SIEMENS

FS720

Fire detection system

Product Data

IP7

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1 About this document

Goal and purpose

This document describes the hardware components of the fire detection system. It includes detailed information on the setup and function of the different hardware components. It especially provides information on the following:

- Pin assignment
- Indication elements
- Adjustment elements
- Technical data

This document does not contain any instructions. You will find information on the structure and functions of the fire detection system in document A6V10210355 System description; see 'Applicable documents'. The system description contains the overview of the structure and functions of the fire detection system.

Scope

The information contained in this document is valid for introduction package IP7.

The document also contains information on country-specific components. Country-specific components are marked with square brackets, e.g. [DE]. It may be the case that these cannot be used in your country.

Target groups

The information in this document is intended for the following target groups:

Target group	Activity	Qualification
System owner	• According to EN 50110-1, 'nominated person with the overall responsibility to ensure the safe operation of the electrical installation by setting rules and organisation or framework.'	• 'This person can be the owner, employer, proprietor or a delegated person.' • 'Some of these duties can be delegated to others as required. For large or complex electrical installations or networks, the duties can be delegated for parts of the installations or the network.'
Product Manager	• Is responsible for information passing between the manufacturer and regional company. • Coordinates the flow of information between the individual groups of people involved in a project.	• Has obtained suitable specialist training for the function and for the products. • Has attended the training courses for Product Managers.
Project Manager	• Coordinates the deployment of all persons and resources involved in the project according to schedule. • Provides the information required to run the project.	• Has obtained suitable specialist training for the function and for the products. • Has attended the training courses for Project Managers.
Project engineer	• Sets parameters for product depending on specific national and/or customer requirements. • Checks operability and approves the product for commissioning at the place of installation. • Is responsible for troubleshooting.	• Has obtained suitable specialist training for the function and for the products. • Has attended the training courses for Product Engineer.
Commissioning personnel	• Configures the product at the place of installation according to customer-specific requirements. • Checks the product operability and releases the product for use by the operator. • Searches for and corrects malfunctions.	• Has obtained suitable specialist training for the function and for the products. • Has attended the training courses for commissioning personnel.
Maintenance personnel	• Carries out all maintenance work. • Checks that the products are in perfect working order. • Searches for and corrects malfunctions.	• Has obtained suitable specialist training for the function and for the products.

Source language and reference document

- The source/original language of this document is German (de).
- The reference version of this document is the international version in English. The international version is not localized.

Document identification

The document ID is structured as follows:

ID code	Examples
ID_ModificationIndex_Language_COUNTRY -- = multilingual or international	A6V10215123_a_de_DE A6V10215123_a_en_-- A6V10315123_a_--_--

Date format

The date format in the document corresponds to the recommendation of international standard ISO 8601 (format YYYY-MM-DD).

Conventions for text marking

Markups

Special markups are shown in this document as follows:

▷	Requirement for a behavior instruction
1. 2.	Behavior instruction with at least two operation sequences
–	Version, option, or detailed information for a behavior instruction
⇨	Intermediate result of a behavior instruction
⇨	End result of a behavior instruction
•	Numbered lists and behavior instructions with an operation sequence
[→ X]	Reference to a page number
'Text'	Quotation, reproduced identically
<Key>	Identification of keys
>	Relation sign and for identification between steps in a sequence, e.g., 'Menu bar' > 'Help' > 'Help topics'
↑ Text	Identification of a glossary entry

Supplementary information and tips

The 'i' symbol identifies supplementary information and tips for an easier way of working.

1.1 Applicable documents

Document ID	Title
A6V10210355	FS720, Fire Detection System, Description

1.2 Download center

You can download various types of documents, such as data sheets, installation instructions, and license texts via the following Internet address:

https://siemens.com/bt/download

- Enter the document ID in the search field.

You will also find information about search variants and links to mobile applications (apps) for various systems on the home page.

1.3 Revision history

The reference document's version applies to all languages into which the reference document is translated.

The first edition of a language version or a country variant may, for example, be version 'd' instead of 'a' if the reference document is already this version.

The table below shows this document's revision history:

Version	Edition date	Brief description
m	2018-08-29	**Changes and additions** • Adjustments in accordance with EMC recertification and EN54-4 requirements for external power supplies for line devices made in the 'Connections' and 'Technical data' chapters for the following components: Floor repeater terminal FT2010, floor repeater display FT2011, and mimic display driver FT2001 • In accordance with EN50130-4: Adjustment of operating voltage range of the line voltage to DC 16…33 V for floor repeater terminal FT2010, floor repeater display FT2011, and mimic display driver FT2001, each in chapter: 'Technical data'.
l	2018-06-25	**Edition: Introduction Package IP7** **New:** • Card cage (1 sector exting.) FCA2046 [→ 327] • Extinguishing card XCI2005 [→ 350] • Extinguishing terminal XTO2001-A1 [→ 357] **Changes and additions** • Floor repeater terminal FT2010 and floor repeater display FT2011, chap.: 'Technical data' and 'X101 detector line and external supply' added with reference to the electrical isolation of the external supply. • The following changes have been made to chapter 'Pin assignment' in 'Fiber optic network module FN2006/FN2007': Fault contact wiring changed and reference to EN54-compliant power supply added. 'Fiber optic cable connection' wiring diagram changed. • Chapter 'Description' in 'Ethernet switch (modular) FN2012-A1' and 'Connection module (MoNet) FCA2031-A1': Degraded mode signal support removed from the features. • Connection module (MoNet) FCA2031-A1, chap. 'Views' and 'Simplified circuit diagram' – connector inscription X400/X401 changed, chap. 'Technical data' – dimensions added. • Power supply (150 W) SV 24 V-150 W-A4 – Technical data, current loads table • Power supply (150 W) SV 24 V-150 W-A5 – Technical data, current loads table

Version	Edition date	Brief description
k	2017-06-12	**Changes and additions:** • Floor repeater terminal FT2010 and floor repeater display FT2011, chap.: 'Technical data' and 'X101 detector line and external supply' added with reference to the electrical isolation of the external supply. • Chapter 'Pin assignment' in 'Installing the fiber optic cable network module': Fault contact wiring changed and reference to EN54-compliant power supply added. • Chapter 'Description' in 'Ethernet switch (modular) FN2012-A1' and 'Connection module (MoNet) FCA2031-A1': Degraded mode signal support removed from the features. • Connection module (MoNet) FCA2031-A1, chap. 'Views' and 'Simplified circuit diagram' – connector inscription X400/X401 changed, chap. 'Technical data' – dimensions added.
j	2015-12-15	**Edition: Introduction Package IP6** **New:** • Ethernet switch (modular) FN2012-A1 • Connection module (MoNet) FCA2031-A1 • Power supply unit (70 W) FP2015-A1 • Operating unit (AU) FCM7222-X3
		Changes and additions: • Network module (SAFEDLINK) FN2001 – indicators: Functional description for H2 and H3 corrected (were the wrong way round) • Power supply unit (150 W) SV24V-150 W-A4/A5: Drawing for X11 monitoring signals corrected (#MAINS connection) • Referenced documents updated • Standard SB36350 removed (FT2010, FT2011, FT2001) • Fiber optic cable network module FN2006 / FN2007 updated with information on fiber optic cable termination • Chapter 'Event printer FTO2001' – 'Connection on printer side' product version 02 integrated • Housing FDCH291 replaced by FDCH221 in chapter 'Sounder module FCA2005' – 'Description' • Data rate corrected to 115 and 315 kbit/s in 'Technical data' chapter for FN2001 and FN2002
i	2014-02-10	Information on voltage ranges revised throughout the document

Version	Edition date	Brief description
h	2013-11-14	**Edition: Introduction Package IP5** Change to date format according to ISO 8601 **New components:** • Card cage (2 slots) FCA2007-A1 • LED module FTO2008-A1 • Line card (SynoLOOP) FCL7201-Z3 **Changes and additions:** • Fiber optic cable network module FN2006/FN2007 – Connection to fiber optic cable: Wiring to FN2001 corrected – EF1/EF2 sockets for SAFEDLINK wiring: Note on wiring added • Note on Ethernet loop FN2008 added • PMI & mainboard FCM2004: Notes on limitation of firmware • PMI & mainboard FCM2027: Notes on limitation of firmware • 150 W power supplies do not support a battery capacity of 12 Ah **CPR replaces CPD**: The Construction Products Regulation (CPR 305/2011) replaces the previous Construction Products Directive (CPD 89/106).
g	05.2012	Edition: Introduction Package IP4 New components: • I/O card (horn/monitored) • I/O card (RT) • Fiber optic cable network module (SM/MM) FN2006-A1/FN2007-A1 • Power supply unit (150 W) Version A5 Revised: • Power supply unit (150 W) Version A4 • Chapter structure
f	07.2010	Third edition MP3.0XS • Revision history redefined and standardized • Integration of PMI & mainboard FCM2027 • Revision of EVAC-NL components • Power supply 70 W, fuse corrected • Pin assignment for event printer FTO2001-A1
e	03.2010	Second edition MP3.0XS for VdS: • Assignment of manufacturer designation "Scalance" to BT designation
d	10.2009	First edition MP3.0XS for VdS Integration of: • Card cage (5 slots) FCA2008-A1 • Connection module (card cage) FCA2006-A1 • Line card (FDnet/C-NET) FCL2001-A1 • I/O card (programmable) FCI2008-A1 • Housing (Large Extension) FH7204-Z3 • Housing (Large) FH7205-Z3 • Scalance switch X204-2 • Firewall/router S612
c	03.2009	Second revised edition MP1XS
b	01.2009	First extended edition MP1XS
a	09.2008	First edition MP1XS

1.4 Technical terms and abbreviations

You will find details of technical terms and abbreviations in the 'Glossary' chapter.

2 Safety

2.1 Safety instructions

The safety notices must be observed in order to protect people and property.

The safety notices in this document contain the following elements:

- Symbol for danger
- Signal word
- Nature and origin of the danger
- Consequences if the danger occurs
- Measures or prohibitions for danger avoidance

Symbol for danger

	This is the symbol for danger. It warns of **risks of injury**. Follow all measures identified by this symbol to avoid injury or death.

Additional danger symbols

These symbols indicate general dangers, the type of danger or possible consequences, measures and prohibitions, examples of which are shown in the following table:

 General danger

 Explosive atmosphere

 Voltage/electric shock

 Laser light

 Battery

 Heat

Signal word

The signal word classifies the danger as defined in the following table:

Signal word	Danger level
DANGER	'DANGER' identifies a dangerous situation, which **will result directly in death or serious injury** if you do not avoid this situation.
WARNING	'WARNING' identifies a dangerous situation, which **may result in death or serious injury** if you do not avoid this situation.
CAUTION	'CAUTION' identifies a dangerous situation, which could result in **slight to moderately serious injury** if you do not avoid this situation.
NOTICE	'*NOTICE*' identifies a possibly harmful situation or possible damage to property that may result from non-observance. '*NOTICE*' does not relate to possible bodily injury.

How risk of injury is presented

Information about the risk of injury is shown as follows:

⚠ WARNING
Nature and origin of the danger Consequences if the danger occurs • Measures / prohibitions for danger avoidance

How possible damage to property is presented

Information about possible damage to property is shown as follows:

NOTICE
Nature and origin of the danger Consequences if the danger occurs • Measures / prohibitions for danger avoidance

2.2 Safety regulations for the method of operation

National standards, regulations and legislation

Siemens products are developed and produced in compliance with the relevant European and international safety standards. Should additional national or local safety standards or legislation concerning the planning, mounting, installation, operation or disposal of the product apply at the place of operation, then these must also be taken into account together with the safety regulations in the product documentation.

Electrical installations

⚠ WARNING
Electrical voltage Electric shock • Work on electrical installations may only be carried out by qualified electricians or by instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electrotechnical regulations.

- Wherever possible disconnect products from the power supply when carrying out commissioning, maintenance or repair work on them.
- Lock volt-free areas to prevent them being switched back on again by mistake.
- Label the connection terminals with external voltage using a 'DANGER External voltage' sign.
- Route mains connections to products separately and fuse them with their own, clearly marked fuse.
- Fit an easily accessible disconnecting device in accordance with IEC 60950-1 outside the installation.
- Produce earthing as stated in local safety regulations.

⚠ CAUTION

Noncompliance with the following safety regulations

Risk of injury to persons and damage to property

- Compliance with the following regulations is required.

- Specialist electrical engineering knowledge is required for installation.
- Only an expert is permitted to carry out installation work.

Incorrect installation can take safety devices out of operation unbeknown to a layperson.

Mounting, installation, commissioning and maintenance

- If you require tools such as a ladder, these must be safe and must be intended for the work in hand.
- When starting the fire control panel ensure that unstable conditions cannot arise.
- Ensure that all points listed in the 'Testing the product operability' section below are observed.
- You may only set controls to normal function when the product operability has been completely tested and the system has been handed over to the customer.

Testing the product operability

- Prevent the remote transmission from triggering erroneously.
- If testing building installations or activating devices from third-party companies, you must collaborate with the people appointed.
- The activation of fire control installations for test purposes must not cause injury to anyone or damage to the building installations. The following instructions must be observed:
  - Use the correct potential for activation; this is generally the potential of the building installation.
  - Only check controls up to the interface (relay with blocking option).
  - Make sure that only the controls to be tested are activated.
- Inform people before testing the alarm devices and allow for possible panic responses.
- Inform people about any noise or mist which may be produced.
- Before testing the remote transmission, inform the corresponding alarm and fault signal receiving stations.

Modifications to the system design and the products

Modifications to the system and to individual products may lead to faults, malfunctioning and safety risks. Written confirmation must be obtained from Siemens and the corresponding safety bodies for modifications or additions.

Modules and spare parts

- Components and spare parts must comply with the technical specifications defined by Siemens. Only use products specified or recommended by Siemens.
- Only use fuses with the specified fuse characteristics.
- Wrong battery types and improper battery changing lead to a risk of explosion. Only use the same battery type or an equivalent battery type recommended by Siemens.
- Batteries must be disposed of in an environmentally friendly manner. Observe national guidelines and regulations.

Disregard of the safety regulations

Before they are delivered, Siemens products are tested to ensure they function correctly when used properly. Siemens disclaims all liability for damage or injuries caused by the incorrect application of the instructions or the disregard of danger warnings contained in the documentation. This applies in particular to the following damage:

- Personal injuries or damage to property caused by improper use and incorrect application
- Personal injuries or damage to property caused by disregarding safety instructions in the documentation or on the product
- Personal injury or damage to property caused by poor maintenance or lack of maintenance

2.3 Standards and directives complied with

A list of the standards and directives complied with is available from your Siemens contact.

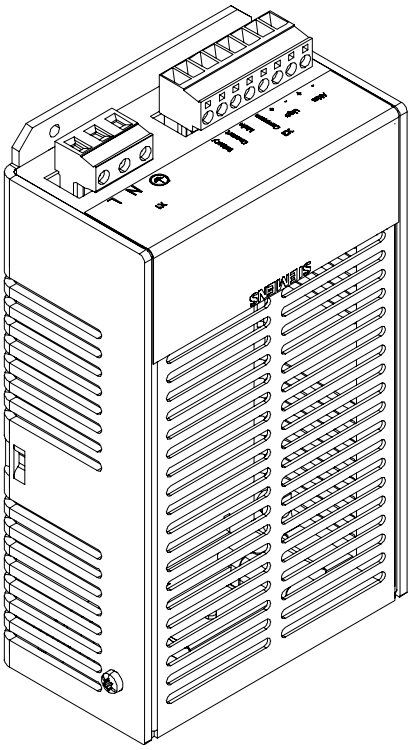
2.4 Release Notes

Limitations to the configuration or use of devices in a fire detection installation with a particular firmware version are possible.

	⚠ WARNING
	Limited or non-existent fire detection Personal injury and damage to property in the event of a fire. • Read the 'Release Notes' before you plan and/or configure a fire detection installation. • Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

	NOTICE
	Incorrect planning and/or configuration Important standards and specifications are not satisfied. Fire detection installation is not accepted for commissioning. Additional expense resulting from necessary new planning and/or configuration. • Read the 'Release Notes' before you plan and/or configure a fire detection installation. • Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

3 Power supply (70 W) FP2001-A1



3.1 Description

The power supply (70 W) FP2001 converts the mains voltage to system voltage and charges the batteries.

The power supply has the following features:

- Output power 70 W
- Short-circuit-proof
- Current limited
- Monitoring of mains voltage
- Uninterruptible power supply in battery operation
- Battery charging with temperature compensation
- Monitoring of battery
- Used to supply other consumers (complies with EN 54 and VdS)
- Not switchable in parallel

3.2 Views

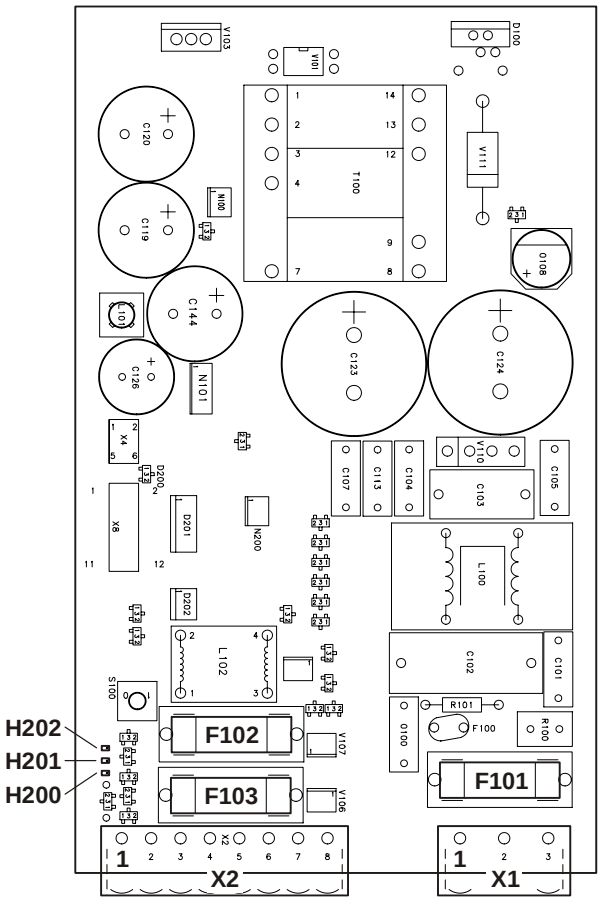


Figure 1: Printed circuit board view of power supply (70 W) FP2001

Element	Des.	Function
Connections	X1	Mains connection terminals
	X2	Connection for supply outputs and monitoring signals
LEDs	H202	'MAINS' LED: Monitoring of mains voltage
	H201	'BATT' LED: Monitoring of battery
	H200	'CONV' LED: Monitoring of power supply
Fuses	F101	Mains fuse (3.15 A/T; 5 x 20 mm)
	F102/F103	Battery fuse (3.5 A/T; Schurter OMT125)

3.3 Pin assignments

3.3.1 X1 mains connection

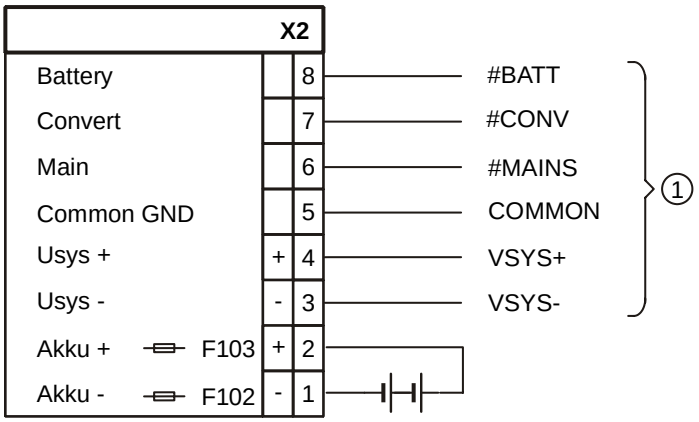
Pin	Designation	Description
1	⏚	Ground (protective conductor PE)
2	N	Neutral conductor
3	L	External conductor (L1)

Admissible cable cross-section: 0.2…2.5 mm²

3.3.2 X2 Power supply and signal lines FP2001

Pin	Designation	Description
8	Battery	Detection line (#BATT): Battery fault
7	Convert	Detection line (#CONV): Power supply fault
6	Mains	Detection line (#MAINS): Mains fault
5	Common GND	Ground (COMMON)
4	Usys +	System supply (VSYS+)
3	Usys –	System supply (VSYS-)
2	Akku +	Battery supply (+)
1	Akku –	Battery supply (–)

Admissible cable cross-section: 0.2…2.5 mm²



1 Cable tree to periphery board or fire terminal board

See also

- X1 supply [→ 64]
- X1 supply [→ 77]
- X1 supply [→ 46]

3.4 Indicators

LED	Color	Function	State	Meaning
MAINS (H202)	Yellow	Monitoring of mains voltage	On	No mains voltage, fault in the primary supply
			Off	Normal condition
BATT (H201)	Yellow	Monitoring of battery	On	Battery fault
			Off	Normal condition
CONV (H200)	Green	Monitoring of power supply	On	Normal condition
			Off	Power supply fault

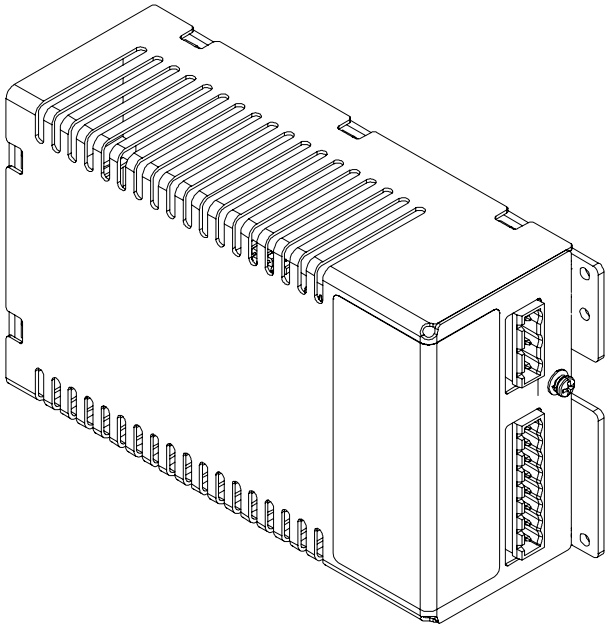
3.5 Technical data

Mains supply	Voltage	AC 85…265 V, 50/60 Hz
	Current	0.5…1 A
	Power consumption	Max. 90 VA
Supply output (System)	Designation	'Usys'
	Voltage	DC 20…28.6 V (depending on charge and temperature)
	Current:	
	• Maximum nominal output current with battery charge ($I_{max\ a}$)	0.9 A
	• Maximum nominal output current without battery charge ($I_{max\ b}$)	2.5 A
	• Minimum output current (I_{min})	0.05 A
	Performance	70 W
	Ripple	Max. 2.5 %
Supply output (Battery)	Designation	'Akku'
	Voltage	DC 21…28.6 V (depending on charge and temperature)
	Charging current	Max. 1.6 A (the charging current is reduced at full load)
	Connectable batteries	2 x 12 V / 7…17 Ah (all battery types recommended by Siemens in acc. with document A6V10210362)
	Load resistance (R_{imax})	Max. 1 Ω (batteries incl. line)
	Batteries are monitored for	• Short-circuit • Open line • Internal short-circuit • Presence
	Low discharge protection	Battery voltage <DC 20.5 V

Monitoring signal Mains fault	Designation	'Mains'
	Active in event of	No mains voltage (signaling within 10 s)
	Design	Open collector
Monitoring signal Battery fault	Designation	'Battery'
	Active in event of	• Battery fault • Battery voltage DC <21.0 V (together with 'Main')
	Design	Open collector
	Designation	'Convert'
	Active in event of	Fault within the power supply
	Design	Open collector
Connections	Mains supply, battery supply and monitoring signals	Plug-type connection
Mechanical data	Dimensions (W x H x D)	95 x 170 x 54 mm
	Weight	28.22 oz
Standards and approvals	Standards	EN 54-4:1997
	Approvals	VdS G206112
	CPR certificate	0786-CPR-20266
	CE conformity mark	Yes

!	*NOTICE*
	Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is always >5 °C.

4 Power supply (70 W) FP2015-A1



4.1 Description

- The power supply (70 W) converts mains voltage to system voltage and charges the batteries.
- The DC 24 V system voltage is electrically isolated.
- For the supply of consumers in accordance with EN 54-4 and VdS.
- The output voltage is short-circuit-proof and battery charging is current-limited.
- Must not be connected in parallel.
- The battery charge voltage is regulated with temperature compensation.
- A jumper can be used to switch the mains voltage from AC 230 V to AC 115 V.

Monitoring of mains voltage and the batteries

- A failure of the AC 230 V supply voltage or a higher internal battery resistance are detected and an error message is generated.

Uninterruptible power supply

- If the mains voltage fails, the supply switches automatically from mains operation to battery operation.

Protecting the battery against total discharge

- When the final voltage is reached, the battery switches off automatically.

4.2 Pin assignments

4.2.1 X1 mains connection

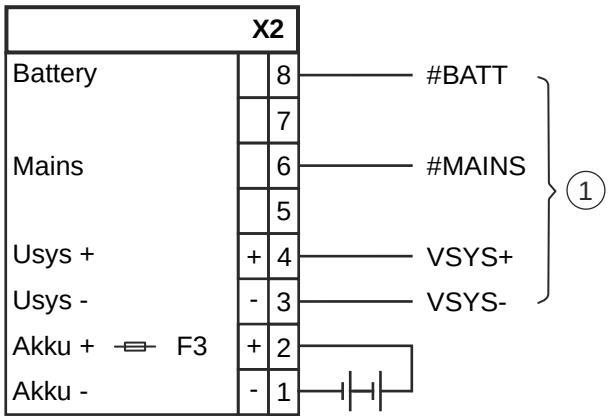
Pin	Designation	Description
1	⏚	Ground (protective conductor PE)
2	N	Neutral conductor
3	L	External conductor (L1)

Admissible cable cross-section: 0.2…2.5 mm²

4.2.2 X2 Power supply and signal lines FP2015

Pin	Designation	Description
8	Battery	Detection line (#BATT): Battery fault
7	Not used	
6	Mains	Detection line (#MAINS): Mains fault
5	Not used	
4	Usys +	System supply (VSYS+)
3	Usys –	System supply (VSYS-)
2	Akku +	Battery supply (+), protected with F3
1	Akku –	Battery supply (–)

Admissible cable cross-section: 0.2…2.5 mm²



1 Cable tree to periphery board or fire terminal board

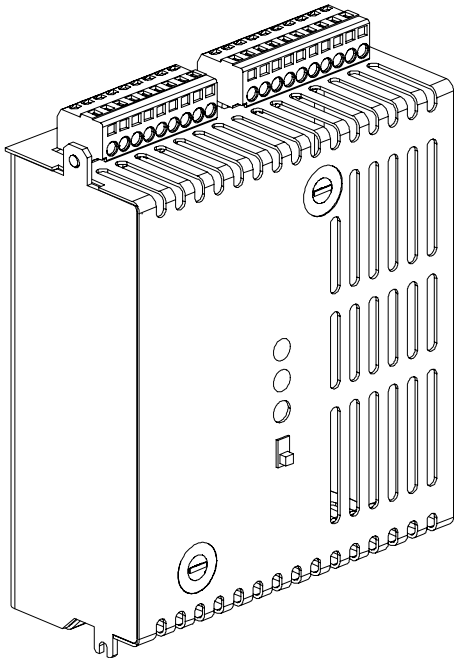
4.3 Technical data

Mains supply	Voltage	AC 97…127 V, AC 196…253 V, 50 / 60 Hz
	Current	0.5…1 A
	Power consumption	Max. 90 VA
System supply output	Designation	'Usys'
	Voltage	DC 20.5…28.6 V, depending on charge and temperature
	Current:	
	• Maximum output current with battery charge ($I_{max\ a}$)	0.9 A
	• Maximum output current without battery charge ($I_{max\ b}$)	2.5 A
	• Minimum output current (I_{min})	0.05 A
	Output power	70 W
	Ripple	Max. 5 %
Battery supply output	Designation	'Accu'
	Voltage	DC 20.5…28.6 V, depending on charge and temperature
	Charging current	Max. 1.6 A, the charging current is reduced at full load
	Connectable batteries	2x 12 V / 7…17 Ah Battery types recommended by Siemens in acc. with planning document
	Battery internal resistance (R_{imax})	Max. 1 Ω, batteries incl. line
	Batteries are monitored for	• Short-circuit • Open line • Presence
	Low discharge protection	Battery voltage DC 20.5 V…21.0 V
Mains fault monitoring signal	Designation	'Mains'
	Active in event of	• No mains voltage Signaling within 10 s
	Design	Open collector
Battery fault monitoring signal	Designation	'Battery'
	Active in event of	• Battery fault • Battery voltage <DC 21.0 V
	Design	Open collector
Connections	Mains supply, battery supply and monitoring signals	Plug-type connections

Mechanical data	Dimensions (W x H x D)	95 x 170 x 54 mm
	Weight	576 g
Approvals	VdS	G213083
	LPCB	Pending

!	*NOTICE*
	Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is always >5 °C.

5 Power supply (150 W) SV 24V-150W-A4



5.1 Description

The power supply (150 W) SV 24V-150W-A4 converts the mains voltage to system voltage and charges the batteries. It has the following features:

- Output power 150 W
- Parallel switching of 2 power supply units possible
- Short-circuit-proof
- Current limited
- Monitoring of mains voltage
- Uninterruptible power supply in battery operation
- Temperature-compensated battery charging with external temperature sensor
- Monitoring of battery
- Monitoring of temperature sensor
- Used to supply other consumers (complies with EN 54 and VdS)

5.2 Views

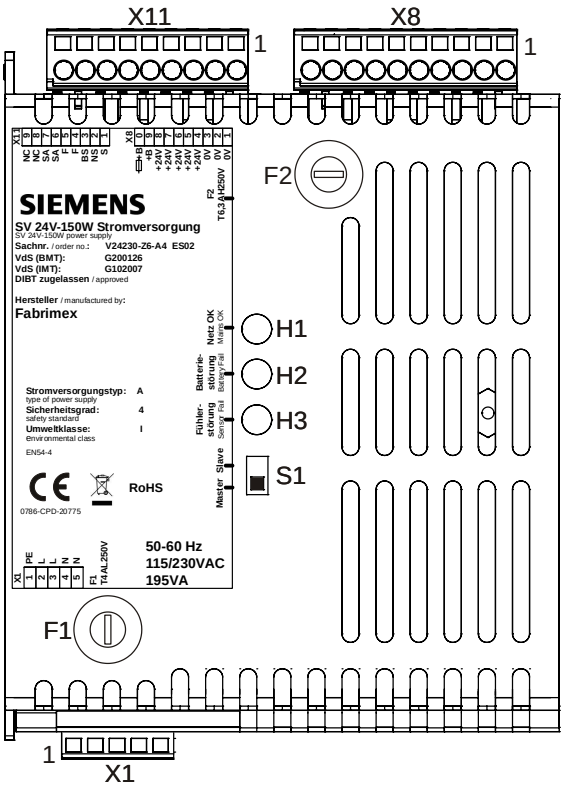


Figure 2: View of the power supply (150 W) SV 24V-150W-A4

Element	Des.	Function
Connections	X1	Mains connection terminals
	X8	Connections for output voltage
	X11	Connections for monitoring signals
LEDs	H1	Status display for mains voltage
	H2	Status display for battery
	H3	Status display for temperature sensor
Fuses	F1	Mains fuse (4 AT / 250 V)
	F2	Battery fuse (6.3 AF / 250 V)
Switch	S1	Operation mode selection switch (master / slave)

5.3 Pin assignments

5.3.1 X1 mains connection

Pin	Designation	Description
1	PE	Earth (protective conductor)
2	L	External conductor (L1)
3	L	External conductor (L1)
4	N	Neutral conductor
5	N	Neutral conductor

Admissible cable cross-section: 0.2…2.5 mm²

5.3.2 X8 output voltage

Pin	Designation	Description
10	$+B_{I\text{-begr.}}$	Connection for battery, current limited via internal battery fuse F2 (without parallel switching)
9	$+B_{I\text{-unbegr.}}$	Connection for battery, no current limit (when switching in parallel, fuse in the cable tree)
8	+24 V	Supply output +24 V
7	+24 V	Supply output +24 V
6	+24 V	Supply output +24 V
5	+24 V	Supply output +24 V
4	+24 V	Supply output +24 V
3	0 V	Supply output 0 V
2	0 V	Supply output 0 V
1	0 V	Supply output 0 V

Admissible cable cross-section: 0.2…2.5 mm²

Batteries may be connected either on terminal 10 or, with external fuse, to terminal 9.

5.3.3 X11 monitoring signals

Pin	Designation	Description
9	NC	Not used
8	NC	Not used
7	SA	Control line for even current distribution (only when switching in parallel)
6	SA	Control line for even current distribution (only when switching in parallel)
5	F	Connection for temperature sensor (master only)
4	F	Connection for temperature sensor (master only)
3	BS	Signaling: Battery fault (↑ normal operation 1/3 closed)
2	NS	Signaling: Mains fault (normal operation 1/2 closed)
1	S	Signaling: Common fault contact

Admissible cable cross-section: 0.2…2.5 mm²

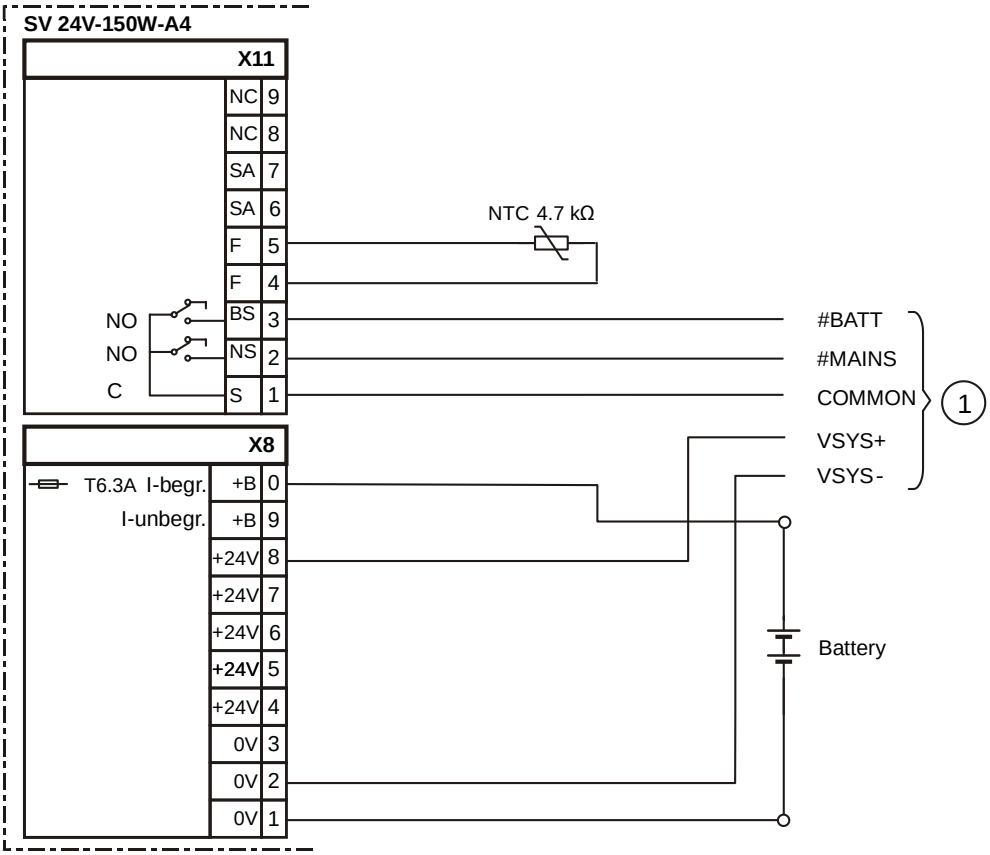


Figure 3: Wiring of the single power supply SV 24V-150W-A4

1 Cable tree to periphery board or fire terminal board

See also

- X1 supply [→ 64]
- X1 supply [→ 77]
- X1 supply [→ 46]

5.3.4 Parallel switching of two supply units

!	*NOTICE*
	Damage to the power supply Different versions (A4/A5) of the power supply (150 W) may not be switched in parallel.

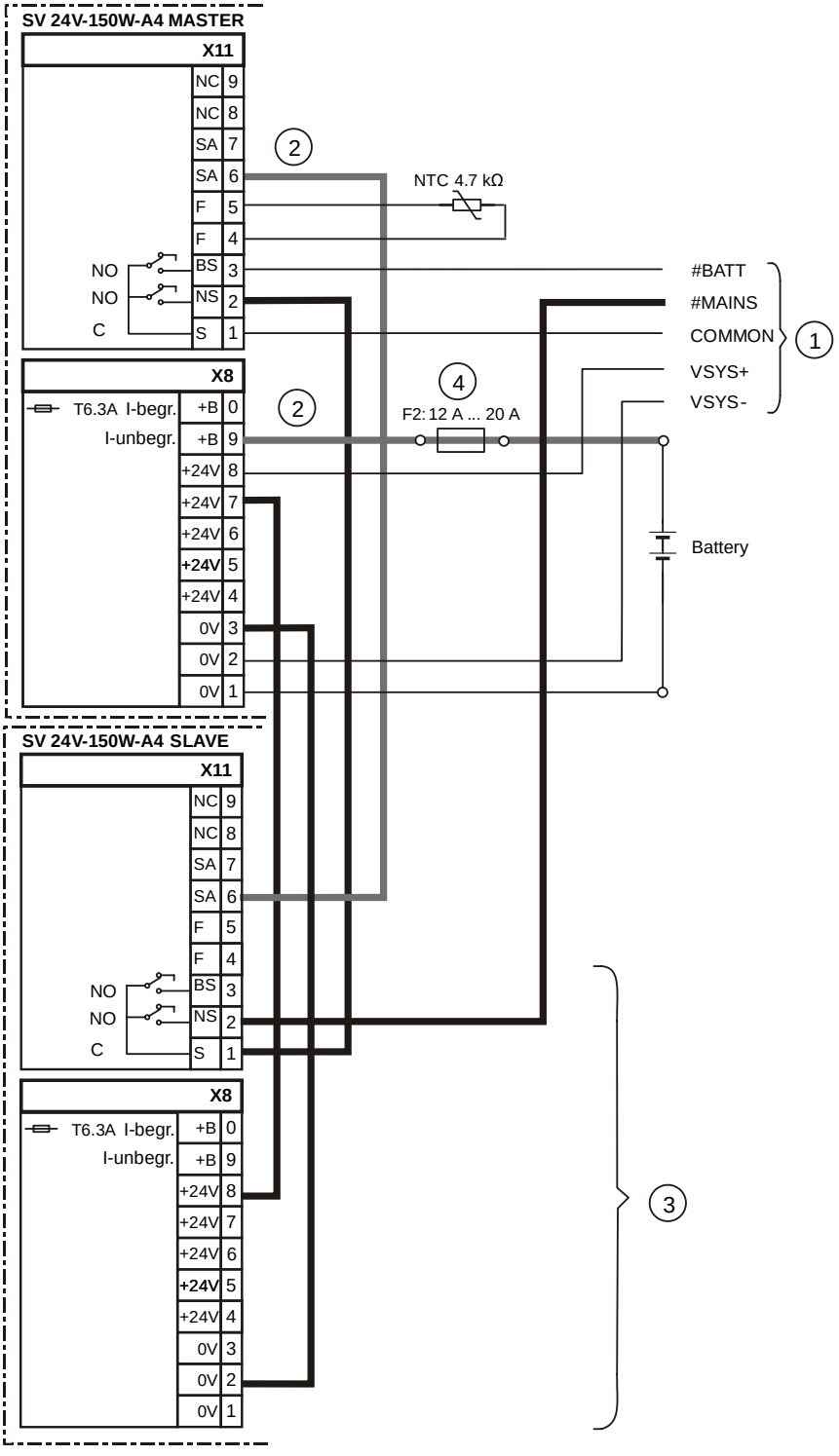


Figure 4: Parallel connection of two power supplies (150 W)-A4

1 Cable tree to periphery board or fire terminal board

2 Existing cable tree (connection for master power supply)

3 Additional cable tree for the second power supply (slave)

4 Additional fused terminal (F2) on the DIN rail

- The **connection lines marked in bold** of the additional cable tree (3) and the existing cable tree (2) must be wired again when installing the second power supply (slave).
- In order to avoid operating temperature differences, the two power supply units must be mounted next to each other in the same housing.
- The batteries and the system supply must only be connected to the master power supply unit.
- The positive pole for the batteries must be unwired at connection X8-9 (Master) and be provided with an external fuse.
- Only one temperature sensor must be connected to the master power supply unit.
- The temperature sensor must be fitted close to the batteries. (You will find precise details in document A6V10210390).

5.4 Indicators

LED	Color	Function	State	Meaning
H1	Green	Monitoring of mains voltage	On	↑ Normal operation (mains voltage available)
			Off	Fault (no mains voltage)
H2	Yellow	Monitoring of battery	On	Battery fault (open line, short-circuit or voltage too low)
			Off	Normal operation (no fault)
H3	Yellow	Monitoring of temperature sensor	On	Temperature sensor fault (open line, short-circuit or excess temperature)
			Off	Normal operation (no fault)

5.5 Technical data

Mains input	Voltage	AC 115 / 230 V +10/-15 % (automatic changeover)
	Frequency range	47…63 Hz
	Power consumption	195 VA
Supply output (System) X8/4…8	Voltage	DC 24 V (20.7…28.4 V, depending on charge and temperature)
	System current	• Max. 2.1 A per battery pair (single operation) • Max. 4.2 A per battery pair (parallel operation)
	Performance	150 W
	Design	• Idling-proof • Short-circuit-proof • Current limited
	Ripple	Max. 2.5 %
Supply output (Batteries) X8/9…10 [1]	Voltage	DC 24 V (20.7…28.4 V)
	Charging current	• Max. 5 A (single operation) • Max. 10 A (parallel operation)
	Connectable batteries (see table further below)	2 x 12 V • Single operation: min. 17…max. 65 Ah • Parallel operation: min. 45…max. 100 Ah (use only battery types recommended by Siemens in acc. with document A6V10210362)
	Batteries are monitored for	• Short-circuit • Open line • Internal short-circuit • Increase of the internal resistance
	Low discharge protection	Battery voltage <DC 21.0 V…22.0 V
Monitoring signal Mains fault	Designation	'NS'
	Active in event of	No mains voltage or mains voltage is too low (signaling after 60 s at the earliest)
	Design	Potential-free opener
Monitoring signal Battery fault	Designation	'BS'
	Active in event of	• Battery fault • Battery voltage <DC 21 V
	Design	Potential-free opener

Connections	Mains input	Spring clips, max. 1.5 mm²
	Battery supply and monitoring signals:	Spring clips / pluggable block, max. 2.5 mm²
Mechanical data	Dimensions (W x H x D)	130 x 150 x 70 mm
	Weight	1.2 kg
Standards and approvals	Standards	EN 54-4/A2
	Approvals	• VdS G200126 • VdS G102007 • CPR 0786-CPR-20775
	CE conformity mark	Yes

[1] Battery connection:

- Single operation: Terminal X8/10 +BI-limited
- Parallel operation: Terminal X8/9 +BI-unlimited (external fuse needed)

!	*NOTICE*
	Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is always >5 °C.

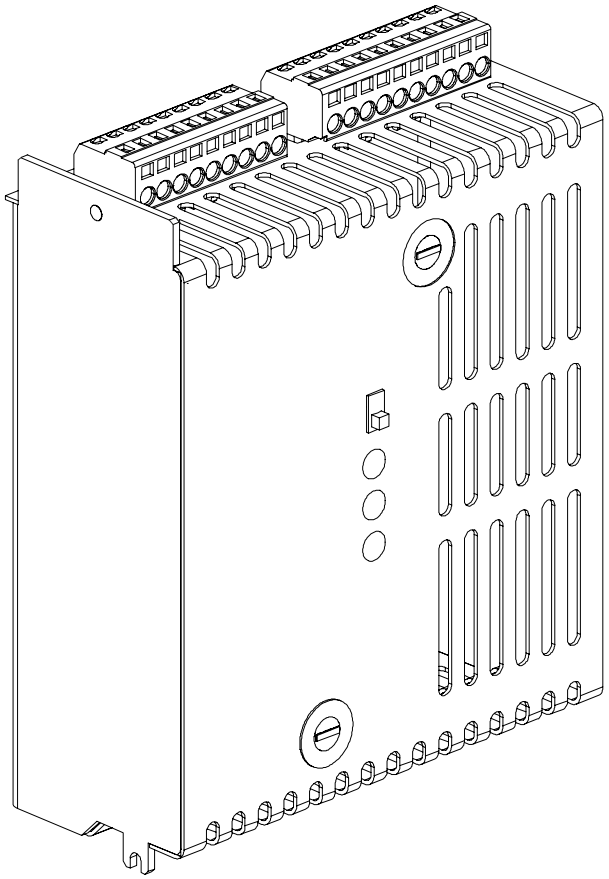
Permitted current loads for the SV24V-150W-A4

		17 Ah	25 Ah	45 Ah	65 Ah	100 Ah
$R_{i\ max.}$ [Ω]	Max. internal resistance of the battery	0.6				
$I_{min.}$ [A]	Minimum current	0				
$I_{max.\ a}$ (single)	Max. permanent current to load [1]	2.1	2.1	2.1	2.1	-
$I_{max.\ a}$ [A] (2 parallel)	Max. permanent current to load [1] for switching two power supply units in parallel	-	-	4.2	4.2	4.2
$I_{max.\ b}$ [A] (single/parallel)	Max. current peak to load [1]	4.2				

[1] Current to consumers on the control panel side

To determine loads of the power supply (150 W), note the maximum permissible charging currents of the corresponding batteries. You will find detailed information for calculating the power supply in the Project planning document A6V10210362.

6 Power supply (150 W) SV 24V-150W-A5



6.1 Description

The power supply (150 W) SV 24V-150W-A5 converts the mains voltage to system voltage and charges the batteries. The power supply (150 W) SV 24V-150W-A5 replaces type SV 24V-150W-A4 and has the following features:

- Higher EMC resistance
- Higher current load in the parallel operation
- Output power 150 W
- Parallel switching of up to 3 power supply units possible
- Short-circuit-proof
- Current limited
- Monitoring of mains voltage
- Uninterruptible power supply in battery operation
- Temperature-compensated battery charging with external temperature sensor
- Monitoring of battery
- Monitoring of temperature sensor
- Used to supply other consumers (complies with EN 54 and VdS)

6.2 Views

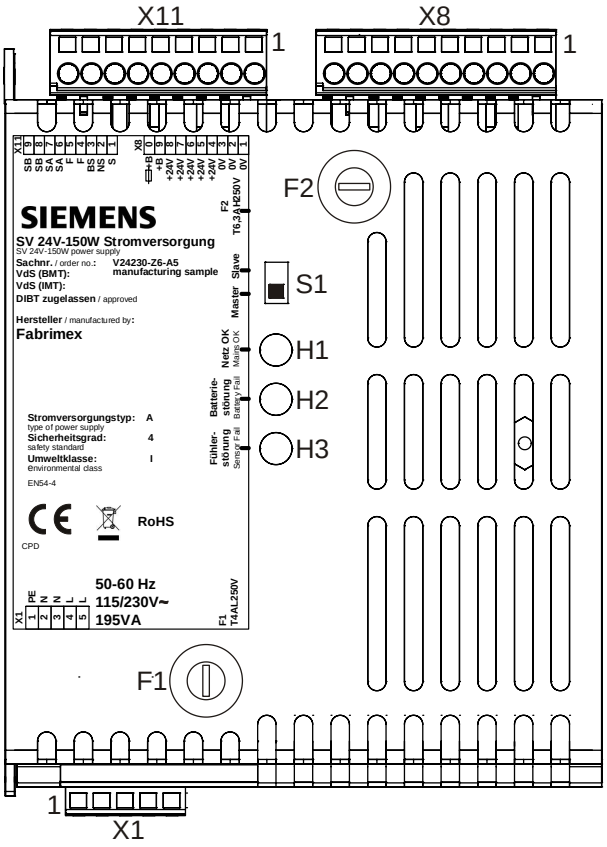


Figure 5: View of power supply (150 W) SV 24V-150W-A5

Element	Des.	Function
Connections	X1	Mains connection terminals
	X8	Connections for output voltage
	X11	Connections for monitoring signals
LEDs	H1	Status display for mains voltage
	H2	Status display for battery
	H3	Status display for temperature sensor
Fuses	F1	Mains fuse (4 AT / 250 V)
	F2	Battery fuse (6.3 AF / 250 V)
Switch	S1	Operation mode selection switch (master / slave)

6.3 Pin assignments

6.3.1 X1 mains connection

Pin	Designation	Description
1	PE	Earth (protective conductor)
2	N	Neutral conductor
3	N	Neutral conductor
4	L	External conductor (L1)
5	L	External conductor (L1)

Admissible cable cross-section: 0.2…2.5 mm²

When replacing a power supply, note the different pin assignment as against that in the power supply SV 24V-150W-A4.

