

# COMTRAXX® MK2430

Remote alarm indicator and test combination with LC display




**COMTRAXX® MK2430**

### Device features

- Display of operating status, warning and alarm messages in accordance with DIN VDE 0100-710, IEC 60364-7-710 and other standards
- Backlit clear LC text display (4 x 20 characters)
- Predefined standard texts in 20 languages
- 200 freely programmable message texts
- Bus technology for easy installation and reduced fire load
- Audible alarm (can be acknowledged)
- Parameter setting via menu (German/English)
- Suitable for flush and surface mounting
- Easy commissioning due to predefined message texts
- 12 digital inputs/1 relay output (MK2430-11 only)
- History memory with real-time clock to store 250 warning and alarm messages
- Easy replacement of MK2418/MK2007

### Approvals



### Product description

The universal remote alarm indicator and test combination MK2430 is designed for visual and audible indication of alarm messages from Bender systems such as EDS, RCMS and MEDICS. In MEDICS monitoring systems, the MK2430 meets the requirements of IEC 60364-7-710 and DIN VDE 0100-710:2002-11 in respect of test functions for IT system monitoring and alarms from changeover modules.

The IT system monitoring equipment can be tested using the programmable test button.

### Important display functions:

- Normal operation indicator (green LED)
- Insulation fault
- Overload
- Overtemperature
- Messages from insulation fault locators (EDS) and residual current monitoring systems (RCMS)
- Supply line failure
- Interruption of the phase conductor or PE conductor of the ISOMETER®
- Power supply fault conditions and changeover system faults
- Device failure
- Test results
- Measured values

The LC text display makes this information easy to understand. The connection between the MKs and the changeover and monitoring modules is implemented with bus technology. During normal operation, the MK2430 indicates the readiness for operation of the system. The MK2430-11 features 12 digital inputs allowing messages from third party systems to be recorded and displayed on the MK2430, for example from medical gases or UPS systems (special safety power supply sources).

### Function description

On its backlit LC display (4 x 20 characters), the MK2430 displays messages from all BMS bus devices assigned via alarm addresses. As well as being used as a standalone indicator the MK2430 also supports parallel operation. In the event of an alarm message, the yellow "WARNING" LED or the red "ALARM" LED lights up and the message appears on the LC display in plain text format. At the same time there is an audible signal (acknowledgeable). If a second message is received whilst the first is still pending, the audible signal will sound again and the messages will flash up alternately on the LC display. The address of the device triggering the alarm can also be called up. The audible signal sounds again once a configurable period of time has elapsed.

Internal device parameters (alarm addresses, test addresses,...) and the parameter setting of EDS and RCM systems can be accessed via the menu system.

As a master, the MK2430 can also be used in installations with a number of IT and EDS systems.

The test button can be used to check the operation of an ISOMETER® isoMED427P or IRDH. A message is only output on the MK2430 on which the test button was pressed.

When wiring the bus connection, please note that a 4-wire cable (2 x BUS, 2 x  $U_S$ ) with a suitable cross section is required when the supply voltage  $U_S$  is incorporated in the cable.

### Display/operating elements

The backlit display features four lines of 20 characters. It supplies medical and technical personnel with information that is always clear and unambiguous, in order to help them to make decisions. Every alarm message comprises three lines which appear spontaneously and three additional lines which can be displayed at the touch of a button. The fourth line contains status information (number of messages, test procedures, menu information). Three LEDs are located above the text display. They indicate: normal operation (green), warnings (yellow) or alarms (red). Five buttons are available for acknowledging alarms and warnings, and for the menu system.

**Programming**

Standard message texts can be activated by enabling alarm addresses. These texts are available in 20 languages. Standard message texts can be activated by enabling alarm addresses. Individual message texts each comprising 6 lines of 20 characters can be programmed with the TMK-SET software. An LED (yellow or red) and an audible signal can be assigned to each message. For this purpose, the PC is connected to the USB interface or BMS bus (RS-485) via converter.

