Changeover and monitoring module UMA710-4-xx-DIO-HA, ...-BP-HA

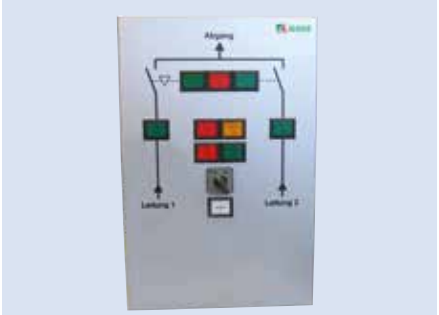
The Power in Electrical Safety

Changeover and monitoring module UMA710-4-xx-DIO, ...-BP

ATICS® monitoring device of the UMA710-4-xx-DIO

Device features

- ATICS® automatic transfer switching device which monitors in particular:
  - Voltage of the incoming supplies
  - Output voltage
  - Correct switching position
  - Switching times
  - Load current
- Functional safety acc. to. IEC 61508 (SIL2)
- All-in-one: Integration of switch disconnector and controls
- Robust switch disconnector contacts
- Mechanical locking
- Manual operation directly on the device
- Bypass switch allows uninterrupted testing and maintenance for UMA710-4-xxx-DIO-BP version (bypass recommended)
- Variable changeover period $t \leq 0.5 \ldots 15$ s
- Information exchange and parameter setting via BMS bus
- Connection for alarm indicator and operator panels TM800/MK800/MK2430/CP9xx
- Screwless connection system
- Optional TÜV (Technical Inspection Association) test of the ATICS® transfer switching device



TMX-UMA-DIO-HA alarm indicator and operator panel Manual/automatic for UMA..DIO-HA / UMA..DIO-BP-HA

Application

Sensitive installations, e. g. like those in group 2 medical locations, in industry or computer centres, require a safe and reliable power supply even in case of a malfunction. A major contribution to reliable power supply is achieved by redundant supply lines.

The ATICS®-…-DIO series transfer switching devices provide all functions for changeover between two independent power supplies. The integration of both the electronic system and the switching elements in one flat, compact device reduces space requirements in the control cabinet, minimises the amount of wiring, and reduces the fault probability. The bypass switch in the UMA710-4-xxx-DIO-BP version enables uninterrupted testing of the ATICS®. In case of need for service – in combination with the connectors on all connecting cables – this allows fast replacement without voltage interruption.

For maximum reliability, ATICS® was designed in strict accordance with the guidelines for functional safety (SIL 2). ATICS® thus enhances the safety level of the power supply in sensitive environments.

Changeover

- Automatic changeover to the second (redundant) line on loss of the preferred supply or when the values are outside the permissible voltage range
- Voltage monitoring line 1/2 (input) and line 3 (output)
- Automatic return to the preferred line on voltage recovery
- Optional switching back interlocking function can be programmed
- Monitoring for short circuits at the output or in the distribution board downstream of the transfer switching device avoids damaging switching operations
- Manual operation, optionally locked with a padlock
- Freely programmable assignment of the preferred/redundant line

Messages

- Indication of the operating status and of operating, warning and alarm messages via an integrated graphic display and external indication at MK2430/MK800/TM800/CP9xx alarm indicator and operator panels
- Automatic reminder for prescribed tests and service intervals
- History memory for events, messages, tests and parameter changes
- Exchange of information with alarm indicator and operator panels via BMS bus
- 4 programmable output relays and 4 programmable digital inputs

Other safety-enhancing measures

- Continuous monitoring of all essential internal components and connecting cables for proper functioning
- Maximum reliability when switching with:
  - Patented switching system with mechanical and electrical interlocking
  - Weld-resistant contacts with the mechanics of a circuit breaker
  - Insensitive e.g. to voltage fluctuations and vibrations due to stable switching position and permanent contact pressure
- Preventive safety due to an automatic reminder of mandatory testing procedures and service times
- UMA710-4-xxx-DIO-BP version with bypass switch for uninterrupted testing/maintenance recommended
- Optional TÜV (German Technical Inspection Association) test of the ATICS® transfer switching device acc. to IEC 61508 (functional safety SIL2)
- For functional safety, provide for reporting to at least two independent points!