6.3.2 X8 output voltage

Pin	Designation	Description
10	$+B_{I\text{-begr.}}$	Connection for battery, current limited via internal battery fuse F2 (without parallel switching)
9	$+B_{I\text{-unbegr.}}$	Connection for battery, not current limited (when switching in parallel: Fuse in the cable tree)
8	+24 V	Supply output +24 V
7	+24 V	Supply output +24 V
6	+24 V	Supply output +24 V
5	+24 V	Supply output +24 V
4	+24 V	Supply output +24 V
3	0 V	Supply output 0 V
2	0 V	Supply output 0 V
1	0 V	Supply output 0 V

Admissible cable cross-section: 0.2…2.5 mm²

Batteries may be connected either on terminal 10 or, with external fuse, to terminal 9.

6.3.3 X11 monitoring signals

Pin	Designation	Description
9	SB	Control line B for even current distribution (only when switching in parallel)
8	SB	Control line B for even current distribution (only when switching in parallel)
7	SA	Control line A for even current distribution (only when switching in parallel)
6	SA	Control line A for even current distribution (only when switching in parallel)
5	F	Connection for temperature sensor (master only)
4	F	Connection for temperature sensor (master only)
3	BS	Signaling: Battery fault (↑ normal operation 1/3 closed)
2	NS	Signaling: Mains fault (normal operation 1/2 closed)
1	S	Signaling: Common fault contact

Admissible cable cross-section: 0.2…2.5 mm²

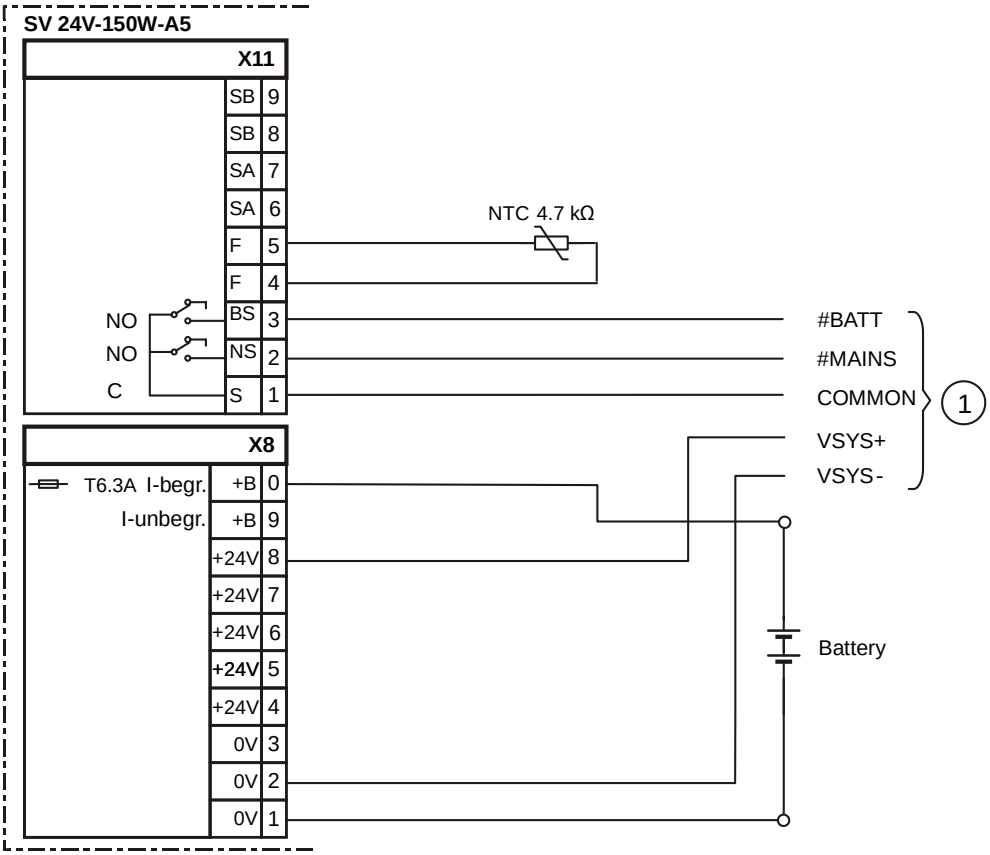


Figure 6: Wiring of the single power supply SV 24V-150W-A5

1 Cable tree to periphery board or fire terminal board

6.3.4 Parallel switching of two supply units

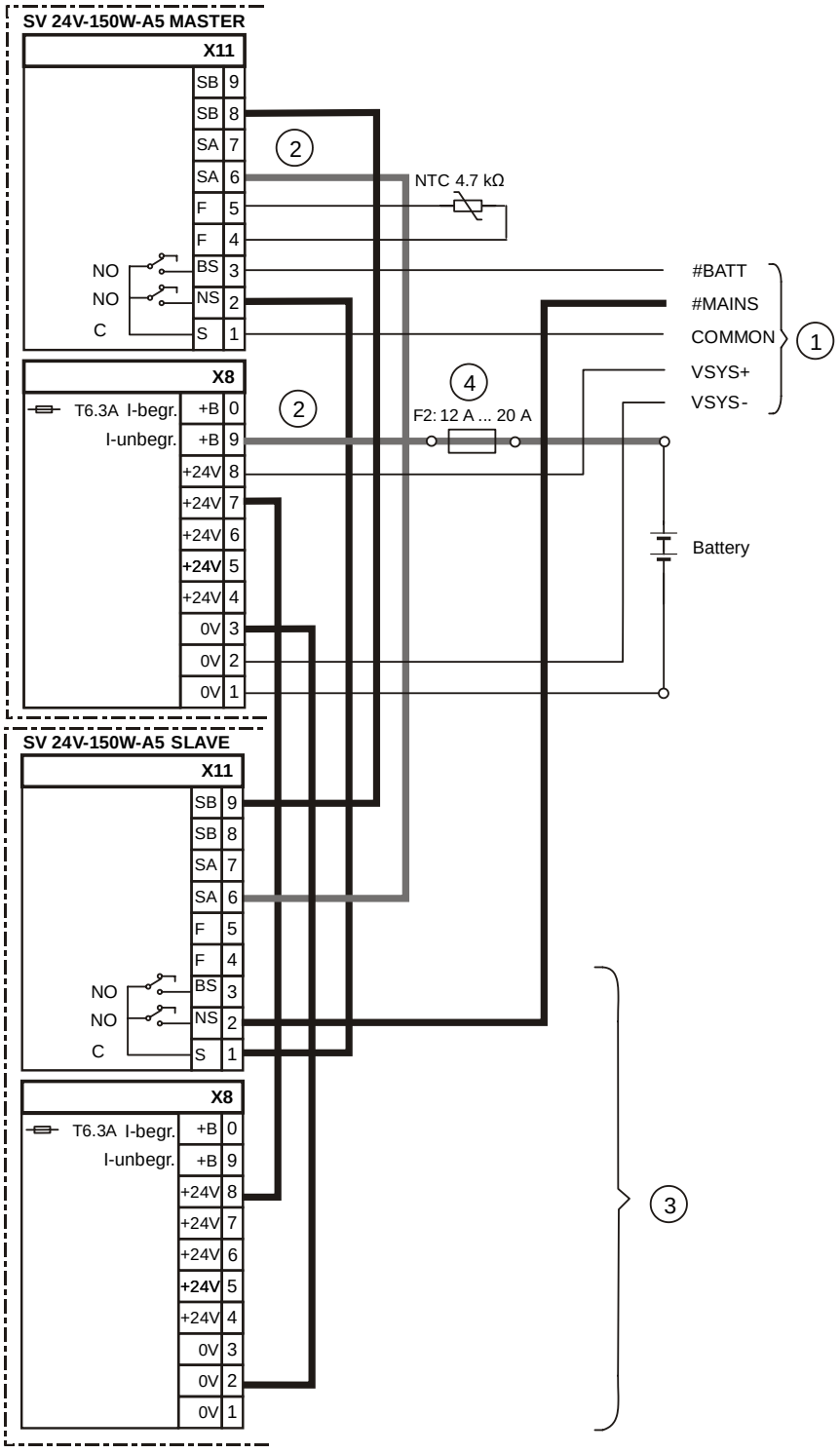


Figure 7: Parallel connection of two power supply units (150 W)-A5

1 Cable tree to periphery board or fire terminal board

2 Existing cable tree (connection for master power supply)

3 Additional cable tree for the second power supply (slave)

4 Additional fused terminal (F2) on the DIN rail

- The **connection lines marked in bold** of the additional cable tree (3) and the existing cable tree (2) must be wired again when installing the second power supply (slave).
- In order to avoid operating temperature differences, the two power supply units must be mounted next to each other in the same housing.
- The batteries and the system supply must only be connected to the master power supply unit.
- Only one temperature sensor must be connected to the master power supply unit.
- The temperature sensor must be fitted close to the batteries. (You will find precise details in document A6V10210390).

!	*NOTICE*
	Damage to the power supply Different versions (A4/A5) of the power supply (150 W) may not be switched in parallel.

6.3.5 Parallel switching of three supply units

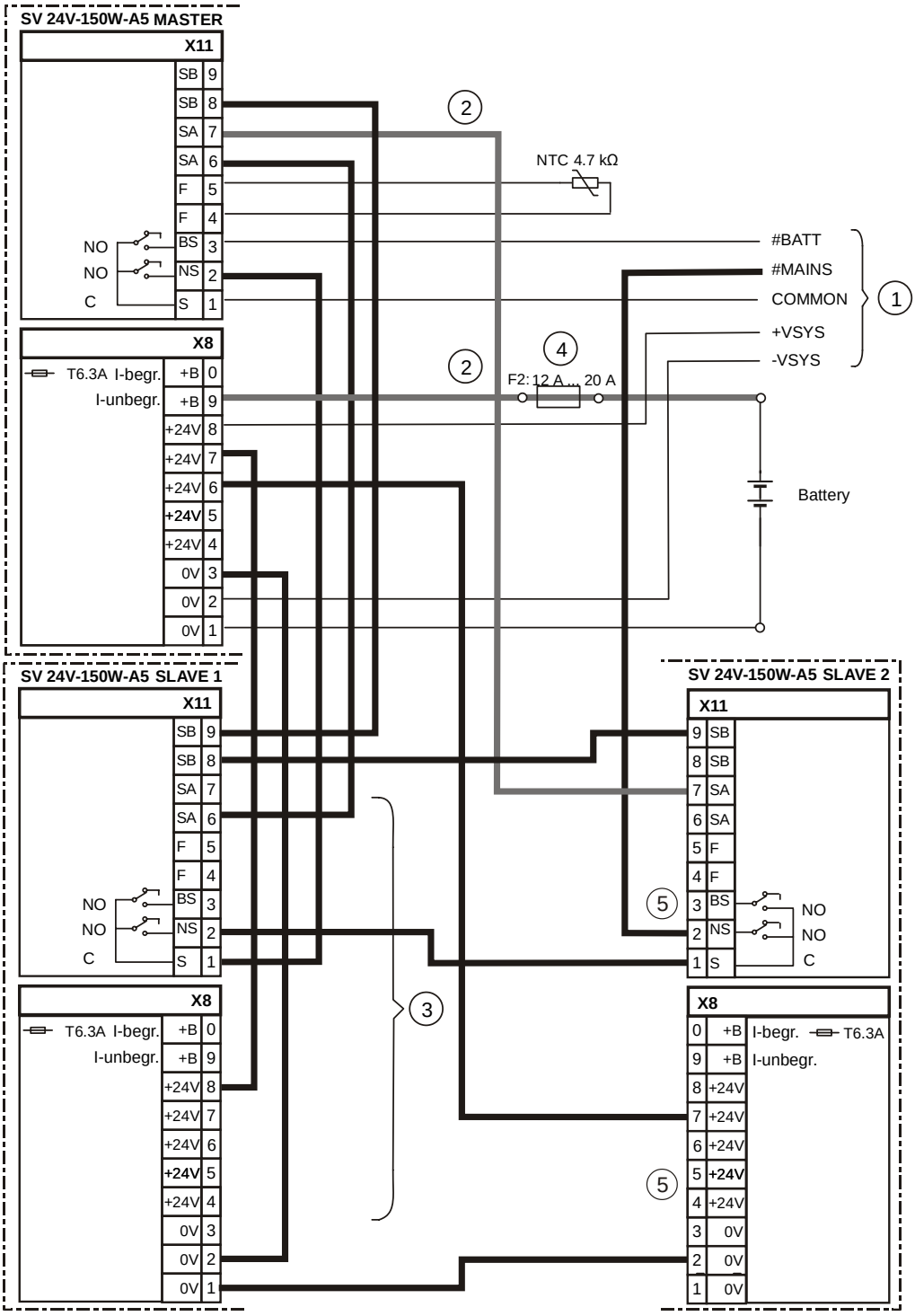


Figure 8: Parallel switching of three power supply units (150 W)-A5

1 Cable tree to periphery board or fire terminal board
2 Existing cable tree (connection for master power supply)
3 Additional cable tree for the second power supply (slave 1)
4 Additional fused terminal (F2) on the DIN rail
5 Additional cable tree for the third power supply (slave 2)

- The **connection lines marked in bold** of the additional cable tree (3 and 5) and the existing cable tree (2) must be wired again when installing the second power supply (slave).
- In order to avoid operating temperature differences, all three power supply units must be mounted next to each other in the same housing.
- The batteries and the system supply must only be connected to the master power supply unit.
- Only one temperature sensor must be connected to the master power supply unit.
- The temperature sensor must be fitted close to the batteries. (You will find precise details in document A6V10210390).

!	*NOTICE*
	Damage to the power supply Different versions (A4/A5) of the power supply (150 W) may not be switched in parallel.

6.4 Indicators

LED	Color	Function	State	Meaning
H1	Green	Monitoring of mains voltage	On	↑ Normal operation (mains voltage available)
			Off	Fault (no mains voltage)
H2	Yellow	Monitoring of battery	On	Battery fault (open line, short-circuit or voltage too low)
			Off	Normal operation (no fault)
H3	Yellow	Monitoring of temperature sensor	On	Temperature sensor fault (open line, short-circuit or excess temperature)
			Off	Normal operation (no fault)

6.5 Technical data

Mains input	Voltage	AC 115 / 230 V +10/-15 % (automatic changeover)
	Frequency range	47…63 Hz
	Power consumption	195 VA
Supply output (System) X8/4…8	Voltage	DC 24 V (21.0…28.4 V, depending on charge and temperature)
	System current	Single device max. 5 A Parallel operation of max. 7.6 A per battery pair
	Performance	150 W
	Design	• Idling-proof • Short-circuit-proof • Current limited
	Ripple	Max. 2.5 %
Supply output (Batteries) X8/9…10 *	Voltage	DC 24 V (21.0…28.4 V)
	Charging current	Max. 5 A
	Connectable batteries (see table further below)	2 x 12 V • Single operation: min. 17…max. 65 Ah • Parallel operation: min. 45…max. 100 Ah (use only battery types recommended by Siemens in acc. with doc. no. A6V10210362)
	Batteries are monitored for	• Short-circuit • Open line • Internal short-circuit • Increase of the internal resistance
	Low discharge protection	Battery voltage <DC 21.0 V…22.0 V
Monitoring signal Mains fault	Designation	'NS'
	Active in event of	No mains voltage or mains voltage is too low (signaling after 60 s at the earliest)
	Design	Potential-free opener
Monitoring signal Battery fault	Designation	'BS'
	Active in event of	• Battery fault • Battery voltage <DC 21 V
	Design	Potential-free opener

Connections	Mains input	Spring clips, max. 1.5 mm²
	Battery supply and monitoring signals:	Spring clips / pluggable block, max. 2.5 mm²
Mechanical data	Dimensions (W x H x D)	130 x 150 x 70 mm
	Weight	1.2 kg
Standards and approvals	Standards	EN 54-4/A2
	Approvals	• VdS pendent
	CE conformity mark	Yes

* Battery connection:

- Single operation: Terminal X8/10 +BI-limited
- Parallel operation: Terminal X8/9 +BI-unlimited (external fuse needed)

!	*NOTICE*
	Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is always >5 °C.

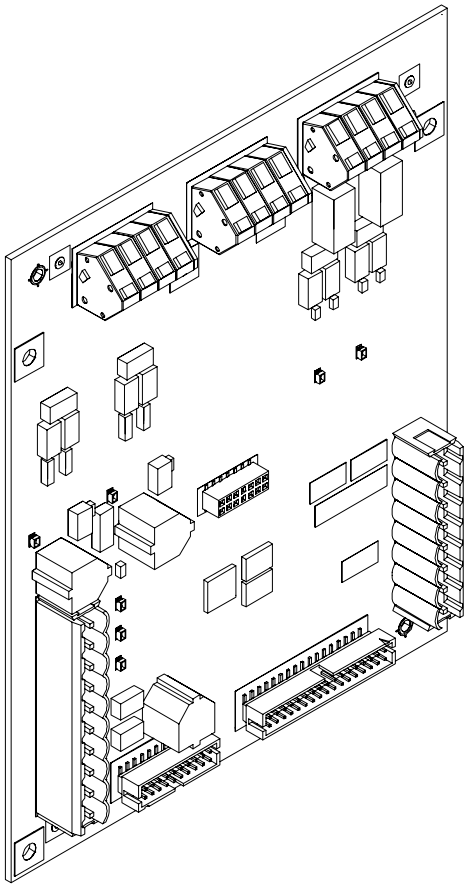
Permitted current loads for the SV24V-150W-A5

		17 Ah	25 Ah	45 Ah	65 Ah	100 Ah
$R_{i\ max.}$ [Ω]	Max. internal resistance of the battery	0.3				
$I_{min.}$ [A]	Minimum current	0				
$I_{max.\ a}$ (single)	Max. permanent current to load [1]	4.2	3.9	3.0	2.1	-
$I_{max.\ a}$ [A] (2 parallel)	Max. permanent current to load [1] for switching two power supply units in parallel	-	-	7.6	7.2	5.6
$I_{max.\ a}$ [A] (3 parallel)	Max. permanent current to load [1] for switching three power supply units in parallel	-	-	-	7.6	7.6
$I_{max.\ b}$ [A] (single)	Max. current peak to load [1]	5.0		--		
$I_{max.\ b}$ [A] (2 or 3 parallel)		--		7.6		

[1] Current to consumers on the control panel side

i	To determine loads of the power supply (150 W), note the maximum permissible charging currents of the corresponding batteries. You will find detailed information for calculating the power supply in the Project planning document A6V10210362.

7 Fire terminal board FTI2001-A1



7.1 Description

The fire terminal board FTI2001-A1 is used in the fire terminal FT724. It is the interface between the power supply unit (mains or battery) and the operating unit. The fire terminal board has the following features:

- Supply inputs for an external 24 V supply
- Third supply input [FR]
- Monitored supply outputs (24 V)

7.2 Views

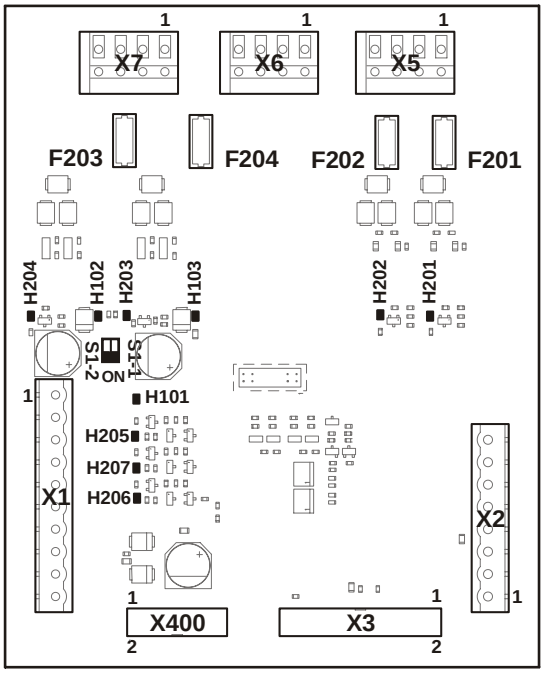


Figure 9: Printed circuit board view FTI2001 fire terminal board

Element	Des.	Function
Plugs and terminals	X1	Supply and message signals from the power supply unit
	X2	Not used
	X3	Connection to the PMI & mainboard
	X5	Supply outputs (2 x 24 V)
	X6	Supply input 2 (24 V)
	X7	Supply input 1 (24 V)
	X400	Connection for the periphery bus
LEDs	H101…H103	Power Down Ready
	H201	Monitoring of the fuse for supply output 1
	H202	Monitoring of the fuse for supply output 2
	H203	Monitoring of the voltage at supply input 2
	H204	Monitoring of the voltage at supply input 1
	H207	Monitoring of power supply
	H206	Monitoring of mains voltage
	H205	Monitoring of battery
Fuses	F201	Supply output 1 (1 A/T); Schurter OMT 125
	F202	Supply output 2 (1 A/T); Schurter OMT 125
	F203	Supply input 1 (2 A/T); Schurter OMT 125
	F204	Supply input 2 (2 A/T); Schurter OMT 125
Switch	S1	Switch for supply surveillance of X6 and X7

7.3 Pin assignments

7.3.1 X1 supply

The optional power supply or the external 24 V supply is connected to supply input X1.

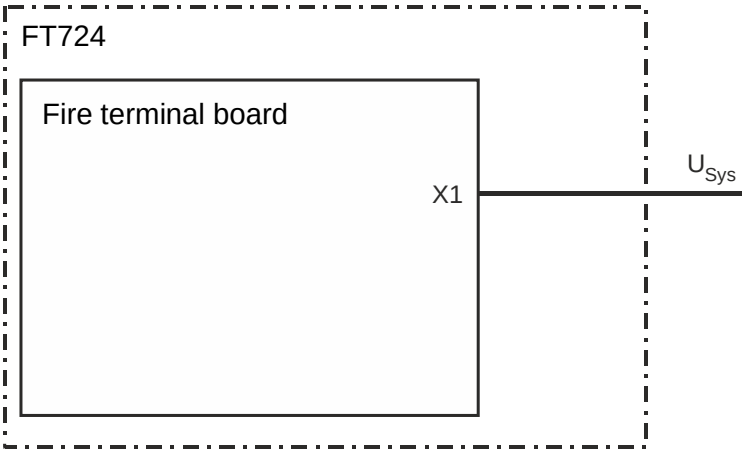
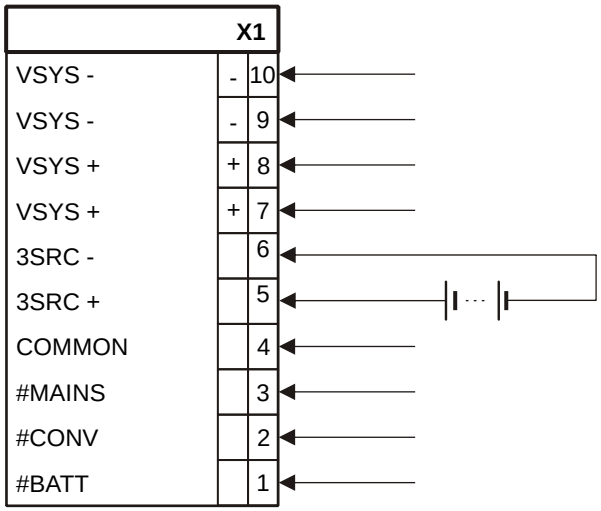


Figure 10: FTI2001-A1, supply input for external supply or fitted power supply (optional)

Pin	Designation	Description
10	VSYS–	Supply input from the power supply (–)
9	VSYS–	Supply input from the power supply (–)
8	VSYS+	Supply input from the power supply (+)
7	VSYS+	Supply input from the power supply (+)
6	3SRC–	Input for third supply source (–) [FR]
5	3SRC+	Input for third supply source (+) [FR]
4	COMMON	Ground
3	#MAINS	Message input from the power supply: Mains failure
2	#CONV	Message input from the power supply: Converter fault
1	#BATT	Message input from the power supply: Battery fault

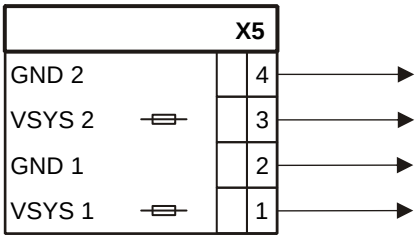
Admissible cable cross-section: 0.2…2.5 mm²



7.3.2 X5 supply output

Pin	Designation	Description
4	GND 2	Ground
3	VSYS 2	System supply (+) (1 A/T)
2	GND 1	Ground
1	VSYS 1	System supply (+) (1 A/T)

Admissible cable cross-section: 0.2…2.5 mm²



7.3.3 X6/X7 supply input 2/1

If the fire terminal is supplied by a fire control panel, a redundant supply is needed according to EN 54. For reasons of reliability, the two supply lines must be routed separately.

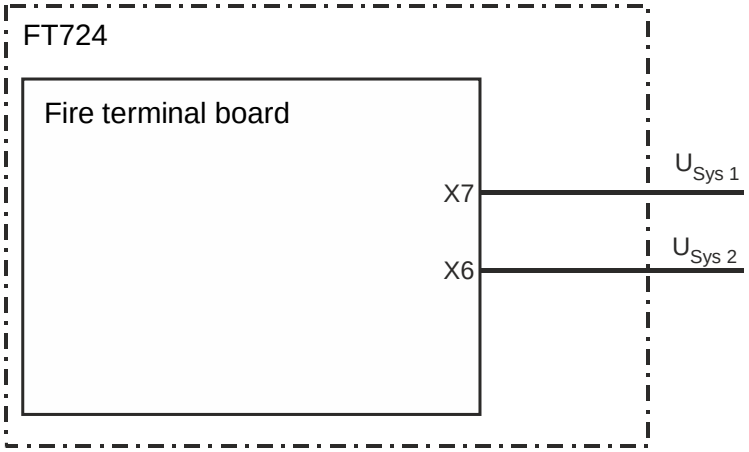
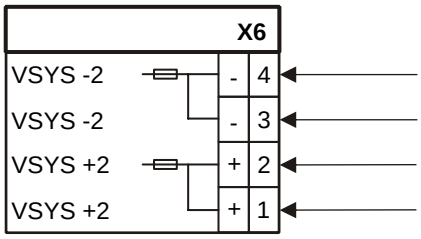


Figure 11: FTI2001-A1, supply via a fire control panel

X6, supply input 2

Pin	Designation	Description
4	VSYS - 2	Ground
3	VSYS - 2	Ground
2	VSYS + 2	System supply (+)
1	VSYS + 2	System supply (+)

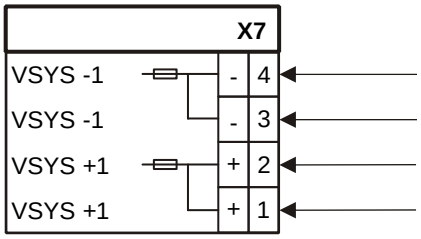
Admissible cable cross-section: 0.2…2.5 mm²



X7, supply input 1

Pin	Designation	Description
4	VSYS - 1	Ground
3	VSYS - 1	Ground
2	VSYS + 1	System supply (+)
1	VSYS + 1	System supply (+)

Admissible cable cross-section: 0.2…2.5 mm²



7.4 Indicators

LED	Color	Function	State	Meaning
H101…H103	Red	Power Down Ready	Off	↑ Normal operation
			On	Control panel may be disconnected from the mains
H201	Yellow	Supply output 1	Off	Fuse ok
			On	Fuse damaged
H202	Yellow	Supply output 2	Off	Fuse ok
			On	Fuse damaged
H203	Yellow	Monitoring of the voltage at the supply input 2 'VSYS2' [1]	Off	Supply available
			On	No supply and monitoring is switched on (S1-1 = ON)
H204	Yellow	Monitoring of the voltage at the supply input 1 'VSYS1' [1]	Off	Supply available
			On	No supply and monitoring is switched on (S1-2 = ON)
H207	Yellow	Monitoring power supply 'CONVERT_DEF_IN'	On	Fault in the power supply unit
			Off	Normal condition
H206	Yellow	Monitoring mains voltage 'MAINS_FAIL_IN'	On	No mains voltage
			Off	Normal condition
H205	Green	Monitoring batteries 'BATT_DEF_IN'	On	Battery fault
			Off	Normal condition

[1] For a correct indication the switch S1 must be in the corresponding position!

7.5 Adjustment elements

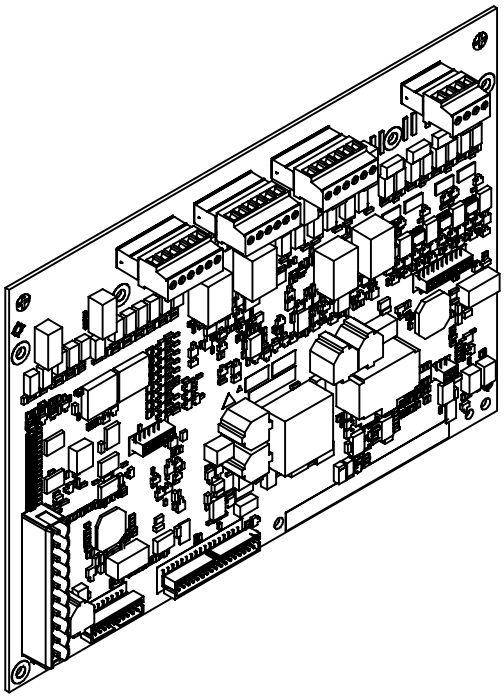
Switch	Function	Position	Meaning
S1-1	Supply input 1 'VSYS1'	ON	Input is not used (default setting)
		OFF	Input is used (monitored)
S1-2	Supply input 2 'VSYS2'	ON	Input is not used (default setting)
		OFF	Input is used (monitored)

7.6 Technical data

Supply	Designation	'VSYS+'; 'VSYS-'
(connector X1)	Operating voltage	DC 20…30 V
	Operating current	Max. 2.5 A
Input 3rd supply source	Designation	'3SRC+'; '3SRC-'
(connector X1)	Voltage	DC 7…30 V
	Current	Max. 40 mA
Power supply input 1	Designation	'VSYS +1', 'VSYS -1'
(connector X7)	Voltage	DC 20…30 V
	Current	Max. 2 A
Power supply input 2	Designation	'VSYS +2', 'VSYS -2'
(connector X6)	Voltage	DC 20…30 V
	Current	Max. 2 A
Supply output	Designation	'VSYS 1', 'VSYS 2'; 'GND 1', 'GND 2'
(connector X5)	Voltage	DC 20…30 V
	Current	Max. 1 A per output
Connection terminals	Inputs and outputs:	
	• Design	Spring clips
	• Admissible cable cross-section	0.2…2.5 mm²
Mechanical data	Dimensions (L x W x H)	210 x 150 x 40 mm
	Weight	130 g

!	*NOTICE*
	When the operating voltage is <20.8 V, an error is displayed via the monitoring of the supply input.

8 Periphery board (1-loop) FCI2010-A1



8.1 Description

The periphery board (1-loop) is used in the fire control panel FC721. It has the following features:

- Integrated line card for connecting a C-NET-loop or two stubs
- Max. 126 device addresses
- Connections for one remote transmission device each for RT Alarm and RT Fault
- One monitored output each for Alarm and Fault
- Four configurable inputs/outputs (24 V)
- Monitored sounder (horn) output
- A monitored supply output
- Input for a third supply source
- Activation of fault outputs in degraded mode operation
- Alarm evaluation in degraded mode operation; activation of the alarm and horn outputs in case of emergency alarm

8.2 Views

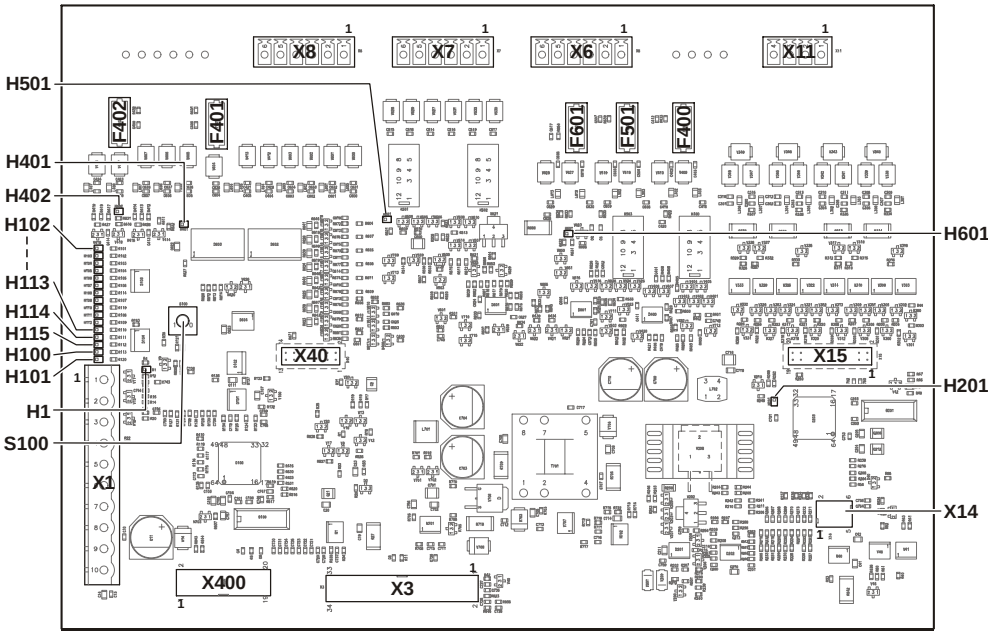


Figure 12: PCB view of periphery board (1-loop) FCI2010

Element	Des.	Function
Plugs and terminals	X1	Supply connection
	X3	Connection periphery bus to the PMI & mainboard
	X6	Monitored outputs for alarm, fault and horn
	X7	Changeover contacts for RT Alarm and RT Fault
	X8	Configurable inputs/outputs 1 … 4, supply input 1
	X11	C-NET detector line, loop 1 (mod. 2)
	X400	Connection periphery bus for additional peripherals
Slots for modules	X15	Not used
	X40	Not used
	X14	Not used
LEDs	H1	Power Down Ready
	H201	Display C-NET module 2
	H401	Monitoring supply output 1 (fuse F401)
	H402	Not used
	H501	Monitoring alarm output (fuse F501)
	H601	Monitoring fault output (fuse F601)
	H102- H113	Indications of programmable inputs and outputs (H100, H101, H114, H115 not used)
	H114	Not used
	H115	Not used

Element	Des.	Function
Fuses	F400	Horn output (1 A/T); Schurter OMT 125
	F401	Supply output 1 (1 A/T); Schurter OMT 125
	F402	Not used
	F501	Monitored alarm output (1 A/T); Schurter OMT 125
	F601	Monitored fault output (1 A/T); Schurter OMT 125
Adjustment elements	S100	Switchover of the LED indicators for the inputs and outputs

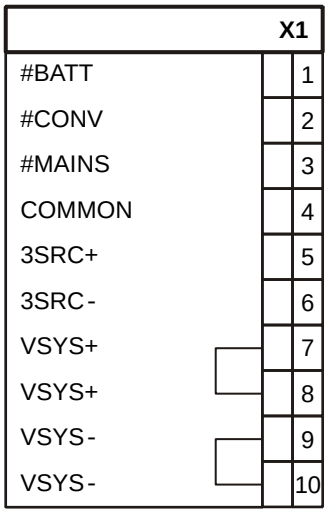
8.3 Pin assignments

Inputs and outputs which are not used do not require termination.
C-NET detector lines which are not used must not be terminated.

8.3.1 X1 supply

Pin	Designation	Description
1	#BATT	Message input from the power supply: Battery fault
2	#CONV	Message input from the power supply: Converter fault
3	#MAINS	Message input from the power supply: Mains failure
4	COMMON	Ground
5	3SRC+	Supply input for third supply source (+) [FR]
6	3SRC–	Supply input for third supply source (–) [FR]
7	VSYS+	Supply input from the power supply (+)
8	VSYS+	Supply input from the power supply (+)
9	VSYS–	Supply input from the power supply (–)
10	VSYS–	Supply input from the power supply (–)

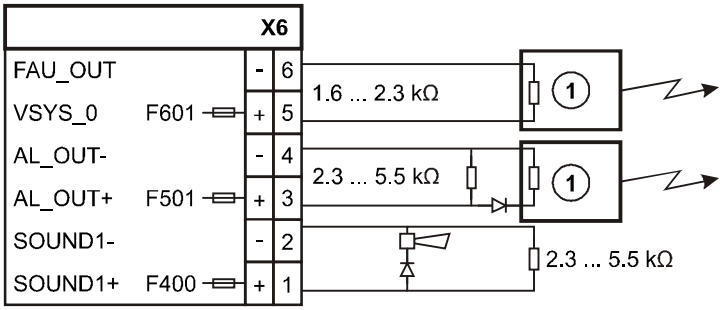
Admissible cable cross-section: 0.2…2.5 mm²



8.3.2 X6 Horn, alarm and fault monitored outputs

Pin	Designation	Description
6	FAU_OUT	Output fault
5	VSYS_O	Supply output for consumer fault
4	AL_OUT-	Alarm output (-)
3	AL_OUT+	Alarm output (+)
2	SOUND1-	Horn output (-)
1	SOUND1+	Horn output (+)

Admissible cable cross-section: 0.2…1.5 mm²

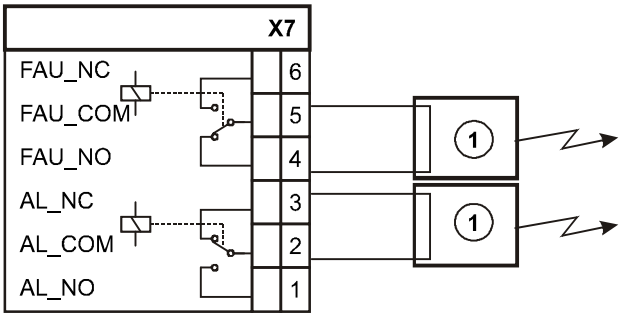


1 Remote transmission

8.3.3 X7 RT alarm and RT fault changeover contacts

Pin	Designation	Description
6	FAU_NC	↑ RT fault ↑ normally closed contact
5	FAU_COM	RT fault center tap (common)
4	FAU_NO	RT fault ↑ normally open contact
3	AL_NC	RT alarm break contact (normally closed)
2	AL_COM	RT alarm center tap (common)
1	AL_NO	RT alarm make contact (normally open)

Admissible cable cross-section: 0.2…1.5 mm²



1 Remote transmission

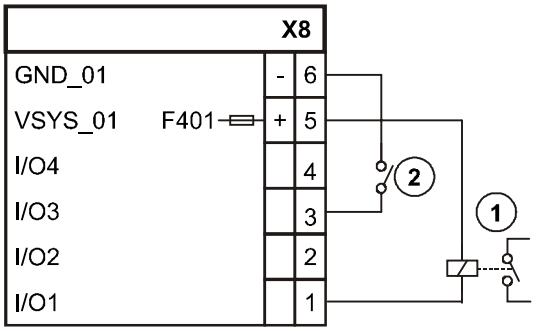
FAU_… Diagram of relay in ↑ normal operation = contact 5/4 closed

AL_… Diagram of relay in normal operation = contact 2/3 closed

8.3.4 X8 configurable inputs / outputs 1…4 and supply output 1

Pin	Designation	Description
6	GND_01	Supply output 1 (–)
5	VSYS_01	Supply output 1 (+)
4	I/O4	Configurable input/output 4
3	I/O3	Configurable input/output 3
2	I/O2	Configurable input/output 2
1	I/O1	Configurable input/output 1

Admissible cable cross-section: 0.2…1.5 mm²



All inputs/outputs can be connected as follows:

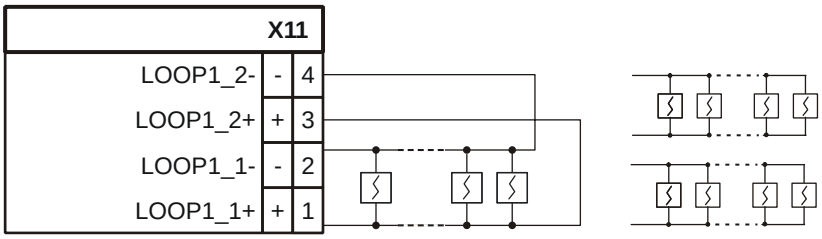
1 Configured as output

2 Configured as input

8.3.5 X11 detector line loop 1

Pin	Designation	Description
4	LOOP1_2–	↑ Loop 1 / ↑ stub 2 (–)
3	LOOP1_2+	Loop 1 / stub 2 (+)
2	LOOP1_1–	Loop 1 / stub 1 (–)
1	LOOP1_1+	Loop 1 / stub 1 (+)

Admissible cable cross-section: 0.2…1.5 mm²



One ↑ loop or two ↑ stubs can be connected.

8.4 Indicators

Indications of supply and system

LED	Color	Function	State	Meaning
H1	Red	Power Down Ready	Off	Normal operation
			On	Control panel may be disconnected from the mains.
H401	Yellow	Supply output 1 (F401)	Off	Fuse ok
			On	Fuse damaged
H501	Yellow	Monitored alarm output (F501)	Off	Fuse ok
			On	Fuse damaged
H601	Yellow	Monitored fault output (F601)	Off	Fuse ok
			On	Fuse damaged

Indication of outputs

LED	Color	Function	State	Meaning
H102	Yellow	FUE_FAU_1	Off	Relay activated (default)
			On	Relay not activated
H103	Yellow	FUE_FAU_2	Off	Active (default)
			Slow	Open line
			Fast	Short-circuit
			On	Passive
H104	Yellow	FUE_AL_1	Off	Relay not activated (default)
			On	Relay activated
H105	Yellow	FUE_AL_2	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active
H106	Yellow	HORN_1	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active

Indications of programmable inputs / outputs

LED	Color	Function	State	STATUS	DIRECTION
H108	Yellow	IO_FAULT	Off	Normal operation	
			On	I/O error (excess temperature, excess voltage, etc.)	
H109	Yellow	IO_DIR	Off	I/O STATUS (push button S100)	
			On	I/O DIRECTION (push button S100)	
H110	Yellow	IO_1	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H111	Yellow	IO_2	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H112	Yellow	IO_3	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H113	Yellow	IO_4	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT

C-NET indicators

LED	Color	Function	State	Meaning
H201	Yellow	C-NET loop 1 (module 2)	Off	Passive (normal operation)
			1 x flashing (every 2 s)	Failsafe active (communication to PMI interrupted)
			2 x flashing quickly (every 2 s)	Failsafe active + local alarm
			1 x flashing (every 1 s)	Failsafe active + indication (local alarm)
			1 x flashing (every 1 s) and 2 x flashing quickly (every 2 s)	Failsafe active + local alarm + indication
			On	Startup problems C-NET module 2 (clock)

8.5 Adjustment elements

Switch	Function	Position	Meaning
S100	Switchover of the indication for the I/O LEDs (see also H109)	Switchover	STATUS indication
			DIRECTION indication

8.6 Technical data

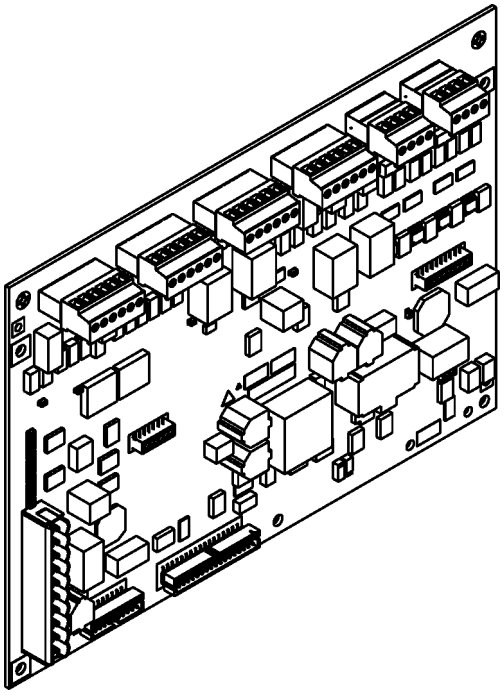
Supply input	Designation	'VSYS+'; 'VSYS-'
	Operating voltage	DC 21…28.6 V (= Vsys)
	Operating current	Max. 5 A
Input 3. supply source [FR]	Designation	'3SRC+'; '3SRC-'
	Voltage	DC 7…30 V
	Current	Max. 40 mA
Supply output 1	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 21…28.6 V
	Current	Max. 1 A (protected with 1 AT)
Detector line	Designation	'LOOP1_1+'; 'LOOP1_1-' …
	Output voltage	Max. DC 33 V
	Number of integrated line cards	1
	Output current per integrated line card	Max. 0.5 A
	Addressable devices per integrated line card	Max. 126
	Connectable lines per integrated line card	1 loop or 2 stubs
	Protocol	C-NET
	Cable types	All types (recommended: twisted); for detailed specifications, see document A6V10210362
	Monitored for	• Ground fault • Short-circuit • Open line • Line capacitance
	Design	• Short-circuit-proof • Voltage surge protection • Open line
Changeover contacts RT fault	Designation	'FAU_NO'; 'FAU_COM'; 'FAU_NC'
	Design	• Relay output • Break or make contact • Failsafe • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA

Monitored output Fault	Designation	'VSYS_O'; 'FAU_OUT'
	Design	• Open drain • Failsafe • Activated in degraded mode
	Output voltage	21 ... DC 28.6 V
	Output current	Max. 300 mA (protected with 1 AT)
	Guaranteed output current (monitored for short-circuit and open line)	15 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance	1.6 … 2.3 kΩ
	Min. tolerance	+/–Ω
Changeover contacts RT alarm	Designation	’AL_NO’; ’AL_COM’; ’AL_NC’
	Design	• Relay output • Break or make contact • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA
Monitored output Alarm	Designation	'AL_OUT+'; 'AL_OUT-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	21 ... DC 28.6 V
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current (monitored for short-circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance with tolerance	2.3 … 5.5 kΩ +/–Ω
Monitored sounder (horn) output	Designation	'SOUND1+'; 'SOUND1-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	21 ... DC 28.6 V [1])
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current (monitored for short-circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance with tolerance	2.3 … 5.8 kΩ +/–Ω
Configurable	Designation	'I/O1'…'I/O4'

inputs/outputs 1…4	Individually configurable as	• Input • Output
	Configured as input:	
	• Design	• Digital • Not monitored
	• Threshold values	> Vsys/2 = off < Vsys/4 = on
	Configured as output:	
	• Design	• Open drain • Inherently short-circuit-proof • Excess temperature protection
	• Output voltage	DC 21…28.6 V
	• Output current per output	Max. 300 mA
	• Output current of all outputs (total)	1 A
Connection terminals	Inputs, outputs and detector line:	
	• Design	Spring clips
	• Admissible cable cross-section	0.2 ... 1.5 mm²
	Supply:	
	• Design	Screw terminals
	• Admissible cable cross-section	0.5 ... 2.5 mm²
Mechanical data	Dimensions (L x W x H)	210 x 150 x 40 mm
	Weight	220 g

[1]) **NOTICE! Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is always >5 °C.**

9 Periphery board (2 loops) FCI2002-A1



9.1 Description

The periphery board (2 loops) is used in the fire control panel FC722. It has the following features:

- 1 integrated ↑ line card for the connection of 2 C-NET loops or 4 ↑ stubs (mixed variants are possible)
- Maximum of 252 device addresses per ↑ loop
- Maximum of 252 device addresses per integrated line card
- Optional loop extension (C-NET) FCI2003-A1 to extend to 4 loops or 8 stubs
- Connections for one remote transmission device each for ↑ RT alarm and RT fault
- One monitored output each for Alarm and Fault
- Eight configurable inputs/outputs (24 V)
- Monitored sounder (horn) output
- Two monitored supply outputs
- Input for a third supply source
- Activation of fault outputs in degraded mode operation
- Alarm evaluation in degraded mode operation; activation of the alarm and horn outputs in case of emergency alarm

9.2 Views

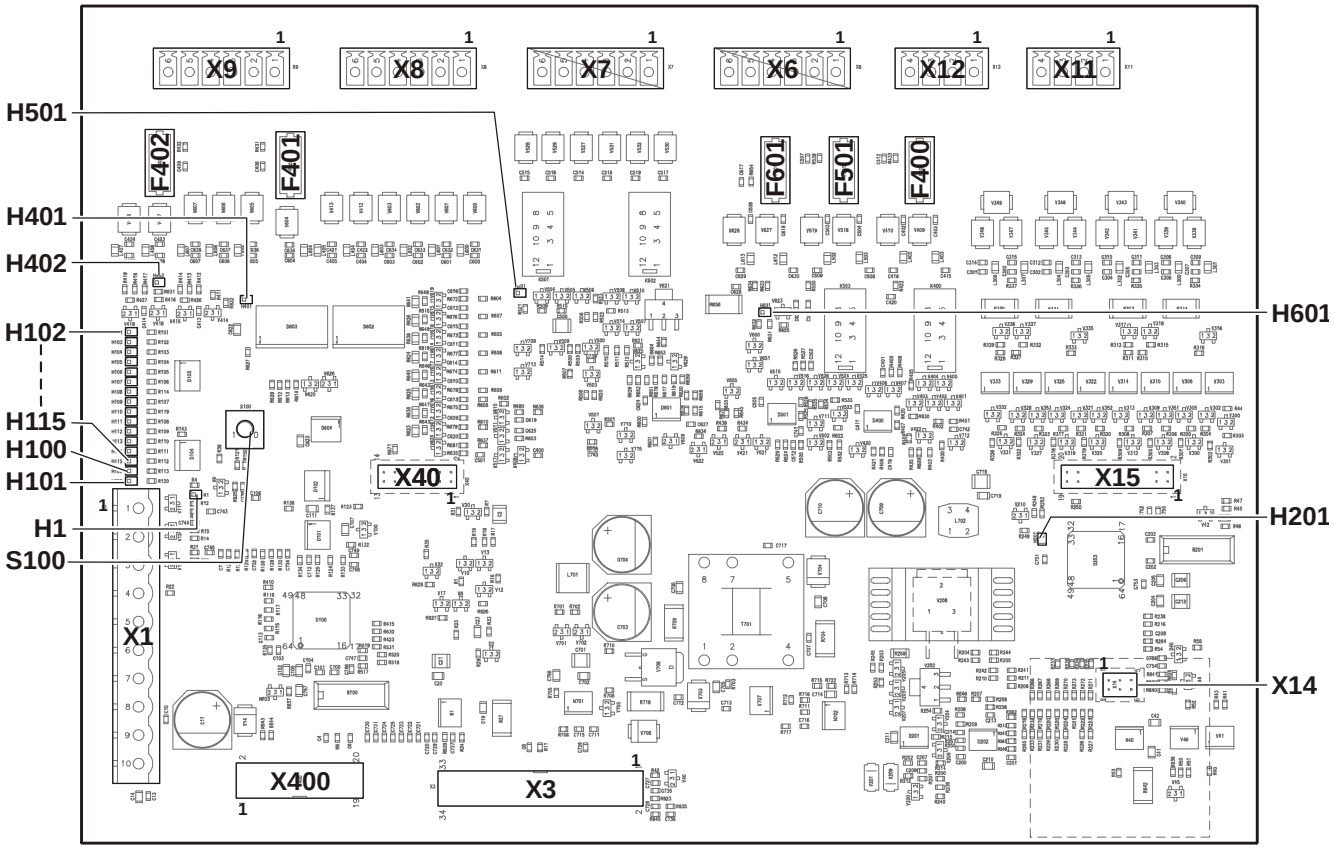


Figure 13: PCB view of periphery board (2 loops) FCI2002

Element	Des.	Function
Plugs and terminals	X1	Supply connection
	X3	Connection periphery bus to the PMI & mainboard
	X6	Monitored outputs for alarm, fault and horn
	X7	Changeover contacts for RT Alarm and RT Fault
	X8	Configurable inputs/outputs 1 … 4, supply input 1
	X9	Configurable inputs/outputs 5…8, supply input 2
	X11	C-NET detector line, loop 1 (module 2)
	X12	C-NET detector line, loop 2 (module 2)
	X400	Connection periphery bus for additional peripherals
Slots for modules	X15	Loop extension (C-NET) FCI2003 for the integrated line card
	X40	Not used
	X14	Not used

Element	Des.	Function
LEDs	H1	Power Down Ready
	H201	Display C-NET module 2
	H401	Monitoring supply output 1 (fuse F401)
	H402	Monitoring supply output 2 (fuse F402)
	H501	Monitoring alarm output (fuse F501)
	H601	Monitoring fault output (fuse F601)
	H100-H115	Indications of programmable inputs and outputs
Fuses	F400	Horn output (1 A/T); Schurter OMT 125
	F401	Supply output 1 (1 A/T); Schurter OMT 125
	F402	Supply output 2 (1 A/T); Schurter OMT 125
	F501	Monitored alarm output (1 A/T); Schurter OMT 125
	F601	Monitored fault output (1 A/T); Schurter OMT 125
Adjustment elements	S100	Switchover of the LED indicators for the inputs and outputs

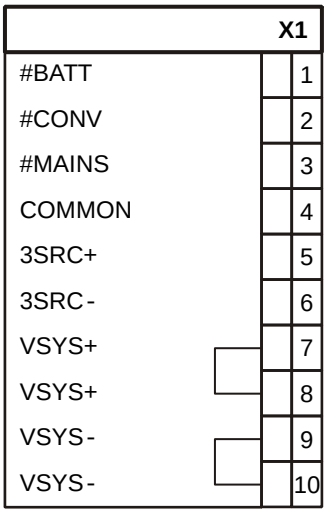
9.3 Pin assignments

Inputs and outputs which are not used do not require termination.
C-NET detector lines which are not used must not be terminated.

