BENDER
The Power in Electrical Safety©

Protocol converter DI400

Expansion module for Bender monitoring systems

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Device features

- Display of operating status and alarm messages from Bender monitoring systems
- A set of LEDs, red, yellow and green, allowing messages to be indicated in an order of priority
- 1000 freely programmable message texts
- Memory with real-time clock to store 1000 alarm messages with date and time stamp
- 16 digital inputs (option)
- 1 programmable relay (option)
- Non-reflecting, multicoloured foil
- Smooth surfaces without openings to meet the hygiene requirements for medical locations

Product description

The protocol converter DI400 is an expansion module for Bender monitoring systems to exchange data via the BMS bus. It permits a doubling of the internal BMS bus address range 2…150 for address connection to the TM800 operator panel or an MK800 alarm indicator and test combination.

Function

The DI400 is connected to the TM800 operator panel or MK800 via the external BMS bus. The first devices of the address range 2…150 are connected to the internal BMS bus of the TM800 operator panel or the MK800 alarm indicator test combination. Additional devices can be connected to the internal interface of DI400. All operating, warning and fault messages of the devices connected to DI400 are collected and can be accessed and indicated via the external interface of TM800 operator panel or MK800.

The DI400 is mounted into an enclosure suitable for wall mounting.

History memory

The DI400 stores up to 1000 messages with date and time in the history memory (ring buffer). When more than 1000 messages are recorded by DI400, the 1001th message overwrites entry 1. The history memory can be read out with the PC software via USB interface or the BMS bus.

Programming

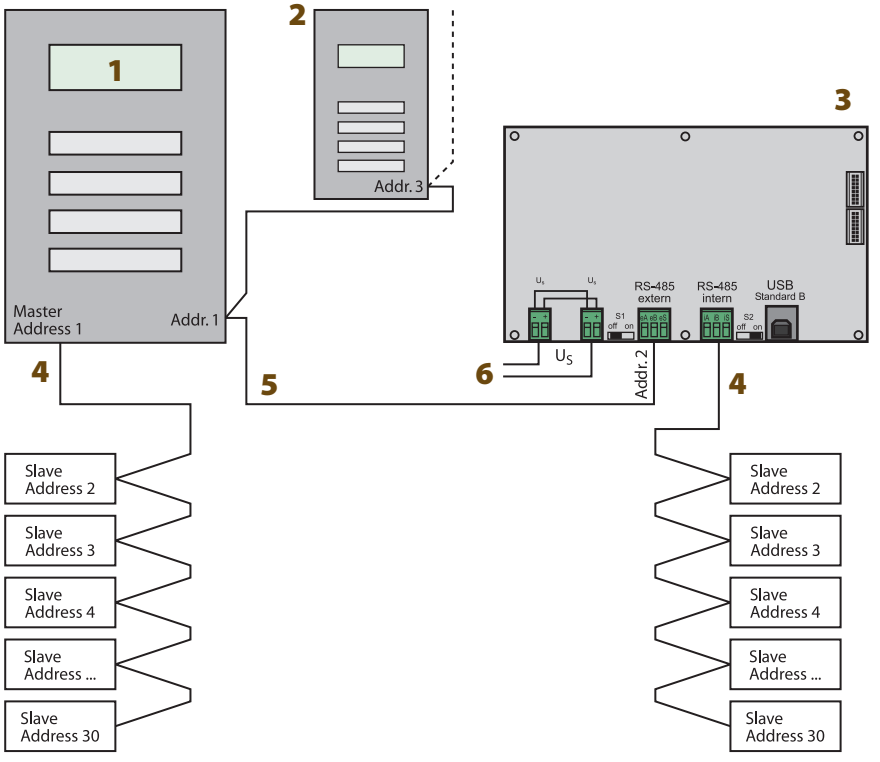
The DI400 is capable of transmitting messages without the need for additional parameter setting. If, however, the history memory is used, the respective messages have to be parameterised with TMK-SET, in the same way as MK800.

Settings

The address of the external BMS interface of the DI400 is factory set to 2. The address can be set via a DIP switch or by parameterization (TMK-SET).

On the internal BMS bus, the DI400 always is the master and has address 1.

Wiring diagram



1 - TM operator panel or MK800 alarm indicator and test combination

2 - TM operator panel or MK800 alarm indicator and test combination

3 - BMS expansion module DI400

4 - Internal BMS bus

5 - External BMS bus

6 - Connection to supply voltage U_S

Note: Terminate both ends of the BMS bus with 120 Ω resistors (R).

Technical data

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 250 V
Rated impulse withstand voltage/pollution degree	4 kV/3

Supply voltage

Supply voltage U_S	AC/DC 24 V
Frequency range U_S	AC 40…60 Hz, DC
Operating range U_S	AC 18…28 V/DC 18…30 V
Power consumption	≤ 5 VA

Displays and LEDs

Standard message texts in	21 languages
Alarm addresses configurable	250
Programmable text messages	1000
History memory (messages)	1000
Standard text message	3 x 20 characters
Additional text message (press button to access)	3 x 20 characters
Indication LEDs (three different colours)	NORMAL (green) WARNING (yellow) ALARM (red)
Menu texts	German/ English
Buttons	5 (Isometer test, buzzer mute, additional text, scroll, menu)

Buzzer

Buzzer message	can be acknowledged, with new value operation
Buzzer interval	configurable
Buzzer frequency	configurable
Buzzer repetition	configurable

Inputs (DI400-11 only)