**History memory**

Warning and alarm messages are written to the history memory automatically with date and time stamp. 250 text messages can be saved; the history memory can be read out via the operating menu, the Medi-History PC software or MK-SET.

**MK2430-12**

The MK2430-12 is used for visual and audible indication of alarms from Bender systems, such as EDS, RCMS and MEDICS systems and to trigger the A-ISOMETER® test function via the BMS bus. Furthermore, the MK2430-12 can also be used with older changeover modules in conjunction with SMI470-9 or as a parallel display in conjunction with MK2430-11 or SMI472-1. The programmed message texts are displayed on the LCD in the selected language.

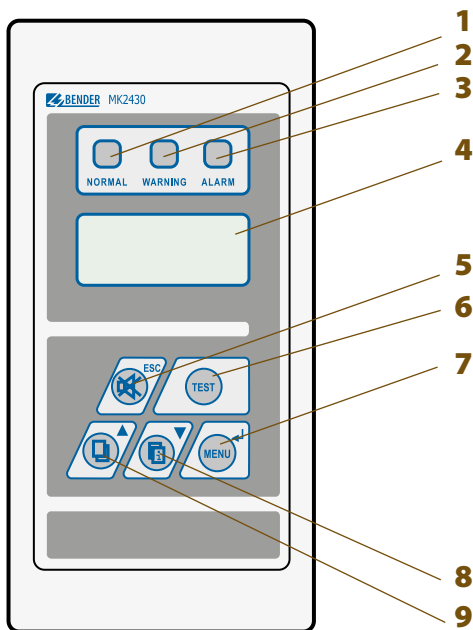
**MK2430-11**

The MK2430-11 features all the functions of the MK2430-12, plus 12 digital inputs. These digital inputs (IN1... IN12) are controlled via potential-free contacts (N/C, N/O operation configurable). Any message text can be assigned to the inputs.

**MK2430C-...**

The MK2430C-... is factory-programmed according to the customer's requirements.

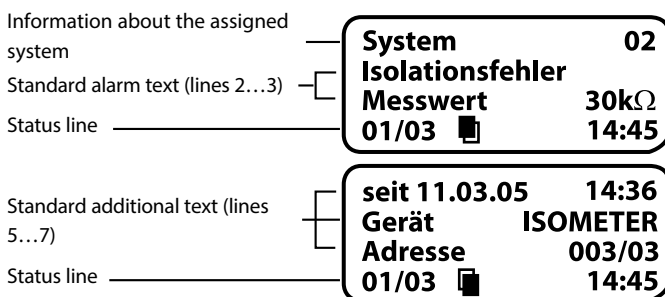
**Operating and display elements**



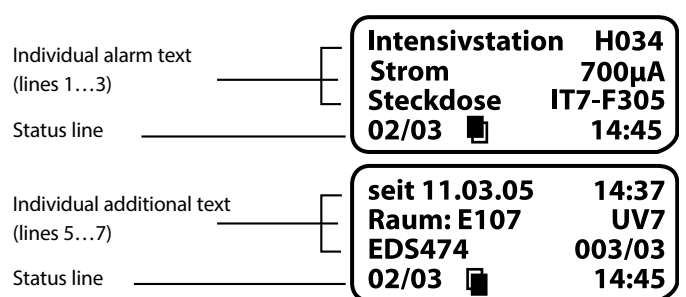
- 1 - LED "NORMAL": operating mode display
- 2 - LED "WARNING": Warning messages
- 3 - LED "ALARM": Alarm messages
- 4 - LCD: Display of operating and alarm messages
- 5 - "Mute" button  
In operating mode: to mute the buzzer.  
In menu mode: ESC function
- 6 - "TEST" button:  
to activate the test for connected and assigned insulation monitoring devices
- 7 - "MENU" button  
In operating mode: to call up the menu mode.  
In menu mode: Enter function
- 8 - Additional text button  
In operating mode: additional text  
In menu mode: down
- 9 - Scroll button  
In operating mode: to scroll messages  
In menu mode: up