9.3.1 X1 supply

Pin	Designation	Description
1	#BATT	Message input from the power supply: Battery fault
2	#CONV	Message input from the power supply: Converter fault
3	#MAINS	Message input from the power supply: Mains failure
4	COMMON	Ground
5	3SRC+	Supply input for third supply source (+) [FR]
6	3SRC–	Supply input for third supply source (–) [FR]
7	VSYS+	Supply input from the power supply (+)
8	VSYS+	Supply input from the power supply (+)
9	VSYS–	Supply input from the power supply (–)
10	VSYS–	Supply input from the power supply (–)

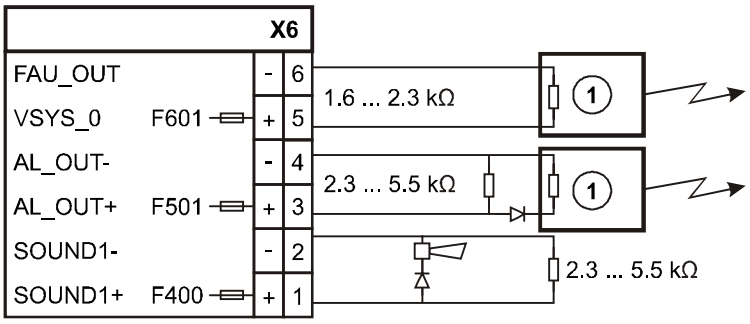
Admissible cable cross-section: 0.2…2.5 mm²



9.3.2 X6 Horn, alarm and fault monitored outputs

Pin	Designation	Description
6	FAU_OUT	Output fault
5	VSYS_O	Supply output for consumer fault
4	AL_OUT-	Alarm output (-)
3	AL_OUT+	Alarm output (+)
2	SOUND1-	Horn output (-)
1	SOUND1+	Horn output (+)

Admissible cable cross-section: 0.2…1.5 mm²

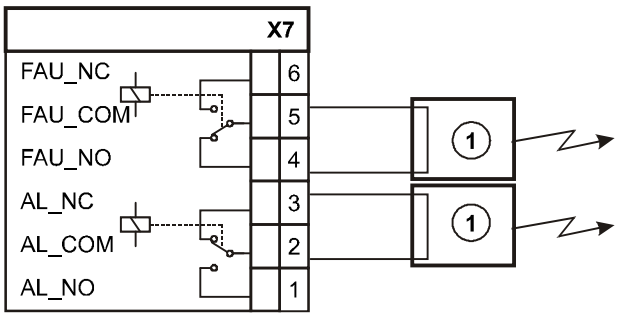


1 Remote transmission

9.3.3 X7 RT alarm and RT fault changeover contacts

Pin	Designation	Description
6	FAU_NC	↑ RT fault ↑ normally closed contact
5	FAU_COM	RT fault center tap (common)
4	FAU_NO	RT fault ↑ normally open contact
3	AL_NC	RT alarm break contact (normally closed)
2	AL_COM	RT alarm center tap (common)
1	AL_NO	RT alarm make contact (normally open)

Admissible cable cross-section: 0.2…1.5 mm²



1 Remote transmission

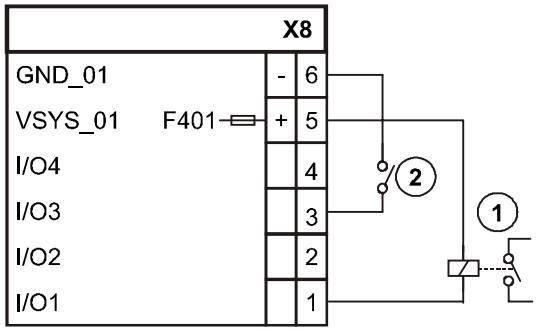
FAU_… Diagram of relay in ↑ normal operation = contact 5/4 closed

AL_… Diagram of relay in normal operation = contact 2/3 closed

9.3.4 X8 configurable inputs / outputs 1…4 and supply output 1

Pin	Designation	Description
6	GND_01	Supply output 1 (–)
5	VSYS_01	Supply output 1 (+)
4	I/O4	Configurable input/output 4
3	I/O3	Configurable input/output 3
2	I/O2	Configurable input/output 2
1	I/O1	Configurable input/output 1

Admissible cable cross-section: 0.2…1.5 mm²



All inputs/outputs can be connected as follows:

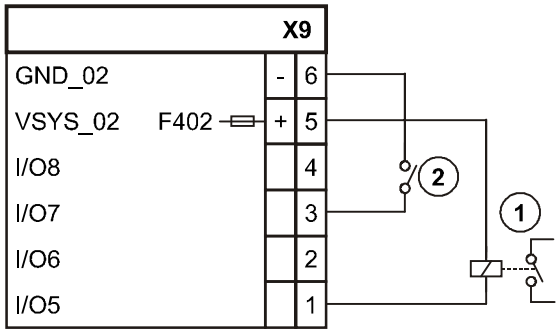
1 Configured as output

2 Configured as input

9.3.5 X9 configurable inputs/outputs 5…8 and supply output 2

Pin	Designation	Description
6	GND_02	Supply output 2 (–)
5	VSYS_02	Supply output 2 (+)
4	I/O8	Configurable input/output 8
3	I/O7	Configurable input/output 7
2	I/O6	Configurable input/output 6
1	I/O5	Configurable input/output 5

Admissible cable cross-section: 0.2…1.5 mm²



All inputs/outputs can be connected as follows:

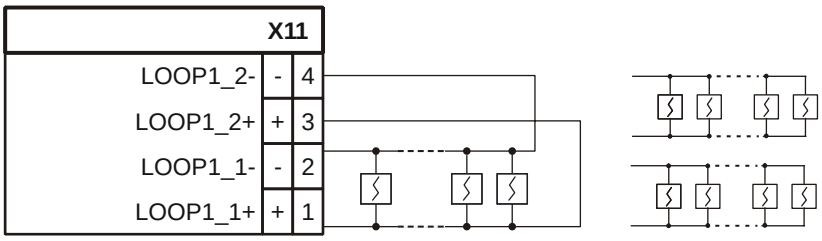
1 Configured as output

2 Configured as input

9.3.6 X11 detector line loop 1

Pin	Designation	Description
4	LOOP1_2–	↑ Loop 1 / ↑ stub 2 (–)
3	LOOP1_2+	Loop 1 / stub 2 (+)
2	LOOP1_1–	Loop 1 / stub 1 (–)
1	LOOP1_1+	Loop 1 / stub 1 (+)

Admissible cable cross-section: 0.2…1.5 mm²

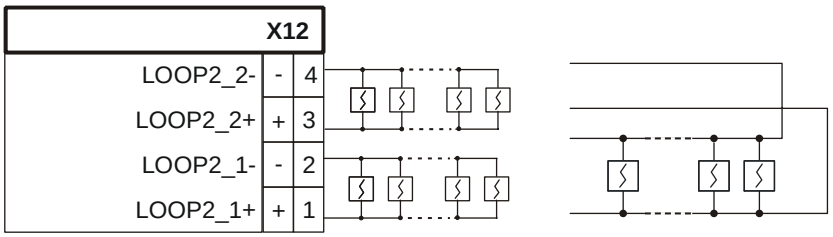


One ↑ loop or two ↑ stubs can be connected.

9.3.7 X12 detector line loop 2

Pin	Designation	Description
4	LOOP2_2–	↑ Loop 2 / ↑ stub 4 (–)
3	LOOP2_2+	Loop 2 / stub 4 (+)
2	LOOP2_1–	Loop 2 / stub 3 (–)
1	LOOP2_1+	Loop 2 / stub 3 (+)

Admissible cable cross-section: 0.2…1.5 mm²



One ↑ loop or two ↑ stubs can be connected.

9.4 Indicators

Indications of supply and system

LED	Color	Function	State	Meaning
H1	Red	Power Down Ready	Off	↑ Normal operation
			On	Control panel may be disconnected from the mains.
H401	Yellow	Supply output 1 (F401)	Off	Fuse ok
			On	Fuse damaged
H402	Yellow	Supply output 2 (F402)	Off	Fuse ok
			On	Fuse damaged
H501	Yellow	Monitored alarm output (F501)	Off	Fuse ok
			On	Fuse damaged
H601	Yellow	Monitored fault output (F601)	Off	Fuse ok
			On	Fuse damaged

Indication of outputs

LED	Color	Function	State	Meaning
H102	Yellow	FUE_FAU_1	Off	Relay activated (default)
			On	Relay not activated
H103	Yellow	FUE_FAU_2	Off	Active (default)
			Slow	Open line
			Fast	Short-circuit
			On	Passive
H104	Yellow	FUE_AL_1	Off	Relay not activated (default)
			On	Relay activated
H105	Yellow	FUE_AL_2	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active
H106	Yellow	HORN_1	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active

Indications of programmable inputs / outputs

LED	Color	Function	State	STATUS	DIRECTION
H108	Yellow	IO_FAULT	Off	Normal operation	
			On	I/O error (excess temperature, excess voltage, etc.)	
H109	Yellow	IO_DIR	Off	I/O STATUS (push button S100)	
			On	I/O DIRECTION (push button S100)	
H110	Yellow	IO_1	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H111	Yellow	IO_2	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H112	Yellow	IO_3	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H113	Yellow	IO_4	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H114	Yellow	IO_5	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H115	Yellow	IO_6	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H100	Yellow	IO_7	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H101	Yellow	IO_8	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT

C-NET indicators

LED	Color	Function	State	Meaning
H201	Yellow	C-NET loops 1 and 2 (module 2)	Off	Passive (normal operation)
			1 x flashing (every 2 s)	Failsafe active (communication to PMI interrupted)
			2 x quickly flashing (every 2 s)	Failsafe active + local alarm
			1 x flashing (every 1 s)	Failsafe active + indication (local alarm)
			1 x flashing (every 1 s) and 2 x quickly flashing (every 2 s)	Failsafe active + local alarm + indication
			On	Start problems C-NET loop 1 and 2, module 2 (clock)

9.5 Adjustment elements

Switch	Function	Position	Meaning
S100	Switchover of the indication for the I/O LEDs (see also H109)	Switchover	STATUS indication
			DIRECTION indication

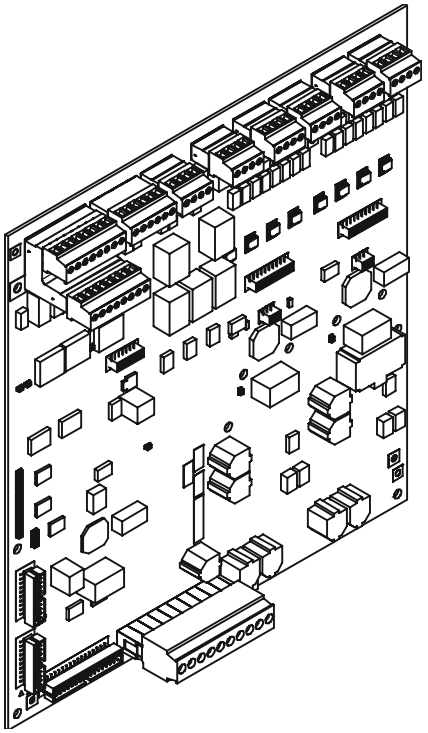
9.6 Technical data

Supply input	Designation	'VSYS+'; 'VSYS-'
	Operating voltage	DC 20…30 V
	Operating current	Max. 5 A
Input 3. supply source [FR]	Designation	'3SRC+'; '3SRC-'
	Voltage	DC 7…30 V
	Current	Max. 40 mA
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 20…30 V
	Current	Max. 1 A (protected with 1 AT)
Detector line	Designation	'LOOP1_1+'; 'LOOP1_1-' … LOOP2_2+'; 'LOOP2_2-'
	Output voltage	Max. DC 33 V
	Number of integrated line cards	1
	Output current per integrated line card	Max. 0.5 A
	Addressable devices per integrated line card	Max. 252
	Connectable lines per integrated line card	2 loops or 4 stubs (mixed variants are possible)
	Protocol	C-NET
	Cable types	All types (recommended: twisted); for detailed specifications, see document A6V10210362
	Monitored for	• Ground fault • Short-circuit • Open line • Line capacitance
	Design	• Short-circuit-proof • Voltage surge protection • Open line

Changeover contacts RT fault	Designation	'FAU_NO'; 'FAU_COM'; 'FAU_NC'
	Design	• Relay output • Break or make contact • Failsafe • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA
Monitored output Fault	Designation	'VSYS_O'; 'FAU_OUT'
	Design	• Open drain • Failsafe • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 300 mA (protected with 1 AT)
	Guaranteed output current (monitored for short circuit and open line)	15 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance	1.6 … 2.3 kΩ
	Min. tolerance	+/–Ω
Changeover contacts RT alarm	Designation	'AL_NO'; 'AL_COM'; 'AL_NC'
	Design	• Relay output • Break or make contact • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA
Monitored output Alarm	Designation	'AL_OUT+'; 'AL_OUT-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current (monitored for short circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance with tolerance	2.3…5.5 kΩ +/–Ω

Monitored sounder (horn) output	Designation	'SOUND1+'; 'SOUND1-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current (monitored for short circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance with tolerance	2.3…5.8 kΩ +/–Ω
Configurable inputs/outputs 1…8	Designation	'I/O1'…'I/O8'
	Individually configurable as	• Input • Output
	Configured as input:	
	• Design	• Digital • Not monitored
	• Threshold values	> Vsys/2 = off < Vsys/4 = on
	Configured as output:	
	• Design	• Open drain • Inherently short-circuit-proof • Excess temperature protection
	• Output voltage	DC 20…30 V
	• Output current per output	Max. 300 mA
	• Output current of all outputs (total)	1 A
Connection terminals	Inputs, outputs and detector line:	
	• Design	Spring clips
	• Admissible cable cross-section	0.2…1.5 mm²
	Supply:	
	• Design	Screw terminals
	• Admissible cable cross-section	0.5…2.5 mm²
Mechanical data	Dimensions (L x W x H)	210 x 150 x 40 mm
	Weight	220 g

10 Periphery board (4 loops) FCI2004-A1



10.1 Description

The periphery board (4 loops) is used in the fire control panel FC724. It has the following features:

- 2 integrated ↑ line cards for the connection of 4 C-NET loops or 8 ↑ stubs (mixed variants are possible)
- Maximum of 252 device addresses per ↑ loop
- Maximum of 252 device addresses per integrated line card (total 504)
- Optional loop extensions (C-NET) FCI2003-A1 to extend to 8 loops or 16 stubs
- Connections for one remote transmission device each for ↑ RT alarm and RT fault
- One monitored output each for Alarm and Fault
- Twelve configurable inputs/outputs (24 V)
- Two monitored horn outputs
- Two monitored supply outputs
- Input for a third supply source
- Activation of fault outputs in degraded mode operation
- Alarm evaluation in degraded mode operation; activation of the alarm and horn outputs in case of emergency alarm

10.2 Views

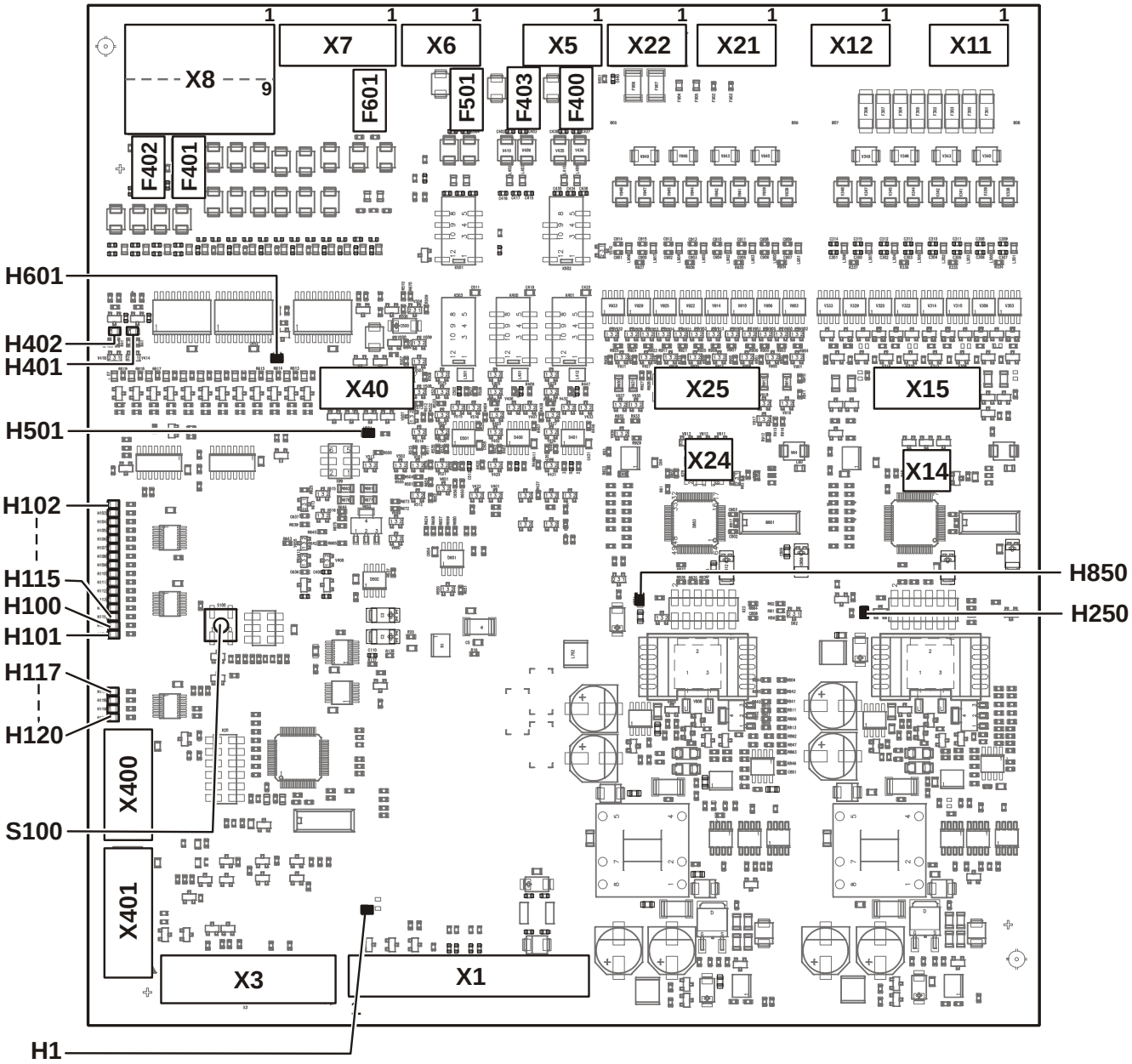


Figure 14: PCB view of FCI2004

Element	Des.	Function
Plugs and terminals	X1	Supply connection
	X3	Connection periphery bus to the PMI & mainboard
	X5	Monitored horn outputs
	X6	Monitored outputs for Alarm and Fault
	X7	Changeover contacts for RT Alarm and RT Fault
	X8	Configurable inputs/outputs 1 … 12 and supply outputs Vsys
	X11	C-NET detector line, loop 1 (module 2)
	X12	C-NET detector line, loop 2 (module 2)
	X21	C-NET detector line, loop 1 (module 3)
	X22	C-NET detector line, loop 2 (module 3)
	X400	Connection periphery bus for additional peripherals
	X401	Connection periphery bus for additional peripherals
Slots for modules	X14	Not used
	X15	Loop extension (C-NET) FCI2003 for the integrated line card 1
	X24	Not used
	X25	Loop extension (C-NET) FCI2003 for the integrated line card 2
	X40	Not used
LEDs	H1	Power Down Ready
	H250	Display C-NET module 2
	H850	Display C-NET module 3
	H401	Monitoring supply output 1 (fuse F401)
	H402	Monitoring supply output 2 (fuse F402)
	H501	Monitoring alarm output (fuse F501)
	H601	Monitoring fault output alarm output (fuse F601)
	H100-H120	Indications of the programmable I/Os
Fuses	F400	Horn output 1 (1 A/T); Schurter OMT 125
	F401	Supply output 1 (1 A/T); Schurter OMT 125
	F402	Supply output 2 (1 A/T); Schurter OMT 125
	F403	Horn output 2 (1 A/T); Schurter OMT 125
	F501	Monitored alarm output (1 A/T); Schurter OMT 125
	F601	Monitored fault output (1 A/T); Schurter OMT 125
Adjustment elements	S100	Switchover of the LED indicators for the I/Os

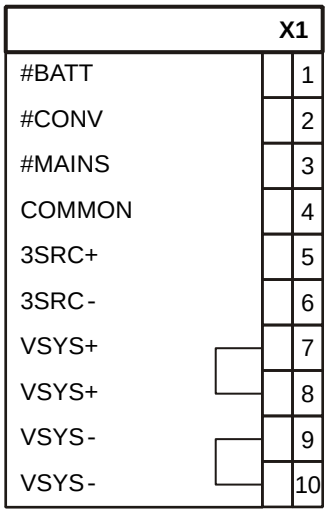
10.3 Pin assignments

Inputs and outputs which are not used do not require termination.
C-NET detector lines which are not used must not be terminated.

10.3.1 X1 supply

Pin	Designation	Description
1	#BATT	Message input from the power supply: Battery fault
2	#CONV	Message input from the power supply: Converter fault
3	#MAINS	Message input from the power supply: Mains failure
4	COMMON	Ground
5	3SRC+	Third power supply input (+) [FR]
6	3SRC–	Third power supply input (–) [FR]
7	VSYS+	Supply input from the power supply (+)
8	VSYS+	Supply input from the power supply (+)
9	VSYS–	Supply input from the power supply (–)
10	VSYS–	Supply input from the power supply (–)

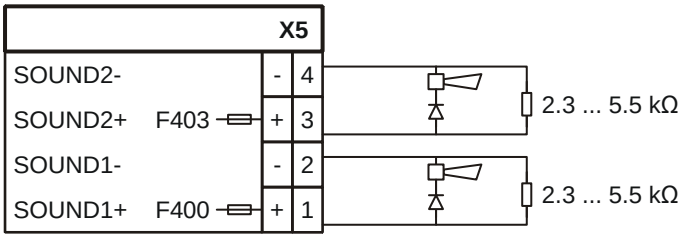
Admissible cable cross-section: 0.2…2.5 mm²



10.3.2 X5 monitored horn outputs 1 and 2

Pin	Designation	Description
4	SOUND2-	Horn output 2 (-)
3	SOUND2+	Horn output 2 (+)
2	SOUND1-	Horn output 1 (-)
1	SOUND1+	Horn output 1 (+)

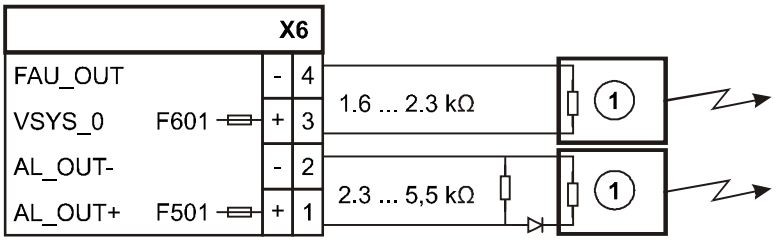
Admissible cable cross-section: 0.2…1.5 mm²



10.3.3 X6 alarm and fault monitored outputs

Pin	Designation	Description
4	FAU_OUT	Output fault
3	VSYS_O	Supply output for consumer fault
2	AL_OUT-	Alarm output (-)
1	AL_OUT+	Alarm output (+)

Admissible cable cross-section: 0.2…1.5 mm²

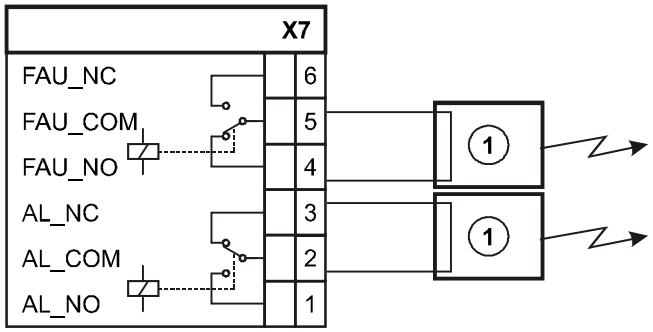


1 Remote transmission

10.3.4 X7 RT alarm and RT fault changeover contacts

Pin	Designation	Description
6	FAU_NC	↑ RT fault ↑ normally closed contact
5	FAU_COM	RT fault center tap (common)
4	FAU_NO	RT fault ↑ normally open contact
3	AL_NC	RT alarm break contact (normally closed)
2	AL_COM	RT alarm center tap (common)
1	AL_NO	RT alarm make contact (normally open)

Admissible cable cross-section: 0.2…1.5 mm²

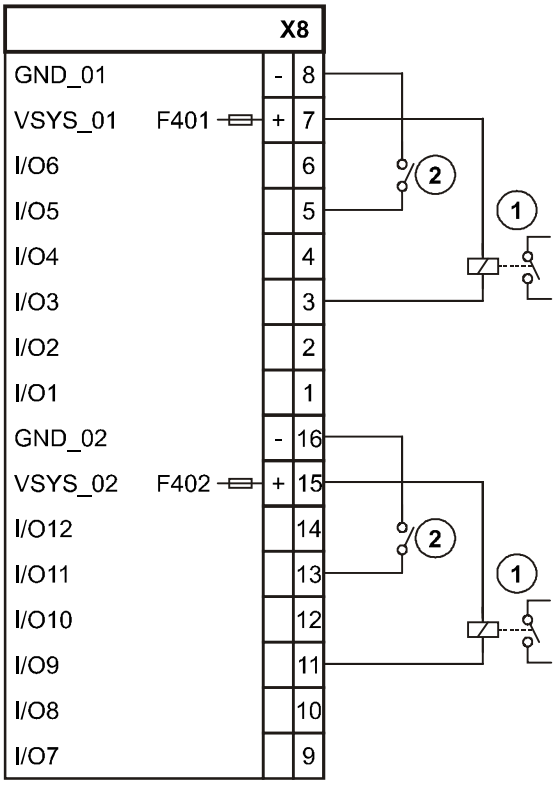


1	Remote transmission
FAU_…	Diagram of relay in ↑ normal operation = contact 5/4 closed
AL_…	Diagram of relay in normal operation = contact 2/3 closed

10.3.5 X8 configurable inputs/outputs 1…12 and supply outputs 1…2

Pin	Designation	Description
8	GND_01	Supply output 1 (-)
7	VSYS_01	Supply output 1 (+)
6	I/O6	Configurable input/output 6
5	I/O5	Configurable input/output 5
4	I/O4	Configurable input/output 4
3	I/O3	Configurable input/output 3
2	I/O2	Configurable input/output 2
1	I/O1	Configurable input/output 1
16	GND_02	Supply output 2 (-)
15	VSYS_02	Supply output 2 (+)
14	I/O12	Configurable input/output 12
13	I/O11	Configurable input/output 11
12	I/O10	Configurable input/output 10
11	I/O9	Configurable input/output 9
10	I/O8	Configurable input/output 8
9	I/O7	Configurable input/output 7

Admissible cable cross-section: 0.2…1.5 mm²



All inputs/outputs can be connected as follows:

1 Configured as output

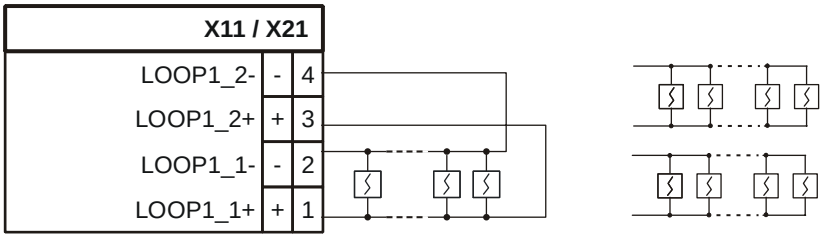
2 Configured as input

10.3.6 X11 / X21 detector line loop 1 (module 2/3)

Pin	Designation	Description	X11	X21 [1]
4	LOOP1_2–	↑ Loop 1 / ↑ stub 2 (–)	Connection – 1st Loop	Connection – 3rd Loop
3	LOOP1_2+	Loop 1 / stub 2 (+)	Connection + 1st Loop	Connection + 3rd Loop
2	LOOP1_1–	Loop 1 / stub 1 (–)	Connection - 1st Loop	Connection - 3rd Loop
1	LOOP1_1+	Loop 1 / stub 1 (+)	Connection + 1st Loop	Connection + 3rd Loop

Admissible cable cross-section: 0.2…1.5 mm²

[1] Loop number without loop extension



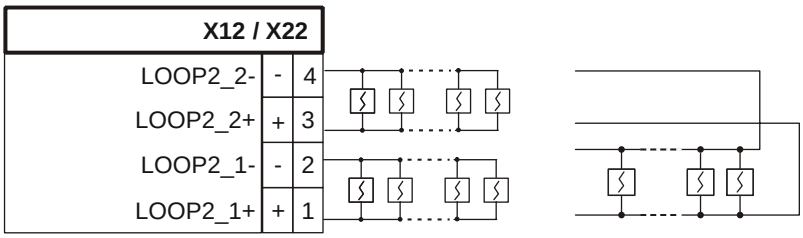
- The technical term LOOP 1 applies to both loops on connectors X11 and X21.
- One loop or two stubs can be connected.

10.3.7 X12 / X22 detector line loop 2 (module 2/3)

Pin	Designation	Description	X12	X22 [1]
4	LOOP1_2–	↑ Loop 1 / ↑ stub 2 (–)	Connection – 2nd Loop	Connection – 4th Loop
3	LOOP1_2+	Loop 1 / stub 2 (+)	Connection + 2nd Loop	Connection + 4th Loop
2	LOOP1_1–	Loop 1 / stub 1 (–)	Connection – 2nd Loop	Connection – 4th Loop
1	LOOP1_1+	Loop 1 / stub 1 (+)	Connection + 2nd Loop	Connection + 4th Loop

Admissible cable cross-section: 0.2…1.5 mm²

[1] Loop number without loop extension



- The technical term LOOP 2 applies to both ↑ loops on connectors X12 and X22.
- One loop or two stubs can be connected.

10.4 Indicators

Indications of supply and system

LED	Color	Function	State	Meaning
H1	Red	Power Down Ready	Off	↑ Normal operation
			On	Control panel may be disconnected from the mains
H401	Yellow	Supply output 1 (F401)	Off	Fuse ok
			On	Fuse damaged
H402	Yellow	Supply output 2 (F402)	Off	Fuse ok
			On	Fuse damaged
H501	Yellow	Monitored alarm output (F501)	Off	Fuse ok
			On	Fuse damaged
H601	Yellow	Monitored fault output (F601)	Off	Fuse ok
			On	Fuse damaged

Indication of outputs

LED	Color	Function	State	Meaning
H102	Yellow	FUE_FAU_1	Off	Relay activated (default)
			On	Relay not activated
H103	Yellow	FUE_FAU_2	Off	Active (default)
			Slow	Open line
			Fast	Short-circuit
			On	Passive
H104	Yellow	FUE_AL_1	Off	Relay not activated (default)
			On	Relay activated
H105	Yellow	FUE_AL_2	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active
H106	Yellow	HORN_1	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active
H107	Yellow	HORN_2	Off	Passive (default)
			Slow	Open line
			Fast	Short-circuit
			On	Active

Indications of programmable inputs / outputs

LED	Color	Function	State	STATUS	DIRECTION
H108	Yellow	IO_FAULT	Off	Normal operation	
			On	I/O error (excess temperature, excess voltage, etc.)	
H109	Yellow	IO_DIR	Off	I/O STATUS (push button S100)	
			On	I/O DIRECTION (push button S100)	
H110	Yellow	IO_1	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H111	Yellow	IO_2	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H112	Yellow	IO_3	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H113	Yellow	IO_4	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H114	Yellow	IO_5	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H115	Yellow	IO_6	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H100	Yellow	IO_7	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H101	Yellow	IO_8	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H117	Yellow	IO_9	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H118	Yellow	IO_10	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H119	Yellow	IO_11	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H120	Yellow	IO_12	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT

C-NET indicators

LED	Color	Function	State	Meaning
H250	Yellow	C-NET 1 and 2 (module 2)	Off	Passive (normal operation)
			1 x flashing (every 2 s)	Failsafe active (communication to PMI interrupted)
			2 x quickly flashing (every 2 s)	Failsafe active + local alarm
			1 x flashing (every 1 s)	Failsafe active + indication (local alarm)
			1 x flashing (every 1 s) and 2 x quickly flashing (every 2 s)	Failsafe active + local alarm + indication
			On	Startup problems C-NET module 2 (clock)
H850	Yellow	C-NET loops 3 and 4 (module 3)	Off	Passive (normal operation)
			1 x flashing (every 2 s)	Failsafe active (communication to PMI interrupted)
			2 x quickly flashing (every 2 s)	Failsafe active + local alarm
			1 x flashing (every 1 s)	Failsafe active + indication (local alarm)
			1 x flashing (every 1 s) and 2 x quickly flashing (every 2 s)	Failsafe active + local alarm + indication
			On	Startup problems C-NET module 2 (clock)

10.5 Adjustment elements

Switch	Function	Position	Meaning
S100	Switchover of the indication for the I/O LEDs (see also H109)	Switchover	STATUS indication
			DIRECTION indication

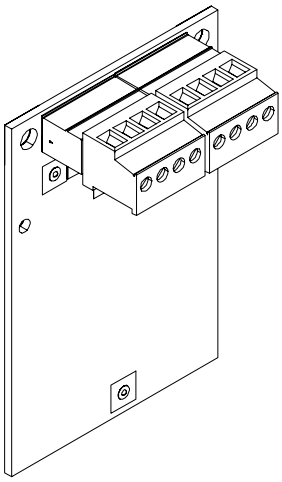
10.6 Technical data

Supply input	Designation	'VSYS+'; 'VSYS-'
	Operating voltage	DC 20…30 V
	Operating current	Max. 5 A
Input 3. supply source	Designation	'3SRC+'; '3SRC-'
	Voltage	DC 7…30 V
	Current	Max. 40 mA
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 20…30 V
	Current	Max. 1 A (protected with 1 AT)
Detector lines	Designation	'LOOP1_1+'; 'LOOP1_1-'…'LOOP2_2+'; 'LOOP2_2-'
	Output voltage	Max. DC 33 V
	Number of integrated line cards	2
	Output current per integrated line card	Max. 0.5 A
	Addressable devices per integrated line card	Max. 252
	Connectable lines per integrated line card	2 loops or 4 stubs (mixed variants are possible)
	Protocol	C-NET
	Cable types	All types (recommended: twisted); for detailed specifications, see document A6V10210362
	Monitored for	• Ground fault • Short-circuit • Open line • Line capacitance
	Design	• Short-circuit-proof • Voltage surge protection • Open line
Changeover contacts RT fault	Designation	’FAU_NO’; ’FAU_COM’; ’FAU_NC’
	Design	• Relay output • Break or make contact • Failsafe • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA

Monitored output Fault	Designation	'VSYS_O'; 'FAU_OUT'
	Design	• Open drain • Failsafe • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 0.3 A (safeguarded with 1 AT)
	Guaranteed output current (monitored for short circuit and open line)	15 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance min. tolerance	1.6 … 2.3 kΩ +/–Ω
Changeover contacts RT alarm	Designation	’AL_NO’; ’AL_COM’; ’AL_NC’
	Design	• Relay output • Break or make contact • Activated in degraded mode
	Switching voltage	Max. DC 60 V
	Switching current	Max. 400 mA
Monitored output Alarm	Designation	'AL_OUT+'; 'AL_OUT-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current (monitored for short circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance min. tolerance	2.3…5.5 kΩ +/–Ω

Monitored horn outputs 1 and 2	Designation	• 'SOUND1+'; 'SOUND1-' • 'SOUND2+'; 'SOUND2-'
	Design	• Relay reversed polarity • Activated in degraded mode
	Output voltage	DC 20…30 V
	Output current	Max. 1 A (protected with 1 AT)
	Guaranteed output current: (monitored for short circuit and open line)	20 mA with $U_{out\ min}$ = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Nominal monitoring resistance	2.3…5.5 kΩ
	min. tolerance	+/–Ω
Configurable inputs/outputs 1…12	Designation	'I/O1'…'I/O12'
	Individually configurable as	• Input • Output
	Configured as input	
	• Design	• Digital • Not monitored
	• Threshold values	• > Vsys/2 = off • < Vsys/4 = on
	Configured as output:	
	• Design	• Open drain • Inherently short-circuit-proof • Excess temperature protection
	• Output voltage	DC 20…30 V
	• Output current per output	Max. 300 mA
	• Output current of all outputs (total)	1.5 A
Connection terminals	Inputs, outputs, and C-NET	
	• Design	Screw terminals
	• Admissible cable cross-section	0.2…1.5 mm²
	Supply	
	• Design	Screw terminals
	• Admissible cable cross-section	0.5…2.5 mm²
Mechanical data	Dimensions (L x W x H)	210 x 225 x 40 mm
	Weight	350 g

11 Loop extension FCI2003-A1



11.1 Description

The ↑ loop extension (C-NET) is plugged onto the periphery board in the fire control panels and makes it possible to double the number of loops per integrated ↑ line card. The number of addresses per integrated line card remains at 252.

11.2 Views

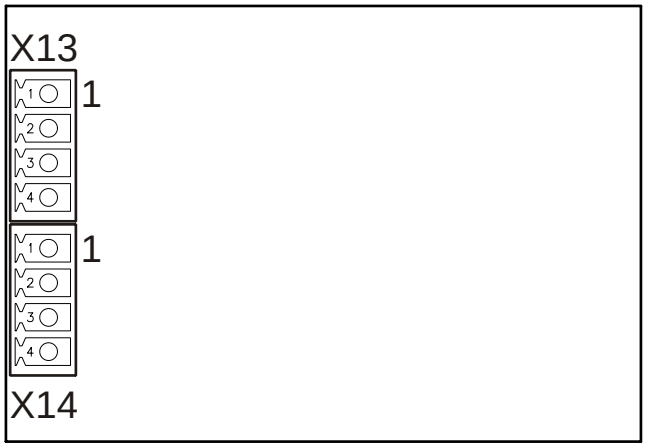


Figure 15: Printed circuit board view of ↑ loop extension FCI2003-A1

X13 Connections for loop 3

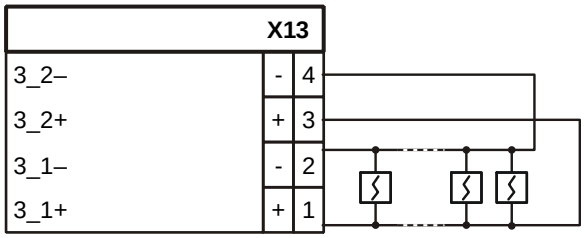
X14 Connections for loop 4

11.3 Pin assignments

11.3.1 X13 connection loop 3

Pin	Designation	Description
4	3_2-	↑ Loop extension for loop 3 or ↑ stub 6 (–)
3	3_2+	Loop extension for loop 3 or stub 6 (+)
2	3_1-	Loop extension for loop 3 or stub 5 (–)
1	3_1+	Loop extension for loop 3 or stub 5 (+)

Admissible cable cross-section: 0.2…1.5 mm²

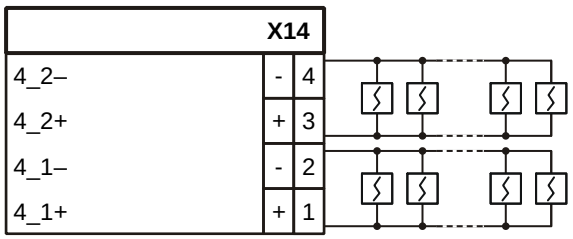


- One loop or two stubs can be connected to the ↑ loop extension (C-NET).
- The plug for the loop extension (C-NET) is always located at the corresponding ↑ detector line connection.

11.3.2 X14 connection loop 4

Pin	Designation	Description
4	4_2-	↑ Loop extension for loop 4 or ↑ stub 8 (–)
3	4_2+	Loop extension for loop 4 or stub 8 (+)
2	4_1-	Loop extension for loop 4 or stub 7 (–)
1	4_1+	Loop extension for loop 4 or stub 7 (+)

Admissible cable cross-section: 0.2…1.5 mm²

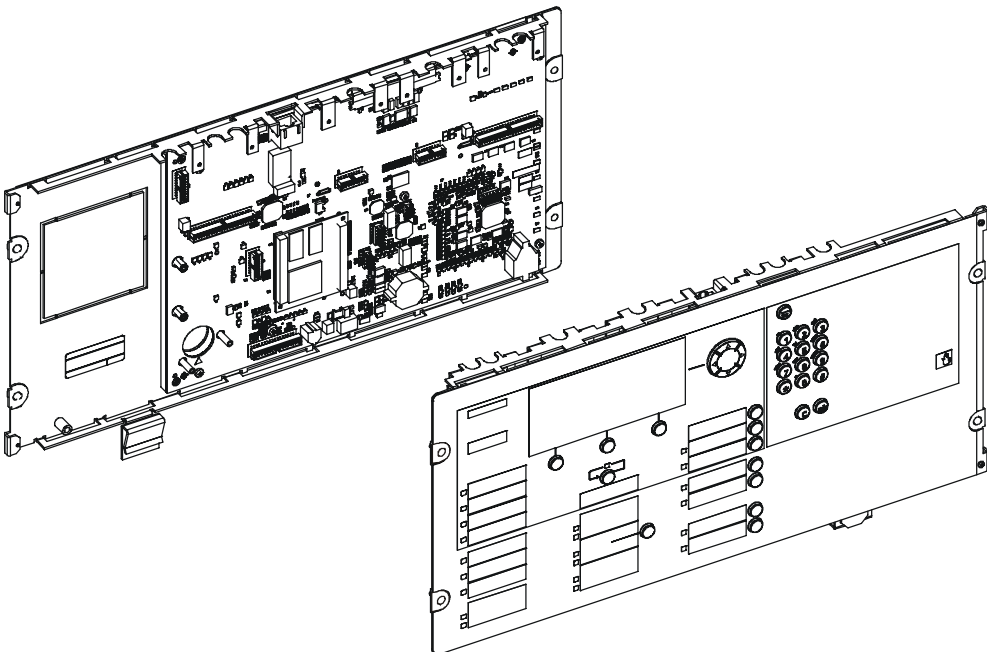


- One loop or two stubs can be connected to the ↑ loop extension (C-NET).
- The plug for the loop extension (C-NET) is always located at the corresponding ↑ detector line connection.

11.4 Technical data

Detector line **Loop 1 and loop 2**	Designation	'3_1+'…'4_2–'
	Output voltage	Max. DC 33 V
	Connectable lines	2 loops or 4 stubs
	Protocol	C-NET
	Monitored for	• Ground fault • Short-circuit • Open line • Line capacitance
	Design	• Short-circuit-proof • Voltage surge protection • Open line
Connection terminals	Inputs, outputs and detector lines:	
	• Design	Screw terminals
	• Admissible cable cross-section	0.2…1.5 mm²
Mechanical data	Dimensions (W x H x D)	48 x 20 x 70 mm
	Weight	25 g

12 Operating unit with PMI & mainboard FCM2004



12.1 Description

The operating unit with PMI & mainboard FCM2004 includes the CPU module and the Person Machine Interface. The operating unit equipment varies depending on the station type.