Digital inputs	16 (IN1…IN16)
Galvanically isolated	
Control of digital inputs via voltage-free contacts/ extraneous voltage	
Operating principle: N/O, N/C operation, off, selectable for each input	
Factory setting	off
Voltage range (high)	AC/DC 10…30 V
Voltage range (low)	AC/DC 0…2 V

Interface internal/external

Interface/protocol	2 x RS-485/BMS
Baud rate internal/external (default setting)	9.6 kbit/s/57.6 kbit/s
Cable length	≤ 1200 m
Cable (twisted in pairs, one end of shield connected to PE)	recommended: J-Y(St)Y min. 2 x 0.8
Terminating resistor	120 Ω (0.25 W) connectable via DIP switch
Device address, BMS bus internal/external	1(…150)/1…99
Factory setting device address internal/external	1 (master)

Programming

Interfaces	RS-485/BMS/USB
Software TMK-SET	V 4.0 or higher
Factory setting password query	activated

Colours

DI400

Front foil	RAL 7035 (light grey)/RAL 7012 (basalt grey)
Marking buttons	RAL 5002 (ultramarine blue), lettering: RAL 7035 (light grey)
Front plate	RAL 7035 (light grey)

Switching elements (DI400-11 only)

Number			1
Operating principle			N/C or N/O operation (programmable)
Electrical endurance, number of cycles			10000
Contact data acc. to IEC 60947-5-1			
Utilisation category	AC-13	AC-14	DC-12
Rated operational voltage	24 V	24 V	24 V
Rated operational current	5 A	3 A	1 A
Minimum contact rating			1 mA at AC/DC > 10 V

Environment/EMC

EMC immunity	IEC 61000-6-2
EMC emission	IEC 61000-6-3
Operating temperature	-5…+55 °C
Classification of climatic conditions acc. to IEC 60721	
Stationary use	3K5
Transport	2K3
Storage	1K4
Classification of mechanical conditions acc. to IEC 60721	
Stationary use	3M4
Transport	2M2
Storage	1M3

Connection

Connection pluggable screw terminals	
Connection properties (supply voltage, BMS bus)	
rigid/flexible/conductor sizes	0.2…2.5 mm² (AWG 24…12)
flexible with ferrule without/with plastic sleeve	0.25…2.5 mm²
Connection properties (inputs)	
rigid/flexible/conductor sizes	0.08…1.5 mm² (AWG 28…16)
flexible with ferrule without/with plastic sleeve	0.25…1.5/0.25…0.5 mm²
Stripping length	7 mm
Tightening torque	0.5…0.6 Nm

Other

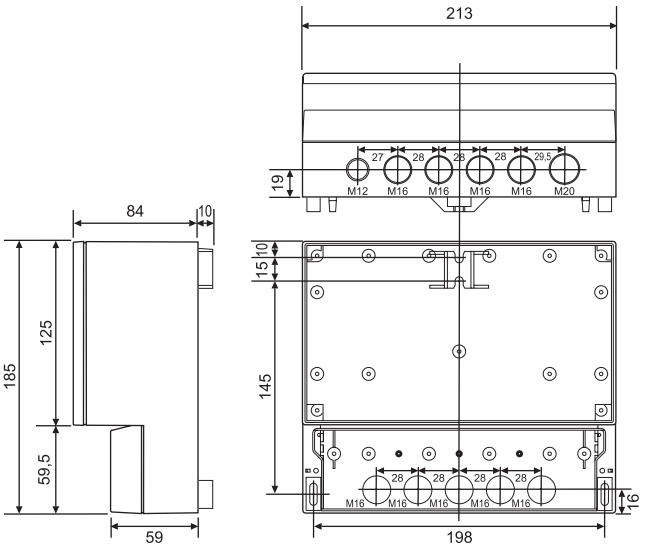
Operating mode	continuous operation
Mounting	display-oriented
Degree of protection, internal components (IEC 60529)	IP50
Degree of protection, terminals (IEC 60529)	IP30
Flammability class	UL94 V-0
Operating manual	TGH1408
Weight	
Surface-mounting	< 880 g

Ordering information

Enclosure	Indication	Digital inputs/relay outputs	Type	Art. No.
Surface mounting	3 LEDs	16/1	DI400-11	B 9510 0113
		–	DI400-12	B 9510 0114

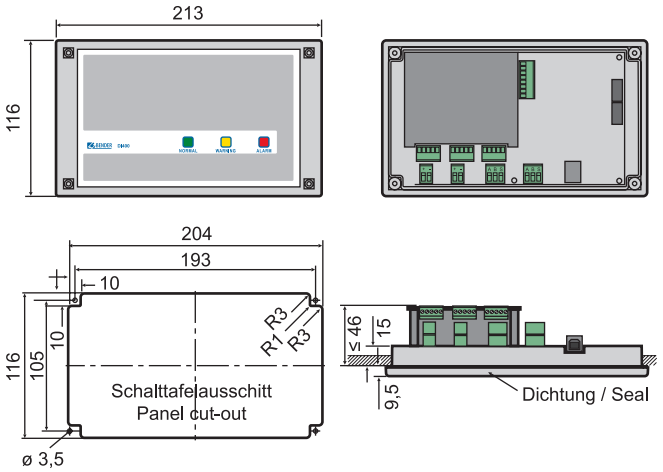
Dimension diagram DI400-11/DI400-12, surface mounting

Dimensions are given in mm



Dimension diagram DI400-11/DI400-12, example: door mounting

Dimensions are given in mm



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