Functional description changeover

If the preferred supply fails, the ATICS® ensures that the power supply is changed over safely. The switch contacts are offset on a shaft. This design prevents simultaneous switch-on of line 1 and line 2.

The switch has three positions:

- I – Line 1 is switched on
- 0 – Both lines are switched off
- II – Line 2 is switched on.

In normal condition (fault-free operation) the preferred supply is connected.

The ATICS® will switch to the redundant line if:

- The preferred line fails
- The "TEST" button is pressed and the test function is executed via the menu
- A digital input is set to "TEST" and this input is enabled
- The setting "Preferred line" is reconfigured to the other line

The ATICS® switches from the redundant line back to the preferred line if:

- The voltage on the preferred line is restored, when:
  - the return transfer delay time T(2->1) has elapsed and no switching back interlocking function is enabled
  - after pressing the "RESET" button and the switching back interlocking function has been deleted via the menu
  - when the redundant line fails (even when the switching back interlocking function is enabled)
- The setting "Preferred line" is reconfigured to the other line
- The digital input is set to "TEST" and this input is reset
- A transfer switching device test is enabled and the test time has expired

The factory settings guarantee a changeover period of $t \leq 0.5$ seconds and switching back within 10 seconds when the voltage is restored on the preferred supply. Therefore, the ATICS® can be used in IT systems with a requirement for a changeover period $t \leq 0.5$ s (IT systems with operating theatre lights, endoscopic field illumination in operating theatres or other essential sources of light, etc.).

When there is a short circuit downstream of the transfer switching device, the switching device must not continually change back and forth between the two lines. This can occur when the short-circuit current is small and the transfer switching device switches faster than the short-circuit breaker trips. The ATICS® monitors the load current downstream of the automatic transfer switching device in order to detect a possible short circuit. If the preferred line fails and a short-circuit current is detected at the same time, the ATICS® does not switch over immediately but only once the circuit breaker has tripped.

If the ATICS® detects a supply failure or a fault, a message will appear on the LCD, the "ALARM" LED lights up, the alarm relay trips (if set) and this alarm is forwarded to other Bender devices, (such as an alarm indicator and test combination) via the BMS.