The following operating units are equipped with the PMI & mainboard FCM2004:

- Operating unit FCM7201-xx
- Operating unit with LED indicator (internal)FCM7202-Y3
- Operating unit with country-specific equipment FCM7203-xx

The PMI & mainboard FCM2004 is only compatible with firmware up to IP3.0.

The PMI & mainboard FCM2004 has the following interfaces:

- Interface to the periphery board
- Slot for a network module (SAFEDLINK) with full functionality
- Slot for a network module (SAFEDLINK) with degraded mode function
- Ethernet connection for:
  - Maintenance PC or
  - Networking via LAN
- Slots for serial options:
  - RS232 module for the connection of an event printer
  - RS485 module for connecting other devices such as ESPA 4.4.4. interface, FAT [DE], FDF [DE], UGA [FR] or remote EVAC-NL operation
  - Connection module (card cage)

- Interface for the periphery bus for the connection of:
  - LED indicator (internal)
  - EVAC-NL operation (internal)
- Holder for the license key

The PMI has the following features:

- Graphic display
- Buzzer
- Configurable LED indicators
- Insertable inscription strips
- Operation can be released with a password or key switch (optional)

Notes:

- The operation and designation of the keys and indicators are described in document A6V10211076.
- Templates for inscription strips can be found in document A6V10217440.

12.2 View of PMI & mainboard

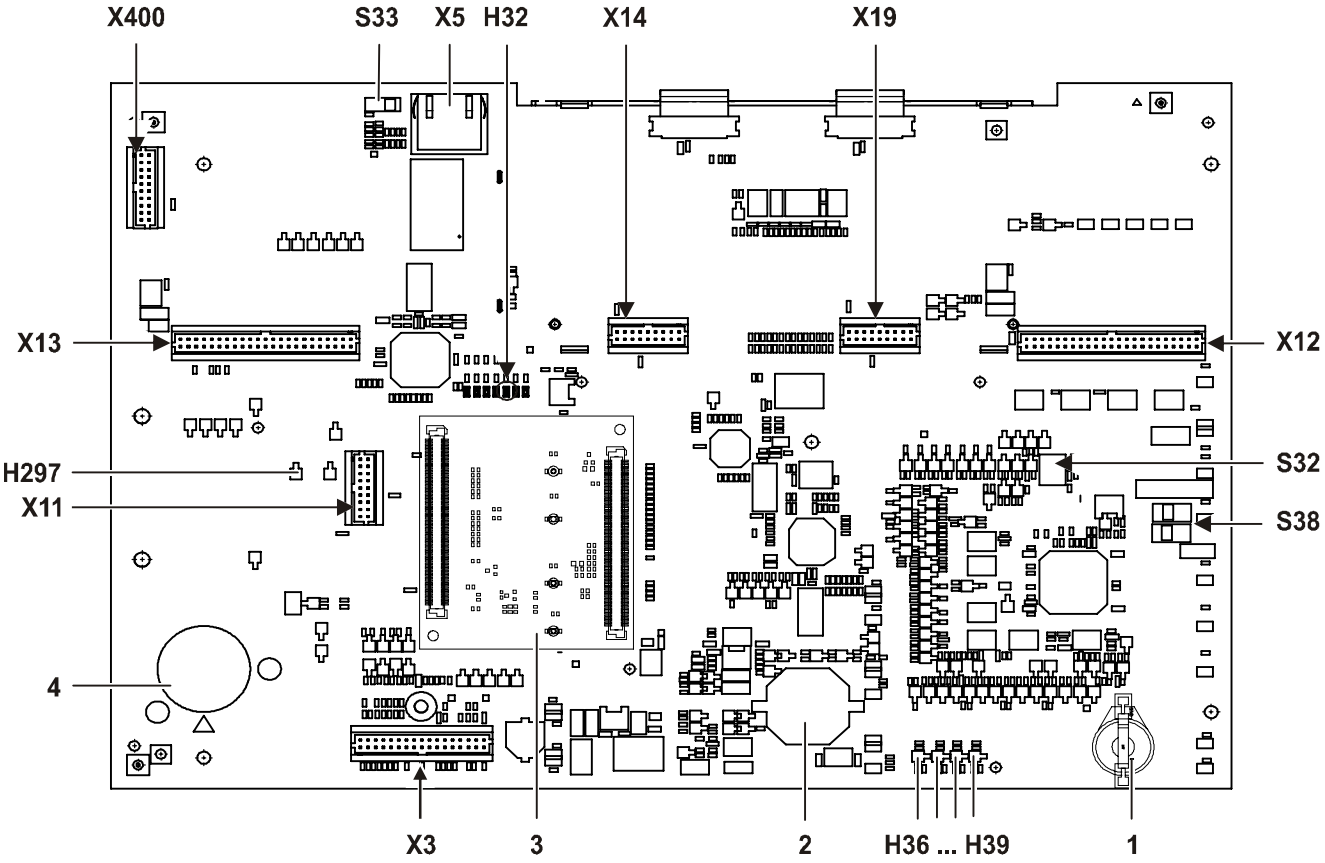


Figure 16: PCB view of PMI & mainboard

1	Support for license key
2	Buzzer
3	CPU module
4	Key switch (optional)
X3	Connection for periphery board or fire terminal board (supply and data signals)

X5 Ethernet connection

X11 Slot for connection module (card cage)

X12 Slot for network module (SAFEDLINK) FN2001-A1; degraded mode module

X13 Slot for network module (SAFEDLINK) FN2001-A1; main module

X14 * Slot for RS232 module FCA2001-A1 (e.g. for event printer)

X19 * Slot for RS232 or RS485 module for FAT [DE]

X400 Connection for peripheral data bus

S32 Reset key

S33 Switch for the ground fault monitoring of the Ethernet connection

S38 Switches for booting and operation system options

* The serial modules can be equipped in any way.

12.3 Indicators

LED	Color	Function	State	Meaning
H32	Yellow	LINK control indicator	Off	No Ethernet connection
			On	Ethernet connection established
H36	Yellow	Processor status indicator	Off	Processor in ↑ normal operation
			On	Processor in degraded mode; replace component or contact hotline
H37	Red	Processor status indicator	Off	Processor in normal operation
			On	Processor in degraded mode
H38	Red	↑ Site ready for ↑ switching off	Off	Installation in operation
			On	Installation may be disconnected from the mains
H39	Red	Processor status indicator	Off	Processor in normal operation
			On	Processor in degraded mode; replace component or contact hotline
H297	Red	Reserved		

12.4 Adjustment elements

S32: Reset key

Operation	Function
Press for <2 s	↑ Station is shut down and restarted in a controlled manner. This procedure takes up to 5 minutes.
Press for >2 s	Station is shut down and restarted immediately. This may lead to data loss. This procedure takes up to 5 minutes.
Press S32 + positions S38-2 or S38-1	See below, S38 Update firmware or restore factory settings

S38: Switches for booting and operation system options

The two S38 switches have independent functions. Both switches are in the 'OFF' position as standard.

- S38-2 has an impact on booting.
- The setting of S38-2 has priority over the setting of S38-1.

Position S38-2	Function
ON	↑ Station's firmware is updated.
OFF	Station is started normally.

After the firmware has been updated and before the restart, S38-2 must be in the 'OFF' position, otherwise the firmware is updated again.

- S38-1 has an impact on starting the operation system.

Position S38-1	Function
ON	↑ Station is started in Restore factory settings mode.
OFF	Station is started normally.

After the factory settings have been restored and before the restart, S38-1 must be in the 'OFF' position, otherwise Restore factory settings mode is triggered again.

S33: Switch for ground fault monitoring of the Ethernet connection

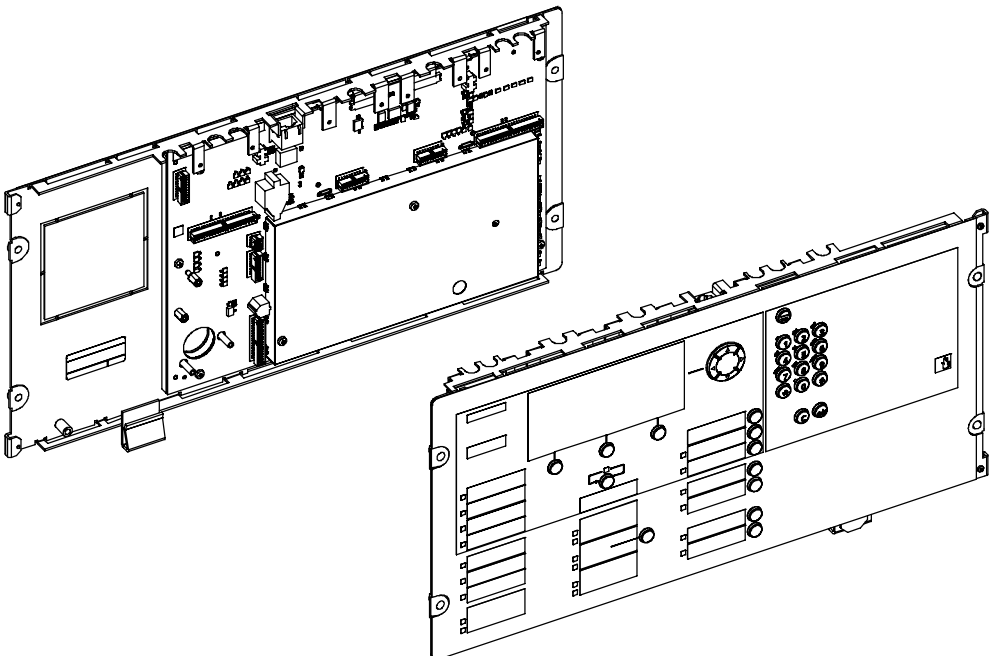
Both switches must be in the same position.

S33-1	S33-2	Function
ON	ON	Ground fault monitoring switched on
OFF	OFF	Ground fault monitoring switched off
OFF	ON	Not admissible
ON	OFF	Not admissible

12.5 Technical data

Supply input	Voltage	DC 20…30 V
	Quiescent current (display illumination off)	120 mA
	Maximum current (display illumination on and lamp test on)	200 mA
Display	Dimensions (L x W)	115 x 50 mm
	Resolution	256 x 112 pixels
Interfaces	Slots for serial options (RS232 or RS485 module)	• For RS232 module for event printer • For RS485 module for ESPA-4.4.4 interface, FAT, FBF
	Slots for network module (SAFEDLINK)	• Full functionality (incl. degraded mode function) • Degraded mode function only
	Ethernet connection	10/100 Mbit/s
	Connections for peripheral data bus	1
Connections	Ethernet	RJ45
	Peripheral data bus	Plug-type connection
Mechanical data	Dimensions (W x H x D)	427 x 200 x 25 mm

13 Operating unit with PMI & mainboard FCM2027



13.1 Description

The operating unit with PMI & mainboard FCM2027 includes the CPU module (MPC8248) and the Person Machine Interface. The operating unit equipment varies depending on the station type. The PMI & mainboard FCM2027 is used in all operating units from IP4 onwards.

The following operating units are equipped with the PMI & mainboard FCM2027:

- Operating unit FCM7204-Z3
- Operating unit with LED indicator (internal) FCM7205-Y3
- Operating unit with LED module FCM7215-Y3
- Operating unit with country-specific equipment FCM7203-H3

The PMI & mainboard FCM2027 is not compatible with firmware below IP3.0.

The PMI & mainboard FCM2027 has the following features:

- Ground fault monitoring for system supply
- Integrated real time clock, maintains the time function for at least 2 days in the event of power failure.
- Shield plate
- Interface to the periphery board
- Slot for a network module (SAFEDLINK) with full functionality
- Slot for a network module (SAFEDLINK) with degraded mode function
- Ethernet connection for:
  - Maintenance PC or
  - Networking via LAN, with switchable ground fault monitoring

- Slots for serial options:
  - RS232 module for the connection of an event printer
  - RS485 module for connecting other devices such as ESPA-4.4.4. interface, FAT [DE], FDF [DE], or remote EVAC-NL operating unit
  - Connection module (card cage)
- Interface for the periphery bus for the connection of:
  - LED indicator (internal)
  - EVAC-NL operation (internal)
- Holder for the license key

The Person Machine Interface has the following features:

- Graphic-enabled display
- Buzzer
- Configurable LED indicators
- Operating buttons
- Insertable inscription strips
- Operation can be released with a password or key switch (optional)

Notes:

- The operation and designation of the keys and indicators are described in document A6V10211076.
- Templates for inscription strips can be found in document A6V10217440.

13.2 View of PMI & mainboard

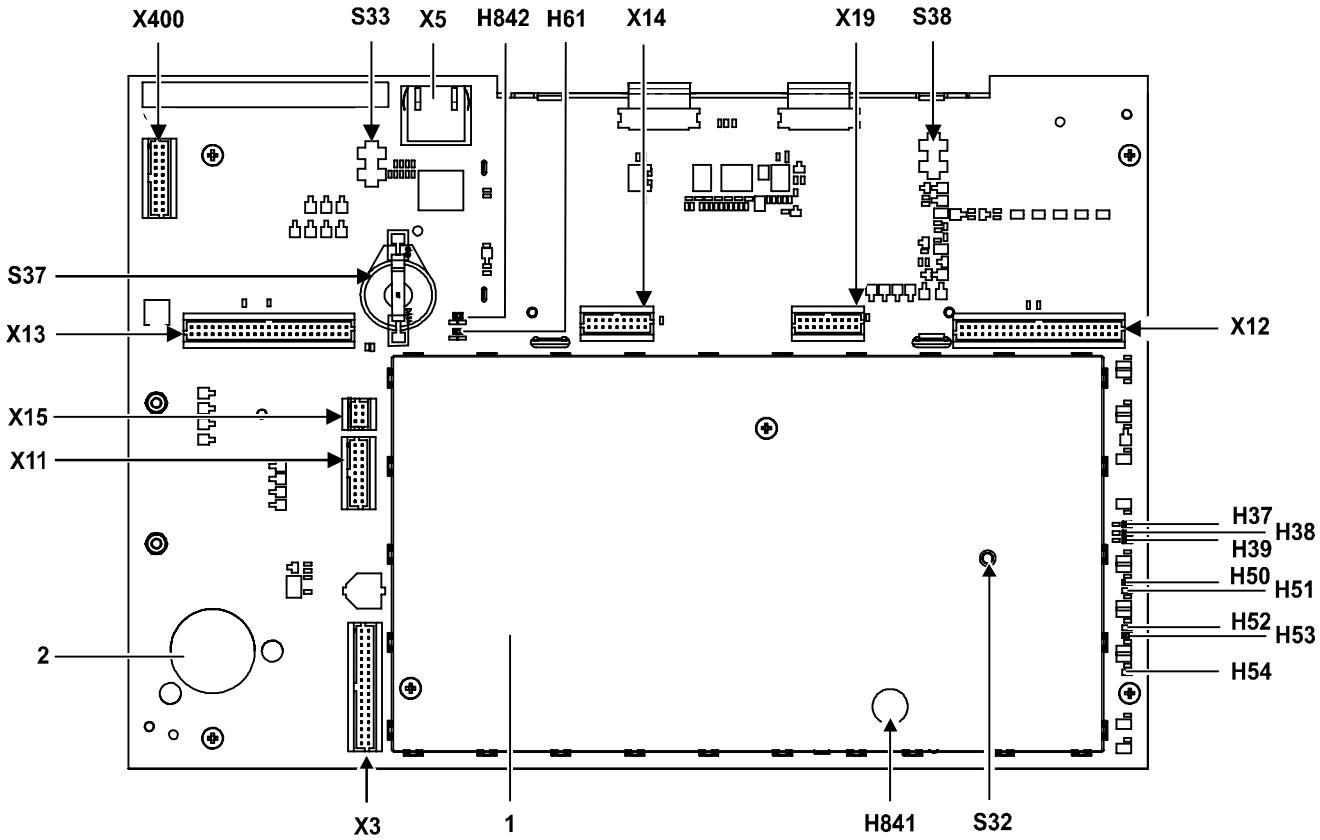


Figure 17: Equipment for PMI & mainboard FCM2027

Element	Des.	Function
Position	1	Shield plate
	2	Key switch (optional)
Plug connections	X3	Connection for periphery board or fire terminal board (supply and data signals)
	X5	Ethernet connection
	X11	Slot for connection module (card cage) FCA2006-A1
	X12	Slot for ↑ network module (SAFEDLINK) FN2001-A1; degraded mode module
	X13	Slot for network module (SAFEDLINK) FN2001-A1; master module
	X14	SER_OPT1, slot for series module (RS232 module FCA2001-A1 or RS485 module FCA2002-A1) [1]
	X15	Reserved
	X19	SER_OPT2, slot for series module (RS232 module FCA2001-A1 or RS485 module FCA2002-A1) [1]
	X400	Connection for peripheral data bus
Indicators	H37…H61 H842	LED indicators
	H841	Buzzer
Switches, buttons	S32	Reset key
	S33	Switch for ground fault monitoring of the Ethernet connection
	S37	Support for ↑ license key
	S38	Switch for ground fault monitoring system supply

[1] The serial modules can be loaded in any way. Two identical modules for each PMI & mainboard can also be loaded.

13.3 PMI & mainboard indicators

Indicators on the rear panel of PMI & mainboard FCM2027

LED	Color	Function	State	Meaning
H37	Yellow	Diagnosis 1	Off	↑ Normal operation
			On	Ground fault present
H38	Yellow	Diagnosis 2		Not used
H39	Yellow	Diagnosis 3		Not used
H50	Yellow	'MSP fail' (processor periphery)	Off	Normal operation
			On	Processor in degraded mode; replace component or contact hotline
H51	Red	'PD ready', ↑ site ready to ↑ switch off	Off	Installation in operation
			On	Installation may be disconnected from the mains
H52	Yellow	'PPC fail' (CPU module)	Off	Normal operation
			On	Processor in degraded mode; replace component or contact hotline
H53	Yellow	'CPLD fail' (reset and watchdog logic)	Off	Normal operation
			On	Logic unit failed; replace component or contact hotline
H54	Red	'TEMP', ↑ CPU module excess temperature indicator		Not used
H61	Yellow	'SPEED', Ethernet transmission indicator	Off	Data transfer at 10 Mbit/s
			On	Data transfer at 100 Mbit/s
H842	Green	'LINK' control indicator	Off	No Ethernet connection
			On	Ethernet connection established

13.4 Adjustment elements

S32: Reset key

The S32 button has a number of functions depending on how long it is pressed for and whether it is pressed in combination with other buttons.

Operation	Function
Press for <2 s	↑ Station is shut down and restarted in a controlled manner. This procedure takes up to 5 minutes.
Press for >2 s	Station is shut down and restarted immediately. This may lead to data loss. This procedure takes up to two minutes.
Press S32 + 'Reset' or 'Acknowledge' (front operating buttons) at the same time	Restore factory settings or update firmware.

Restore factory settings

Operation	Function
Press S32 + 'Reset' (front operating button) at the same time for >2 s	↑ Station is started in Restore factory settings mode. A short peeping sound confirms the function is being executed.

You will find detailed instructions in document A6V10210416. See chapter 'Applicable documents'.

Updating the firmware

Operation	Function
Press S32 + 'Acknowledge' (front operating button) at the same time for >2 s	↑ Station's firmware is updated. A short peeping sound confirms the function is being executed.

You will find detailed instructions in document A6V10210416. See chapter 'Applicable documents'.

S33: Switch for ground fault monitoring of the Ethernet connection

S33	Position	Function
Off		Default setting Setting for networking via C-WEB
On		Setting for networking via Ethernet

S38: Switch for ground fault monitoring of the system supply

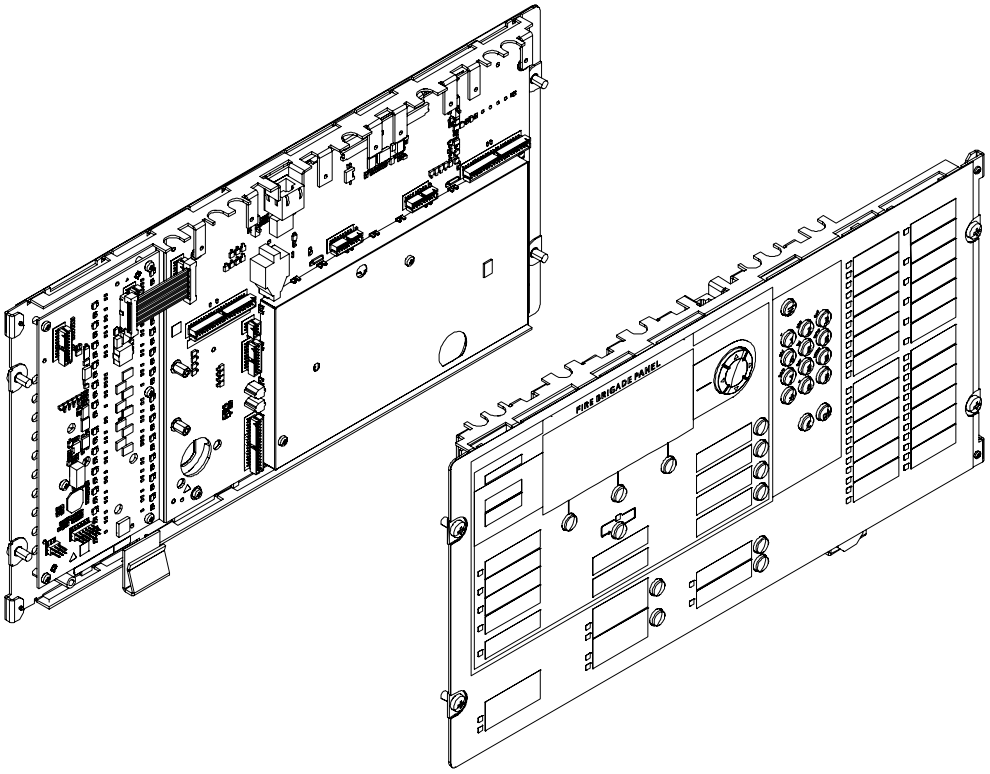
- S38 deactivates the station's internal ground fault monitoring including the Ethernet interface, which can also be deactivated with S33.
- Electrically isolated components, such as the ↑ network module (SAFEDLINK), RS485 module, or optional line cards, have their own monitoring and are not included in the deactivation of ground fault monitoring.

S38	Position	Function
On		Ground fault monitoring activated
Off		Ground fault monitoring deactivated

13.5 Technical data

Supply input	Voltage	DC 20…30 V
	Quiescent current (display illumination off)	120 mA
	Maximum current (display illumination on and lamp test on)	200 mA
Display	Dimensions (L x W)	115 x 50 mm
	Resolution	256 x 112 pixels
Interfaces	3 x slots for serial modules	• For RS232 module for event printer • For RS485 module for ESPA-4.4.4 interface, FAT, FBF or remote EVAC-NL operating unit • Connection module (card cage)
	2 x slots for network modules (SAFEDLINK)	• Full functionality (incl. degraded mode function) • Degraded mode function only
	1 x Ethernet connection RJ45	10/100 Mbit/s
	2 x connections for peripheral data bus	X3, X400
Mechanical data	Dimensions (W x H x D)	427 x 200 x 25 mm

14 Operating unit (AU) FCM7222-X3



14.1 Description

The operating unit FCM7222-X3 has the following components:

- PMI & mainboard FCM2027 with CPU module FCC2006-A1
- Person Machine Interface for Australia
- LED module FTO2008

The PMI & mainboard FCM2027 is not compatible with firmware below IP3.0.

Features:

- Ground fault monitoring for system supply
- Integrated real time clock
  - Maintains time function for at least 2 days in the event of power failure
- Shield plate
- Interface to the periphery board
- Slot for a network module (SAFEDLINK) with full functionality
- Slot for a network module (SAFEDLINK) with degraded mode function
- Ethernet connection for:
  - Maintenance PC
    or
  - Networking via LAN, with switchable ground fault monitoring

- Slots for serial options:
  - RS232 module for connecting event printer
  - RS485 module for connecting other devices such as ESPA-4.4.4. interface, FAT [DE], FDF [DE], or remote EVAC-NL operating unit
  - Connection module (card cage)
- Interface for peripheral data bus for the connection of:
  - LED indicator (internal)
  - EVAC-NL operation (internal)
- Holder for the license key

Person Machine Interface features:

- Graphic-enabled display
- Buzzer
- Configurable LED indicators
- Operating buttons
- Insertable inscription strips
- Operation can be released with a password or key switch (optional)

LED module FTO2008

The LED module FTO2008 is a zone indicator with which events such as alarms and faults from 24 zones can be indicated. Each zone has a two-color LED (red/green) and a yellow LED. The LED module is connected to the peripheral data bus and has the following features:

- LED indicator for max. 24 zones
- Configurable two-color LED (red/green) and one yellow LED per zone
- Configurable selection of events that are indicated per zone
- Configuration of the LEDs with Cerberus-Engineering-Tool.
- Max. 5 LED modules can be connected in series.

Additional documents

- The operation and designation of the keys and indicators are described in document A6V10211076.
- Templates for inscription strips can be found in document A6V10217440.

14.2 View of operating unit FCM7222-X3

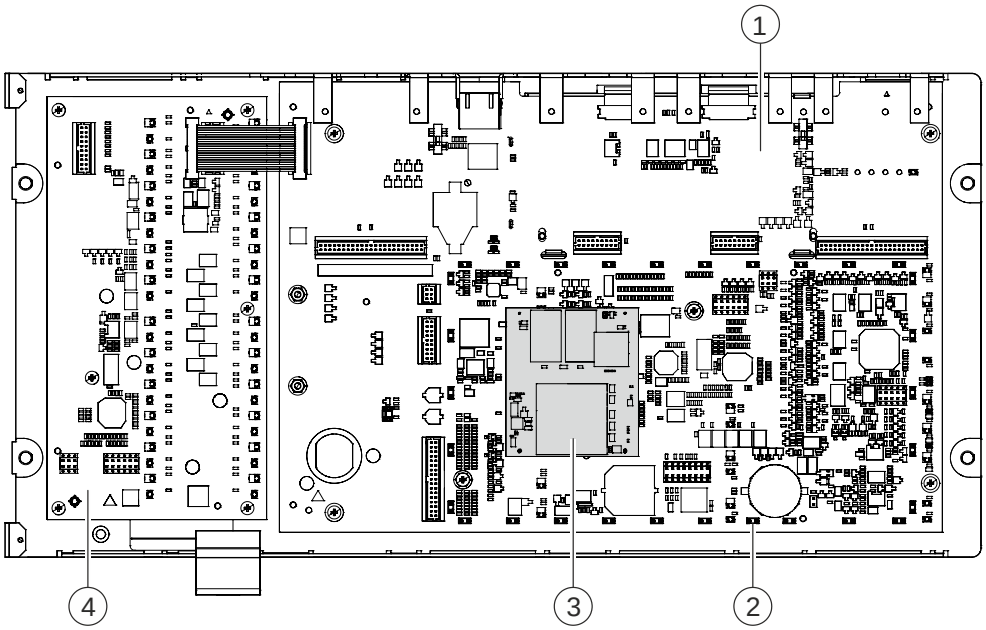


Figure 18: FCM7222-X3 PCB overview

1 PCB for PMI & mainboard FCM2027
2 Clamps for shield plate
3 CPU module (MPC8248) FCC2006-A1
4 PCB of LED module FTO2008-A1

14.2.1 View of PMI & mainboard FCM2027-A1

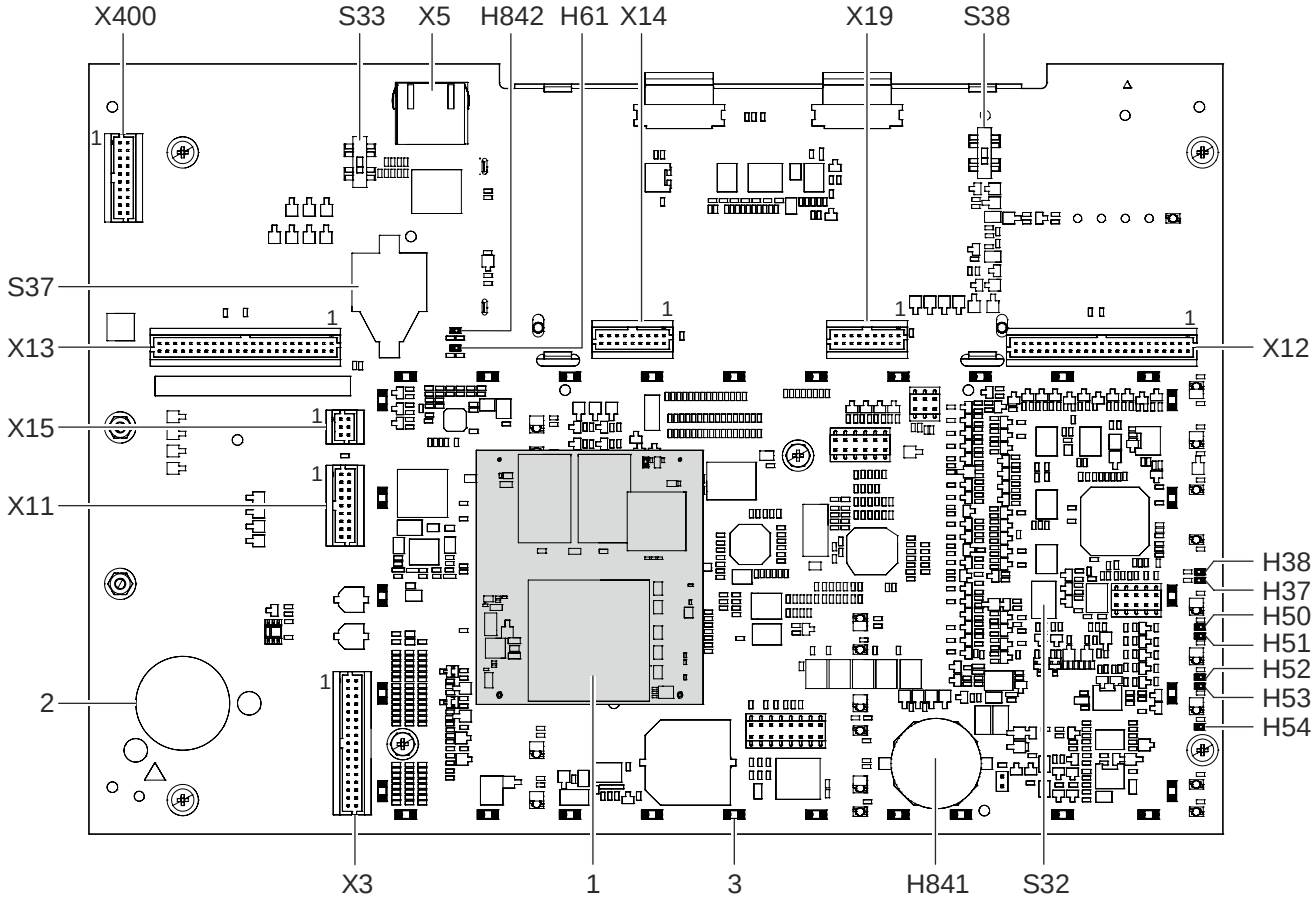


Figure 19: Printed circuit board view of PMI & mainboard FCM2027

Element	Des.	Function
Position	1	CPU module (MPC8248) FCC2006-A1
	2	Hole for mounting key switch
	3	Clamps for shield plate
Plug connections	X3	Connection for periphery board or fire terminal board (supply and data signals)
	X5	Ethernet connection
	X11	Slot for connection module (card cage) FCA2006-A1
	X12	Slot for network module (SAFEDLINK) FN2001-A1; degraded mode module
	X13	Slot for network module (SAFEDLINK) FN2001-A1; master module
	X14	SER_OPT1, slot for series module (RS232 module FCA2001-A1 or RS485 module FCA2002-A1) [1]
	X15	Reserved
	X19	SER_OPT2, slot for series module (RS232 module FCA2001-A1 or RS485 module FCA2002-A1) [1]
	X400	Connection for peripheral data bus to front panel (Touch)

Element	Des.	Function
Indicators	H37…H61 H842	LED indicators
	H841	Buzzer
Switches, buttons	S32	Reset key
	S33	Switch for ground fault monitoring of the Ethernet connection
	S37	Support for ↑ license key
	S38	Switch for ground fault monitoring system supply

[1] The serial modules can be loaded in any way. Two identical modules for each PMI & mainboard can also be loaded.

14.2.2 View of LED module FTO2008

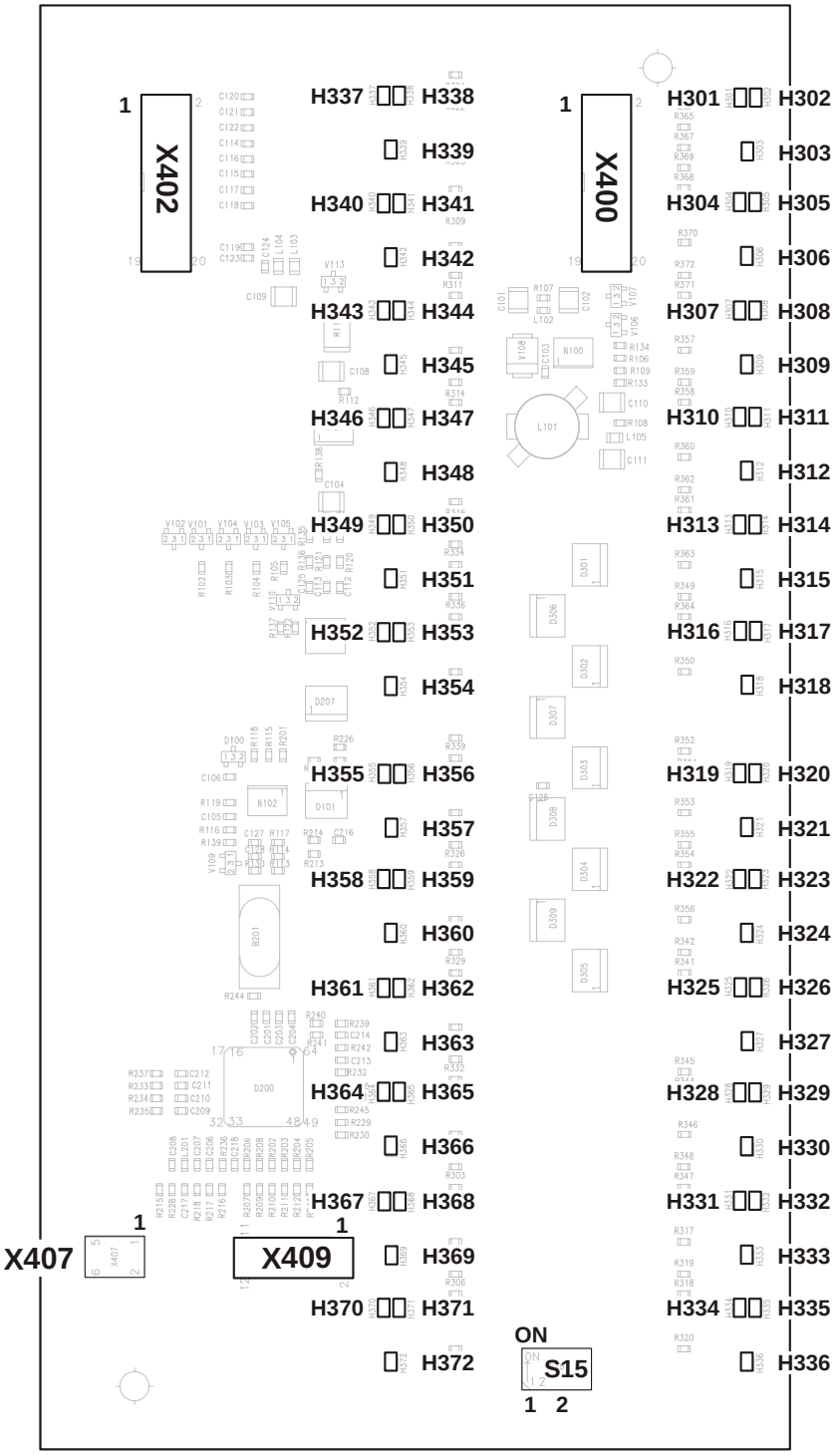


Figure 20: LED module FTO2008-A1, PCB view

Element	Des.	Function
Indicators	H301…H371	LEDs for indicator on front (designation on printed circuit board)
Switch	S15	Switch for device address
Connections	X400	Connection periphery bus (input)
	X402	Connection periphery bus (output)
	X407	Not used
	X409	Not used

You will find detailed information on the LED module FTO2008-A1 in document A6V10210368.

See also

Layout view of FCM7222-X3 [→ 110]

14.2.3 Layout view of FCM7222-X3

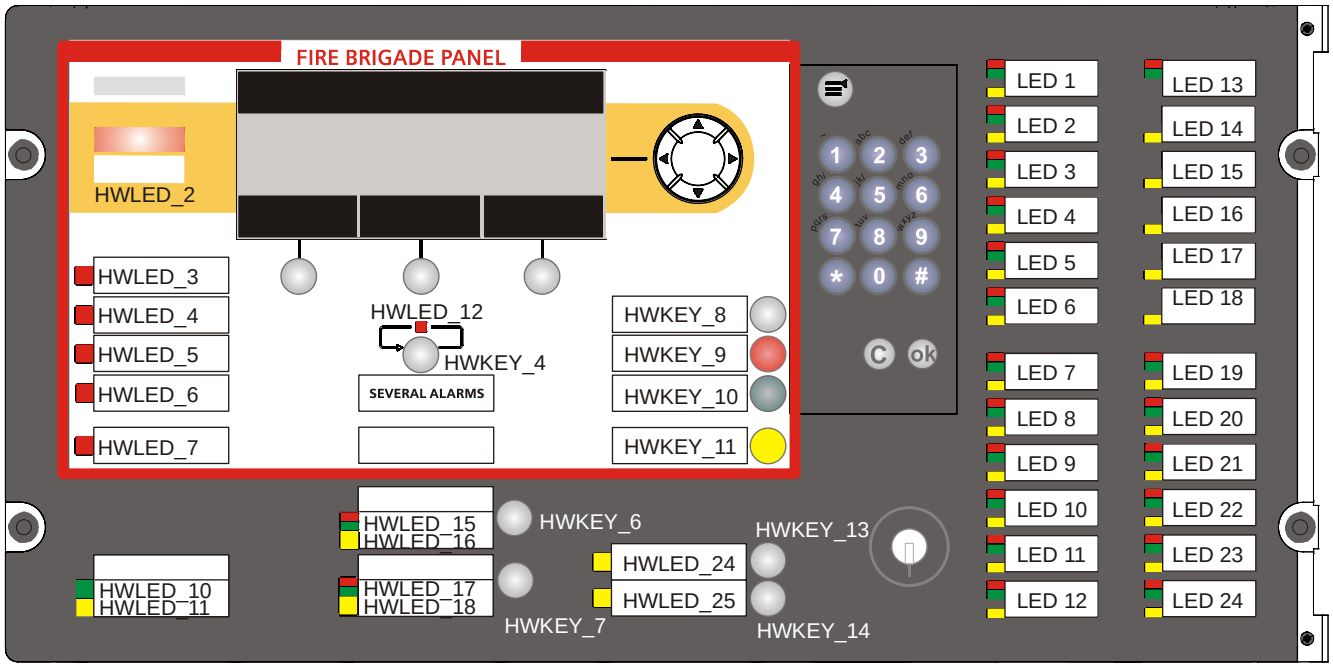


Figure 21: Front view of FCM7222-X3 with LED and button assignment

LED / button	Assignment / function
HWLED_2	General fire alarm 'ALARM'
HWLED_3	Indicator (red) for activated fire protection equipment 'Fire Protection Activated'
HWLED_4	Freely configurable indicator (red)
HWLED_5	Indicator (red) for activated fire detectors 'Smoke Control Activated'
HWLED_6	Freely configurable indicator (red)
HWLED_7	Indicator (red) for activated alarm transmission 'Warning System Activated'
HWLED_10	System LED (green) 'On'
HWLED_11	System LED (yellow) 'Fault'
HWLED_12	Indicator (red) for additional activated alarms 'SEVERAL ALARMS'
HWKEY_4	Scroll button for 'SEVERAL ALARMS'
HWLED_15	Freely configurable, User 1 (red / green)
HWLED_16	Freely configurable, User 1 (yellow)
HWKEY_6	Freely configurable, User 1
HWLED_17	Freely configurable, User 2 (red / green)
HWLED_18	Freely configurable, User 2 (yellow)
HWKEY_7	Freely configurable, User 2
HWKEY_8	Switch-off for station buzzer 'Silence Buzzer'

LED / button	Assignment / function
HWKEY_9	Switch-off for alarm delay 'Silence Alarm'
HWKEY_10	Resets all events that can be reset 'Reset'
HWKEY_11	Deactivates the alarm devices 'Disable'
HWLED_24	Indicates all events that can be acknowledged 'Acknowledge'
HWKEY_13	Acknowledges all events that can be acknowledged 'Acknowledge'
HWLED_25	Indicator for manned / unmanned 'Premises Manned'
HWKEY_14	Switchover for manned / unmanned 'Premises Manned'
LEDs 1 to 6	Indicators (red / green, yellow) for defined functions
LEDs 7 to 12	Freely configurable indicators (red / green, yellow)
LEDs 13 to 18	Indicators (red / green) for defined functions
LEDs 14 to 18	Indicators (yellow) for defined functions
LEDs 19 to 24	Freely configurable indicators (red / green, yellow)

You will find a detailed description of the indicator and button functions in document A6V10211076.

14.3 PMI & mainboard indicators

Indicators on the rear panel of PMI & mainboard FCM2027

LED	Color	Function	State	Meaning
H37	Yellow	Diagnosis 1	Off	↑ Normal operation
			On	Ground fault present
H38	Yellow	Diagnosis 2		Not used
H39	Yellow	Diagnosis 3		Not used
H50	Yellow	'MSP fail' (processor periphery)	Off	Normal operation
			On	Processor in degraded mode; replace component or contact hotline
H51	Red	'PD ready', ↑ site ready to ↑ switch off	Off	Installation in operation
			On	Installation may be disconnected from the mains
H52	Yellow	'PPC fail' (CPU module)	Off	Normal operation
			On	Processor in degraded mode; replace component or contact hotline
H53	Yellow	'CPLD fail' (reset and watchdog logic)	Off	Normal operation
			On	Logic unit failed; replace component or contact hotline
H54	Red	'TEMP', ↑ CPU module excess temperature indicator		Not used
H61	Yellow	'SPEED', Ethernet transmission indicator	Off	Data transfer at 10 Mbit/s
			On	Data transfer at 100 Mbit/s
H842	Green	'LINK' control indicator	Off	No Ethernet connection
			On	Ethernet connection established

14.4 Adjustment elements

PMI & mainboard FCM2027

S32: Reset key

The S32 button has a number of functions depending on how long it is pressed for and whether it is pressed in combination with other buttons.

Operation	Function
Press for <2 s	↑ Station is shut down and restarted in a controlled manner. This procedure takes up to 5 minutes.
Press for >2 s	Station is shut down and restarted immediately. This may lead to data loss. This procedure takes up to two minutes.
Press S32 + 'Reset' or 'Acknowledge' (front operating buttons) at the same time	Restore factory settings or update firmware.

Restore factory settings

Operation	Function
Press S32 + 'Reset' (front operating button) at the same time for >2 s	↑ Station is started in Restore factory settings mode. A short peeping sound confirms the function is being executed.

You will find detailed instructions in document A6V10210416. See chapter 'Applicable documents'.

Updating the firmware

Operation	Function
Press S32 + 'Acknowledge' (front operating button) at the same time for >2 s	↑ Station's firmware is updated. A short peeping sound confirms the function is being executed.

You will find detailed instructions in document A6V10210416. See chapter 'Applicable documents'.

S33: Switch for ground fault monitoring of the Ethernet connection

S33	Position	Function
Off		Default setting Setting for networking via C-WEB
On		Setting for networking via Ethernet

S38: Switch for ground fault monitoring of the system supply

- S38 deactivates the station's internal ground fault monitoring including the Ethernet interface, which can also be deactivated with S33.
- Electrically isolated components, such as the ↑ network module (SAFEDLINK), RS485 module, or optional line cards, have their own monitoring and are not included in the deactivation of ground fault monitoring.

S38	Position	Function
On		Ground fault monitoring activated
Off		Ground fault monitoring deactivated

LED module FTO2008

Address setting with DIP switch S15

The LED indicator is assigned an address by means of the switches 1…4 (S15). One LED test can be carried out of using the switches 5 and 6 (S15) respectively.

Switch S15						Address [1]
1	2	3	4	5	6	
						20
ON						21
	ON					22
ON	ON					23
		ON				24
ON		ON				25
	ON	ON				26
ON	ON	ON				27
			ON			28
ON			ON			29
	ON		ON			30
ON	ON		ON			31
		ON	ON			32
ON		ON	ON			33
	ON	ON	ON			34
ON	ON	ON	ON			35
				x	x	LED test [2]

Blank fields = Switch in 'OFF' position

[1] address, which must be set to the corresponding switch setting in field 'Element address' in the engineering tool set.

[2] For LED test detail settings see the table further below.

Each address can be assigned only once per station.

The factory settings always apply to the corresponding station type.

Detail settings for LED test

S15-5	S15-6	LED Test
ON	OFF	Red
OFF	ON	Yellow
ON	ON	Green

14.5 Technical data

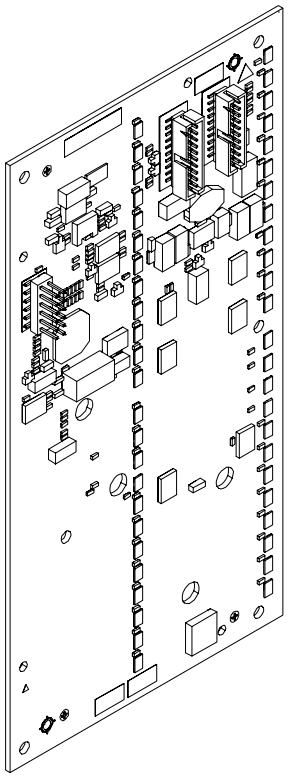
PMI & mainboard FCM2027

Supply input	Voltage	DC 20…30 V
	Quiescent current (display illumination off)	120 mA
	Maximum current (display illumination on and lamp test on)	200 mA
Display	Dimensions (L x W)	115 x 50 mm
	Resolution	256 x 112 pixels
Interfaces	3 x slots for serial modules	• For RS232 module for event printer • For RS485 module for ESPA-4.4.4 interface, FAT, FBF, UGA, or remote EVAC-NL operation • Connection module (card cage)
	2 x slots for network modules (SAFEDLINK)	• Full functionality (incl. degraded mode function) • Degraded mode function only
	1 x Ethernet connection RJ45	10/100 Mbit/s
	2 x connections for peripheral data bus	X3, X400
Mechanical data	Dimensions (W x H x D)	427 x 200 x 25 mm

LED module FTO2008

Supply input	Voltage	DC 20…30 V
	Operating current	Max. 5 mA + 1 mA per LED
Supply output	Voltage	DC 20…30 V
	Current	Looped through, max. 1 A
LEDs	Number	24 zones: • 24 two-color LEDs (red/green) • 24 yellow LEDs
	Function	Can be configured with Cerberus-Engineering-Tool.
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable

15 LED indicator (internal) FTO2002-A1



15.1 Description

The LED indicator (internal) is integrated in the ↑ station and makes it possible to indicate events such as alarms and faults. In total, 48 LEDs are available (24 red and 24 yellow LEDs).

The LED indicator (internal) is built in the PMI or the operating add-on. An LED display can be fitted in the operating unit. A maximum of four LED displays can be fitted in the operating add-on.

