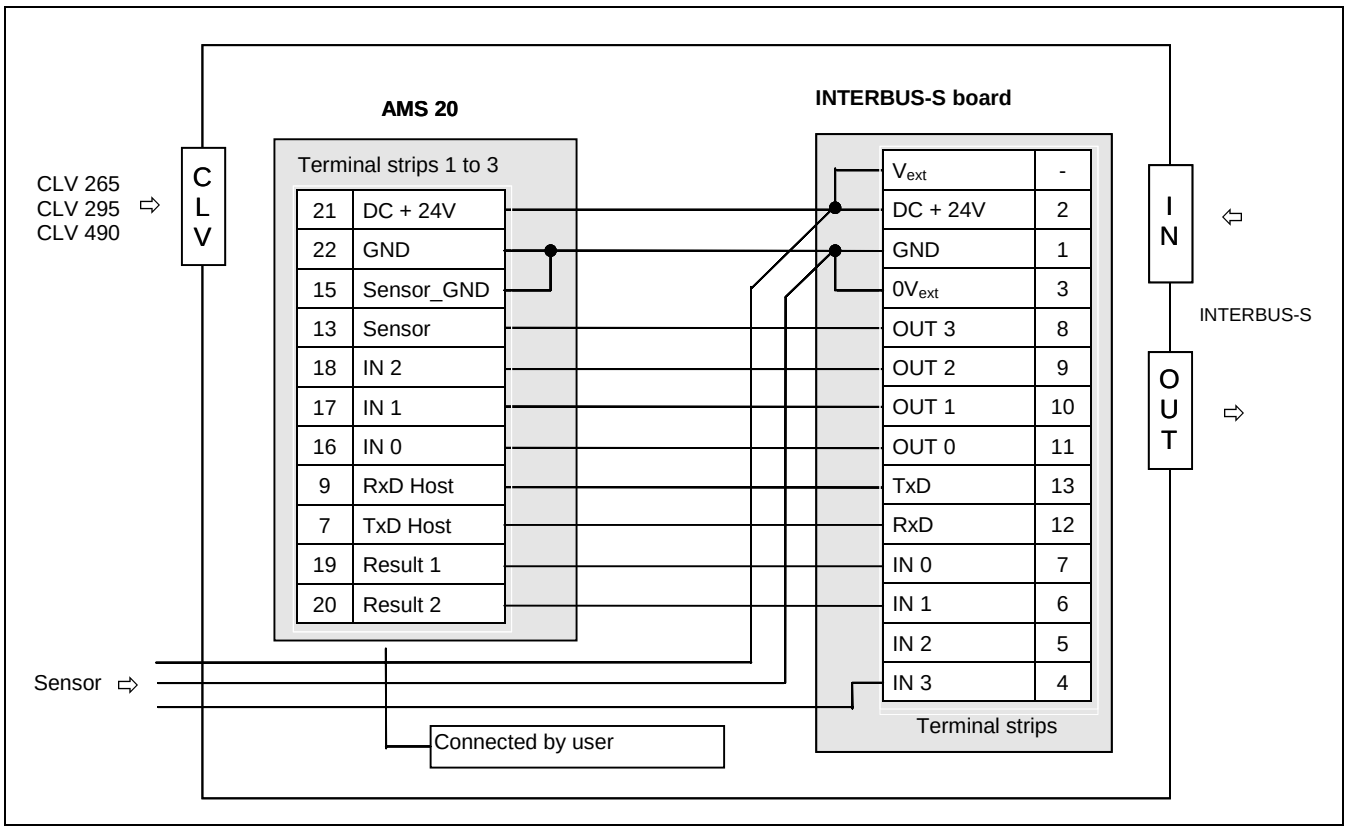


Fig. 4.6. BMS 20 connection diagram for CLV 265/ 295/ 490

5 Commissioning

5.1 User interface

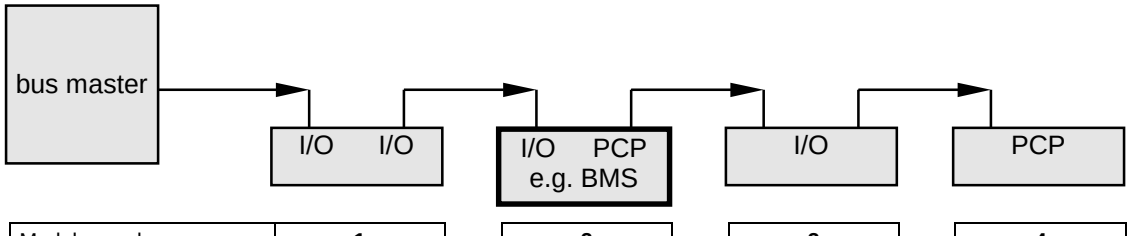
5.1.1 INTERBUS-S interface

The BMS must be entered as a communications partner in the KBL (communications relationship list) of the bus master. The instructions for doing so can be found in the description of the bus interface module. The BMS module is parameterized with WRITE services by the higher-level controller (e.g. PLC).