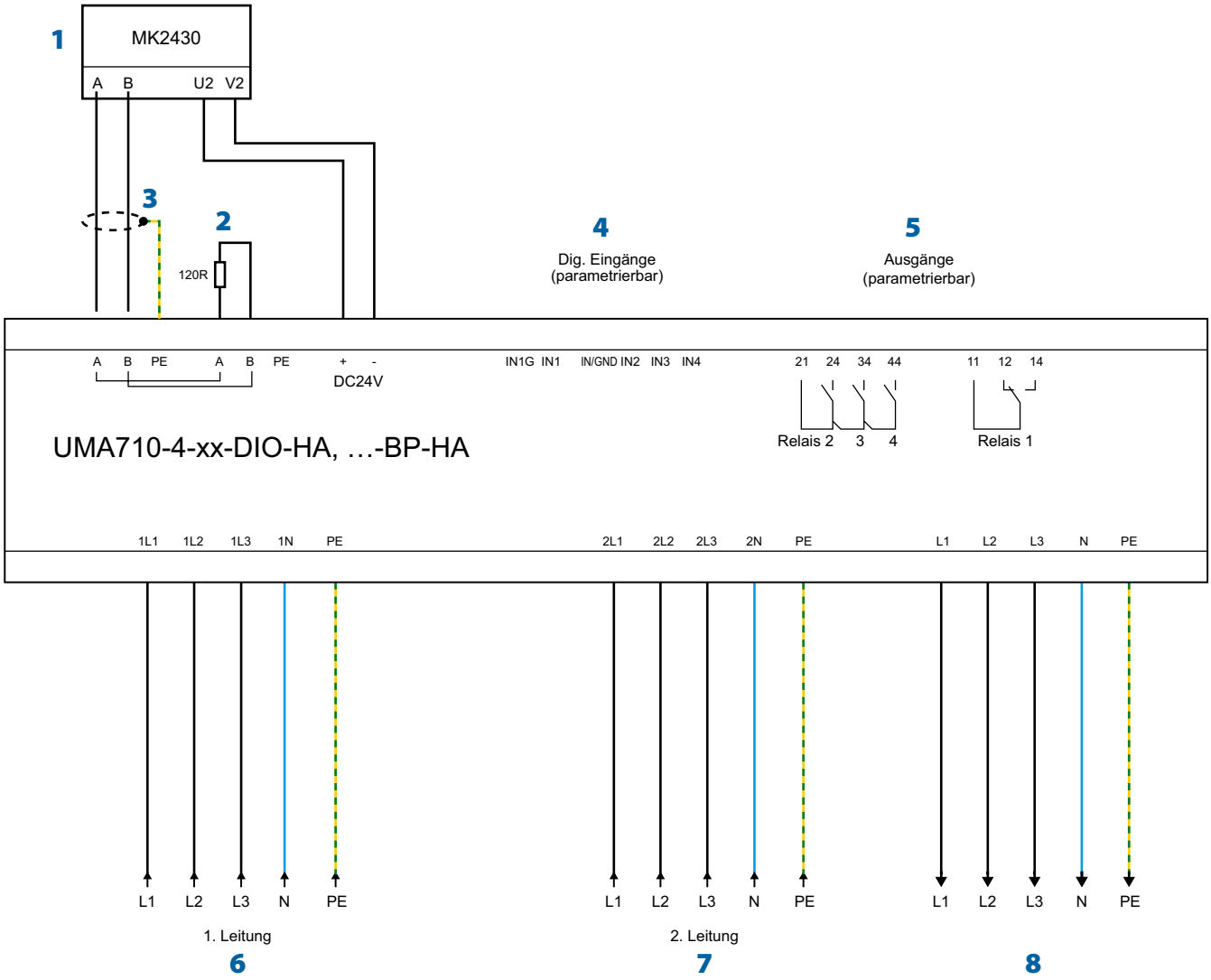
Bypass switch

In the case of the UMA710-4-xxx-DIO-BP changeover and monitoring modules, the bypass switch can be used for uninterrupted testing or maintenance of the ATICS® transfer switching device. The version with bypass switch is recommended for all applications in which an interruption of the power supply is not possible or only possible with great effort.

Messages with clear text display

Operating, warning and fault messages are indicated on a text display in a clear and easy way. The required alarm indicator and test combination MK2430, MK800 or the alarm indicator and operator panel CP9xx or TM800 must be installed in a place in the medical location where they are permanently supervised by the medical staff. The module and the alarm indicators are connected via a two-wire bus cable.

Wiring diagram UMA710-4-xx-DIO (example illustration)



1 - Alarm indicator and test combination MK…
2 - Remove terminating resistor if other bus devices are to be connected here
3 - Shielded cable 2x2x0.8mm, (for A/B, U2/V2), the shield must be connected to earth at one end
4 - Dig. inputs
5 - Potential-free outputs, 1x changeover contact, 3x N/O contacts
6 - Preferred line (line 1) 3N/AC 400/230 V, 50 Hz
7 - Redundant line (line 2) 3N/AC 400/230 V 50 Hz
8 - Outgoing line (line 3) 3N/AC 400/230 V, 50 Hz

The image shows an example of a typical wiring diagram (black box).
Please observe the individual, job-related or project-related documentation provided.