The LED indicator (internal) is built into the operating unit or the operating add-on and included in the following components:

- Operating unit (+LED indicator) FCM7202-Y3
- Operating unit (+LED indicator) FCM7205-Y3
- Operating add-on (2x LED indicators) FCM7211-Y3
- Operating add-on (4x LED indicators) FCM7212-Y3

The LED indicator (internal) is connected to the periphery bus and has the following features:

- Configuration of the LEDs with Cerberus-Engineering-Tool
- Can be cascaded

15.2 Views

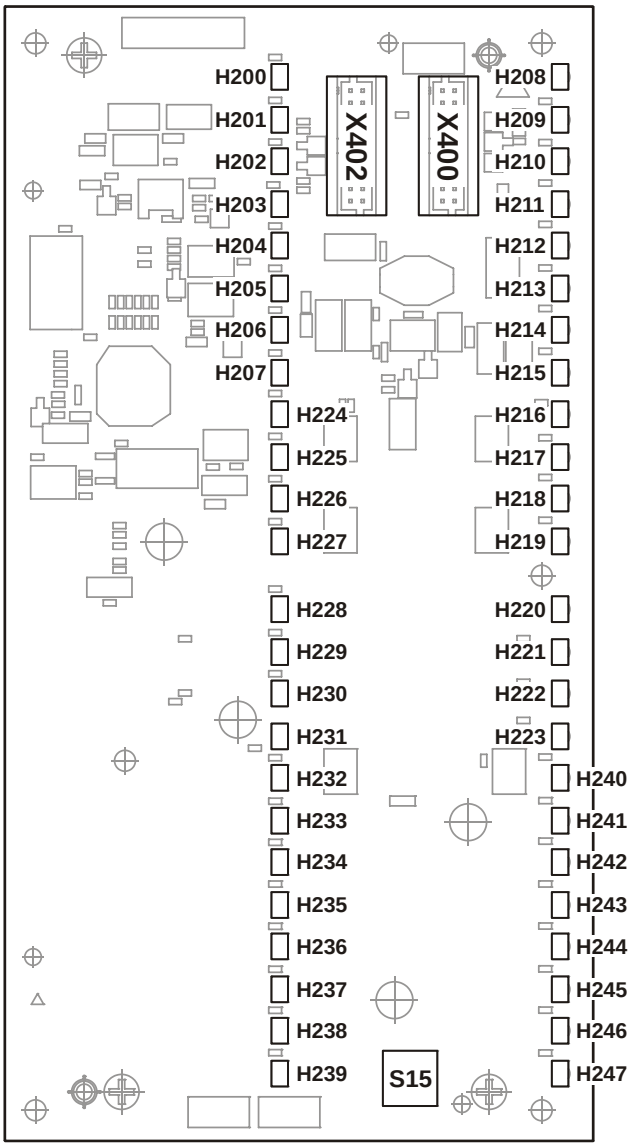


Figure 22: Printed circuit board view of FTO2002-A1

H200…H247	LEDs (designation on printed circuit board)
S15 (1…6)	Switch for device address
X400	Connection periphery bus (input)
X402	Connection periphery bus (output)

15.3 Adjustment elements

The LED indicator is assigned an address by means of the switches 1…4 (S15). One LED test can be carried out of using the switches 5 and 6 (S15) respectively.

Switch S15						Element address [1]
1	2	3	4	5	6	
						20
ON						21
	ON					22
ON	ON					23
		ON				24
ON		ON				25
	ON	ON				26
ON	ON	ON				27
			ON			28
ON			ON			29
	ON		ON			30
ON	ON		ON			31
		ON	ON			32
ON		ON	ON			33
	ON	ON	ON			34
ON	ON	ON	ON			35
				ON		LED test red
					ON	LED test yellow

Blank fields = Switch in 'OFF' position

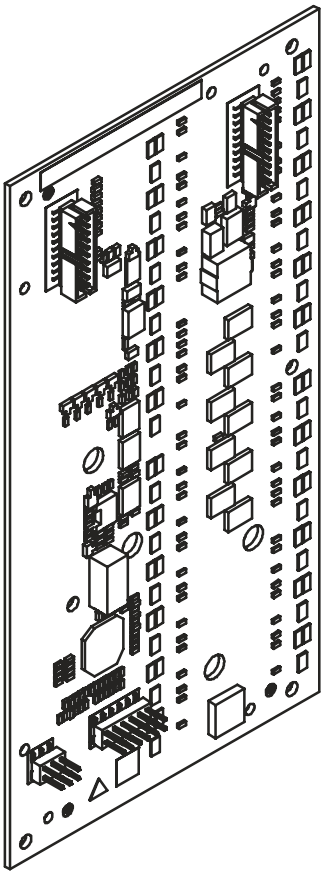
[1] Element address, which is in Cerberus-Engineering-Tool must be set to the corresponding switch setting.

Each address can be assigned only once per ↑ station.
The factory settings always apply to the corresponding station type.

15.4 Technical data

Supply input	Voltage	DC 20…32 V
	Current	Max. 65 mA (20 V)
Supply output	Voltage	DC 20…32 V
	Current	Looped through, max. 1 A
LEDs	Number	24 indication panels with one red and one yellow LED each
	Function	Can be configured with Cerberus-Engineering-Tool
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable
Mechanical data	Dimensions (W x H x D)	185 x 95 x 11 mm
	Weight	60 g

16 LED module FTO2008-A1



16.1 Description

The LED module is a zone indicator with which events such as alarms and faults from 24 zones can be indicated. Each zone has a two-color LED (red/green) and a yellow LED.

The LED module is built into the operating unit or the operating add-on and included in the following components:

- Operating unit (+LED indicator) FCM7215-Y3
- Operating add-on (2x LED indicators) FCM7213-Y3
- Operating add-on (4x LED indicators) FCM7214-Y3

The LED module is connected to the peripheral data bus and has the following features:

- LED indicator for max. 24 zones
- Configurable two-color LED (red/green) and one yellow LED per zone
- Configurable selection of events that are indicated per zone
- Configuration of the LEDs with Cerberus-Engineering-Tool.
- Max. 5 LED modules can be connected in series.

16.2 Views

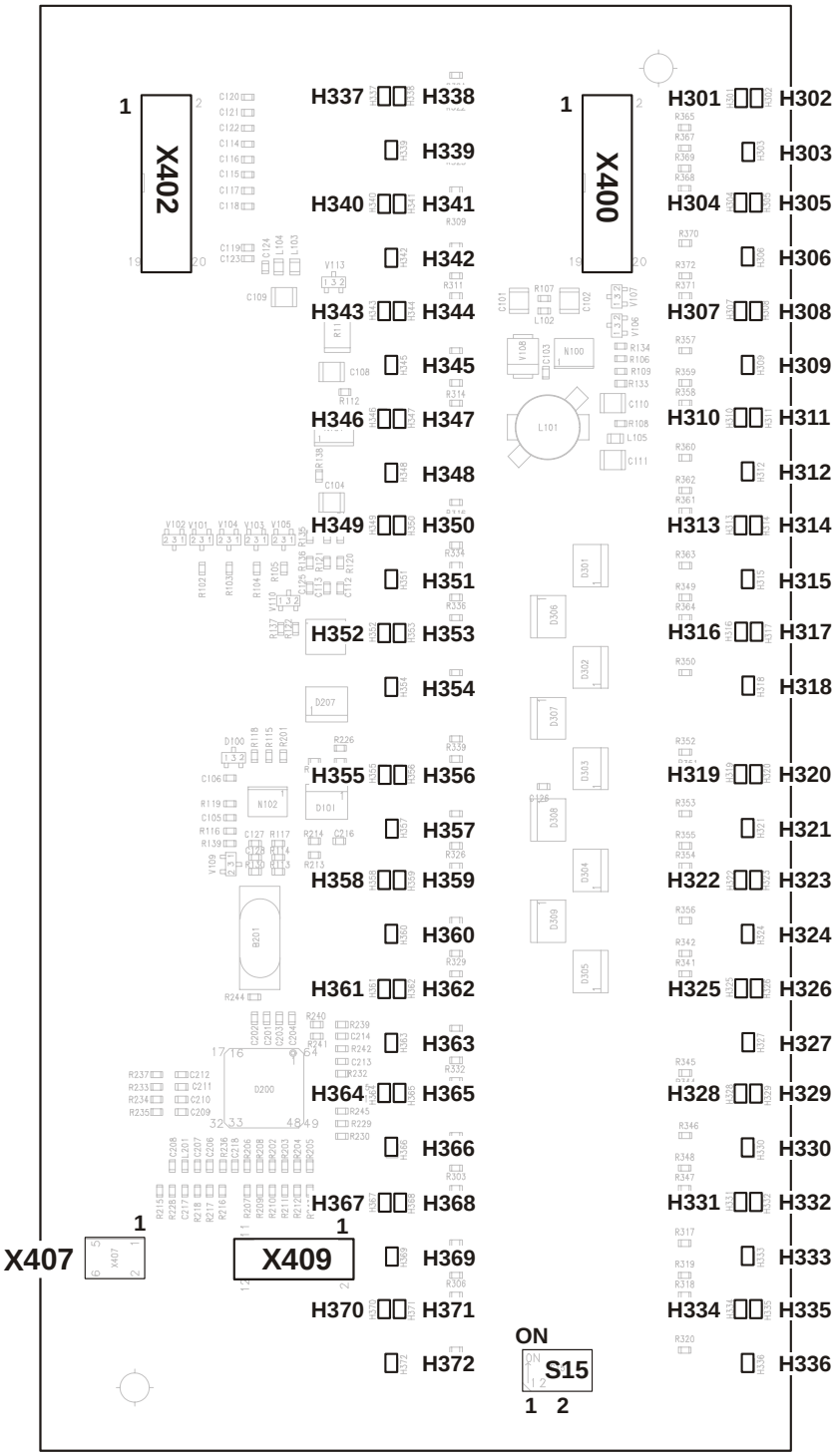


Figure 23: LED module FTO2008-A1, PCB view

Element	Des.	Function
Indicators	H301…H371	LEDs for indicator on front (designation on printed circuit board)
Switch	S15	Switch for device address
Connections	X400	Connection periphery bus (input)
	X402	Connection periphery bus (output)
	X407	Not used
	X409	Not used

16.3 Adjustment elements

Address setting with DIP switch S15

The LED indicator is assigned an address by means of the switches 1…4 (S15). One LED test can be carried out of using the switches 5 and 6 (S15) respectively.

Switch S15						Address [1]
1	2	3	4	5	6	
						20
ON						21
	ON					22
ON	ON					23
		ON				24
ON		ON				25
	ON	ON				26
ON	ON	ON				27
			ON			28
ON			ON			29
	ON		ON			30
ON	ON		ON			31
		ON	ON			32
ON		ON	ON			33
	ON	ON	ON			34
ON	ON	ON	ON			35
				x	x	LED test [2]

Blank fields = Switch in 'OFF' position

[1] address, which must be set to the corresponding switch setting in field 'Element address' in the engineering tool set.

[2] For LED test detail settings see the table further below.

Each address can be assigned only once per station.
The factory settings always apply to the corresponding station type.

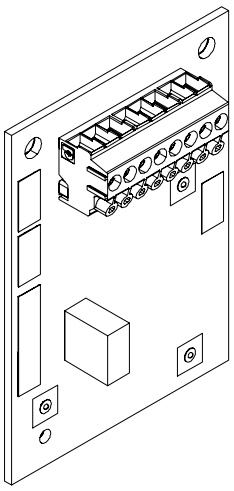
Detail settings for LED test

S15-5	S15-6	LED Test
ON	OFF	Red
OFF	ON	Yellow
ON	ON	Green

16.4 Technical data

Supply input	Voltage	DC 20…30 V
	Operating current	Max. 5 mA + 1 mA per LED
Supply output	Voltage	DC 20…30 V
	Current	Looped through, max. 1 A
LEDs	Number	24 zones: • 24 two-color LEDs (red/green) • 24 yellow LEDs
	Function	Can be configured with Cerberus-Engineering-Tool.
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable

17 RS232 module (isolated) FCA2001-A1



17.1 Description

The RS232 module (isolated) FCA2001 is plugged onto the PMI & mainboard and is required for the operation of an event printer. The RS232 interface is electrically isolated from the station.

17.2 Views

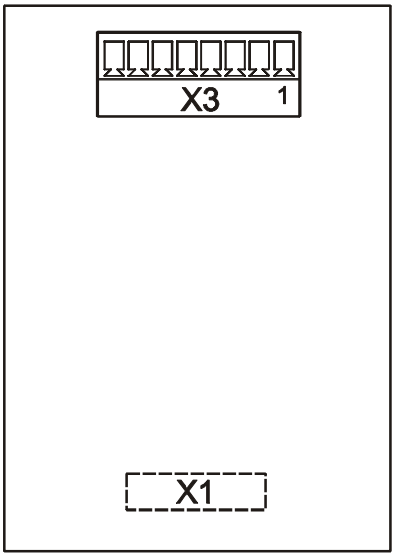


Figure 24: Printed circuit board view of RS232 module (isolated) FCA2001-A1

X1 Plug-type connection to the operating unit (rear panel)

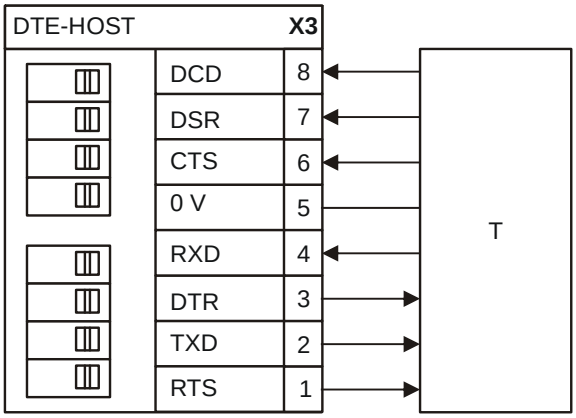
X2 Connection terminals for RS232 interface

17.3 Pin assignments

17.3.1 X3 DTE HOST on RS282 module

Pin	Designation	Description
8	← DCD	Data Carrier Detected
7	← DSR	Data Set Ready
6	← CTS	Clear To Send
5	0 V	Ground
4	← RXD	Received Data
3	DTR →	Data Terminal Ready
2	TXD →	Transmitted Data
1	RTS →	Ready To Send

Admissible cable cross-section: 0.2…1.5 mm²

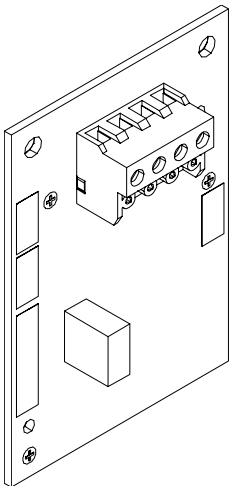


T Participant with RS232 interface

17.4 Technical data

Supply	Voltage	DC 3.3 V from PMI & mainboard
	Operating current at:	
	No-load operation	Approx. 65 mA
	Send and receive at 19.2 kbit/s	Approx. 75 mA
RS232 interface	Connection	Point-to-point
	Communication mode	Full duplex
	Max. data rate	115.2 kbit/s
	Max. cable length	15 m
	Max. data rate at 15 m	19.2 kbit/s
	Electrical isolation between the RS232 interface and the station	1.5 kV
Connections	RS232 interface:	
	Design	8-pin screw terminal
	Cross-section	0.14…1.5 mm^2
	To the operating unit	Plug-type connection
Mechanical data	Dimensions (W x H x D)	50 x 15 x 70 mm
	Weight	20 g

18 RS485 module (isolated) FCA2002-A1



18.1 Description

The RS485 module (isolated) FCA2002 is plugged onto the PMI & mainboard and is required for the operation of peripheral devices such as the remote EVAC-NL operation [NL], FAT [DE], ESPA-4.4.4 interface, and serial FBF [DE]. The RS485 module has the following features:

- Standardized RS485 interface
- Electrical isolation between the RS485 interface and the ↑ station
- Earth fault monitoring

18.2 Views

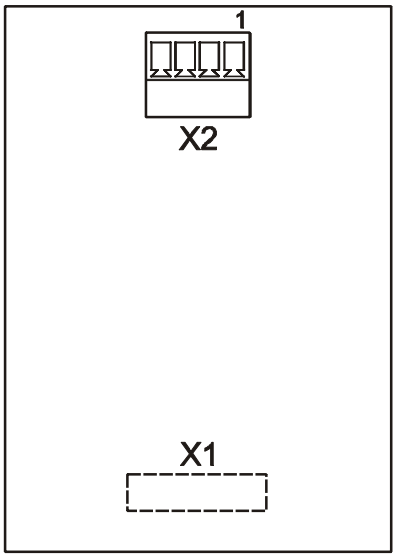


Figure 25: Printed circuit board view of RS485 module (isolated) FCA2002-A1

X1 Plug-type connection to the operating unit (rear panel)

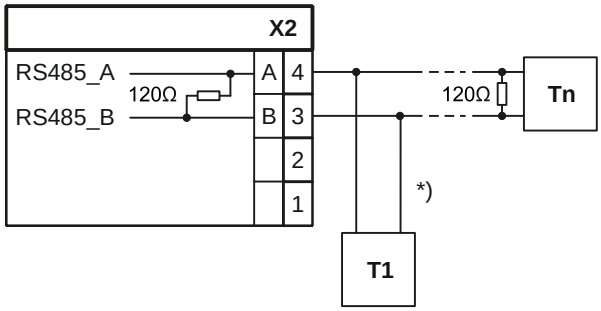
X2 RS485 interface to the peripheral devices

18.3 Pin assignments

18.3.1 X2 on RS485 module

Pin	Designation	Description
4	RS485_A	Line A
3	RS485_B	Line B
2		Not connected
1		Not connected

Admissible cable cross-section: 0.2…1.5 mm²



T1 First participant

Tn Last participant

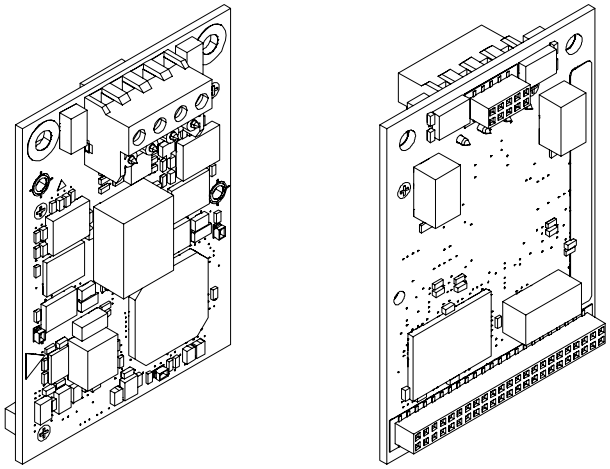
*) Stub lines must not exceed 20 m!

- Consider the polarity A, B!
- Terminate the line after the last participant (Tn) with 120 Ω!

18.4 Technical data

Supply input	Voltage	DC 3.3 V from PMI & mainboard
	Operating voltage while:	
	Receiving	Approx. 65 mA
	Sending at 19.2 kbit/s	Approx. 125 mA
RS485 interface	Connection	Bus structure
	Communication mode	Half-duplex
	Number of participants	Max. 8
	Length of line	Max. 1200 m
	Data rate at 1200 m with:	
	Shielded cables	Max. 96 kBit/s
	Unshielded cables	Max. 9.6 kbit/s
	Electrical isolation between the RS485 interface and the station	1.5 kV
	Monitored for	Ground fault
Connections	RS485 interface:	
	Design	Screw terminal 4-pin
	Cross-section	0.14…1.5 mm^2
	To the operating unit	Plug-type connection
Mechanical data	Dimensions (W x H x D)	50 x 15 x 70 mm
	Weight	20 g

19 Network module (SAFEDLINK) FN2001-A1



19.1 Description

The ↑ network module (SAFEDLINK) FN2001 is used to network several ↑ stations via the ↑ system bus C-WEB. The network module is plugged onto the PMI & mainboard and has the following features:

- Connections for a system bus input and a system bus output
- Integrated degraded mode function
- Electrical isolation between the system bus and the station
- Earth fault monitoring
- Redundant networking with one network module per station (simple line fault)
- Redundancy can be extended by a second module per station (degraded mode module)

19.2 Views

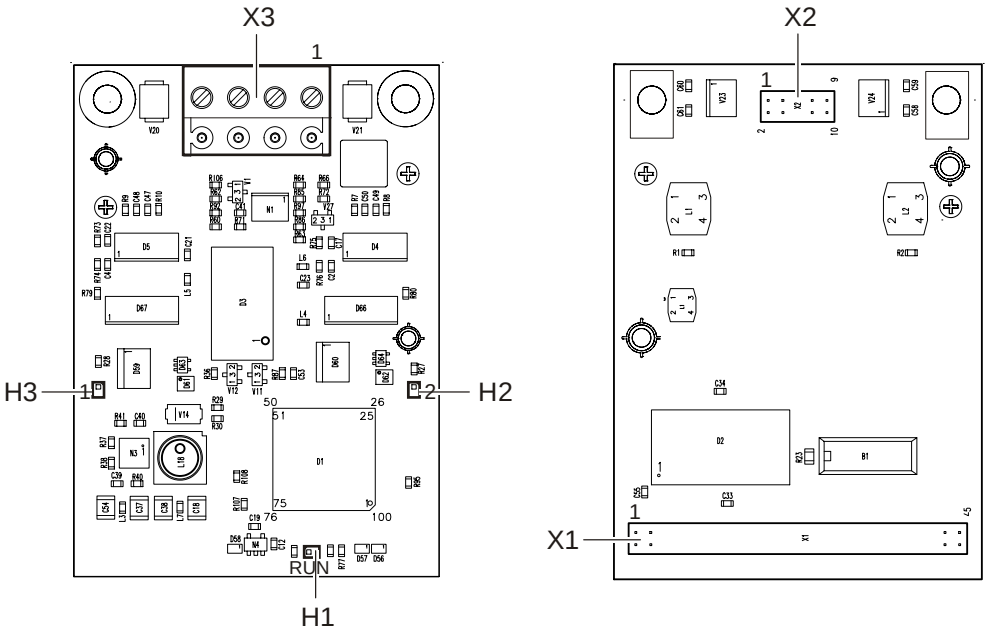


Figure 26: ↑ Network module (SAFEDLINK) FN2001-A1, view of front and rear panels

X1	Connector to the PMI & mainboard (connector on rear panel)
X2	Connector to the C-WEB lines (connector on the rear panel); not used in FS720
X3	Connector to the C-WEB lines
H1	LED green, status indicator for the network module
H2	LED yellow, status indicator for line 2
H3	LED yellow, status indicator for line 1

19.3 Pin assignments

19.3.1 Connector X3

Pin	Designation	Description
4	A1	Line 1 (+)
3	B1	Line 1 (–)
2	A2	Line 2 (+)
1	B2	Line 2 (–)

Admissible cable cross-section: 0.2…2.5 mm²

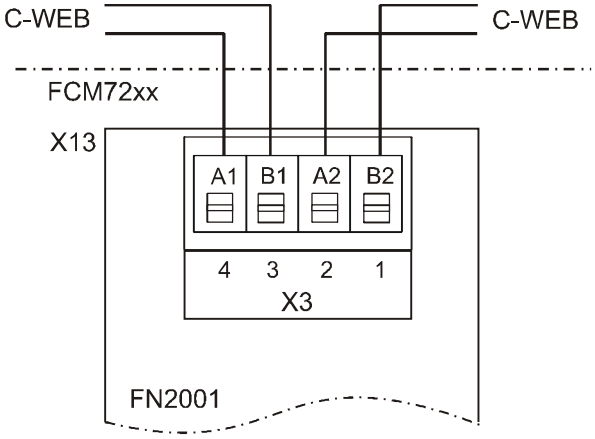


Figure 27: Wiring of 1 network module

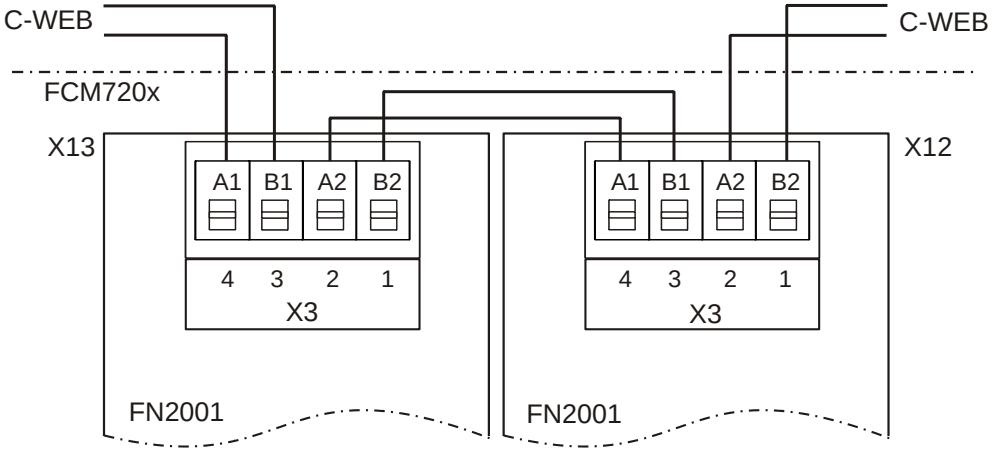


Figure 28: Wiring of 2 network modules

The main module must always be plugged in slot X13 of the operating unit FCM72xx.

When two network modules are used, the degraded mode module must be plugged in slot X12 of the FCM72xx operating unit.

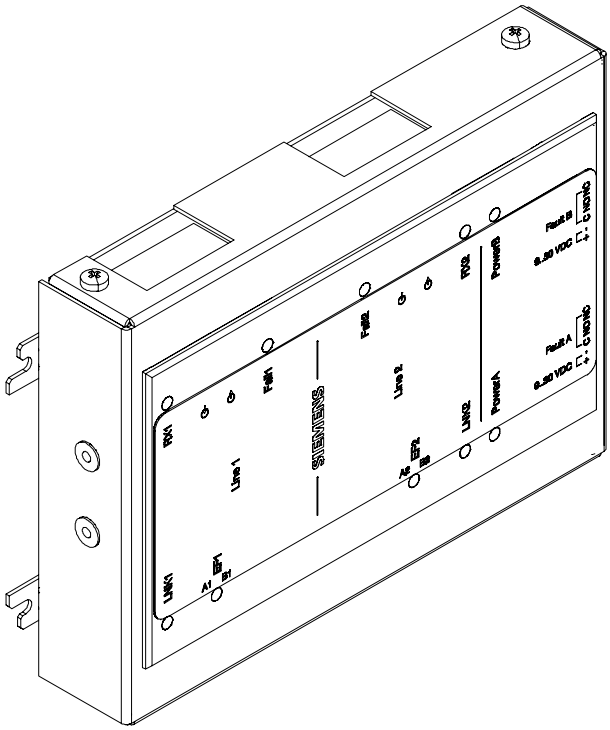
19.4 Indicators

LED	Color	Function	State	Meaning
RUN (H1)	Green	State of the ↑ network module (SAFEDLINK)	Off	Network module (SAFEDLINK) is defective
			On	Normal condition (H2 and H3 are off)
			Flashes	Normal condition for master module and degraded mode module (H2 and H3 are off)
2 (H2)	Yellow	Condition of line 2 (A2, B2)	Off	Normal condition (communication on line 2 is OK)
			On	Fault on line 2; (no communication on line 2)
1 (H3)	Yellow	Status of line 1 (A2, B2)	Off	Normal condition (communication on line 1 is OK)
			On	Fault on line 1; (no communication on line 1)

19.5 Technical data

Supply input	Voltage	DC 20…30 V (Vsys)
	Operating current	Max. 45 mA
System bus	Voltage	DC 5 V
	Current	Max. 100 mA
	Impedance	120 Ω
	Cable type	Shielded and unshielded cables Example: • Uninet 30044PFRNC(KAT6) • R&M fseenet KAT5e F/UTP 4P • Communication cable J-2T(St)TSTIIIBD • CCM 2C1.5T1/1254(MICC) • Fire detection cable JY(St)Y2x2x0.8mm red
	Protocol	SAFEDNET (UDP/IP)
	Data rate at 'Network speed':	
	• 'Standard'	315 kbit/s
	• 'Low'	115 kbit/s
	Distance between 2 network modules	Max. 1000 m
	Electrical isolation between the C-WEB and the station	1 kV
	Monitored for:	• Short-circuit • Open line • Ground fault • Communication error
Connections	System bus:	
	Design	Screw terminals 0.2…2.5 mm^2 (0.8 mm^2 recommended)
	Admissible cable cross-section	0.8 mm^2
	Operating unit	Plug-type connection
Mechanical data	Dimensions (W x H x D)	50 x 20 x 70 mm
	Weight	20 g

20 Fiber optic network module FN2006 / FN2007



20.1 Description

With the fiber optic cable network module Multi Mode (MM) and the fiber optic cable network module Single Mode (SM), FS720 stations can be networked over great distances by means of glass fiber optic cables using the ↑ system bus C-WEB/SAFEDLINK.

As a result of the redundant supply, a network in conformance with EN 54 is also possible with remote network module.

The fiber optic cable network modules have the following features:

- Fiber optic cable network module (SM) FN2006
  - Single mode transmission up to 40 km
- Fiber optic cable network module (MM) FN2007
  - Multi mode transmission up to 4 km
- Two independent, electrically isolated channels
- SC connectors for fiber optic cables
- Two redundant, monitored voltage inputs in accordance with EN 54
- Ground fault monitoring
- Error signaling via LED and potential-free relay contact
- Mounting in ↑ station or remote possible
- Horizontal or vertical installation on U-rail possible

20.2 View

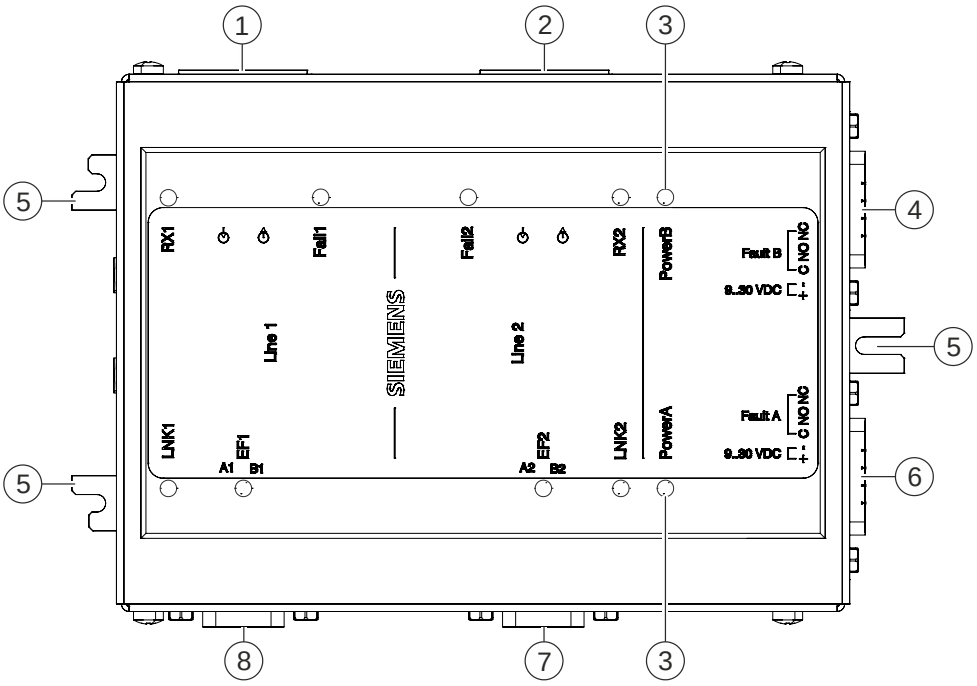


Figure 29: View of fiber optic cable network module (SM/MM)

1 Fiber optic cable SC connector Line 1

2 Fiber optic cable SC connector Line 2

3 LED indicators for data transmission, faults and power supply for both channels

4 Power B plug-type connection, power supply and error contact

5 Fastening tab

6 Power A plug-type connection, power supply and error contact

7 Plug-type connection A2/B2, C-WEB line 2

8 Plug-type connection A1/B1, C-WEB line 1

20.3 Pin assignments

20.3.1 Power A / B sockets and 'fault' relay contact

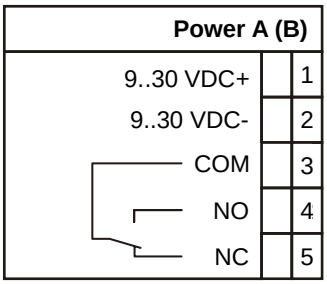
The 5-pin connector for the power supply is supplied with the fiber optic cable network module.

Pin	Designation	Description
1	+DC 9...30 V	Supply input +
2	-DC 9...30 V	Supply input -
3	COM	Fault relay: Common contact (DC 24 V)
4	NO	NO: Normally open [1]
5	NC	NC: Normally closed [2]

[1] Relay contact open in normal operation

[2] Relay contact closed in normal operation

Permissible conductor cross-section: 0.14…1.5 mm²



- The power supply need not be monitored and made redundant when installing in the fire control panel.
- For remote installation, the power must be supplied by a power supply tested in accordance with EN54-4 (e.g., FP120), which must be shielded and made redundant.
- Relay contact opens in the event of an error. The display indicates the error. COM and NC (pin 5) are connected.

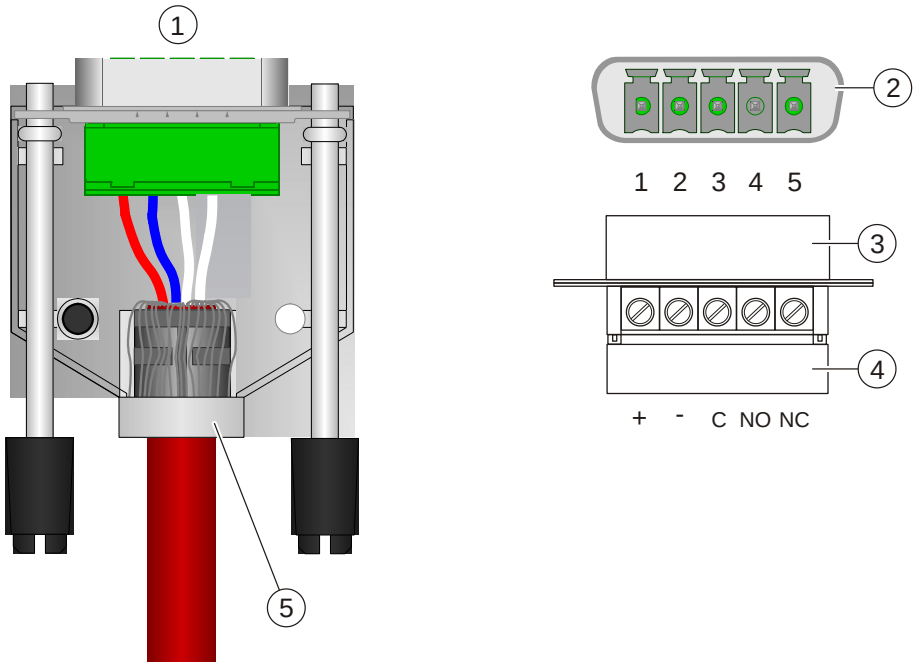


Figure 30: Connector for Power A and Power B sockets

1	Connector with housing
2	Socket on fiber optic cable network module
3	Connector without housing
4	Cover cap (open)
5	360° shielding

20.3.2 EF1/EF2 sockets for SAFEDLINK wiring

The 3-pin connector for the C-WEB/SAFEDLINK connection is supplied with the fiber network module.

EF1 socket, C-WEB A1/B1

Pin	Designation	Description
3	B1	C-WEB line 1 (-)
2	–	–
1	A1	C-WEB line 1 (+)

Permissible conductor cross-section: 0.14…1.5 mm²

EF2 socket, C-WEB A2/B2

Pin	Designation	Description
3	B2	C-WEB line 2 (-)
2	–	–
1	A2	C-WEB line 2 (+)

Permissible conductor cross-section: 0.14…1.5 mm²

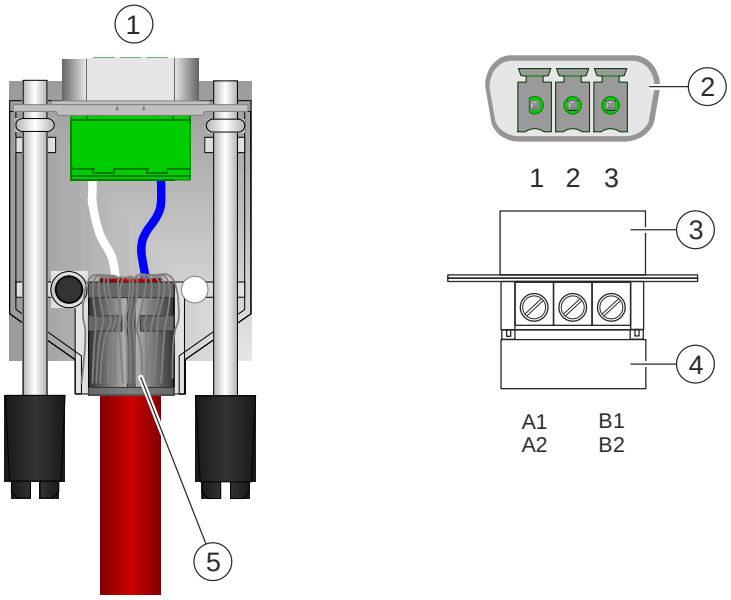


Figure 31: Connector for EF1/EF2 socket, for SAFEDLINK networking

1 Connector with housing
2 Socket on fiber optic cable network module
3 Connector without housing
4 Cover cap (open)
5 360° shielding

The feed line of the electric C-WEB can be either shielded or unshielded. If the feed line is shielded, cable glands must be used for the ↑ network module

(SAFEDLINK). You will find information in the description of network module (SAFEDLINK) FN2001.

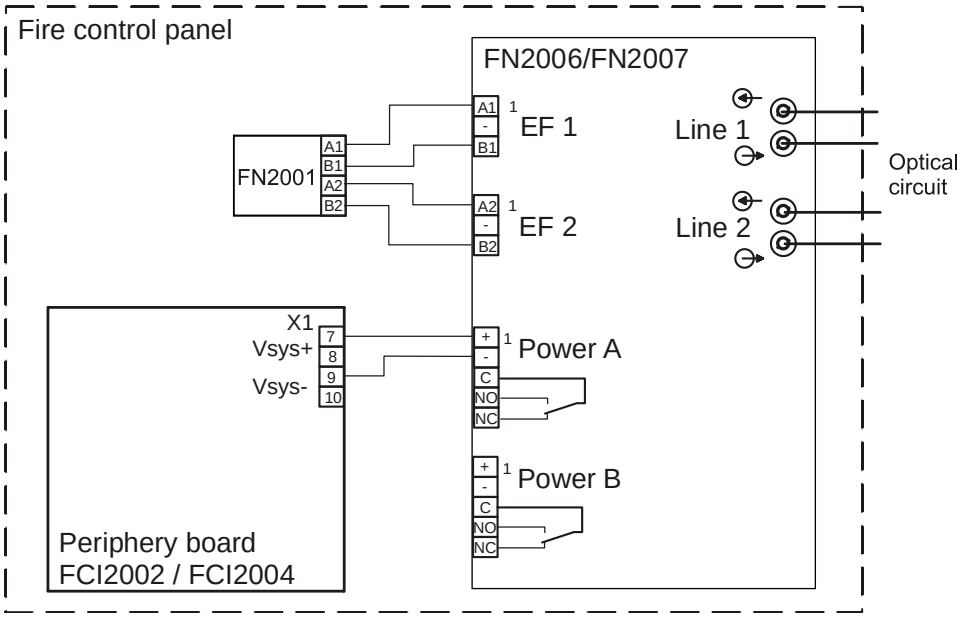


Figure 32: Example of wiring the FN2006 / FN2007 to the FN2001 for internal installation

The total cable lengths of the electric C-WEB connections with copper cables for all fiber network modules to the stations may be no longer than 1000 m.

!	*NOTICE*
	Wiring cross-wise in the electrical C-WEB If the FN2001 is wired cross-wise to the FN2006/FN2007, ground fault monitoring is not required. The wiring must be carried out 1:1 according to the diagram above (A1-A1, B1-B1, A2-A2, and B2-B2).

20.3.3 Fiber optic cable connection

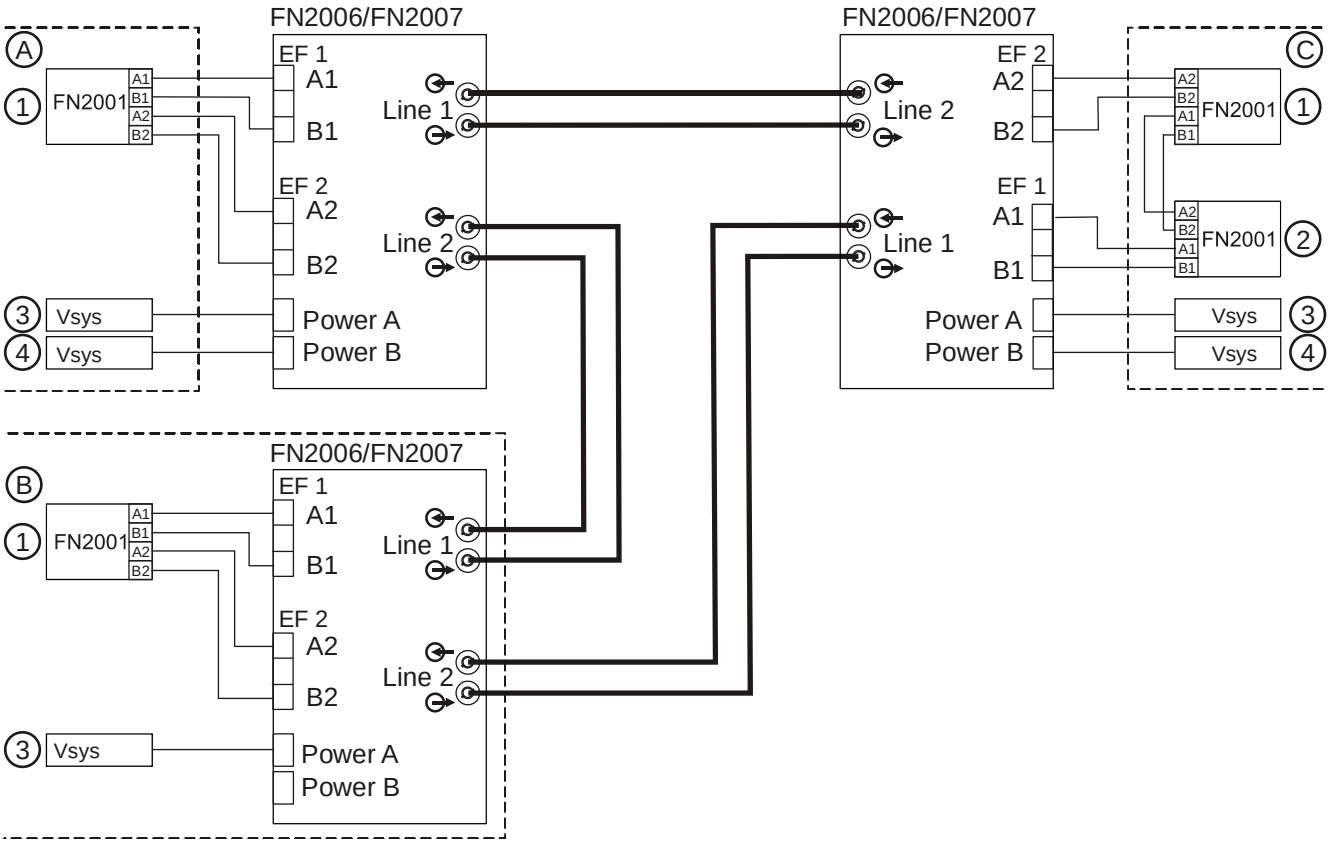


Figure 33: Example of different wirings of the fiber optic cable network module

Designation	Description
A	↑ Station with one ↑ network module (SAFEDLINK) and external fiber optic cable network module
B	Station with one network module (SAFEDLINK) and internal fiber optic cable network module
C	Station with two network modules (SAFEDLINK) and external fiber optic cable network module
1	Network module (SAFEDLINK), master module
2	Network module (SAFEDLINK), degraded mode module
3	'Power A', supply input A to fiber optic cable network module
4	'Power B', redundant supply input B to fiber optic cable network module
A1/B1	C-WEB connection for line '1'
A2/B2	C-WEB connection for line '2'
⊖	Fiber optic cable connection (RX), optical receiver
⊖	Fiber optic cable connection (TX), optical transmitter

Fiber optic cable wiring

- The accessible laser radiation is harmless. It corresponds to Laser Class 1 in accordance with IEC 60825/ANSI Z136.
- The fiber optic cable is wired cross-wise:
  - The optical transmitter (TX) of one device must always be connected with the optical receiver (RX) of the other device.
  - Line 1 must always be connected with line 2.
- The bending radius of the fiber optic cable must not be less than the manufacturer's specification (e.g., 10 x external diameter).
- Standard (PC) cable termination is sufficient, 8° polish (APC) is not necessary, but is supported.

20.4 Indicators

LED	Color	Function	State	Meaning
RX1	Green	Data reception of fiber optic cable line '1'	Lit up	Data is being received from line '1'
Fail1	Yellow	Fault on fiber optic cable line '1'	Lit up	Weak data reception from line '1'
Fail2	Yellow	Fault on fiber optic cable line '2'	Lit up	Weak data receipt from line '2'
RX2	Green	Data reception of fiber optic cable line '2'	Lit up	Data is being received from line '2'
Power B	Green	Monitoring of 'Power B' supply voltage	On	↑ Normal operation (supply voltage available)
			Off	No supply voltage or input voltage below minimum (9 V)
Power A	Green	Monitoring of 'Power A' supply voltage	On	Normal operation (supply voltage available)
			Off	No supply voltage or input voltage below minimum (9 V)
LNK1	Green	Data transmission for C-WEB line '1'	Flashes	Data transmitted via A1/B1
EF1	Yellow	Ground fault monitoring at C-WEB line '1'	Lit up	Ground fault at A1/B1
EF2	Yellow	Generation of ground fault on C-WEB line '2'	Flashes	Ground fault at A1/B1 mirrored on A2/B2
LNK2	Green	Data transmission for C-WEB line '2'	Flashes	Data transmitted via A2/B2

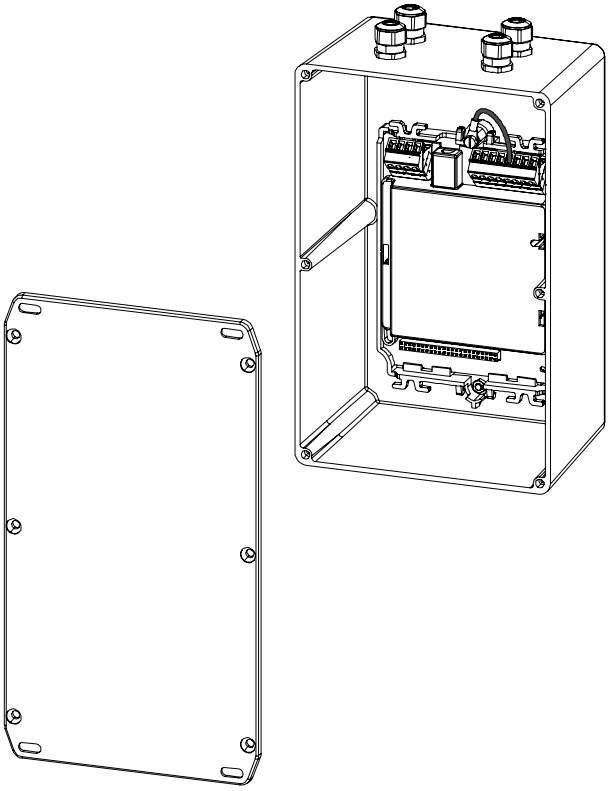
The LED indicators can be used to analyze faults. You will find a description of the troubleshooting steps in document A6V10210416.

20.5 Technical data

Supply input	Supply voltage	Nominal DC 24 V
	Voltage range	DC 9…30 V
	Decentralized installation	Supply cable shielded (not within the scope of delivery)
	Quiescent current:	110 mA @ DC 24 V
	Operating current:	130 mA @ DC 24 V
	Plug connection	Phoenix PSC (connector included in accessories)
Monitoring contact	Ohmic load:	
	Switching voltage maximum	DC 30 V
	Switching current maximum	DC 1 A
Fibre optic cable	Type of connection	SC connector
	Cable termination	Standard 'PC' or 8° polish 'APC'
	Wavelength	1310 nm
	Multi-mode	
	Range:	
	Fiber type 62.5/125 µm	4000 m
	Fiber type 50/125 µm	2000 m
	Optical budget:	
	Fiber type 62.5/125 µm	11 dBm
	Fiber type 50/125 µm	7.5 dBm
	Single mode	
	Range:	
	Fiber type 9/125 µm	40000 m
	Optical budget:	
	Fiber type 9/125 µm	29 dBm
	Minimum optical attenuation (corresponds to a minimum fiber length of 4000 m)	3 dBm

C-WEB	Length of line	Max. 1000 m, total length of the electric connection between two network modules (FN2001 or FN2010)
	Impedance	120 Ω
	Transmission mode	Half-duplex
	Cable type	Shielded and unshielded cables Example: • Uninet 30044PFRNC(KAT6) • R&M freenet KAT5e F/UTP 4P • Communication cable J-2T(St)TSTIIIBD • CCM 2C1.5T1/1254(MICC) • Fire detection cable JY(St)Y2 x 2 x 0.8 mm red
	Plug connection	Phoenix PSC (connector included in accessories)
Mechanical data	Dimensions (H x W x D)	140 x 110 x 35 mm
	Weight	0.57 kg
Ambient conditions	Operating temperature	-10…+55 °C
	Storage temperature	-30…+75 °C
	Rel. air humidity during operation	95 %, non-condensing
Standards		EN 54-18

21 Repeater (SAFEDLINK) FN2002-A1



21.1 Description

The repeater (SAFEDLINK) FN2002-A1 is used to extend the range with the C-WEB ↑ system bus. The repeater is built on the basis of the network module (SAFEDLINK) and allows the C-WEB line between two ↑ stations to be extended by 1000 m.