**Typical alarm messages:**

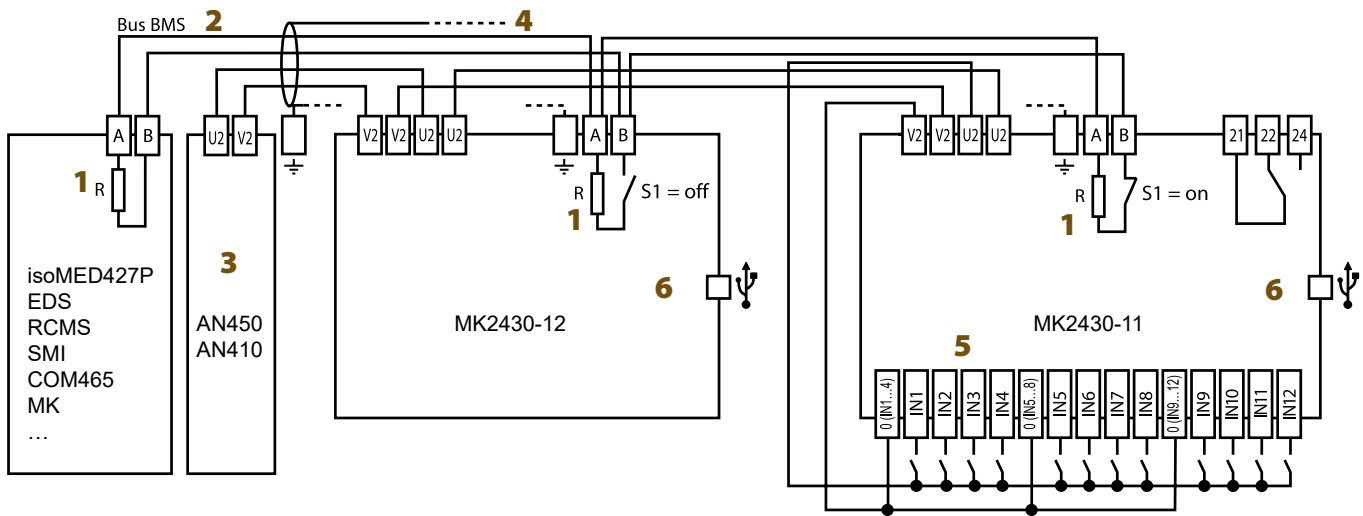
**a) Standard text**



**b) Individually programmed alarm text**



**Wiring diagram**



- 1 - Terminating resistor BMS bus (120 Ω)
- 2 - Connection BMS bus
- 3 - Power supply unit incorporated in the MEDICS® module, sufficient for supplying power to maximum three MK2430
- 4 - Cable between MEDICS® module and MK2430  
When the MK2430 is supplied by the AN410 or AN450 power supply unit in the MEDICS® modules, the permissible cable lengths and cable cross sections have to be considered.

- 5 - Digital inputs  
The digital inputs may be controlled either via potential-free contacts or via voltage signals. If you are using potential-free contacts, the voltage can be drawn from the AN410 or AN450 (3). When the inputs are activated via an external voltage, the common 0(-) is connected to terminal 0 and the 1(+)-signal is connected to the respective input IN1...IN12. In this case, the connections between the terminals 0 and V2 and the common connections and U2 are not required.
- 6 - USB connection for programming purposes

**Ordering information**

Enclosure	Enclosure included in the scope of delivery	Digital inputs/ relay output	factory-programmed	Type	Art. No.
Flush-mounting	■	12/1	-	MK2430-11	B95100001
		-	■	MK2430C-11	B95100003C
Flush-mounting, horizontal mounting	-	-	-	MK2430-12	B95100002
		-	■	MK2430C-12	B95100004C
Surface-mounting	■	12/1	-	MK2430A-11	B95100005
			■	MK2430CA-11	B95100007C
		-	-	MK2430A-12	B95100006
			■	MK2430CA-12	B95100008C