Technical data

Insulation coordination acc. to IEC 60664-1/IEC 60664-3

Overvoltage category	III
Rated operational voltage U_e	AC 230 V (160…276 V)
Supply voltage U_S	from the system being monitored

Power section/switching elements

Nominal system voltage U_n	3N/AC 400/230 V
Frequency range f_n	48…62 Hz

Displays and data memory

Display (languages DE, EN,FR)	graphic display
History memory	500 data records
Data logger	500 data records/channel
Config. logger	300 data records
Test logger	100 data records
Service logger	100 data records

Inputs

Digital inputs	4
Function adjustable:	refer to device manual ATICS-DIO_D00080

Outputs

Switching element	potential-free, 1x changeover contact/3x N/O contacts
Setting	N/O or N/C operation
Function adjustable	refer to device manual ATICS-DIO_D00080

BMS interface

Interface/protocol	RS-485/BMS

Environment/EMC

EMC immunity acc. to	EN 61000-6-2
EMC emission acc. to	EN 61000-6-4
Operating temperature	-10 °C…+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	2M1
Long-term storage	1M3

Connection

Control section

Connection type	cage-clamp spring terminals
Connection properties	
rigid/flexible/conductor sizes	0.08…2.5 mm²

Power section

Connection type	cage-clamp spring terminals
Connection properties	
80 A: conductor sizes max.	35 mm²
125 A: conductor sizes max.	70 mm²
160 A: conductor sizes max.	95 mm²

Other

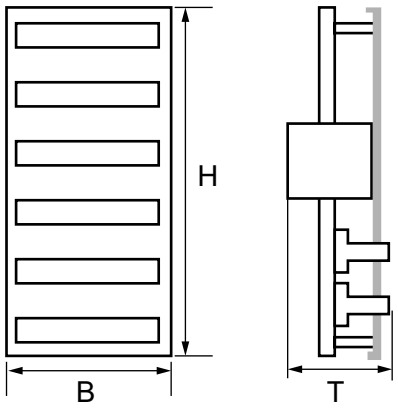
Operating mode	continuous operation
Mounting	vertical
Elevation illustration/circuit diagram	The documents are project-specifically made to suit the specific needs of each customer
Weight/power consumption	see ordering details

Ordering details

Nominal current (AC-3) of the transfer switching device	Max. permissible current acc. to DIN VDE 0100-710	Max. permissible back-up fuse	Approx. power consumption	Type	Art. No.
80 A	80 A	80 A, gG	39 W	UMA710-4-80-DIO-HA	B22040184
				UMA710-4-80-DIO-BP-HA	B22040185
125 A	125 A	125 A, gG	87 W	UMA710-4-125-DIO-HA	B22040186
				UMA710-4-125-DIO-BP-HA	B22040187
160 A	160 A	160 A, gG	119 W	UMA710-4-160-DIO-HA	B22040188
				UMA710-4-160-DIO-BP-HA	B22040189

Please observe the individual, job-related or project-related documentation provided.

Dimensions and weights



Type	Sections/ rows	Dimensions in mm			Recommended cabinet depth	Approx. weight
	Quantity	Width (W)	Height (H)	Depth (D)	mm	kg
UMA710-4-80-DIO-HA	2/6	500	900	250	300	12
UMA710-4-80-DIO-BP-HA	2/6	500	900	250	300	13
UMA710-4-125-DIO-HA	2/6	500	900	250	300	14
UMA710-4-125-DIO-BP-HA	2/7	500	1050	250	300	15
UMA710-4-160-DIO-HA	2/8	500	1200	250	300	17
UMA710-4-160-DIO-BP-HA	2/10	500	1500	250	300	19

One row has a height of 150 mm. One section has a width of 250 mm.
Provision of the equipment rack.

Accessories

Type	Description	Dimensions in mm			Art. No.
		Width (W)	Height (H)	Depth (D)	
TMX-UMA-DIO-HA	Alarm indicator and operator panel	230	350	61	B22030113

Manual/automatic for UMA..DIO-HA / UMA..DIO-BP-HA

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