The repeater has the following features:

- Connections for remote supply and supply transmission to a second repeater
- Cable shields individually placed onto the ground by means of jumpers (HF low-impedance / NF high-impedance)
- Data rate of the C-WEB can be switched via a jumper
- Electrical isolation of the SAFEDLINK ↑ system bus
- Electrical connection between the power supply and the station
- Earth fault monitoring
- EMC protection on system bus and power supply

21.2 View

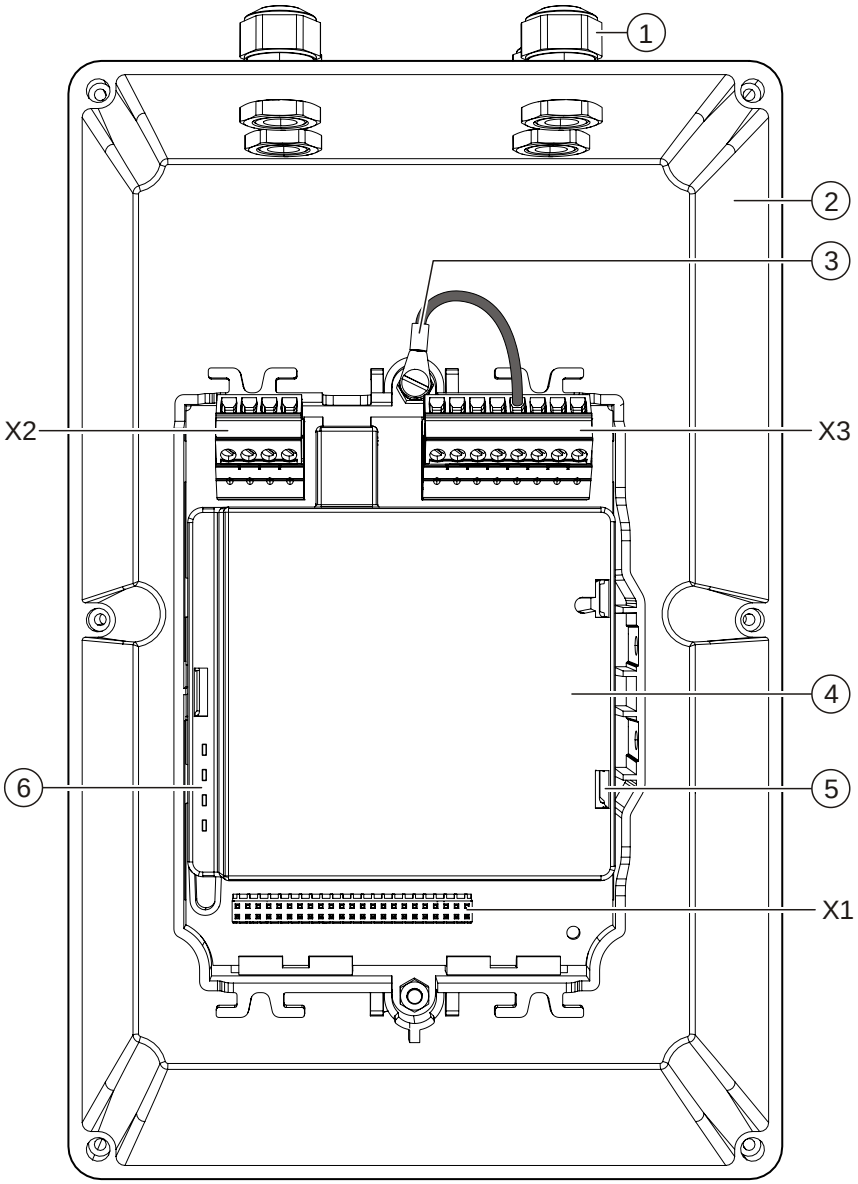


Figure 34: View of repeater, housing open

1	4x EMC cable glands
2	Aluminum housing
3	Repeater ground connection
4	Repeater module
5	Jumpers for transmission rate
6	LED indicators
X1	Connector for programming with firmware, not used in operation
X2	Connector for external power supply and the transmission to additional repeaters
X3	Connector for networking and ground connections

21.3 Pin assignments

21.3.1 Plug X2

Pin	Designation	Description
1	+Usys	Supply input DC +24 V
2	-Usys	Supply input 0 V
3	+Usys	Supply output DC +24 V
4	-Usys	Supply output 0 V

The supply input and output are connected in parallel on the PCB and are interchangeable.

21.3.2 Connector X3

Pin	Designation	Description
1	A1	Line 1 (+)
2	B1	Line 1 (-)
3	S	Shielding (not used)
4	E	Ground connection to housing
5	S	Shielding (not used)
6	S	Shielding (not used)
7	A2	Line 2 (+)
8	B2	Line 2 (-)

Connection example for C-WEB/SAFEDLINK

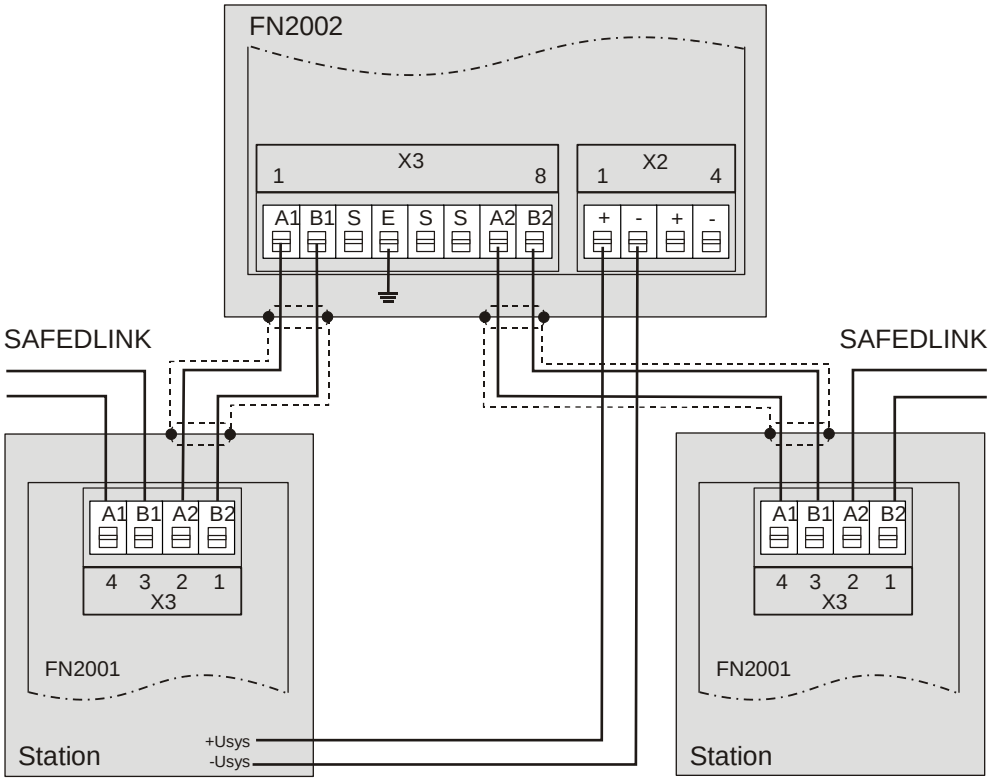


Figure 35: Repeater FN2002, SAFEDLINK wiring

'Line 1' must be wired to 'Line 2' (A1 to A2, B1 to B2) and 'Line 2' must be wired to 'Line 1' (A2 to A1, B2 to B1), see 'Wiring'.

The A2/B2 and A1/B1 wiring that runs between the network module and the repeater must be shielded.

21.4 Indicators

LED	Color	Inscription	State	Meaning
H4	Red	EARTH FAULT2	On	Ground fault on line 2; Repeater (SAFEDLINK) is OK
			Off	Normal condition
H3	Yellow	STÖR2	On	Fault on line 2 (A2, B2) Repeater (SAFEDLINK) is OK
			Off	Normal condition
H2	Yellow	STÖR1	On	Fault on line 1 (A1, B1) Repeater (SAFEDLINK) is OK
			Off	Normal condition
H1	Green	RUN	Flashes	Normal condition
			Off	Repeater (SAFEDLINK) is defective

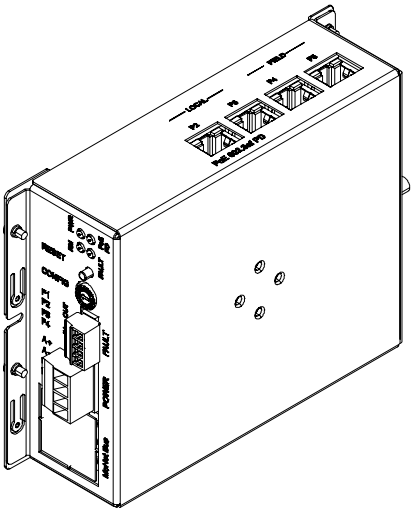
21.5 Technical data

Supply input	Voltage	DC 9…30 V [1]
	Operating current	• 60 mA @ DC 12 V • 40 mA @ DC 24 V • Max. 45 mA @ DC 24 V
Data line	Voltage	DC 5 V
	Current	Max. 100 mA
	Impedance	120 Ω
	Communication protocol	RS485 SAFEDLINK / SIGMANET P
	Data rate can be adjusted with jumper in operation mode:	
	• Standard, factory setting	315 kbit/s
	• Low	115 kbit/s
	Distance between repeater and network module	Max. 1000 m, on both sides
	Electrical isolation between the C-WEB and the station	1 kV
	Monitored for:	• Short-circuit • Open line • Ground fault, line 2 • Communication error
Connections	Design	Screw terminals 0.2…1.5 mm² (0.8 mm² recommended)
Mechanical data	Dimensions (L x W x D)	
	Housing without cover	188 x 120 x 78.4
	Housing with cover	217 x 120 x 84.4
	Weight with accessories	0.78 kg
	Protection category (IEC60529)	IP30

[1] The supply voltage may significantly decrease along the supply line from the station to the repeater. To ensure the reliable operation of the repeater, the voltage at the terminal must be at least 9 V.

Standards	VdS	G211003
	CPR	0786-CPR-21079

22 Ethernet switch (modular) FN2012-A1



22.1 Description

Ethernet switch (modular) FN2012 is used to operate an optical Ethernet network in a fire detection system. The FN2012 has two slots for Ethernet modules. It is supplied by a 24 V input via the connection module (MoNet) FCA2031.

Intended use

- Integrated switch for Ethernet backbone in FS20 / FS720 fire detection systems
- Remote switch for third-party products, such as for connecting a management station

Properties

- For installation in approved FS20 / FS720 housings
- 2x Ethernet ports for local Ethernet (station-internal)
- 2x Ethernet ports for external Ethernet with enhanced EMC protection and ground fault monitoring
- MoNet bus connection for transmitting the signal with peripheral data bus via connection module (MoNet)
- Configurable with 16-pin rotary switch
- 1x potential-free relay output for fault signal
- Several supply options
  - Via supply connection (redundant)
  - Via MoNet bus
- 2x slots for optional Ethernet modules (ring ports) – not included in the scope of delivery
  - VN2002 Ethernet module (MM): Optical Ethernet module for distances up to 4 km with 11 dBm damping [1]
  - VN2003 Ethernet module (SM): Optical Ethernet module for distances up to 40 km with 29 dBm damping [1]

[1] The length is an approximate value and is dependent on the optical cable damping.

Malfunctions during a partial upgrade

Ethernet switch (modular) FN2012 is not compatible with Ethernet switch (MM) FN2008 and so may only be used in panels ≥MP6.

22.2 Views

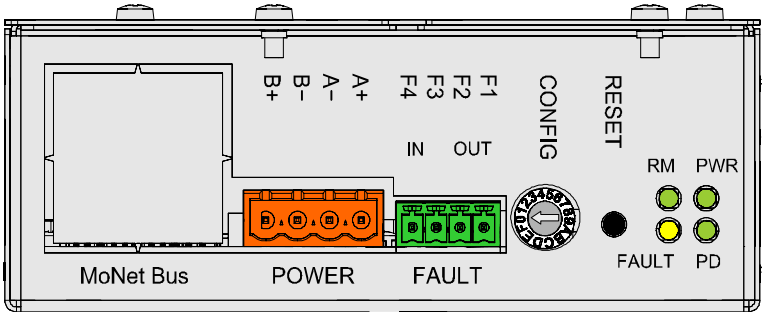


Figure 36: Operating and indication elements on the FN2012

Operating and indication elements

Element	Des.	Function
Connector	POWER	Plug-type connection X301 for external supply in the same housing or room
	FAULT	Connector strip X302 for fault signals: • F1 / F2, potential-free relay contact for fault output • F3 / F4, not connected
	MoNet bus	Removable sheet metal cover to connector strip X201 for MoNet bus ribbon cable
LEDs	RM	Redundancy manager indicator (redundancy master)
	FAULT	General fault
	PWR	Normal operation, hardware ready
	PD	Not connected
Switches and keys	CONFIG	Rotary switch S302 with 16 positions for pre-configured operation modes
	RESET	RESET button S301 with three functions

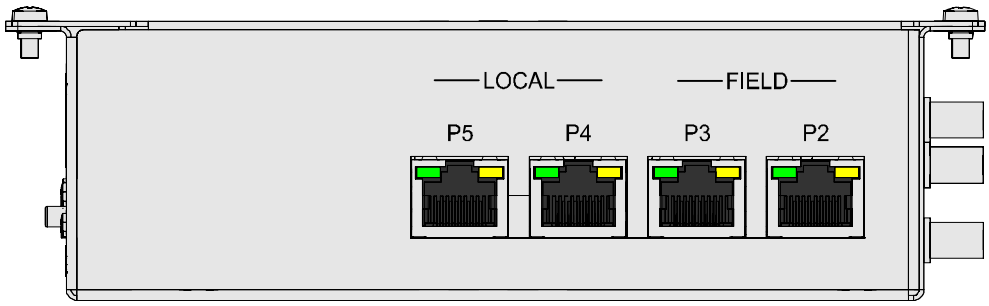


Figure 37: Ethernet connections on the FN2012

Ethernet connections

Element	Des.	Function
Connector	P5	Internal Ethernet connection 1 (LOCAL), restricted to the same housing
	P4	Internal Ethernet connection 2 (LOCAL), restricted to the same housing
	P3	External Ethernet connection 1 (FIELD), restricted to the same housing or the same room **up to max. 20 ft/6 m in length**
	P2	External Ethernet connection 2 (FIELD), restricted to the same housing or the same room **up to max. 6 m in length**

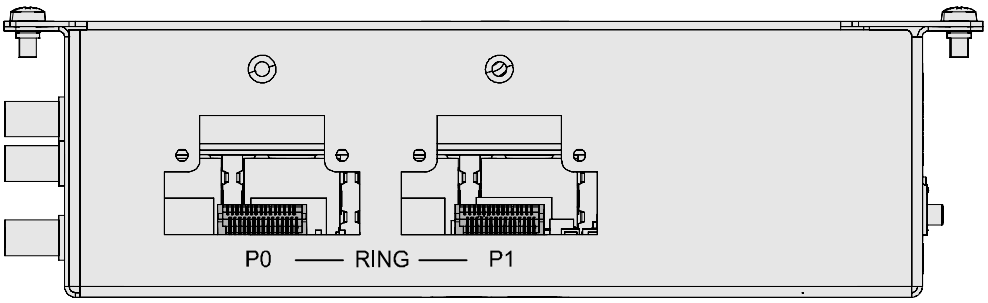


Figure 38: Slots on the FN2012 (unused)

Slots

Element	Des.	Function
Connector	P0	RING port 0, socket X1 for Ethernet module
	P1	RING port 1, socket X2 for Ethernet module

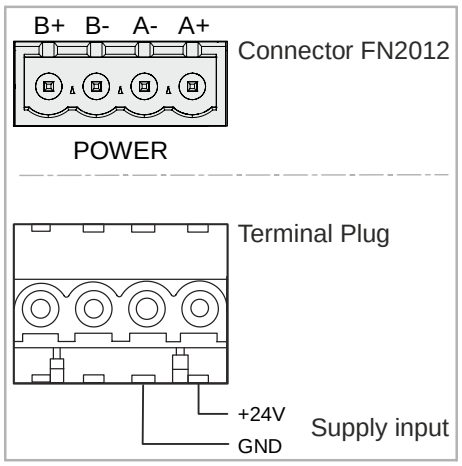
22.3 Pin assignments

22.3.1 'POWER' connector strip

The 'POWER' connector is only used if power cannot be supplied via the MoNet bus or PoE. Generally, this is only the case if the Ethernet switch (modular) is installed remotely in another device. Power must be supplied via a DC 24 V power supply unit with a regulated and power-limited output that has been listed for signaling fire.

Designation	Description
A+	Supply input 1 (+DC 24 V)
A-	Common supply input 1 (DC 0 V)
B-	Not connected
B+	Not connected

Admissible cable cross-section: 0.2…2.5 mm²



22.3.2 'FAULT' connector strip

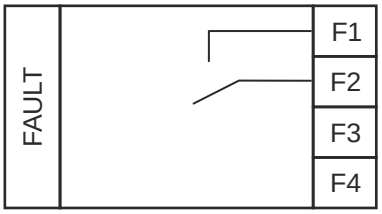
The fault output is a potential-free relay contact which, depending on the configuration, can be used to report fault conditions by interrupting the contact. If the FN2012 is switched off, the relay contact is deactivated (opened).

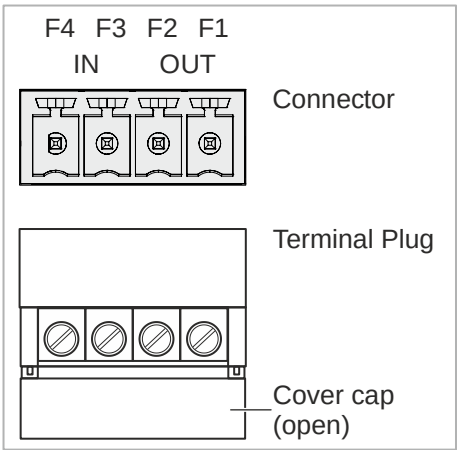
The following error messages can be configured by the web interface:

- 'Fatal fault': Ethernet Switch (modular) malfunction
- 'Ring fault': Ring faults are only indicated if the Ethernet switch (modular) has assumed the 'Redundancy Manager' function
- 'Ring port fault': 'Link down' state on a ring port

Pin	Designation	Description
F1	OUT	Potential-free relay contact 1 (common, normally open)
F2	OUT	Potential-free relay contact 2 (common, normally open)
F3	IN	Not connected
F4	IN	Not connected

Admissible cable cross-section: 0.2…2.5 mm²





22.4 Indicators

LED	Color	Function	State	Meaning
PWR	Green	Power LED	Lit up	• Normal operation
			Does not light up	• No power supply
FAULT	Yellow	General fault	See separate FAULT-LED table	
RM	Green	Redundancy manager	See separate RM-LED table	
PD	Green	Not connected	--	No function
			--	No function
P2	Green / yellow	Ethernet status LEDs	Green lights up	• Link up
P3			Green does not light up	• Link down
P4			Yellow flashes	• Data communication active
P5			Yellow does not light up	• No data communication

Table 1: Status LED

Function displays of the FAULT-LED

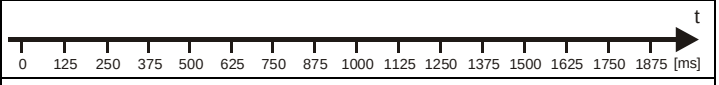
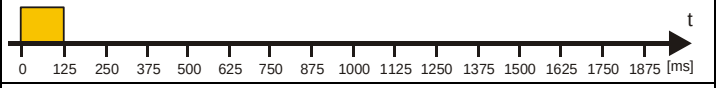
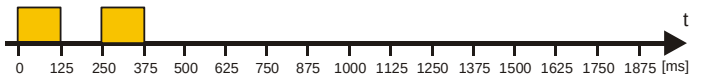
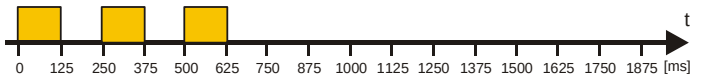
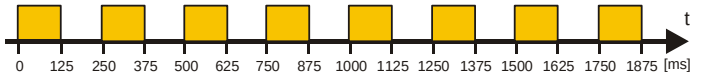
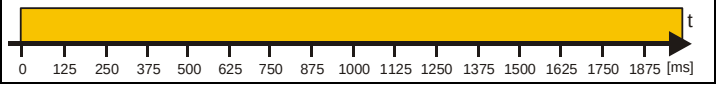
Function display	Meaning	FAULT-LED flashing pattern (every 2 sec.)
Normal Operation	Normal operation	
FW Update Mode	Ready for firmware update	
FW Update Running	Ethernet switch is loading firmware	
FW Update Failed	FW update could not be completed, network connection may be interrupted	
Checksum Failed	The FW checksum is not correct	
Fatal FAULT	Ethernet switch generates another fault	

Table 2: FAULT-LED flashing pattern

Function display	Possible troubleshooting actions
FW Update Failed	• Ethernet switch tries to establish the connection again to load the FW. • Restart the FW update via Cerberus-Engineering-Tool.
Checksum Failed	• Restart the FW update via Cerberus-Engineering-Tool.
Fatal FAULT	• Carry out a reset. If unsuccessful, there is a hardware fault. • Replace Ethernet switch. Check whether other error messages are displayed in the FS720 system.

Table 3: Troubleshooting

Function displays of the RM-LED (redundancy manager)

There must be one master Ethernet switch in an MRP [1]. All other Ethernet switches must be clients.

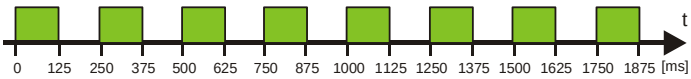
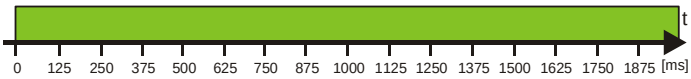
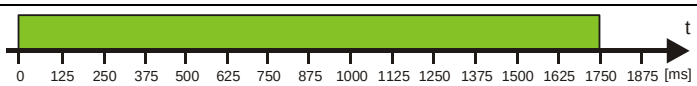
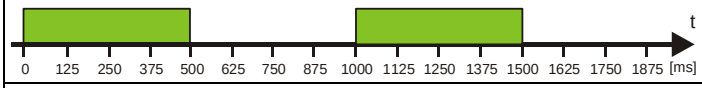
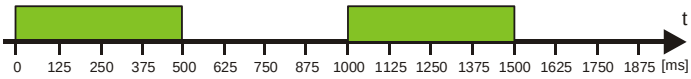
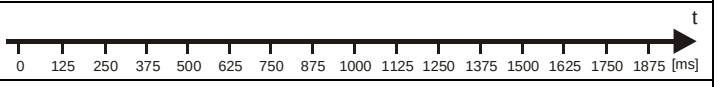
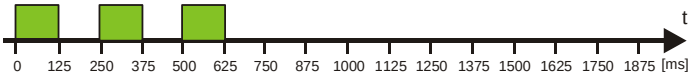
Function display	Meaning	RM-LED flashing pattern (every 2 sec.)
Search Manager	Ethernet switch is initializing Searching for MRP manager Topology has changed as a result of connecting or removing other Ethernet ring participants	
Manager	Ethernet switch is configured as the manager and has also assumed the role of the ring manager	
Claim Manager	Ethernet switch is the manager but is not configured as the manager	
Manager Ring open	Ethernet ring is interrupted at at least one point	
Claim Manager Ring open		
Double Manager	Two Ethernet switches are configured as managers	
Client	Ethernet switch is configured as a client	
Unidirectional Data Link Fault	A section of the MRP ring has a unidirectional connection due to incorrect cabling or hardware faults	

Table 4: RM-LED flashing pattern

[1] MRP: Media Redundancy Protocol

Function display	Possible troubleshooting actions
Claim Manager	• Adapt configuration. A ring manager must be configured in each MRP ring.
Ring open	• Check MRP ring. The ring is interrupted at at least one station. • Check if cable is defective. • Deactivated ring port LEDs show open ports – Cable defective/not plugged in.
Double Manager	• Adapt configuration. Only one Ethernet switch may be configured as a ring manager.
Unidirectional Data Link Fault	• Check cabling of all fiber optic cable sections. • Replace each Ethernet switch in turn until the faulty device is found.

Table 5: Troubleshooting

22.5 Adjustment elements

Reset button

The Reset button has a number of functions depending on how long it is pressed for.

RESET button	FAULT-LED	Function
Press for <5 s	Does not light up	Hardware reset: Switch is restarted.
Press for >5 s but <10 s	Lit up	Factory reset: Switch is reset to factory settings.
Press for >10 s	Lights up and goes out as soon as the switch is in Update mode.	Firmware update mode: The Reset button can be released. Firmware update can be performed.

Rotary switch for device configuration

An Ethernet switch that is not integrated in a station must be configured via the rotary switch. If the Ethernet switch is integrated, the rotary switch must be set to '0'.

Using the rotary switch for device configuration, the Ethernet switch can be set to pre-defined network addresses or operation modes.

To apply a new configuration, the setting must be made when the device is de-energized or by means of a hardware reset.

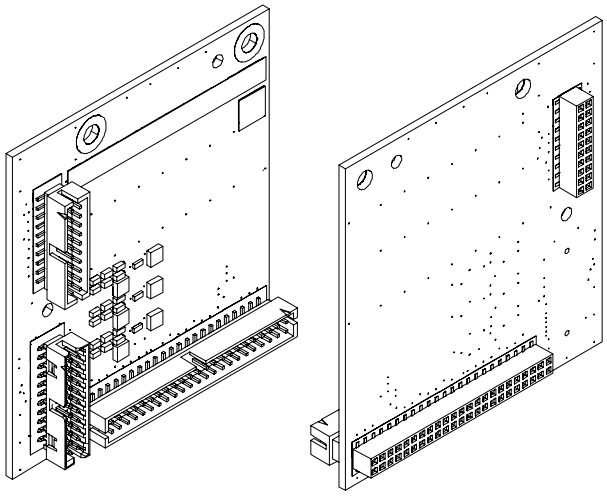
Switch position	IP address / operation mode	Sub-net mask / operation mode
0	Configured via web interface or MoNet bus Factory setting: 0.0.0.0	Configured via web interface or MoNet bus Factory setting: 255.255.248.0
1	192.168.99.241	255.255.248.0
2	192.168.99.242	255.255.248.0
3	192.168.99.243	255.255.248.0
4	192.168.99.244	255.255.248.0
5	192.168.99.245	255.255.248.0
6	192.168.99.246	255.255.248.0
7	192.168.99.247	255.255.248.0
8	192.168.99.248	255.255.248.0
9	192.168.99.249	255.255.248.0
A	192.168.99.250	255.255.248.0
B	192.168.99.251	255.255.248.0
C	192.168.99.252	255.255.248.0
D	Reserved (0.0.0.0)	Reserved (255.255.255.255)
E	Repeater operation	Repeater operation
F	192.168.200.4	255.255.255.0

22.6 Technical data

Supply	Operating voltage	DC 24 V
	Standby power consumption	95 mA @24 V
	Power consumption installed, supply via MoNet bus or AUX power	Max.190 mA @24 V
Ethernet interfaces	Bushes	4x RJ45, 10 / 100 Mbit/s
	Length of line	Max. 100 m via FC TP standard cable
Connections	External supply input	4-pin terminal
	Fault terminal	4-pin terminal
	• Fault output 'F1', 'F2'	Potential-free relay contact (common) Switching current max. 1 A, resistive Switching voltage max. DC 30 V
	MoNet bus	22-pin ribbon cable connector
	External Ethernet connections, 'P2', 'P3'	• Additional overvoltage protection • Enhanced EMC protection • Ground fault monitored
	Circuits	• All connections are power-limited • All connections except local and MoNet connections are monitored
Fiber optic cables, Ethernet modules	Type of connection	LC connector
	Wavelength	1300 nm
Ethernet module (MM) VN2002	Multi-mode fiber optic	
	Fiber type, range, optical budget	• Fiber length 62.5 / 125°µm: 4 km with 11 dBm damping [1] • Fiber length 50 / 125°µm: 2 km with 7.5 dBm damping [1]
Ethernet module (SM) VN2003	Single mode fiber optic	
	Fiber type, range, optical budget	• Fiber length 9 / 125°µm: 40 km with 29 dBm damping [1]
Mechanical data	Dimensions (W x H x D), with cover, without optional modules	165 x 121 x 43 mm
	Weight	560 g
Ambient conditions	For indoor applications in dry rooms only	
	Operating temperature	-10 °C…+55 °C
	Storage temperature	-20 °C…+75 °C
	Rel. humidity during operation	93 % at a temperature of 40 °C
	Protection category	IP30

[1] The length is an approximate value and is dependent on the optical cable damping

23 Connection module (MoNet) FCA2031-A1



23.1 Description

The connection module (MoNet) FCA2031-A1 transmits the system and network signals to the Ethernet switch (modular). The connection module (MoNet) is plugged into slot X13 of the main network module (SAFEDLINK) on the PMI & mainboard and connects the Ethernet switch (modular) to the system. The connection module (MoNet) can be used whether the network module (SAFEDLINK) is plugged in or not.

Properties

The connection module (MoNet) makes the MoNet bus from the PMI & mainboard available to the Ethernet switch (modular) FN2012. The following functions are transferred in this way:

- Supply for the Ethernet switch (modular)
- Transmission of status and monitoring signals
- Transmission of the standard configuration and IP address numbers

23.2 Views

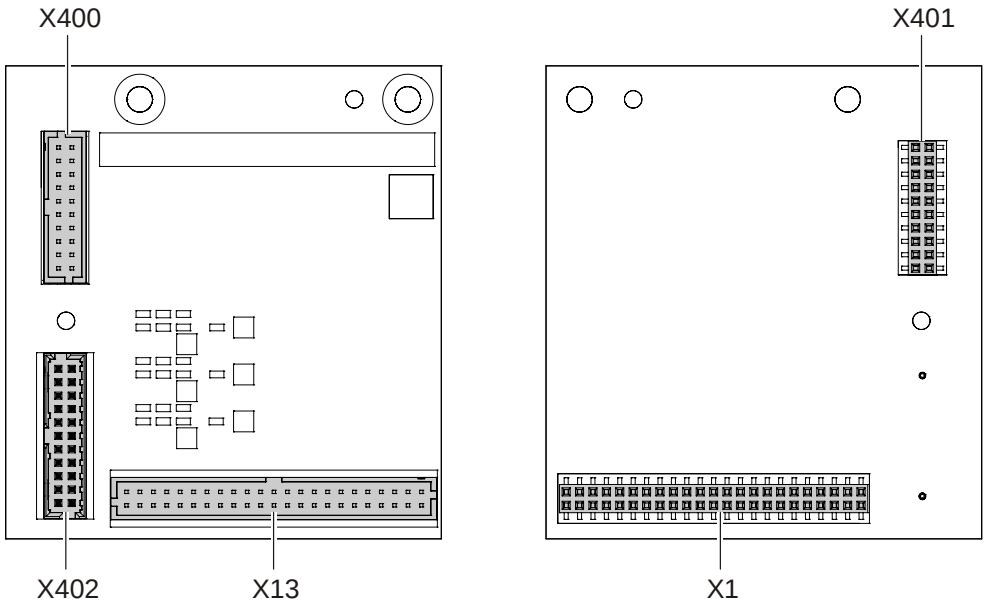


Figure 39: Connection module (MoNet) FCA2031, printed circuit board view of front and rear panels

Legend

Element	Des.	Function
Connector	X1	Connector to X13 for main network module (SAFEDLINK) on PMI & mainboard
	X13	Socket for main network module (SAFEDLINK)
	X400	Socket for peripheral data bus output
	X401	Connector to peripheral data bus connection on PMI & mainboard
	X402	MoNet bus socket

23.3 Pin assignments

23.3.1 Simplified circuit diagram

The connection module (MoNet) is plugged into the slot of the main network module (SAFEDLINK) on the PMI & mainboard FCM2027. If the station is used in the SAFEDLINK network, the network module (SAFEDLINK) can be plugged into the connection module (MoNet).

The connection module (MoNet) generates the MoNet bus from the peripheral data bus and SAFEDLINK bus of the PMI & mainboard.

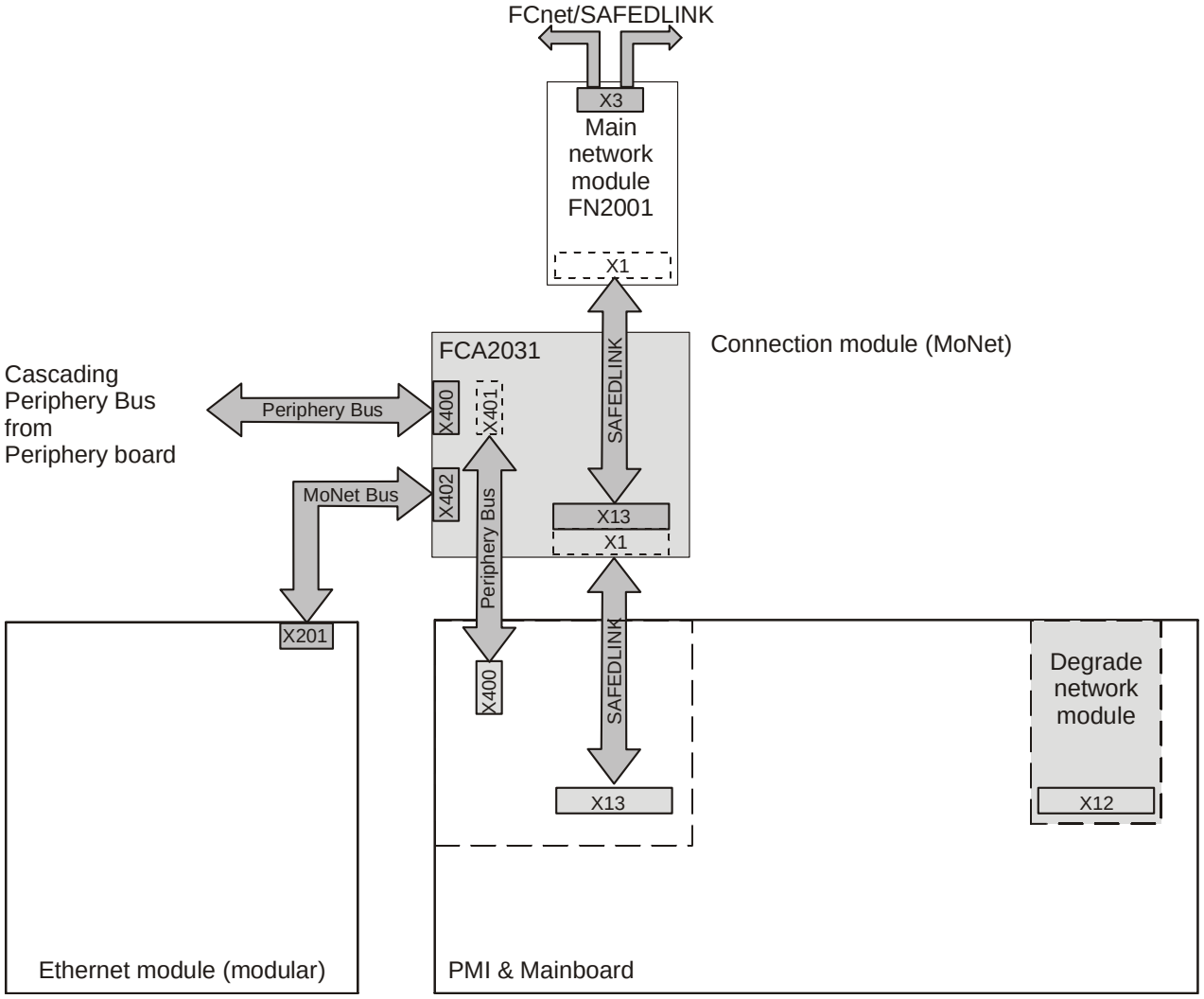


Figure 40: Simplified circuit diagram for connection module (MoNet) FCA2031-A1

Connector	Description
X13	Connector for SAFEDLINK bus
X1	Connector on bottom of PCB for X13
X3	Connection terminal on network module (SAFEDLINK) for FCnet
X400	Connector for peripheral data bus
X401	Peripheral data bus connection from X3 periphery board
X402	MoNet bus connection to X201 of Ethernet switch (modular) FN2012

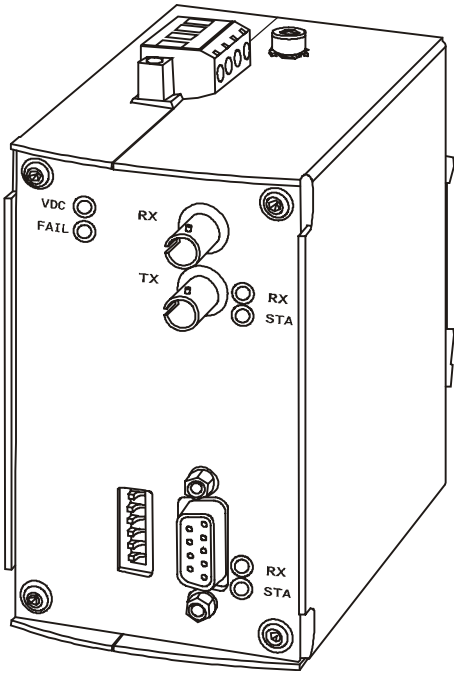
23.4 Adjustment elements

!	*NOTICE*
	Ground fault monitoring When using the connection module (MoNet) FCA2031, switch S33 'Earth-Fault Phy' on the PMI & mainboard must remain OFF. Any ground faults are detected via the MoNet bus.

23.5 Technical data

Supply	Voltage	System supply DC 24 V
	Current	Normal operation 0 mA Maximum current 1 mA
Supply outputs	Peripheral data bus	DC 20…30 V
	SAFEDLINK output	DC 20…30 V
	MoNet bus	DC 20…30 V
Connections	Outputs	Sockets for ribbon cable
	Operating unit	Plug-type connection
Mechanical data	Dimensions (L x W x H)	65 x 70 x 14 mm

24 Interface module DL485/13-xx-ST-SBT



24.1 Description

The interface modules DL485/13-xx-ST-SBT serve to actively couple the C-WEB with fiber optic cables. The purpose of this is to extend the line and isolate it electrically (EMC-resistant).

Generally, the cheapest plastic fibres are used for multi-mode (lower range) while more expensive glass fibres (larger range, less damping) are used for single mode.

Properties

- Long range
  - Single mode: 15000 m
  - Multi-mode: 2000 m
- Available for fiber optic cable fibers 62.5(50) / 125 µm with ST connection
- Single mode transmission with interface module DL485/13-SM-ST-SBT
- Multi-mode transmission with interface module DL485/13-MM-ST-SBT
- Redundant power supply possible if supplying via fire control panel
- Electrically isolated
- Mounting on DIN rail possible
- Error signalling via LED

24.2 Views

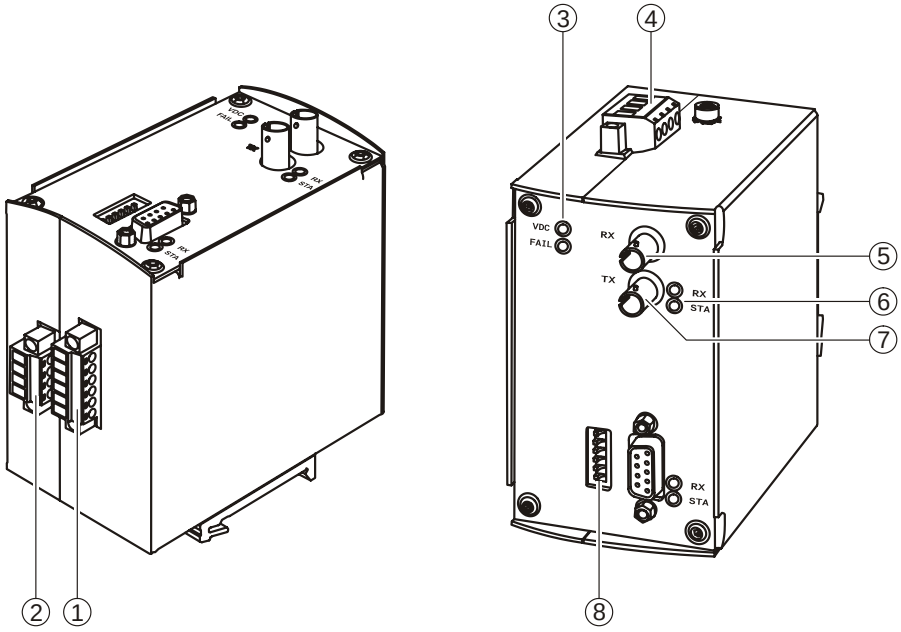


Figure 41: Interface module, view of the connection and operating elements

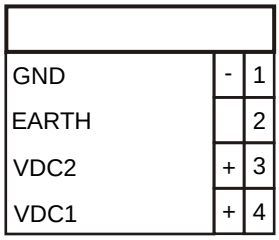
Legend

Element	Position	Function
Connectors and terminals	1	Data line terminal block
	2	Not connected
	4	Supply terminal block
	5	RX connection for fiber optic cable port
	7	TX connection fiber optic cable port
LEDs	3	Supply and error status LEDs
	6	Fiber optic cable port status LEDs
Adjustment elements	8	DIP switch for termination resistor

24.3 Pin assignments

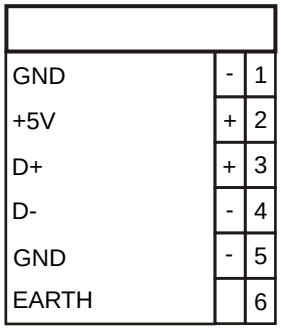
24.3.1 Terminal strip supply

Pin	Designation	Description
1	GND	Supply input (0 V)
2	EARTH	Earth conductor connection (PE)
3	VDC2	Supply input +Vsys (+24 V redundant supply input)
4	VDC1	Supply input +Vsys (+24 V)



24.3.2 Terminal strip data line

Pin	Designation	Description
1	GND	
2	5 V	
3	D+	+ connection data line (A1, A2)
4	D-	- Connection data line (B1, B2)
5	GND	
6	EARTH	



24.3.3 Fiber optic cable connection

Designation	Description
RX	Fiber optic connection, optical receiver
TX	Fiber optic connection, optical transmitter

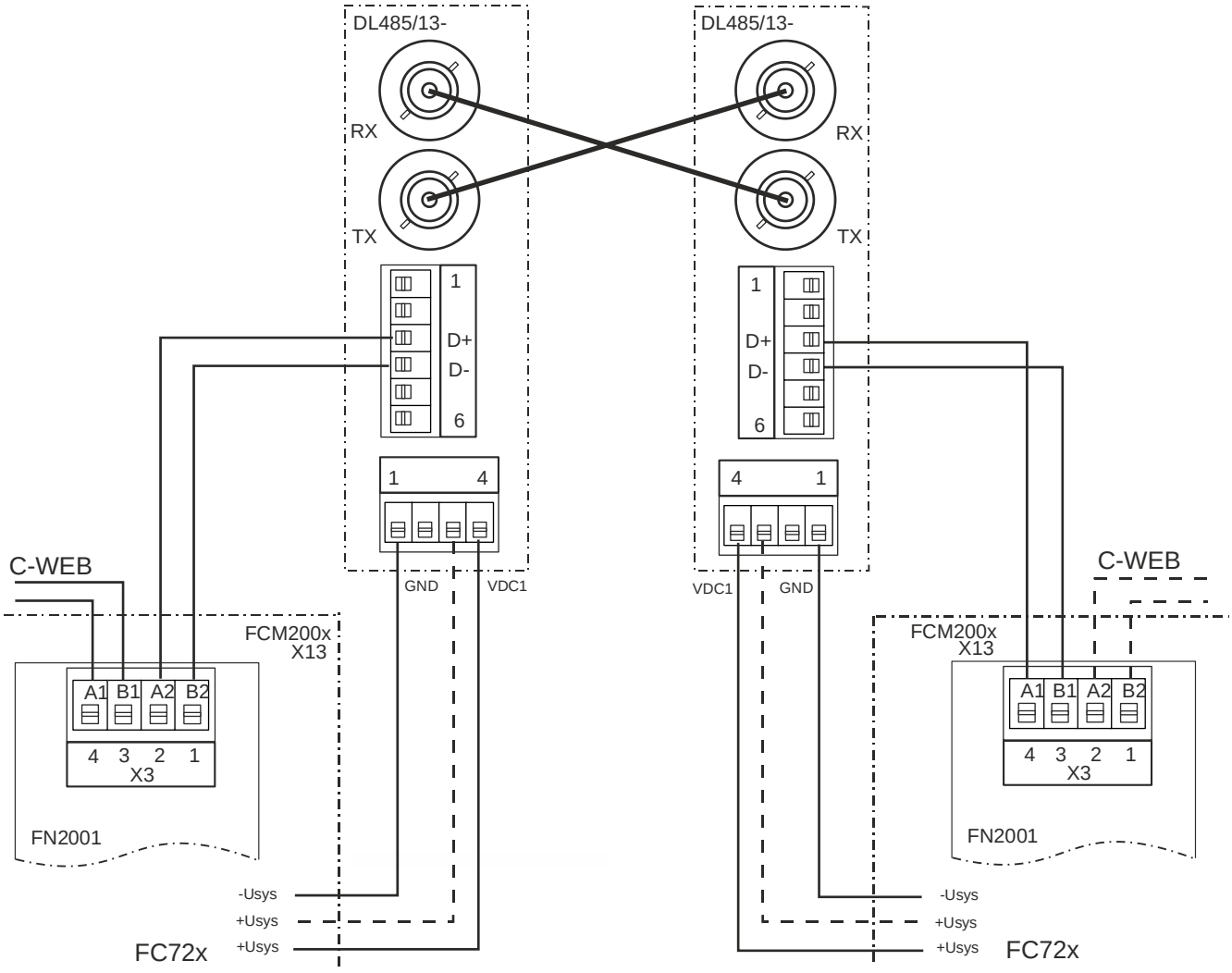


Figure 42: Wiring the interface module DL485/13-MM-ST-SBT

Wiring

	**⚠ WARNING**
	Heavily concentrated light Eye damage • Do not look into the red light of the transmitter (TX).

- The fiber optic cable is wired cross-wise:
  The optical transmitter (TX) of one device must always be connected to the optical receiver (RX) of the other device.
- The bending radius of the fiber optic cable must not be less than 20 mm.

24.4 Indicators

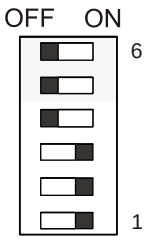
LED	Color	Function	State	Meaning
V DC	Green	Supply	Off	No operating voltage available
			On	+24 V voltage available on VDC1 or VDC2
FAIL	Red	Error	Off	Normal condition
			On	Data error
RX	Yellow	Data line	Off	No data transfer
			On	Data is being received
STA	Red	Status	Off	Normal condition
			On	Optical receiving signal incorrect

24.5 Adjustment elements

The terminating resistor needed for the bus is selected using the DIP switch.