All of the devices installed in the INTERBUS-S have an *ID code* to allow the bus to identify the partner automatically when the bus is initialized:

ID code
F3 HEX (243 DEZ)

The device parameters of the BMS are entered in the KBL of the bus master. An example of these parameters is shown in *Fig. 5.1*. Further details are provided in the descriptions of the bus interface modules.



Module number	1		2		3	4
I/O data word	1	2	3	4	5	6
Remote address			1			2
Communications reference	-			2 or 3		3 or 2

Example:

rem_addr = 1:	Physical address of the PCP participant in accordance with the installation in the ring
com_ref = 2:	Logic address of the INTERBUS-S partner
serv_sup[ ] = 00 30 00 80 b0 80:	The PCP services supported by the module

Fig. 5.1. Communications relationship list of bus master

The "INITIATE", "READ", "WRITE" and "ABORT" services are available for communication. After the BMS has been initiated with the PCP "INITIATE" service, data can be transferred to the bus module with the "WRITE" service. The status bits for controlling the data buffer are also transmitted via the process data channel at this point.

The green "RC" and "BA" LEDs light up after the module has been successfully initialized. The green "TR" LED lights up briefly while data is being transmitted on the PCP channel.

5.1.2 Interface to the bar code scanner

The parameters for the host interface of the bar code scanner must be defined in accordance with the BMS settings (*Table 2.2K)* (see also operating instructions for the bar code scanner).

5.2 Actions for initial operation

All of the relevant transmission systems must be set up to transfer the reading results from the bar code scanner to the host computer. These are

- the parameters of the bar code reader (host interface, trigger parameters, code parameters)
- the BMS bus module (INITIATE, READ, WRITE, and any connected trigger photoelectric switches)
- the bus master (enter BMS as communications partner)

The green "Device Ready" LED on the bar code scanner lights up after all of the components have been connected and the parameters have been set.

5.3 Functional test

A functional test can be performed if problems arise with the functioning of the BMS In the installation phase. This test is performed as follows:

- ➢ Disconnect the bar code scanner cable from the BMS ("CLV" socket)
- ➢ Connect the signal cables for the host interface of the bar code scanner ("RxD" and "TxD") on the INTERBUS-S board (optional, additional I/O board) in the BMS (the external cable of the bar code scanner must be disconnected). The data output by the BMS is now directly received again by the bus module.

In this way, the functioning of the device can be tested independent of the required interface parameters and external connections. The data output with the WRITE service must be detected again by a READ service. The bus module must be successfully initialized (INITIATE service) before the READ/WRITE services are activated.

6 Error correction / troubleshooting

6.1 Troubleshooting table

Fault	Possible cause	Corrective measures
The green “+5V“ LED does not light up	• No power supply	• Check the power supply • Check the fuse
No data from the CLV	• Wrong parameters set in the CLV for his host interface • Wiring fault in the cable	• Do the functional test (see *chapter 5.3*), Check interface parameter (RS 232, baud rate, data format) • Check setting for trigger (parametrization of CLV, wiring)
Module address error	• Master interface module does not support PCP • Parameterization error on master	• Check addressing procedure in bus
Status bit error	• Partner not initialized	• Execute PCP "INITIATE" service
"RD" LED lit	• Bus malfunction	• No bus operation, bus cables not connected, malfunction in bus operation