**Accessories**

Type designation	Art. No.
Parameterisation software TMK-SET	as Internet download
MK2430-mounting kit, complete	B95101000
Flush-mounting enclosure	B923710

**Suitable system components**

Type designation	Type	Art. No.
Power supply units	AN410	B924209
	AN450	B924201

**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 $U_S$	0/40...60 Hz
Operating range $U_S$	AC 18...28/DC 18...30 V
Power consumption	≤ 3 VA
Voltage failure without reset	≤ 15 s

**Displays and LEDs**

Display, characters	four lines, 4 x 20 characters
Standard message texts in	20 languages
Alarm addresses configurable	150
Programmable text messages	200
History memory (messages)	250
Standard text message	3 x 20 characters
Additional text message (press button to access)	3 x 20 characters
Alarm 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, adoption of characteristics of new value operation
Buzzer interval	configurable
Buzzer frequency	configurable
Buzzer repetition	configurable

**Inputs (MK2430...-11 only)**

Digital inputs	12 (IN1...IN12)
Galvanic separation	yes
Activation of the digital inputs	via potential-free contacts/extraneous voltage
Operating principle	N/O or N/C operation individually selectable for each input
Factory setting	N/O operation
Voltage range (high)	AC/DC 10...30 V
Voltage range (low)	AC/DC 0...2 V
Recommended cable: J-Y(St)Y min. x 0.8	
Cable length	≤ 500 m

**Interfaces**

Interfaces	RS-485 and USB (V2.0/V1.1)
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**Technical data for the RS-485 interface:**

Protocol	BMS
Baud rate	9.6 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	1...150
Factory setting device address	1 (master)

**Programming**

Interfaces	RS-485 or USB (V2.0/V1.1), USB cable: Type A plug on type B plug
Software	TMK-SET V 4.0 or higher
Factory setting password	activated

**Max. cable length in case of power supply of 1/2/3 MK24.. from one AN450**

0.28 mm <sup>2</sup> (e.g. J-Y(St)Y nx0.6)	160/40/- m
0.5 mm <sup>2</sup> (e.g. J-Y(St)Y nx0.8)	250/70/- m
0.75 mm <sup>2</sup>	400/100/- m
1.5 mm <sup>2</sup>	800/210/10 m
2.5 mm <sup>2</sup>	1300/360/20 m

**Max. cable length in case of power supply of 1/2/3 MK24.. from one AN410**

0.28 mm <sup>2</sup> (e.g. J-Y(St)Y nx0.6)	300/150/100 m
0.5 mm <sup>2</sup> (e.g. J-Y(St)Y n x 0.8)	500 /250/150 m
0.75 mm <sup>2</sup>	750/375/250 m
1.5 mm <sup>2</sup>	1500/750/500 m
2.5 mm <sup>2</sup>	2500/1200/750 m

**Colours**

Front foil	RAL 7035 (light grey); RAL 7040 (basalt grey)
Marking	RAL 5005 (ultramarine blue)
Front plate	RAL 7035 (light grey)

**Switching elements (MK2430...-11 only)**

Number	1 changeover contact
Function	programmable
Operation mode	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	DIN EN 61000-6-2
EMC emission	DIN EN 61000-6-3
Operating temperature	-5...+55 °C

**Classification of climatic conditions acc. to IEC 60721:**

Stationary use	3K5
Transport	2K3
Long-term storage	1K4

**Classification of mechanical conditions acc. to IEC 60721:**

Stationary use	3M4
Transport	2M2
Long-term storage	1M3

**Connection**

Connection	pluggable screw terminals
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**Connection properties (supply voltage, BMS bus):**