- R_W = wave resistance
- R_{PU} = pull-up resistance
- R_{PD} = pull-down resistance

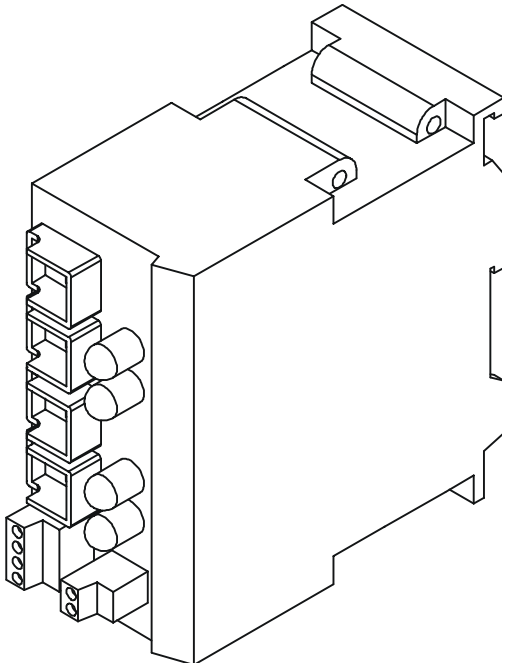
Switch	Designation	Position	Function
6	–	OFF	Not connected
5	–	OFF	Not connected
4	–	OFF	Not connected
3	R_W	ON	120 Ω between the data lines
2	R_{PU}	ON	390 Ω following +5 V
1	R_{PD}	ON	390 Ω following 0 V



24.6 Technical data

Supply input	Supply voltage	DC 18…30 V
	Quiescent current	62 mA at 24 V
	Operating current	75 mA
Fibre optic cable	Type of connection	ST plug connection
	Wavelength	1300 nm
	Transmission mode	Half-duplex
	Multi-mode	
	Fibre types	50/125 µm and 62.5/125 µm
	Optical budget	8 dB
	Range	Max. 2000 m (2 db/km)
	Single mode	
	Fibre types	9/125 µm
	Optical budget	17 dB
	Range	Max. 15000 m (2 db/km)
C-WEB	Connection length	'Network speed' 'Standard': Max. 400 m 'Network speed' 'Low': Max. 1000 m
Mechanical data	Dimensions (H x W x D)	115 x 61 x 113 mm
	Weight	500 g
Ambient conditions	Operating temperature	-10 °C to +55 °C
	Storage temperature	-40 °C to +85 °C
Standards		EN 61000-4 -2/-3 -4 -5

25 Ethernet switch (MM) FN2008-A1



25.1 Description

The Ethernet switch (MM) FN2008-A1 is a switch for using in industrial networks. When used in the FS720 fire detection system, the FN2008-A1 permits expansion to other sub-nets in redundant operation. This allows heterogeneous networks with several sub-nets to be operated.

FN2008-A1 is supplied by the system supply of the ↑ station in which the FN2008-A1 is fitted. If the FN2008-A1 is fitted in a separate housing, it is supplied from the station located right next to the separate housing.

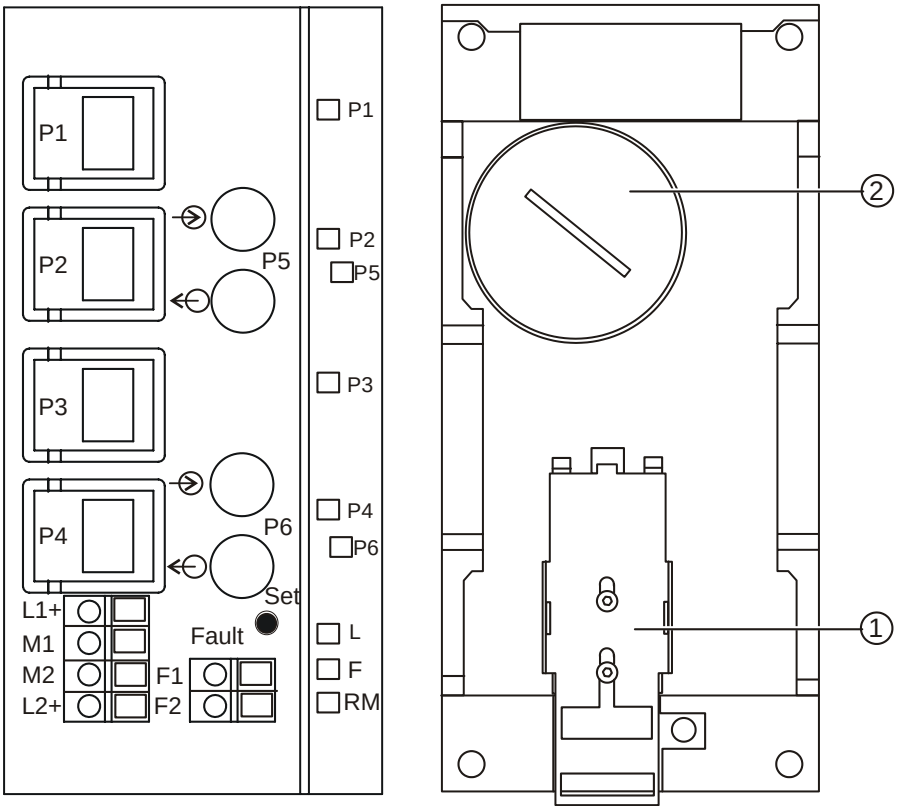
Properties

- Multimode (MM) switch with two ST connections for optical Ethernet via fiber-optic cable
- Four potential-free Ethernet interfaces via RJ45 connections (electric Ethernet)
- Screw terminal for configurable, potential-free detector contact
- Mounting on DIN rail or wall-mounted
- Robust housing with IP30 protection category
- Two supply inputs for optional, redundant supply (for EN 54-compliant sites, it is sufficient to use one supply input only)

You will find detailed information about the FN2008-A1 on the data sheet and in the description supplied by the manufacturer.

You will find the configuration procedure in document A6V10210416.

25.2 Views



Element	Position	Function
Connectors and terminals	P1	Ethernet port 1 (RJ45 plug)
	P2	Ethernet port 2 (RJ45 plug)
	P3	Ethernet port 3 (RJ45 plug)
	P4	Ethernet port 4 (RJ45 plug)
	P5	Optical port 1 (ST connection)
	P6	Optical port 2 (ST connection)
	Fault	Connector strip for detector contact
		Connector strip for supply
	L1+, L2+	Vsys + supply connections
	M1, M2	Vsys - supply connections
LEDs	P1	Function display port 1
	P2	Function display port 2
	P3	Function display port 3
	P4	Function display port 4
	P5	Function display port 5
	P6	Function display port 6
	L	Voltage supply display
	F	Error display (detector contact)
	RM	Redundancy manager display

Element	Position	Function
Buttons	Kit	Button for configuration
Back	1	Locking fastener for DIN rail
	2	Screw-on cover for C-plug (option)

25.3 Pin assignments

25.3.1 Connector strip for supply

Pin	Designation	Description
1	L1+	Supply input 1 (+DC 24 V)
2	M1	Supply input 1 (DC 0 V)
3	M2	Redundant supply input 2 (DC 0 V), optional
4	L2+	Redundant supply input 2 (+DC 24 V), optional

The L1+/M1 and L2+/M2 connections are designed for redundant supply and are not plated-through. Use of the redundant L2+/M2 supply inputs is optional and not necessary for EN-54 compatibility.

25.3.2 Connector strip for detector contact

The detector contact is a potential-free relay contact which can be used to report error states by interrupting contact.

The following errors can be signaled by the detector contact:

- Loss of a link on a monitored port
- Failure of a redundant source of voltage
- Incompatible C-plug inserted

The detector contact remains activated until the error is rectified or until the current status is adopted by the button as the new nominal status.

The detector contact is always activated (opened) by switching off the FN2008-A1.

Pin	Designation	Description
1	F1	Detector contact 1
2	F2	Detector contact 2

25.3.3 Connecting optical Ethernet

Wiring a loop network with four network nodes

To set up a redundant loop topology with the Ethernet switch (MM) FN2008-A1, both free ends of the optical Ethernet must be joined to form a loop.

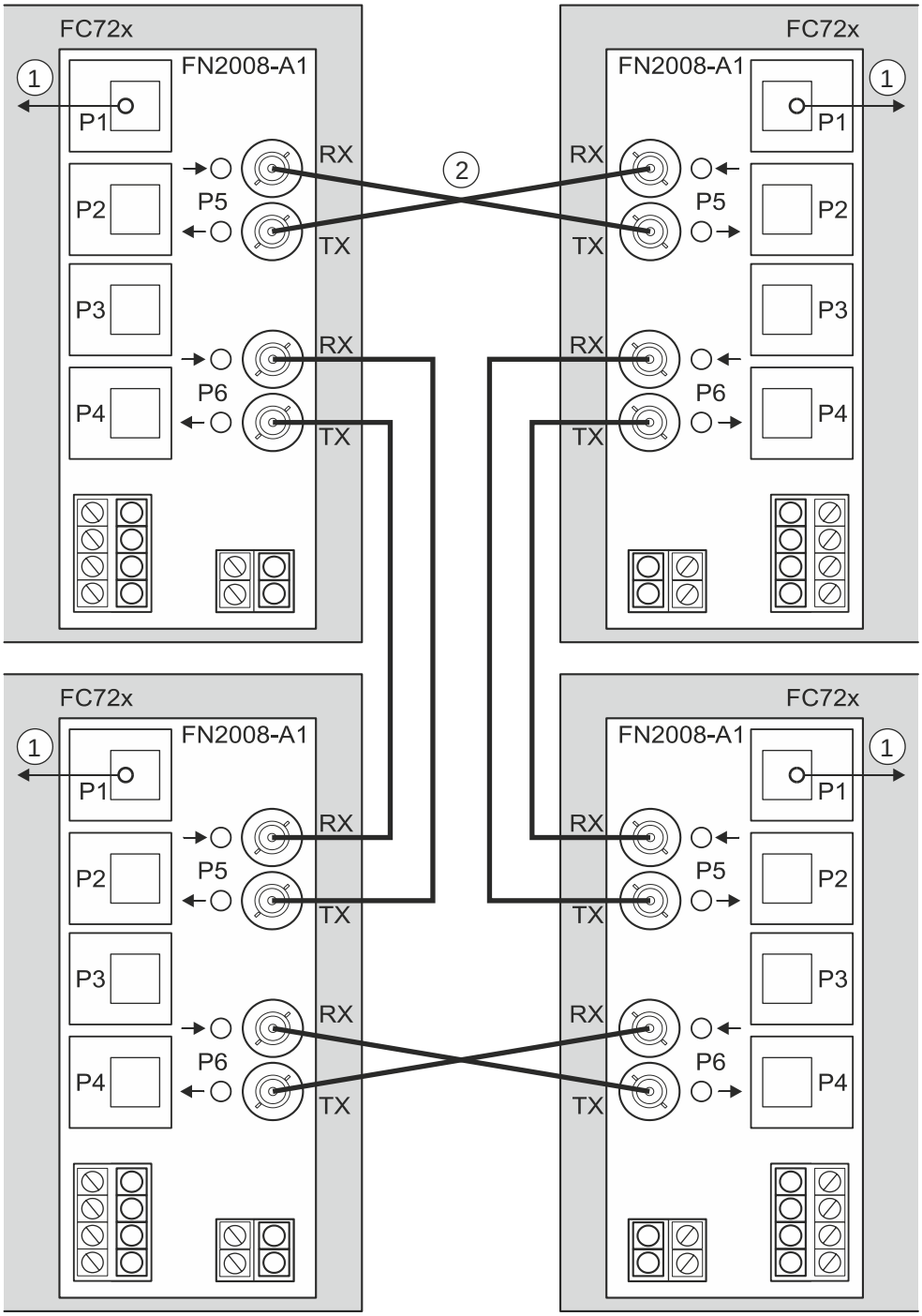


Figure 43: Connecting a fiber optic cable for optical Ethernet with FN2008-A1

1	Ethernet connection to PMI & mainboard
2	Optical Ethernet (loop network)
P1…P4	Electrical Ethernet ports
P5, P6	Optical Ethernet ports
RX	Optical receiver channel
TX	Optical transmission channel

Wiring

⚠ WARNING

Heavily concentrated light

Eye damage

- Do not look into the red light of the transmitter (TX).

- The fiber optic cable is wired cross-wise:

  The optical transmitter (TX) of one port must always be connected to the other switch with the optical receiver (RX) of the other port.
- The bending radius of the fiber optic cable must not be less than 20 mm.

If cabling is being carried out using multiple PMI & mainboards and the FN2008, a loop can be created accidentally. Please observe the following information.

NOTICE

Loop with Ethernet cable

Impairment of system function

- Pay attention to the Ethernet cable connection if you are connecting more than one PMI & mainboard.
- Never connect a port P1…P4 to a port P1…P4.

25.4 Indicators

Standard LED indicators

LED	Color	Function	State	Meaning
F	Red	Fault	Lit up	• Connection fault on one monitored port • Loss of one of the two redundant supplies • C-plug error • Powering up of device, LED lights up for around 20 s
			Flashes	• Internal error. Device may be defective
			Does not light up	• Normal condition
L	Green/ yellow	Line	Lights up green	• Both voltage supplies (L1 and L2) are connected (redundant supply)
			Lights up yellow	• One voltage supply (L1 or L2) is connected (not redundant supply)
			Does not light up	• Voltage supply L1 and L2 are not connected or <14 V
P1 P2 P3 P4 P5 P6	Green/ yellow	Ports	Lights up green	• Powering up of device, LED lights up for around 6 s
			Lights up yellow	• Reception of data • Powering up of device, LED lights up for around 20 s
			Flashes yellow	• Detector screen setting or display
			Flashes green	• The 'Show location' function has been activated via ETHERNET. The button has been pressed for more than 15 s to reset the configuration. • The PROFINET I/O operation with the PN I/O controller has been started. The attempt to change the detector screen by pressing a button is rejected by all port LEDs flashing once.
RM	Green	Redundancy manager	Lights up green	• Redundancy manager is activated
			Flashes green	• Redundancy manager is switched over
			Does not light up	• Redundancy manager is deactivated

Indicators for device powering up

When the device is powering up, the following LEDs light up in the sequence shown:

1. Power LEDs (L) light up as soon as voltage is present.
2. Port LEDs (P1…P6) light up yellow for around 6 s.
3. Port LEDs go out. Once the port LEDs have gone out, the correct link status is displayed after around 2 s.
4. The red fault LED lights up for around 20 s.

The FN2008-A1 is then ready.

25.5 Adjustment elements

25.5.1 Set button

Set button

The 'Set' button can be used to change various settings of the FN2008-A1. Changed settings are retained even after switching off.

Different settings are undertaken depending on how long the button is pressed for.

Six setting phases are possible:

Figure 44: Set button phases

Phase	Time for which button is pressed	Function
1	<3 s	The detector screen currently set is displayed. If no detector screen has been set, all port LEDs flash in turn. If the button is released during phase 1, this will have no ↑ effect.
2	3…6 s	The LEDs of the linked ports flash at 2.5 Hz. If the button is released during phase 2, this will have no effect.
3	6…8 s	The LEDs of the linked ports and the LEDs of the connected voltage supply light up. If the button is released during phase 3, the detector screen is adopted according to the LEDs lit up.
4	8…10 s	The RM LED flashes. If the button is released during phase 4, the redundancy manager is shut down. The redundancy function is however retained. The device switches into 'Automatic redundancy detect' operation mode.
5	10…15 s	The RM LED lights up. If the button is released during phase 5, the redundancy function is activated and the device configured as HSR manager.
6	>15 s	All LEDs flash. The device is reset to the factory setting.

25.5.2 C-plug (option)

The C-plug is an optional removable medium for storing the FN2008-A1's configuration data. When replacing the device, the configuration data can be easily transferred by removing the C-plug.

The C-plug is optional and must be ordered separately. You will find the details for ordering in document A6V10210362.

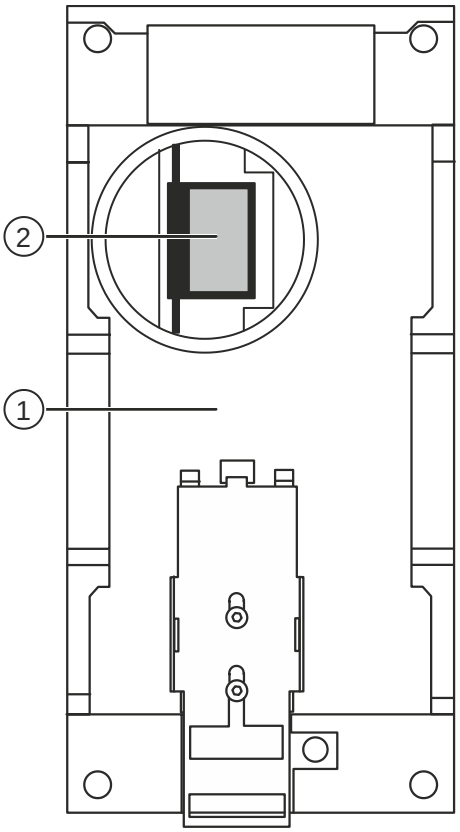


Figure 45: View from rear with C-plug cover open

1 Rear of housing

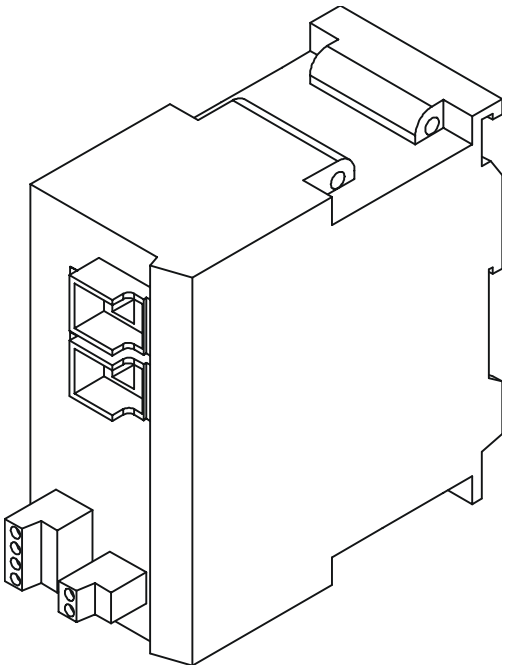
2 C-plug (option)

25.6 Technical data

Supply input	Voltage inputs	DC 18…32 V each, decoupled
	Operating current	Max. 215 mA
Ethernet interface	Sockets	4 x RJ45, 10/100 Mbit/s
	Length of line	Max. 100 m via FC TP standard cable
Optical interfaces	Sockets	4 x ST plug connector
	Transmission speed	100 Mbit/s
	Transmission mode	Full duplex
	Type of line	• Multimode, 1310 nm • Type of fiber 50/125 µm and 62.5/125 µm • Optical budget 6 dB • Range max. 3000 m (1 db/km)
Connections	Power supply inputs	4-pin terminal
	Optical connections	4 x ST plug connector
	Detector contact	1
	Connection	2-pin terminal
	Load	Max. 100 mA can be loaded
	Monitored for	• Internal error • Error in voltage supply
Mechanical data	Dimensions (W x H x D)	60 x 125 x 124 mm
Ambient conditions	Storage temperature	-40…+70 °C
	Operating temperature	-40…+60 °C
	Rel. humidity in operation	95%, non-condensing
	Protection category	IP30

FN2008-A1 is class A equipment and may cause radio interference in residential areas. If interference does occur, observe the modifications to wiring in document A6V10210390, Installation.

26 Security module (firewall) FN2009-A1



26.1 Description

The Security module (firewall) FN2009-A1 is a firewall router for securely decoupling the Ethernet network with an external network. The firewall protection can extend over the operation of individual ↑ stations, several stations, or entire network segments. FN2009-A1 also offers secure access via VPN channels.

The FN2009-A1 splits networks into two areas.

- Internal network as protected area
- External network as area outside the protected nodes

The FN2009-A1 has two RJ45 interfaces for connecting to the electric Ethernet and one detector contact. FN2009-A1 is supplied by the system supply of the station in which the FN2009-A1 is fitted. If the FN2009-A1 is fitted in a separate housing, it is supplied from the station located right next to the separate housing.

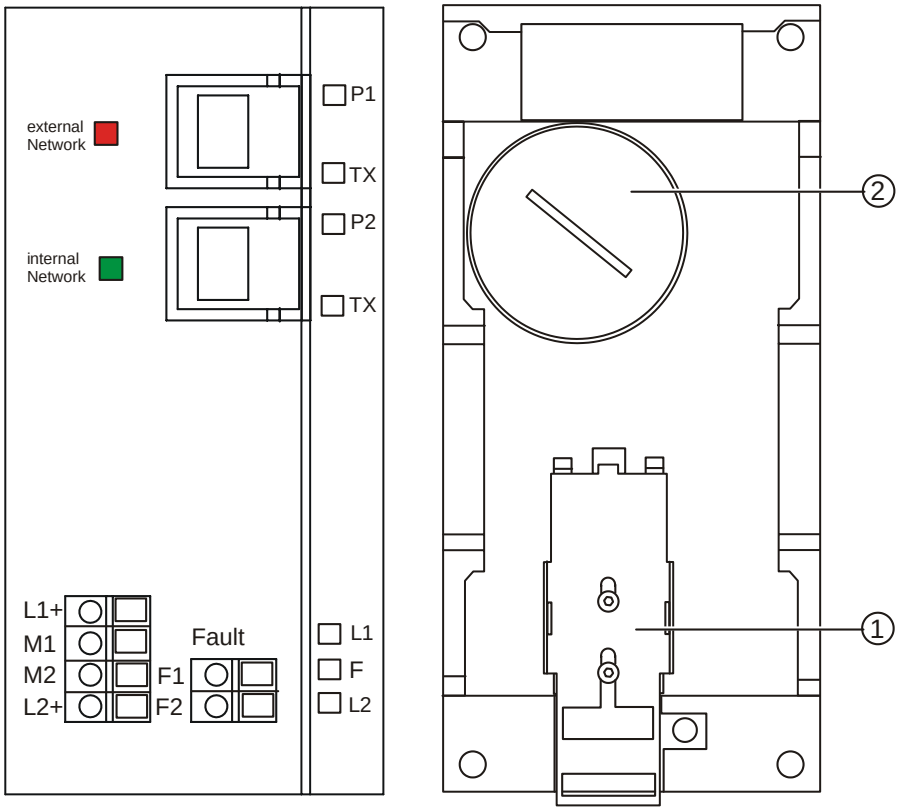
Properties

- Two potential-free Ethernet interfaces via RJ45 connections (electric Ethernet)
- Secure protection offered by firewall function
- Connection of internal and external networks via NAT/NAPT router
- Secure communication with VPN via IPsec tunnel
- Automatic negotiation, i.e. connection parameters are negotiated automatically with the activated network nodes
- Autocrossing function, i.e. no crossed Ethernet cables are needed
- Configuration data saved with encryption on interchangeable C-plug (optional removable medium)
- Screw terminal for potential-free detector contact for internal errors and errors in the voltage supply
- Mounting on DIN rail or wall-mounted
- Robust housing with IP30 protection category
- Two supply inputs for optional, redundant supply (for EN 54-compliant sites, it is sufficient to use one supply input only)

You will find detailed information about the FN2009-A1 on the data sheet and in the description supplied by the manufacturer.

You will find the configuration procedure in document A6V10210416.

26.2 Views



Element	Position	Function
Connectors and terminals	P1	Ethernet port 1, external network
	P2	Ethernet port 2, internal protected network
	Fault	Connector strip for detector contact
		Connector strip for supply
	L1+, L2+	Vsys + supply connections
	M1, M2	Vsys - supply connections
LEDs	P1	Function display port 1
	P2	Function display port 2
	TX	Data output display
	L1	Voltage supply 1
	L2	Voltage supply 2
	F	Error display (detector contact)
Back	1	Locking fastener for DIN rail
	2	Screw-on cover for C-plug (option) and reset key

26.3 Pin assignments

26.3.1 Connector strip for supply

Pin	Designation	Description
1	L1+	Supply input 1 (+DC 24 V)
2	M1	Supply input 1 (DC 0 V)
3	M2	Redundant supply input 2 (DC 0 V), optional
4	L2+	Redundant supply input 2 (+DC 24 V), optional

The L1+/M1 and L2+/M2 connections are designed for redundant supply and are not plated-through. Use of the redundant L2+/M2 supply inputs is optional and not necessary for EN-54 compatibility.

26.3.2 Connector strip for detector contact

The detector contact is a potential-free relay contact which can be used to report error states by interrupting contact.

The following errors can be signaled by the detector contact:

- Error in voltage supply
- Internal error

The detector contact remains activated until the error is rectified.

The detector contact is always activated (opened) by switching off the FN2009-A1.

Pin	Designation	Description
1	F1	Detector contact 1
2	F2	Detector contact 2

26.4 Indicators

LED indicators

LED	Color	Function	State	Meaning
F	Multi-colored	Fault	Lights up red	Module recognizes an error (detector contact is open) The following errors are recognized: • Internal error (e.g. start-up failed) • Invalid C-Plug (invalid formatting)
			Lights up green	Module is in productive mode (detector contact closed)
			Does not light up	Module has failed, no supply (detector contact is open)
			Lights up yellow	Module is powering up (detector contact open) If there is no IP address, the module remains in this status
			Flashes yellow/red	Module resets to factory status (detector contact open)
L1 L2	Green/red	Line	Lights up green	Voltage supply is connected
			Does not light up	Voltage supply is not connected or is less than DC 14 V
			Lights up red	Voltage supply failed during operation or fell below DC 14 V
P1 P2	Green/yellow	Ports	Lights up green	Link present
			Flashes or lights up yellow	Data received on RX
			Does not light up	No link, no data received
TX	Yellow	Redundancy manager	Flashes or lights up yellow	Data being transmitted
			Does not light up	No data being transmitted

26.5 Adjustment elements

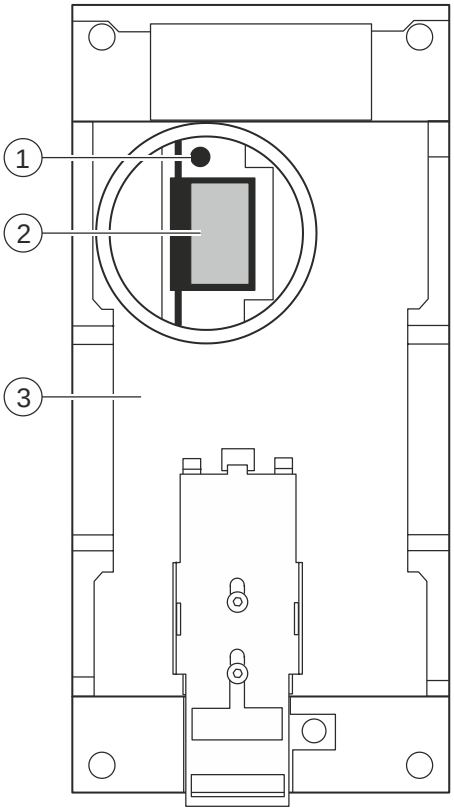


Figure 46: View from rear with C-plug cover open

1 Rear of housing
2 C-plug (option)
3 Reset button

Reset button

The Reset button is above the C-plug and has two functions:

- Restart
  The module is restarted. The loaded configuration is retained.
  – Press the Reset button for less than 5 seconds.
  – The module is restarted.
  – The fault LED lights up yellow. A restart takes around 2 minutes.
  – After the restart, the fault LED lights up green.
- Reset the configuration to the factory settings
  The module is restarted and reset to its original state. The loaded configuration is deleted.
  – Press the Reset button until the fault LED flashes yellow/red (press for more than 5 seconds).
  – After resetting, the module restarts automatically. The fault LED lights up yellow.
  – After the restart, the fault LED lights up green.

C-plug (option)

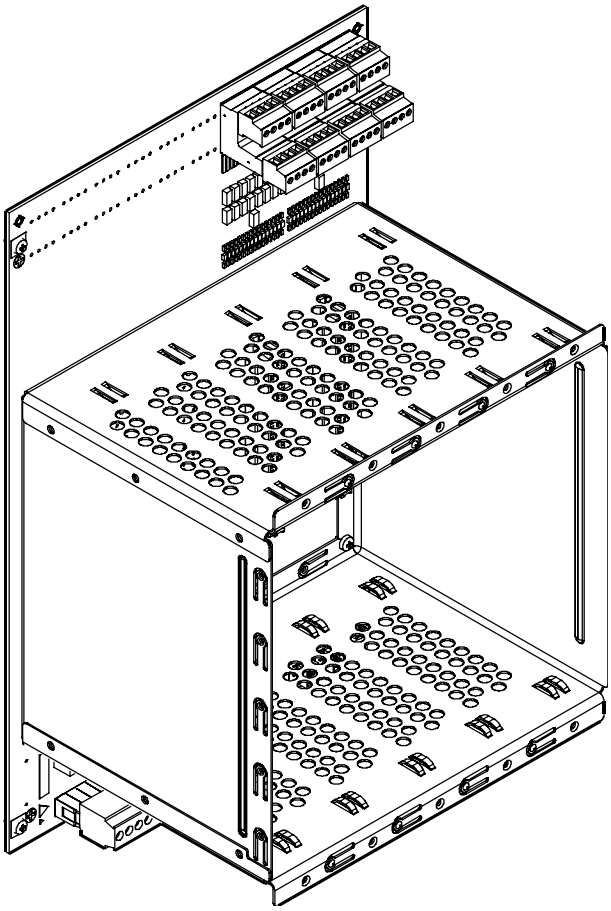
The C-plug is an optional removable medium for storing the FN2009-A1's configuration data. When replacing the device, the configuration data can be easily transferred by removing the C-plug. The C-plug must be ordered separately. You will find details on this in document A6V10210362.

26.6 Technical data

Supply input	Voltage inputs	DC 18…32 V each, decoupled
	Operating current	Max. 250 mA
Ethernet	Bushes	2 x RJ45, 10/100 Mbit/s, automatic sensing • Red port = external network • Green port = internal network
	Length of line	Max. 100 m via FC TP standard cable
Connections	Power supply inputs	4-pin terminal
	Detector contact	
	Connection	2-pin terminal
	Load	Max. 100 mA can be loaded
	Monitored for	• Internal error • Error in voltage supply
Software outline quantities	Firewall function	Max. 256 standard rates
	VPN function	Max. 64 channels (IPsec tunnels or not encrypted)
Mechanical data	Dimensions (W x H x D)	60 x 125 x 124 mm
	Weight	780 g
Ambient data	Storage temperature	-40…+80 °C
	Operating temperature	0…+60 °C
	Rel. humidity during operation	95 %, non-condensing
	Protection category	IP30

FN2009-A1 is class A equipment and may cause radio interference in residential areas. If interference does occur, observe the modifications to wiring in document A6V10210390, Installation.

27 Card cage (2 slots) FCA2007-A1



27.1 Description

The card cage (2 slots) FCA2007-A1 is installed in the fire control panel FC723 as standard. The card cage (2 slots) makes it possible to expand the fire control panel FC723 with module bus cards.

The card cage has the following features:

- Two slots for module bus cards
- Terminal strips for external connections of the module bus cards
- Internal module bus connection to connection module (card cage) FCA2006-A1 on the PMI & mainboard
- Control and line part is electrically isolated
- Easy mounting of the module bus cards by plugging in
- Extensive EMC protection thanks to enclosed metal housing
- Automatic recognition and addressing of the inserted module bus cards

27.2 Views of card cage (2 slots)

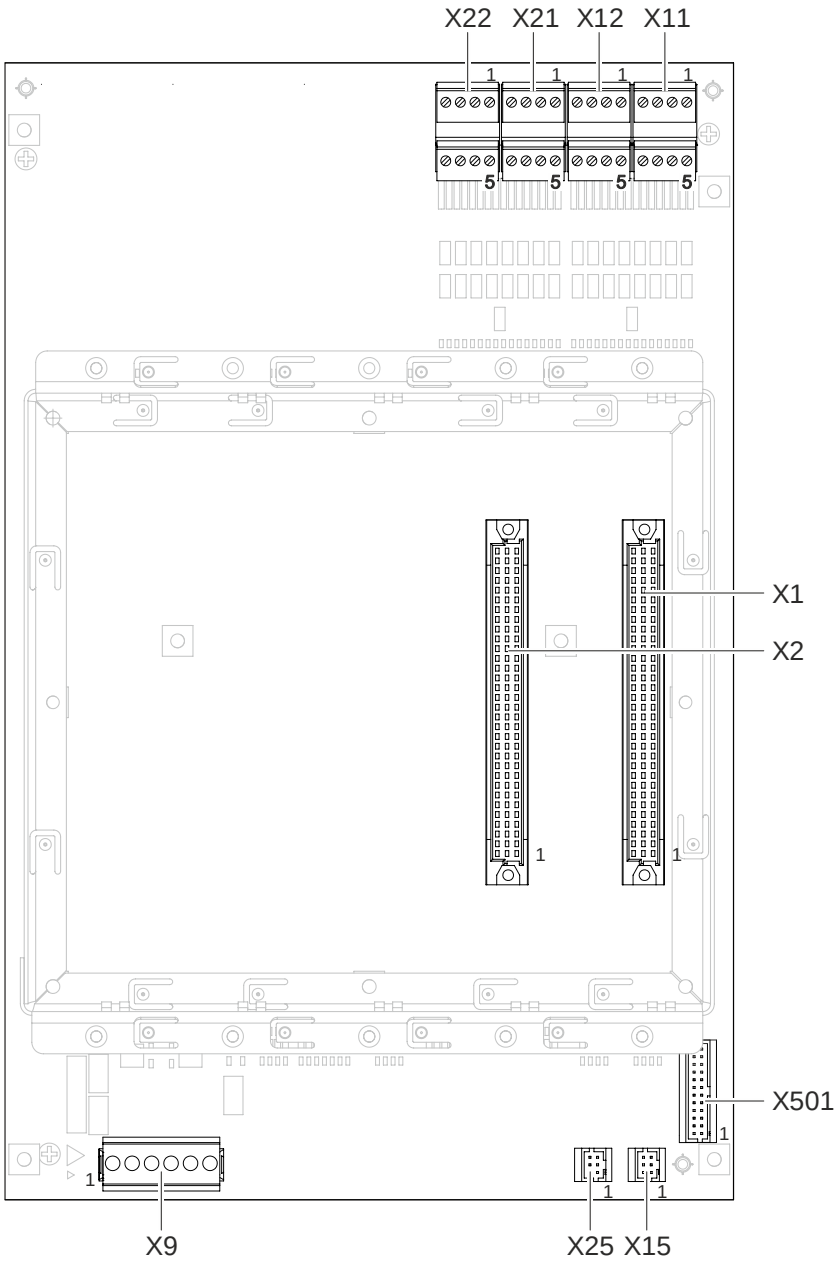


Figure 47: PCB view of card cage (2 slots) FCA2007-A1

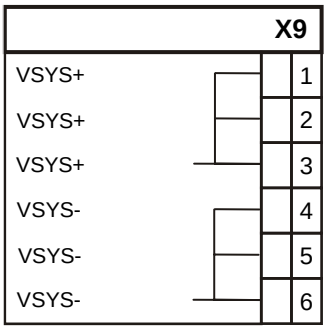
Element	Des.	Function
Slots	X1	Connector strip for module bus card 1
	X2	Connector strip for module bus card 2
Connection terminals	X9	System supply connection
	X11	Connection terminals for module bus card 1
	X12	Connection terminals for module bus card 1
	X21	Connection terminals for module bus card 2
	X22	Connection terminals for module bus card 2
Connector Degraded mode	X15	Connector for degraded mode indicator [AT] of module bus card 1
	X25	Connector for degraded mode indicator [AT] of module bus card 2
Internal bus	X501	Connector for module bus input

27.3 Pin assignments

27.3.1 X9 supply

Pin	Designation	Description
1	VSYS+	System supply (+)
2	VSYS+	System supply (+)
3	VSYS+	System supply (+)
4	VSYS-	System supply (–)
5	VSYS-	System supply (–)
6	VSYS-	System supply (–)

Admissible cable cross-section: 0.2…2.5 mm²



27.3.2 X11…X22 connection terminals for the module bus cards

The module bus card determines the PIN assignment of the four connectors. You will find the pin assignments in the description of the corresponding module card.

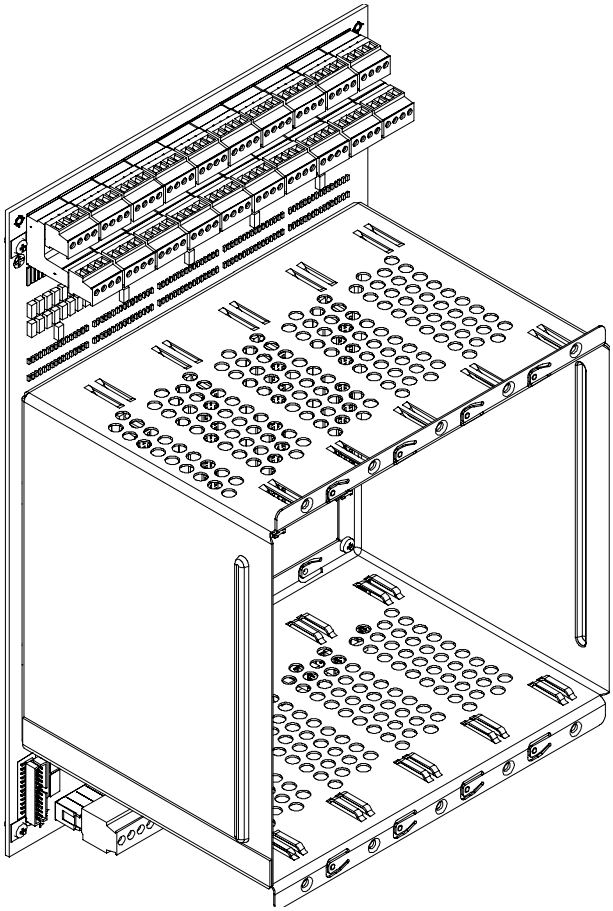
The assignment of the connector is:

- Connections of module bus card 1 are on connectors X11 and X12
- Connections of module bus card 2 are on connectors X21 and X22

27.4 Technical data

Plug-in units	Slots	Max. 2 modernization cards
Supply	Operating voltage	DC 20…30 V
	Operating current	Max. 8 A
	Permitted cable cross section (plug X9) screw terminals	0.5…2.5 mm²
Connections	Total current of all module bus cards	Max. 8 A
	I/O	Max. 2 A
	Permitted cable cross section of the screw terminals (connector X11…X22)	0.14…1.5 mm²
Mechanical data	Dimensions (L x W x H)	298 x 192 x 140 mm
	Weight	1030 g
	Shielding	Housing with cover: Steel sheet
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

28 Card cage (5 slots) FCA2008-A1



28.1 Description

The card cage (5 slots) FCA2008-A1 is installed in the fire control panel FC726. The card cage makes it possible to expand the fire control panel with additional module bus cards.

The card cage has the following features:

- Five slots for module bus cards (C-NET and I/O card)
- Terminal strips for external connections of the module bus cards
- Internal module bus connection to connection module (card cage) FCA2006-A1 on the PMI & mainboard
- Control and line part is electrically isolated
- Easy mounting of the module bus cards by plugging in
- Extensive EMC protection thanks to enclosed metal housing
- Automatic recognition and addressing of the inserted module bus cards

28.2 Views of card cage (5 slots)

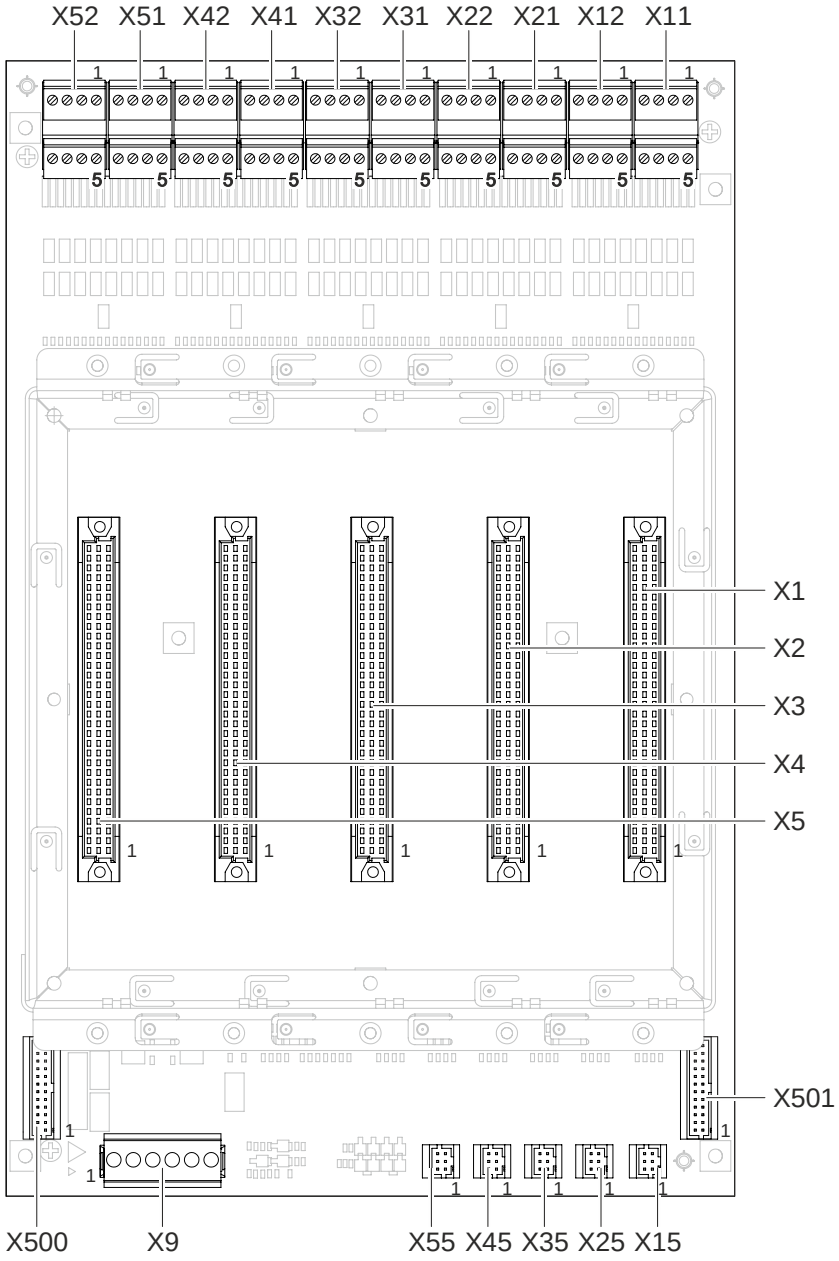


Figure 48: PCB view of card cage (5 slots) FCA2008-A1

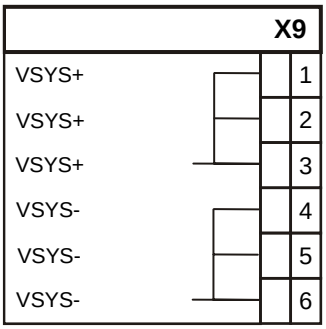
Element	Des.	Function
Slots	X1	Connector strip for module bus card 1
	X2	Connector strip for module bus card 2
	X3	Connector strip for module bus card 3
	X4	Connector strip for module bus card 4
	X5	Connector strip for module bus card 5
Connection terminals	X9	System supply connection
	X11	Connection terminals for module bus card 1
	X12	Connection terminals for module bus card 1
	X21	Connection terminals for module bus card 2
	X22	Connection terminals for module bus card 2
	X31	Connection terminals for module bus card 3
	X32	Connection terminals for module bus card 3
	X41	Connection terminals for module bus card 4
	X42	Connection terminals for module bus card 4
	X51	Connection terminals for module bus card 5
	X52	Connection terminals for module bus card 5
Connector Degraded mode	X15	Connector for degraded mode indicator [AT] of module bus card 1
	X25	Connector for degraded mode indicator [AT] of module bus card 2
	X35	Connector for degraded mode indicator [AT] of module bus card 3
	X45	Connector for degraded mode indicator [AT] of module bus card 4
	X55	Connector for degraded mode indicator [AT] of module bus card 5
Internal bus	X500	Connector for module bus output to other card cages
	X501	Connector for module bus input

28.3 Pin assignments

28.3.1 X9 supply

Pin	Designation	Description
1	VSYS+	System supply (DC 24 V)
2	VSYS+	System supply (DC 24 V)
3	VSYS+	System supply (DC 24 V)
4	VSYS-	System supply (0 V)
5	VSYS-	System supply (0 V)
6	VSYS-	System supply (0 V)

Admissible cable cross-section: 0.5…2.5 mm²



28.3.2 X11…X52 connection terminals for the module bus card

The module bus card determines the PIN assignment of the four connectors. You will find the pin assignments in the description of the corresponding module card.

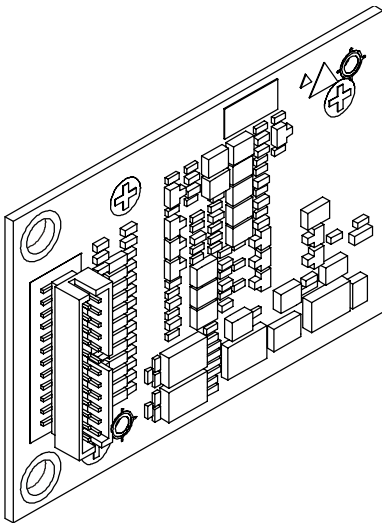
The assignment of the connector is:

- Connections of module bus card 1 are on connectors X11 and X12
- Connections of module bus card 2 are on connectors X21 and X22
- Connections of module bus card 3 are on connectors X31 and X32
- Connections of module bus card 4 are on connectors X41 and X42
- Connections of module bus card 5 are on connectors X51 and X52

28.4 Technical data

Plug-in units	Slots	Max. 5 module bus cards
Supply	Operating voltage	DC 20…30 V
	Operating current	Max. 8 A
	Permitted cable cross section (plug X9) screw terminals	0.5…2.5 mm²
Connections	Total current of all module bus cards	Max. 8 A
	I/O	Max. 2 A
	Permitted cable cross section of the screw terminals (connector X11…X52)	0.14…1.5 mm²
Mechanical data	Dimensions (L x W x H)	298 x 192 x 140 mm
	Weight	1160 g
	Shielding	Housing with cover: Steel sheet
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

29 Connection module (card cage) FCA2006-A1



29.1 Description

The connection module (card cage) FCA2006-A1 is used as an interface for the internal module bus to the card cage. The connection module in fire control panels FC723 and FC726 is installed as standard on the PMI & mainboard and has the following features:

- Connections for a module bus output
- Integrated degraded mode function
- Electrical isolation between the module bus and the station
- Ground fault monitoring

29.2 Views

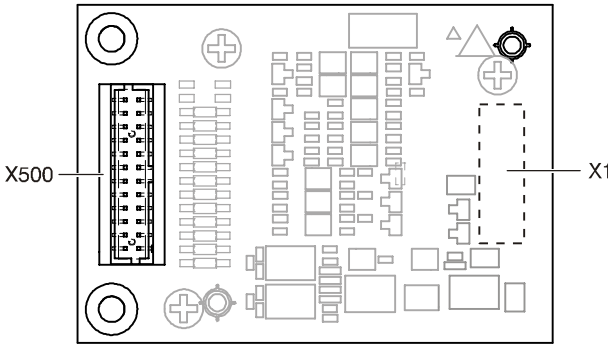


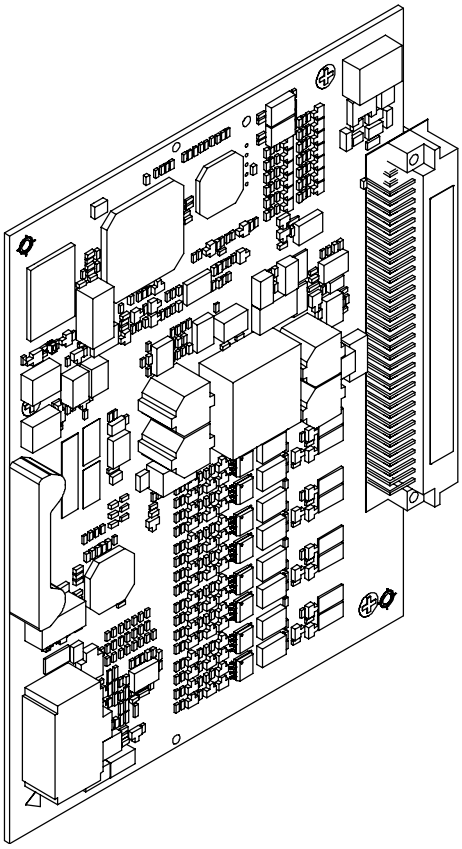
Figure 49: Printed circuit board view of connection module FCA2006-A1

X1	Connector to the PMI & mainboard (connector on rear panel)
X500	Connector for ribbon cable to card cage

29.3 Technical data

Supply input	Voltage	3.3 V from PMI & mainboard
	Operating current	Max. 50 mA
Module bus (X500)	Connections to the card cage	24-pin ribbon cable
	Emergency signals	• Degraded mode signals • # NA_MAIN • # HORN_MAIN • # HS_MAIN • # NB_MAIN • # NA_FROM_MODULE_BUS
	HDLC signals	• HDLC_CLK • Clock frequency 500 Hz • HDLC_DATA
	Time synchronization	• # TIME_SYNC
Mechanical data	Dimensions (L x W x H)	70 x 50 x 10 mm
	Weight	20 g

30 Line card (FDnet / C-NET) FCL2001-A1



30.1 Description

The ↑ line card (FDnet / C-NET) FCL2001-A1 is a line card in addition to the integrated line cards of the FS720 fire control panels. It is used in fire control panels with a card cage. The line card (FDnet / C-NET) has an integrated ↑ line driver that can be used for connecting up to four ↑ loops and 252 C-NET devices. The maximum possible number of addresses per loop is 252.