Table 6.1

7 Technical data

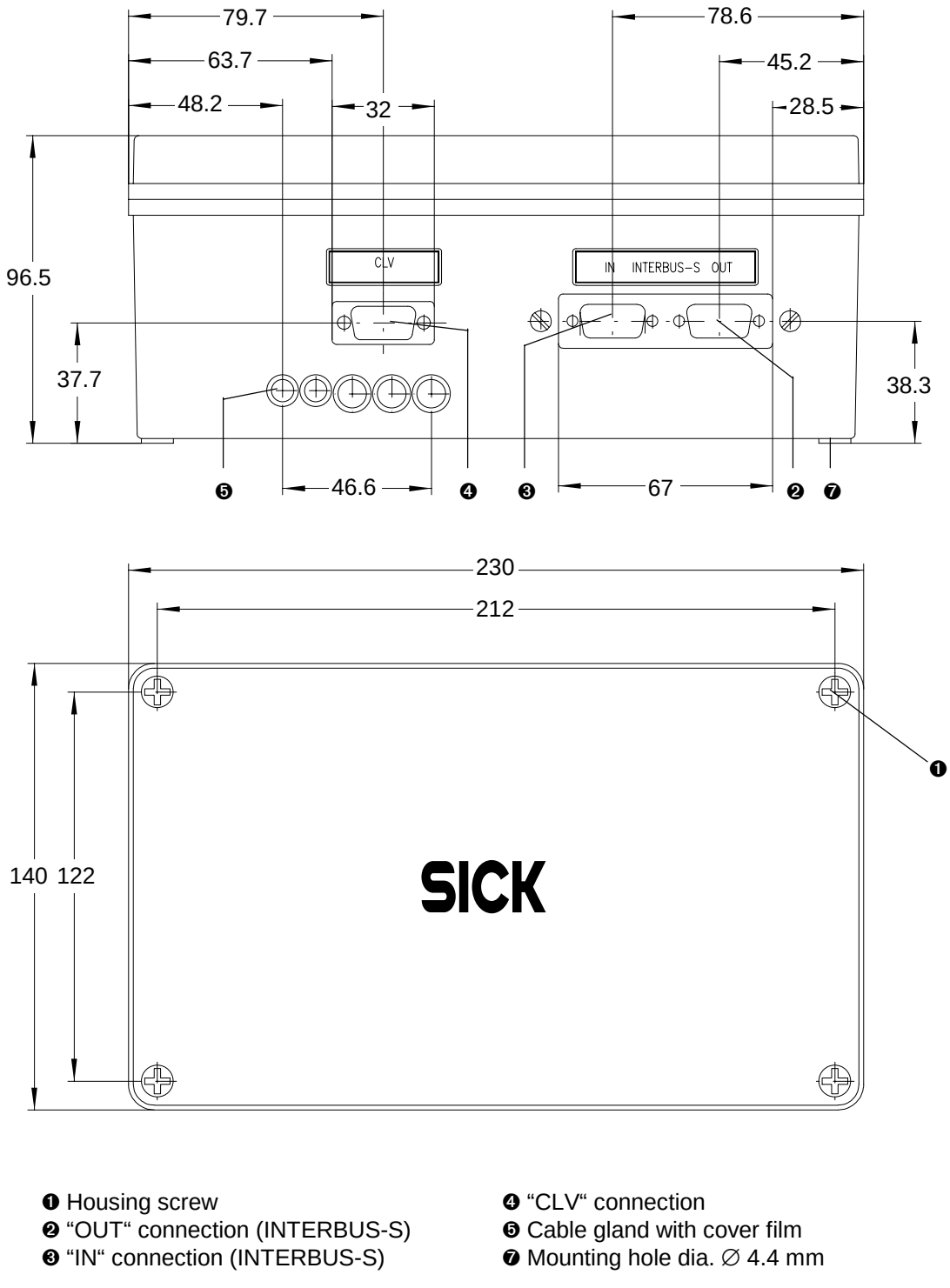
7.1 Specification

Type	**BMS 10**	**BMS 20**
Supported CLVs	CLV 21x/ 22x/ 43x/ 44x	CLV 230/ 250/ 280/ 265/ 295/ 490
Indicators (internal)	4 x LED (RC, RD, BA, TR)	
CLV interface	RS 232	
Connection	15-pin D-Sub HD socket	9-pin D-Sub socket
Data transmission rate	2400 ... 19 200 Bit/ s	
Data format	8 Data bits, parity: no, odd or even, 1 stop bit	
Receive buffer size	256 Byte (to bar code scanner)	
Send buffer size	256 Byte (from bar code scanner)	
INTERBUS-S interface		
Connection	9pin D-Sub plug (IN)/ socket (OUT)	
ID Code	F3 hex (243 dec.)	
Message length	16 bytes for useful data in each direction	
I/O interface (digital)	4 inputs, 4 outputs	
Cable glands	2 x 7 Ø mm and 3 x 9 Ø mm, with strain relievers	
Operating voltage	AC 230 V ± 10% (option: AC 115 V), 50...60 Hz	
Power consumption	Max. 30 W	
Power output [1)]	See enclosed *AMV/ AMS Operating Instructions*	
Housing	Polycarbonate	
Enclosure rating [2)]	IP 54 (to DIN 40 050)	
Protection class	2 (to VDE 0106)	
EMC test	to IEC 801 T1-5	
Mounting	With mounting holes dia. 4.4 mm in screw shafts	
Weight	Approx. 1800 g	
Dimensions (L x W x H)[3)]	230 mm x 140 mm x 96.5 mm	
Temperature (oper./storage)	0 ... +40 °C/ –20 .... +70 °C	
Rel. air humidity	Max. 90%, non-condensing	