Connection of single conductors	
rigid/flexible/conductor sizes	0.2...2.5/0.2...2.5 mm <sup>2</sup> (AWG 24...12)
flexible with ferrule without/with plastic sleeve	0.25...2.5/0.25...2.5 mm <sup>2</sup>
Multi-conductor connection (2 conductors of the same cross section)	
rigid/flexible	0.2...1/0.2...1.5 mm <sup>2</sup>
flexible with ferrule without plastic sleeve	0.25...1 mm <sup>2</sup>
flexible with TWIN ferrules with plastic sleeve	0.5...1.5 mm <sup>2</sup>

**Connection properties (inputs):**

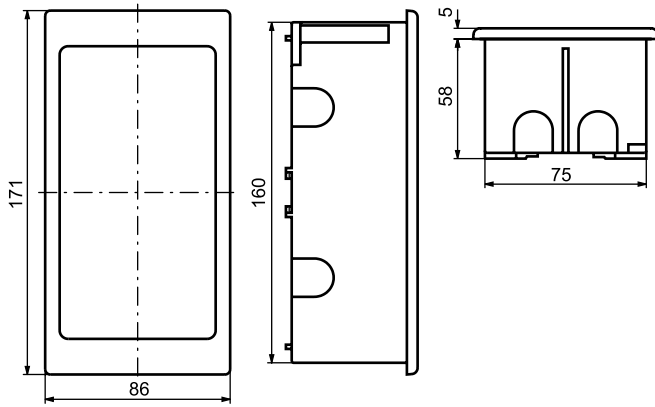
Connection of single conductors	
rigid/flexible/conductor sizes	0.08...1.5/0.08...1.5 mm <sup>2</sup> (AWG 28...16)
flexible with ferrule without/with plastic sleeve	0.25...1.5/0.25...0.5 mm <sup>2</sup>
Multi-conductor connection (2 conductors with the same cross section):	
rigid/flexible	0.08...0.5/0.08...0.75 mm <sup>2</sup>
flexible with ferrules without plastic sleeve	0.25...0.34 mm <sup>2</sup>
flexible with TWIN ferrules with plastic sleeve	0.5 mm <sup>2</sup>
Stripping length	7 mm
Tightening torque	0.5...0.6 Nm

**Other**

Operating mode	continuous operation
Mounting	display-oriented
Degree of protection (DIN EN 60529)	IP50 (surface-mounting type: IP54)
Degree of protection (DIN EN 60529)	IP20
Flammability class	UL94V-0
Weight	flush mounting ≤ 210 g, surface mounting ≤ 400 g

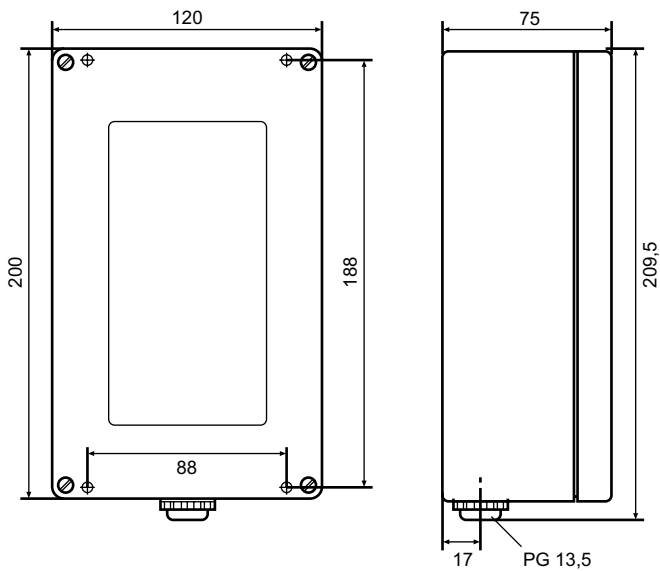
### Dimension diagram flush-mounting type

Dimensions in mm



### Dimension diagram surface-mounting type

Dimensions in mm



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