1) For a CLV 2xx bar code scanner and a SICK clock sensor
2) Cable outlet facing downward 3) Without protruding plug connections

Table 7.1

7.2 Dimensioned diagram



❶ Housing screw
❷ “OUT“ connection (INTERBUS-S)
❸ “IN“ connection (INTERBUS-S)
❹ “CLV“ connection
❺ Cable gland with cover film
❼ Mounting hole dia. ∅ 4.4 mm

Fig. 7.1. Dimensions of BMS for INTERBUS-S

8 Ordering information

8.1 BMS connection modules

Order No.	Type	Description [1)]	for device
1 012 672	BMS 10-0113	Connection module for INTERBUS-S with AC 230 V/ DC 24 V transformer. D-Sub plug connections for CLV connection and field bus connection. Terminal strips (signal distributor), internal "Service" D-Sub plug (access to terminal interface RS232 of bar code scanner), strain relievers, enclosure rating IP 54	CLV 21x/ 22x/ 43x/ 44x
1 012 680	BMS 10-0112	As BMS 10-0113, but with AC 115 V/ DC 24 V transformer	
1 012 683	BMS 20-0113	As BMS 10-0113	CLV 230/ 250/ 280/
1 012 684	BMS 20-0112	As BMS 20-0113, but with AC 115 V/ DC 24 V transformer	265/ 295/ 490
1) Not for CLV 200 devices with heating			

Table 8.1

8.2 Cables and connectors

Order No.	Description	Wires	Length	Connection
6 007 655	Power cable with 3-pin power plug (grounding type) and open end (stripped)	3	3m	Line voltage to BMS
6 010 075	Connection extension cable, Ø 6.5 mm, shielded, with 15-pole D-Sub HD socket/ plug	15	2 m	CLV 21x/ 22x/ 43x/ 44x to BMS
2 013 568	Data connection cable ("Host/Term" connection), Ø 7mm, shielded, with 9-pole D-Sub socket/ plug	9	3 m	CLV 230/ 250/ 280 to BMS
2 013 569	As 2 013 568, but longer	9	10 m	
2 013 574	Connection cable ("I/O" connection), Ø 7.4 mm, with 9-pole D-Sub-plug and open end (stripped)	9	3 m	
2 020 308	Connector housing 15 pole (with EEPROM) and 9-pole socket and cable with open end.	2 x 9 x 0.23 mm^2	3 m	CLV 265/ 295/ 490 to BMS 20
2 014 054	Data connection cable RS 232, Ø 5 mm, shielded, with two 9-pole D-Sub sockets	3	3 m	Terminal/ PC to BMS ('Service')
6 010 088	Data cable, Ø 6.6 mm, shielded, for connection cables up to 3 m in length	15 x 0.09 mm^2	By meter	CLV 21x/ 22x /43x/ 44x to BMS
6 005 695	Data cable, Ø 7 mm, twisted pair, shielded, for CL 20 mA, RS 422, and RS 232 interfaces as well as general applications	4x 2 x 0.2 mm^2	By meter	-
6 007 508	Data cable, Ø 8.5 mm, twisted pair, shielded, for network RS 485	2 x 2 x 0.23 mm^2	By meter	-
6 009 438	D-Sub connection housing (metal) for 9-pole and 15-pole HD elements	-	-	-
6 007 335	D-Sub connection elements, 9-pole socket connector	-	-	-
6 007 336	D-Sub connection elements, 9-pin plug connector	-	-	-
6 010 019	D-Sub connection elements, 15-pole socket connector	-	-	-
6 010 020	D-Sub connection elements, 15-pin plug connector	-	-	-

Table 8.2

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