The line card consists of a control part and a line driver that is electrically isolated. The functionality of the line card (FDnet/C-NET) corresponds to the integrated line driver of the fire control panel FC722 with a loop extension (C-NET).

The line card (FDnet/C-NET) has the following features:

- Connection of four C-NET loops or eight stubs (mixed variants are possible)
- Maximum of 252 device addresses per loop
- Maximum of 252 device addresses per line card
- Electrical isolation of the C-NET lines

30.2 Views

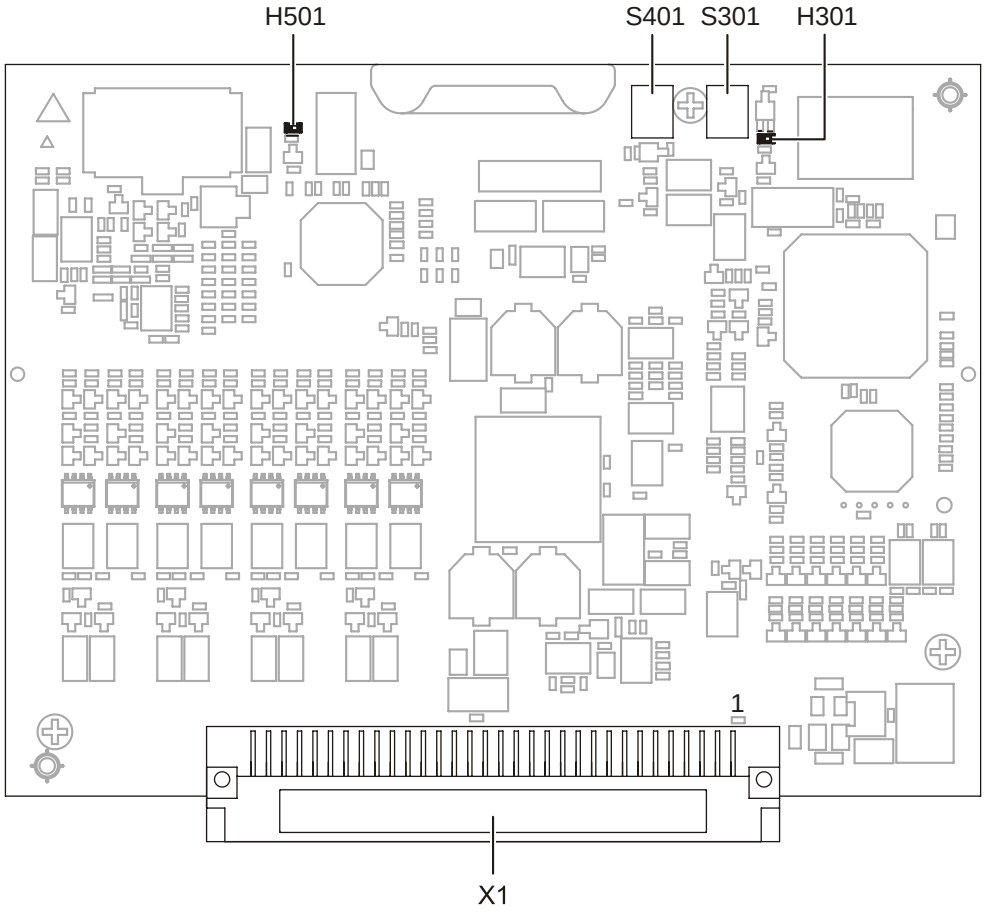


Figure 50: Printed circuit board view of line card (FDnet / C-NET) FCL2001-A1

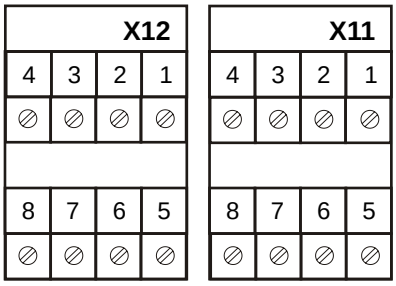
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication element	H301	Status of module bus driver
Indication element	H501	Status of line driver
Button	S301	Reset for module bus driver
Button	S401	Reset for ↑ line driver

30.3 Pin assignments

30.3.1 Connection terminals of line card (FDnet/C-NET) in card cage

The ↑ line card (FDnet / C-NET) FCL2001-A1 determines the PIN assignment of the four connection terminals in the card cage.

External connections on the card cage using the example of module bus card 1 with the associated connection terminals X11 and X12:



- The external connections of module bus card 2 are on connection terminals X21 and X22
- The external connections of module bus card 3 are on connection terminals X31 and X32
- The external connections of module bus card 4 are on connection terminals X41 and X42
- The external connections of module bus card 5 are on connection terminals X51 and X52

Depending on the card cage, not all slots may be available for module bus cards and connection terminals. However, the numbering and assignment of the connection terminals are identical on all card cages.

Connector	Pin	Signal	Connection	↑ Loop	↑ Stub
X11	1	IO_1	Loop1_1+	Loop 1	Stub 1
	2	IO_2	Loop1_1-		
	3	IO_3	Loop1_2+		Stub 2
	4	IO_4	Loop1_2-		
X12	1	IO_5	Loop2_1+	Loop 2	Stub 3
	2	IO_6	Loop2_1-		
	3	IO_7	Loop2_2+		Stub 4
	4	IO_8	Loop2_2-		
X11	5	IO_9	Loop3_1+	Loop 3	Stub 5
	6	IO_10	Loop3_1-		
	7	IO_11	Loop3_2+		Stub 6
	8	IO_12	Loop3_2-		
X12	5	IO_13	Loop4_1+	Loop 4	Stub 7
	6	IO_14	Loop4_1-		
	7	IO_15	Loop4_2+		Stub 8
	8	IO_16	Loop4_2-		

Admissible cable cross-section: 0.2…1.5 mm²

30.4 Indicators

LED	Color	Function	State	Meaning
H301	Yellow	Status of module bus driver	Off	Normal condition
			Flashes slowly	Degraded mode
			1 x flashing (every 2 s)	Update begins
			2 x flashing (every 2 s)	Update running
			3 x flashing (every 2 s)	Update failed
			Flashes rapidly	Checksum error in Flash memory Update required
H501	Yellow	Status of line driver	Off	Passive (↑ normal operation)
			1 x flashing (every 2 s)	Failsafe active (communication to PMI interrupted)
			2 x quickly flashing (every 2 s)	Failsafe active + local alarm
			1 x flashing (every 1 s)	Failsafe active + indication (local alarm)
			1 x flashing (every 1 s) and 2 x quickly flashing (every 2 s)	Failsafe active + local alarm + indication
			Lit up	Startup problems C-NET module 2 (clock)

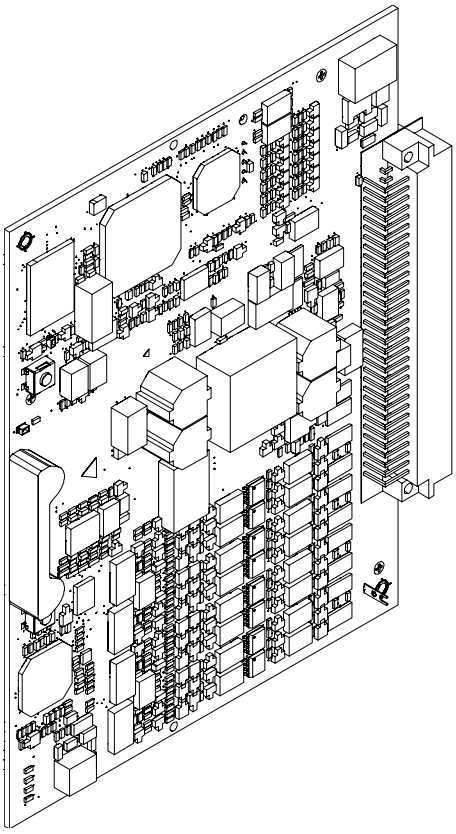
30.5 Adjustment elements

Button	Meaning	Function
S301	Reset for module bus driver	Resets module bus card
S401	Reset for ↑ line driver	Resets line driver

30.6 Technical data

Supply input	Voltage	DC 20…30 V
	Current	Max. 0.8 A
Detector line	Output voltage	Max. DC 33 V
	Output current (total)	Max. 0.5 A
	Plug-type connection for card cage	
	Addressable devices	Max. 252
	Connectable lines	4 loops or 8 stubs (mixed variants are possible)
	Protocol	C-NET
	Cable types	All types (recommended: twisted); for detailed specifications, see document A6V10210362
	Monitored for	• Ground fault • Short-circuit • Open line • Line capacitance
	Design	• Short-circuit-proof • Overvoltage protection (on card cage)
Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	119 g
Ambient conditions	Operating temperature	Min. -5 °C max. +70 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

31 Line card (SynoLOOP) FCL7201-Z3



31.1 Description

The line card (SynoLOOP) FCL7201-Z3 is a module bus card for installation in fire control panels with a card cage.

Four loops or four stubs can be connected to the line card (SynoLOOP). 128 devices can be connected per loop

Properties

- Supplies the detector devices via the detector line
- A maximum of 128 SynoLOOP devices per loop
- Maximum loop length 2000 m
- Device types that can be connected: Automatic fire detectors, manual call points and I/O devices
- Monitors for short-circuit and open line

31.2 Views

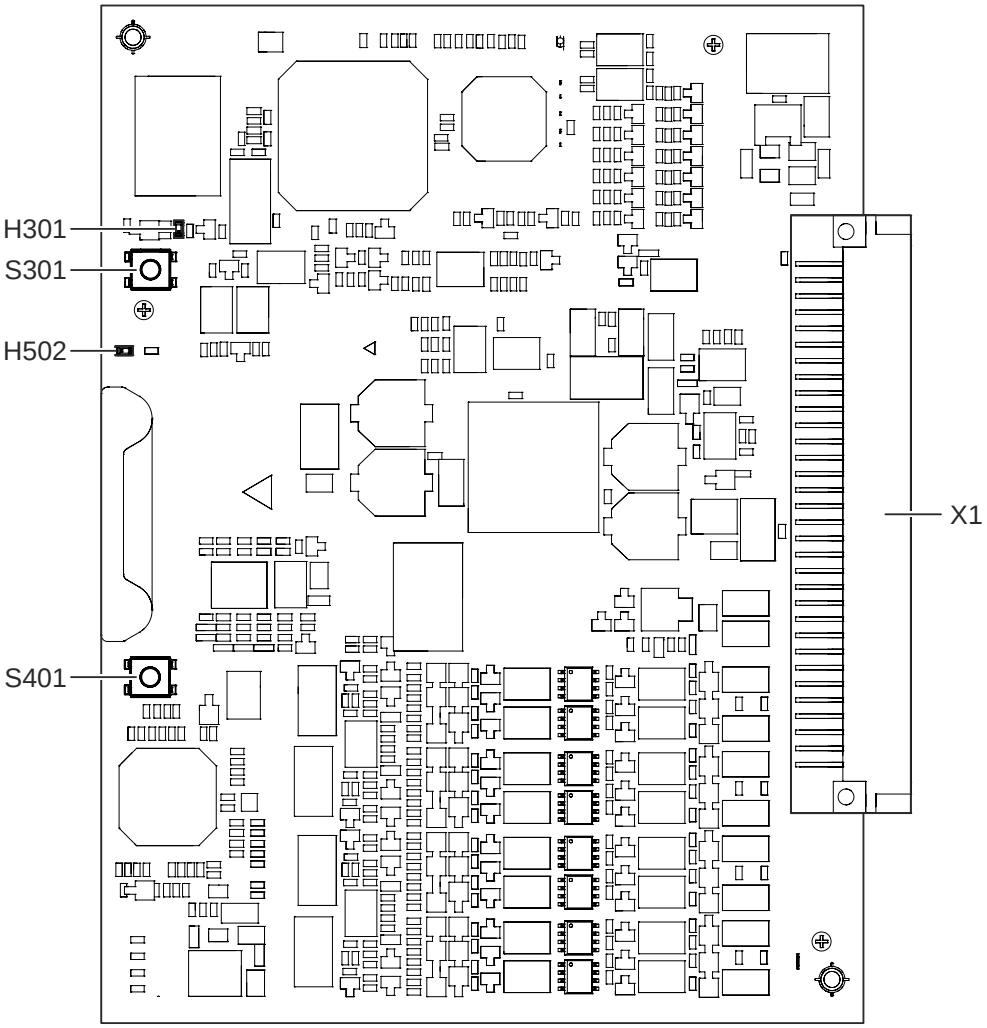


Figure 51: PCB view of the line card (SynoLOOP) FCL7201-Z3

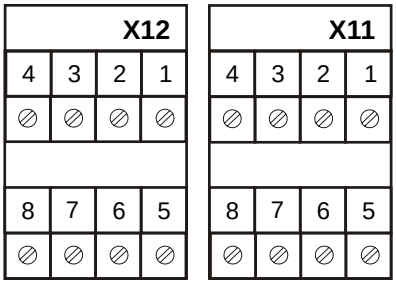
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication element	H301	Status of module bus driver
	H502	Status of line driver
Button	S301	Reset for module bus driver
	S401	Reset for line driver

31.3 Pin assignments

31.3.1 Connection terminals of line card (SynoLOOP) in card cage

The line card (SynoLOOP) FCL7201-Z3 determines the PIN assignment of the four connection terminals in the card cage.

External connections on the card cage using the example of module bus card 1 with the associated connection terminals X11 and X12:



- The external connections of module bus card 2 are on connection terminals X21 and X22
- The external connections of module bus card 3 are on connection terminals X31 and X32
- The external connections of module bus card 4 are on connection terminals X41 and X42
- The external connections of module bus card 5 are on connection terminals X51 and X52

Depending on the card cage, not all slots may be available for module bus cards and connection terminals. However, the numbering and assignment of the connection terminals are identical on all card cages.

Connector	Pin	Signal	Connection	Loop	Stub
X11	1	IO_1	C11_POS	Loop 1	Stub 1
	2	IO_2	C11_NEG		
	3	IO_3	C12_POS		(Stub 1) [1]
	4	IO_4	C12_NEG		
X12	1	IO_5	C21_POS	Loop 2	Stub 2
	2	IO_6	C21_NEG		
	3	IO_7	C22_POS		(Stub 2) [1]
	4	IO_8	C22_NEG		
X11	5	IO_9	C31_POS	Loop 3	Stub 3
	6	IO_10	C31_NEG		
	7	IO_11	C32_POS		(Stub 3) [1]
	8	IO_12	C32_NEG		
X12	5	IO_13	C41_POS	Loop 4	Stub 4
	6	IO_14	C41_NEG		
	7	IO_15	C42_POS		(Stub 4) [1]
	8	IO_16	C42_NEG		

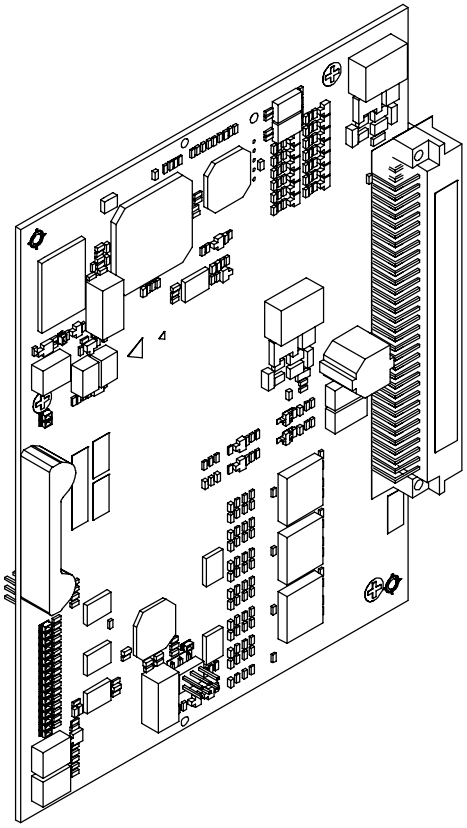
Admissible cable cross-section: 0.2…1.5 mm²

[1] Only one stub may be connected to each of the connections C1x to C4x.

31.4 Technical data

Supply input	Voltage	DC 20…30 V
	Current	Max. 0.8 A
Detector line	Output voltage	Max. DC 28 V
	Output current (per loop)	Max. 0.11 A
	Plug-type connection for card cage	
	Number of devices that can be addressed per loop	Max. 128
	Total number of devices that can be addressed	Max. 512
	Connectable lines	4 loops or 4 stubs, mixed variants possible
	Protocol	SynoLOOP
	Cable types	All, recommended: twisted. For detailed specifications, see document A6V10210362
	Monitored for	• Ground fault • Short-circuit • Open line • Overvoltage protection (on card cage)
Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	121 g
Ambient conditions	Operating temperature	Min. -5 °C max. +70 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

32 I/O card (programmable) FCI2008-A1



32.1 Description

The I/O card (programmable) FCI2008-A1 has programmable inputs/outputs for extending the inputs/outputs integrated on the periphery board with the FC723 and FC726.

The I/O card (programmable) has the following features:

- Twelve programmable inputs/outputs
- Two supply outputs
- Configurable failsafe behavior during degraded mode.

32.2 Views

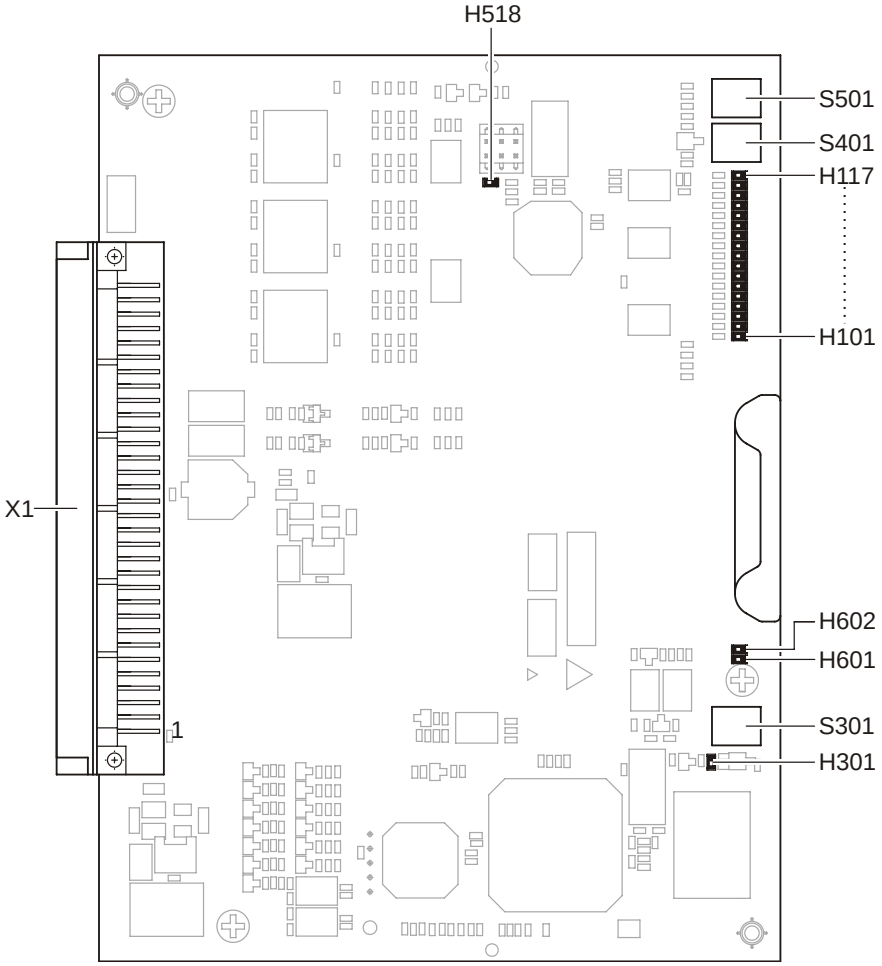


Figure 52: Printed circuit board view I/O card FCI2008-A1

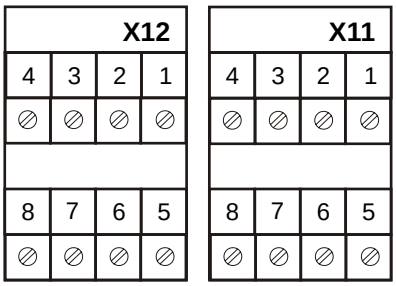
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication elements	H101…H112	Indication I/O 1…12
Indication elements	H113…H116	Status display
Indication element	H117	Degraded mode indicator
Indication element	H301	Status of module bus driver
Indication element	H518	Signal block
Indication element	H601/H602	Error display
Button	S301	Reset for module bus driver (if fitted)
Button	S401	Reset for ↑ line driver (if fitted)
Button	S501	Status/direction switchover

32.3 Pin assignments

32.3.1 Connection terminals for the I/O card (programmable) in the card cage

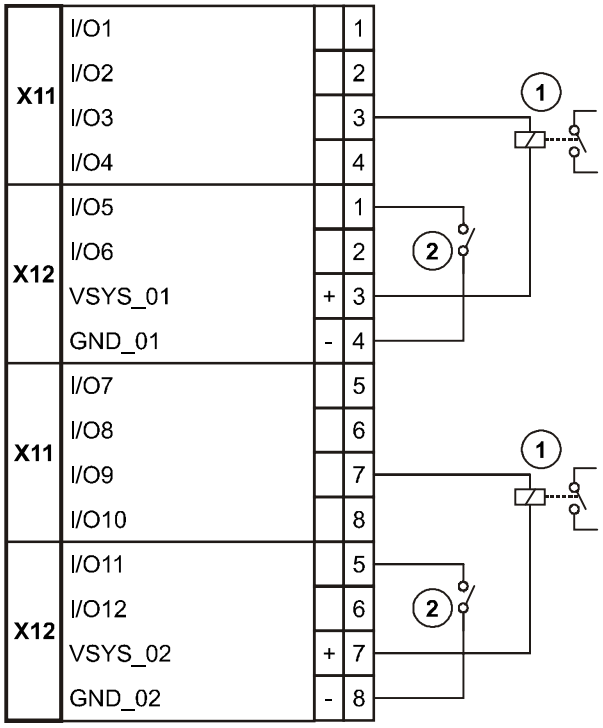
The I/O card (programmable) FCI2008-A1 determines the PIN assignment of the four connection terminals in the card cage.

External connections on the card cage using the example of module bus card 1 with the associated connection terminals X11 and X12:



- The external connections of module bus card 2 are on connection terminals X21 and X22
- The external connections of module bus card 3 are on connection terminals X31 and X32
- The external connections of module bus card 4 are on connection terminals X41 and X42
- The external connections of module bus card 5 are on connection terminals X51 and X52

Depending on the card cage, not all slots may be available for module bus cards and connection terminals. However, the numbering and assignment of the connection terminals are identical on all card cages.



Connector	Pin	Designation	Description
X11	1	IO_1	Configurable input/output 1
	2	IO_2	Configurable input/output 2
	3	IO_3	Configurable input/output 3
	4	IO_4	Configurable input/output 4
X12	1	IO_5	Configurable input/output 5
	2	IO_6	Configurable input/output 6
	3	VSYS_01	Supply output 1 (+)
	4	GND_01	Supply output 1 (–)
X11	5	IO_7	Configurable input/output 7
	6	IO_8	Configurable input/output 8
	7	IO_9	Configurable input/output 9
	8	IO_10	Configurable input/output 10
X12	5	IO_11	Configurable input/output 11
	6	IO_12	Configurable input/output 12
	7	VSYS_02	Supply output 2 (+)
	8	GND_02	Supply output 2 (–)

Admissible cable cross-section: 0.2…1.5 mm²

32.4 Indicators

Inputs/outputs

LED	Color	Function	State	Description	Direction
H101	Green	IO_1	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H102	Green	IO_2	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H103	Green	IO_3	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H104	Green	IO_4	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H105	Green	IO_5	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H106	Green	IO_6	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H107	Green	IO_7	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H108	Green	IO_8	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H109	Green	IO_9	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H110	Green	IO_10	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H111	Green	IO_11	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT
H112	Green	IO_12	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT

Status and error displays

LED	Color	Function	State	Description
H113	Green	IO_FAULT_1	Off	n.o. (normal operation)
			On	I/O fault, I/O 1…4 (over temp. over current)
H114	Green	IO_FAULT_2	Off	n.o. (normal operation)
			On	I/O fault, I/O 5 … 8 (over temp. over current)
H115	Green	IO_FAULT_3	Off	n.o. (normal operation)
			On	I/O fault, I/O 9 … 12 (over temp. over current)
H116	Green	IO_DIR	Off	Status indicator (button S501)
			On	Direction indicator (button S501)
H301	Yellow	Signal from HCS12	Off	Active
			On	Inactive
H518	Yellow	Signal block	Off	Inactive
			On	Active
H601	Orange	SI_DEF_24V_1	Off	n.o. (normal operation)
			On	Fuse fault (R662)
H602	Orange	SI_DEF_24V_2	Off	n.o. (normal operation)
			On	Fuse fault (R663)

Degraded mode indicator

LED	Color	Function	State	Description
H117	Green	Failsafe UART	Off	Passive (↑ normal operation)
			Flashing (every 2 s)	Failsafe active

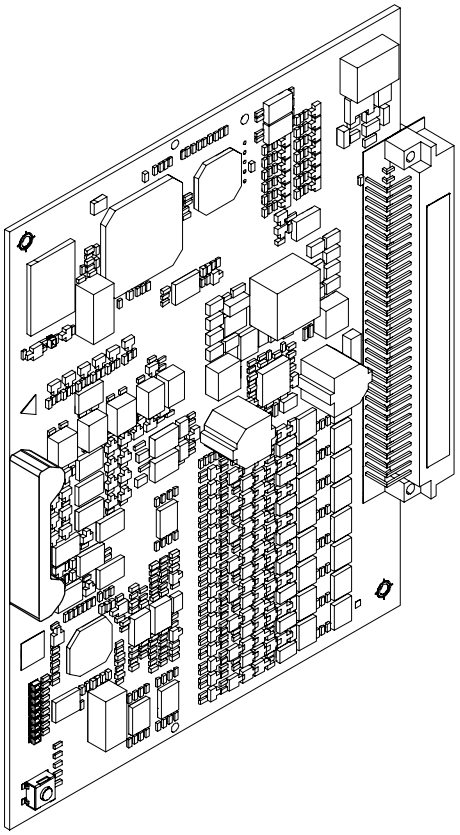
32.5 Adjustment elements

Button	Meaning	Function
S301	Reset for module bus driver (if fitted)	Resets module bus
S401	Reset for ↑ line driver (if fitted)	Resets line driver
S501	STATUS/DIRECTION switchover (see also H116)	Status/direction indicator switchover

32.6 Technical data

General	Number of freely programmable I/Os	12
	Ground fault detection	Via PMI & mainboard
Supply	Operating voltage	DC 20…30 V
	Operating current	Max. 2 A
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 20…30 V
	Current	Max. 1 A (protected with 1 AT)
Configurable Inputs/outputs 1…12	Designation	'I/O1'…'I/O12'
	Individually configurable as	• Input • Output
	Configured as input:	
	Design	• Digital • Not monitored
	Threshold values	> Vsys/2 = off < Vsys/4 = on
	Configured as output:	
	Design	• Open drain • Inherently short-circuit-proof • Excess temperature protection
	Output voltage	DC 20…30 V
	Output current per output	Max. 300 mA
	Output current of all outputs (total)	1.5 A
	Configuration of degraded mode behavior	• Open • Closed • Fixed • Alternating quickly • Alternating slowly • Activated by horn emergency alarm
Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	104 g
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

33 I/O card (horn/monitored) FCI2009-A1



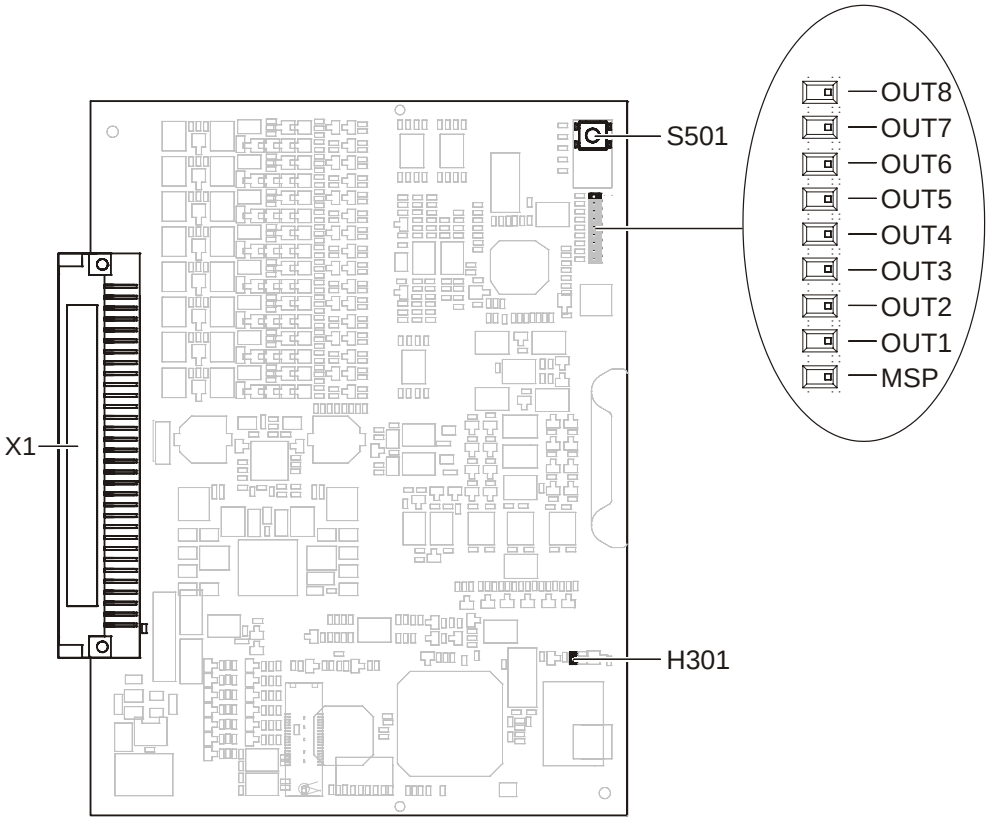
33.1 Description

The I/O card (horn/monitored) FCI2009-A1 provides the fire control panel with 8 monitored outputs for alarm and fault transmission. The I/O card (horn/monitored) is a module bus card for installation in the card cages of the FC723 and FC726.

The I/O card (horn/monitored) has the following features:

- Eight monitored horn outputs
- Supply via card cage
- Configurable
  - Failsafe behavior in degraded mode
  - Degraded mode behavior in degraded mode

33.2 Views



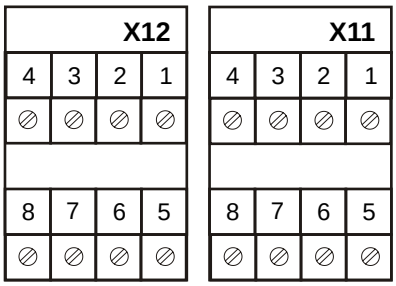
Element	Designation	Function
Connector	X1	Connector for card cage
Button	S501	Calibration
LED	OUT8	Display of monitored output 8 (FireOutput8)
	OUT7	Display of monitored output 7 (FireOutput7)
	OUT6	Display of monitored output 6 (FireOutput6)
	OUT5	Display of monitored output 5 (FireOutput5)
	OUT4	Display of monitored output 4 (FireOutput4)
	OUT3	Display of monitored output 3 (FireOutput3)
	OUT2	Display of monitored output 2 (FireOutput 2)
	OUT1	Display of monitored output 1 (FireOutput1)
	MSP	Status of ↑ line driver
	H301	Status module bus driver

33.3 Pin assignments

33.3.1 Connection terminals for the I/O card (horn/monitored) in the card cage

The I/O card (horn/monitored) FCI2009-A1 determines the PIN assignment of the connection terminals for the module bus cards in the card cage.

External connections on the card cage using the example of module bus card 1 with the associated connection terminals X11 and X12:



- The external connections of module bus card 2 are on connection terminals X21 and X22
- The external connections of module bus card 3 are on connection terminals X31 and X32
- The external connections of module bus card 4 are on connection terminals X41 and X42
- The external connections of module bus card 5 are on connection terminals X51 and X52

Depending on the card cage, not all slots may be available for module bus cards and connection terminals. However, the numbering and assignment of the connection terminals are identical on all card cages.

Example for pin assignment at slot 1

Connector	Pin	Designation	Description
X11	1	FIRE_OUT_1+	Horn/alarm monitored
	2	FIRE_OUT_1-	
	3	FIRE_OUT_2+	Horn/alarm monitored
	4	FIRE_OUT_2-	
X12	1	FIRE_OUT_3+	Horn/alarm monitored
	2	FIRE_OUT_3-	
	3	FIRE_OUT_4+	Horn/alarm monitored
	4	FIRE_OUT_4-	
X11	5	FIRE_OUT_5+	Horn/alarm monitored
	6	FIRE_OUT_5-	
	7	FIRE_OUT_6+	Horn/alarm monitored
	8	FIRE_OUT_6-	
X12	5	FIRE_OUT_7+	Horn/alarm monitored
	6	FIRE_OUT_7-	
	7	FIRE_OUT_8+	Horn/alarm monitored
	8	FIRE_OUT_8-	

Admissible cable cross-section: 0.14…1.5 mm²

Xn2			
4	3	2	1
- +		- +	
Out 4		Out 3	
8	7	6	5
- +		- +	
Out 8		Out 7	

Xn1			
4	3	2	1
- +		- +	
Out 2		Out 1	
8	7	6	5
- +		- +	
Out 6		Out 5	

n = Slot no.

Switching variants for monitored alarm and horn outputs with decoupled load (EN 54)

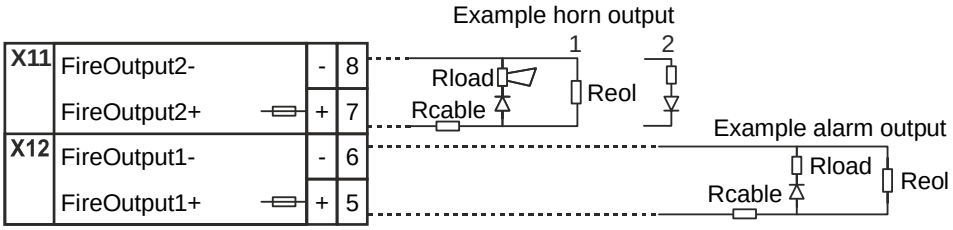


Figure 53: Switching examples for monitored alarm and horn outputs with decoupled load (EN 54)

Rload	Load resistance
Rcable	Line resistance
Reol	Termination resistor
1	Standard EOL
2	EOL with decoupled load

Switching variants for monitored alarm and horn outputs with load resistance monitoring (VdS)

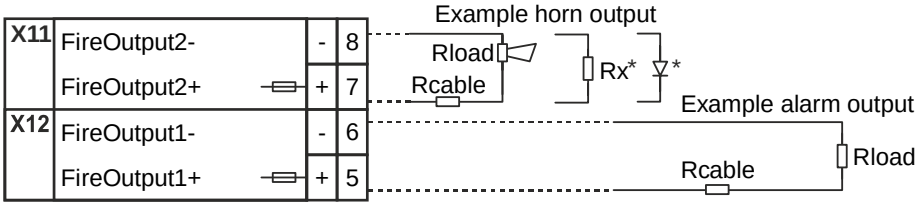


Figure 54: Switching examples for monitored alarm and horn outputs with load resistance monitoring (VdS)

Rload	Load resistance
Rcable	Line resistance
Rx	Additional load resistance
*	If necessary

* Adaptation of the load resistance.

You will find detailed information regarding the determination of the resistances for the monitored outputs in the document Planning A6V10210362.

33.4 Indicators

Standard LED indicators

LED	Color	Function	State	Meaning
H301	Yellow	Signal of module bus driver	Off	Normal condition
			Flashes slowly	Degraded mode
			1 x flashing (every 2 s)	Update begins
			2 x flashing (every 2 s)	Update running
			3 x flashing (every 2 s)	Update failed
			Flashes rapidly	Incorrect test, update needed
OUT1	Yellow	Status of monitored output 1	Off	↑ Normal operation
			Slow	Fault: Connection interrupted or short-circuited (Priority 2)
			Fast	Fault: Overload fuse active (Priority 1)
			Pulsating	- Calibration invalid - Calibration running (maximum 25 seconds) (Priority 3)
			On	Output activated (Priority 4)
OUT2…7	In accordance with OUT1 to output 2…7			
MSP	Yellow	Status ↑ Line driver	Off	Normal operation
			Slow	Line driver in ↑ degraded mode (Priority 2)
			Fast	General fault (Priority 1)
			Pulsating	
			On	

33.5 Adjustment elements

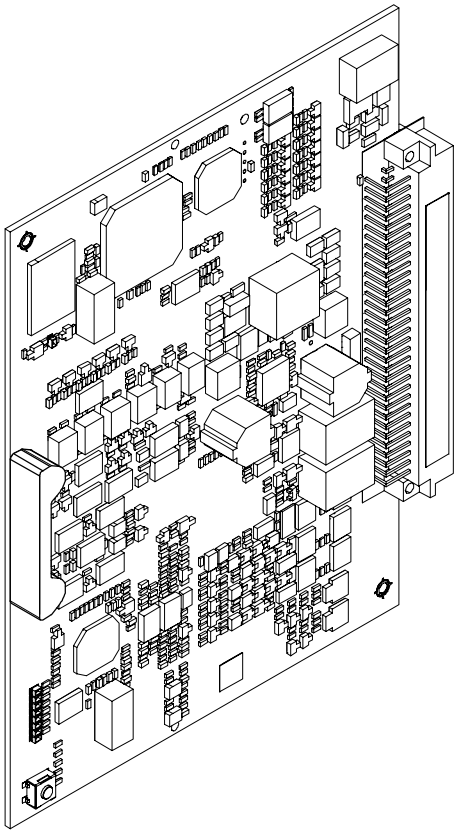
Button	Meaning	Function
CALIB S501	Calibration	Starts the calibration of the monitored outputs

33.6 Technical data

General	Ground fault detection	PMI & mainboard FCM2027
Supply	Operating voltage	DC 20…30 V
	Quiescent operating current	55 mA with Vsys 24 V
	Max. operating current (at max. load)	5.6 A with Vsys 20 V 4.7 A with Vsys 24 V
Maximum load on the outputs	Total current of the monitored outputs	Max. 4 A
Monitored output RT alarm/horn	Designation	'Fire Output 1+'; 'Fire Output 1-' 'Fire Output 2+'; 'Fire Output 2-' 'Fire Output 3+'; 'Fire Output 3-' 'Fire Output 4+'; 'Fire Output 4-' 'Fire Output 5+'; 'Fire Output 5-' 'Fire Output 6+'; 'Fire Output 6-' 'Fire Output 7+'; 'Fire Output 7-' 'Fire Output 8+'; 'Fire Output 8-'
	Design	• Load or EOL monitoring with calibration • Monitored fuse in operation • Activated in degraded mode operation (RT alarm/horn can be switched off)
	Output voltage	DC 26.4…27.6 V (DC 27.2 V - 3 % +1.5 %)
	Output current	Max. 2 A
	Loading capacity	Max. 470 µF
	Monitored for (if output inactive)	• Short-circuit • Open line
	Measuring range, monitoring resistor	40…6100 Ω
	• Range of termination resistor (Reol) for load with diode decoupled (EN54)	45…5500 Ω
	• Range of the load resistance (Rload) with load resistor monitoring (VdS)	45…5200 Ω
	Line resistance (both cables)	Max. 200 Ω
	Monitoring tolerance	Load resistance monitoring (VdS): ±10 % Load with diode decoupled (EN 54): ±7.1 % transient ±2.5 %
	Measurement cycle	1 s
	Status monitoring	4 s
	Duration of the monitoring interruption when activation was deactivated	30 s
	Duration of calibration	25 s

Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	119 g
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VdS QA Standards CE conformity mark LPCB	

34 I/O card (RT) FCI2007-A1



34.1 Description

The I/O card (remote transmission) FCI2007-A1 provides the remote transmission connections and the horn outputs. The I/O card (remote transmission) is inserted in the card cages of fire control panels FC723 and FC726.

The I/O card (RT) FCI2007-A1 has the following features:

- One alarm relay
- Two monitored horn/alarm outputs
- One fault relay
- One monitored fault output
- One supply output
- GPIO input (RT confirmation)
- Two programmable inputs/outputs
- Configurable behavior in degraded mode:
  - Failsafe behavior in degraded mode
  - Degraded mode behavior in degraded mode

34.2 Views

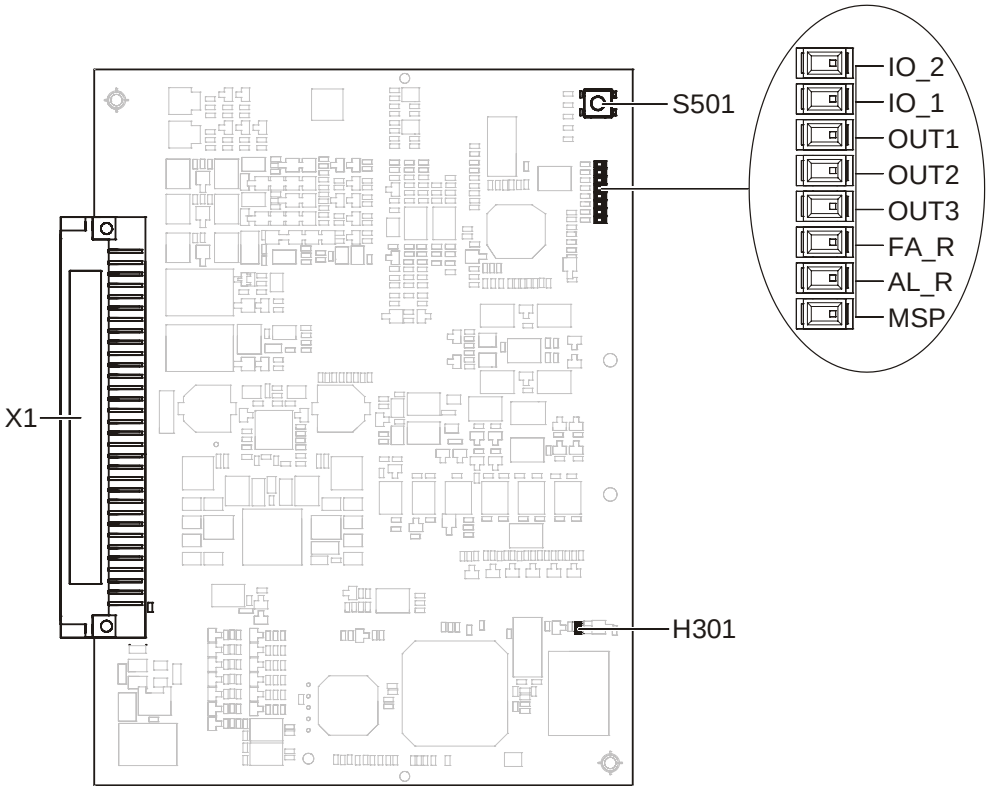


Figure 55: Printed circuit board view I/O card (RT) FCI2007-A1

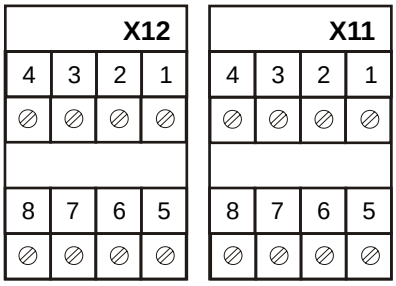
Element	Designation	Function
Connector	X1	Connector for card cage
Button	S501	Calibration
LEDs	IO_2	Display of programmable I/O 2
	IO_1	Display of programmable I/O 1
	OUT1	Display of monitored output 1 (FireOutput 1)
	OUT2	Display of monitored output 2 (FireOutput 2)
	OUT3	Display monitored output 3 (RT_Fault)
	FA_R	Display relay fault output
	AL_R	Display relay alarm output
	MSP	Status of ↑ line driver
	H301	Status module bus driver

34.3 Pin assignments

34.3.1 Connection terminals for the I/O card (RT) in the card cage

The I/O card (↑ RT) FCI2007-A1 determines the PIN assignment of the four connection terminals in the card cage.

External connections on the card cage using the example of module bus card 1 with the associated connection terminals X11 and X12:



- The external connections of module bus card 2 are on connection terminals X21 and X22
- The external connections of module bus card 3 are on connection terminals X31 and X32
- The external connections of module bus card 4 are on connection terminals X41 and X42
- The external connections of module bus card 5 are on connection terminals X51 and X52

Depending on the card cage, not all slots may be available for module bus cards and connection terminals. However, the numbering and assignment of the connection terminals are identical on all card cages.

Connector	Pin	Designation	Description
X11	1	AL-NO	Alarm relay normally open contact (normally open)
	2	AL_COM	Alarm relay center tap (common)
	3	AL_NC	Alarm relay ↑ normally closed contact
	4	27V2	Supply output (+Vsys)
X12	1	0 V	Supply output (–Vsys)
	2	FAU_NO	Fault relay ↑ normally open contact
	3	FAU_COM	Fault relay center tap (common)
	4	FAU_NC	Fault relay normally closed contact (normally closed)
X11	5	RT_Fault+	Output 3 (+) fault output
	6	RT_Fault-	Output 3 (-) fault output
	7	FireOutput 2+	Output 2 (+) can be configured as alarm output or horn output
	8	FireOutput 2-	Output 2 (-) can be configured as alarm output or horn output
X12	5	FireOutput 1+	Output 1 (+) can be configured as alarm output or horn output
	6	FireOutput 1-	Output 1 (-) can be configured as alarm output or horn output
	7	RE_Response/GPIO1	Programmable input/output / RE response in accordance with ↑ VdS
	8	GPIO2	Input/output programmable

Admissible cable cross-section: 0.14…1.5 mm²

Switching for RE response in accordance with ↑ VdS

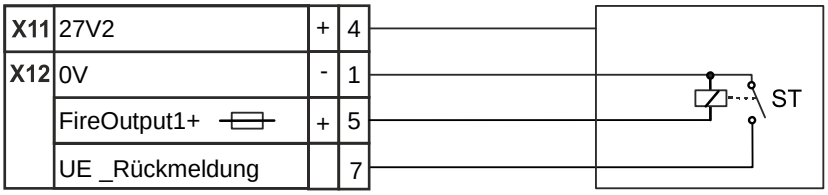


Figure 56: Switching for RE response in accordance with VdS

ST	Fault contact of the transmission device

Switching for monitored remote transmission

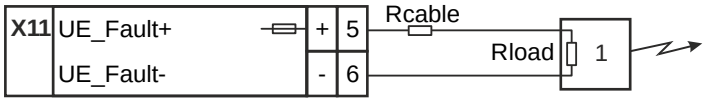


Figure 57: Switching for monitored remote transmission

Rload	Load resistance
Rcable	Line resistance
1	Remote transmission

Switching variants for monitored alarm and horn outputs with decoupled load (EN 54)

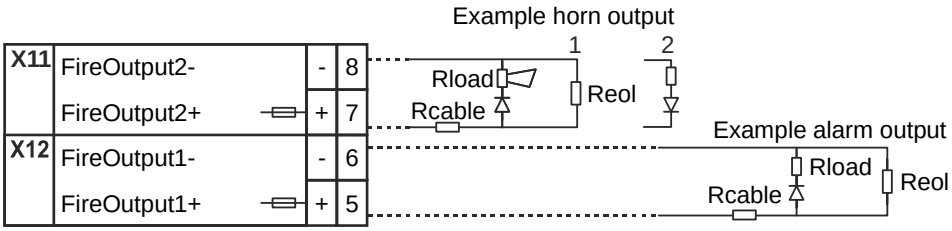


Figure 58: Switching examples for monitored alarm and horn outputs with decoupled load (EN 54)

Rload	Load resistance
Rcable	Line resistance
Reol	Termination resistor
1	Standard EOL
2	EOL with decoupled load

Switching variants for monitored alarm and horn outputs with load resistance monitoring (VdS)

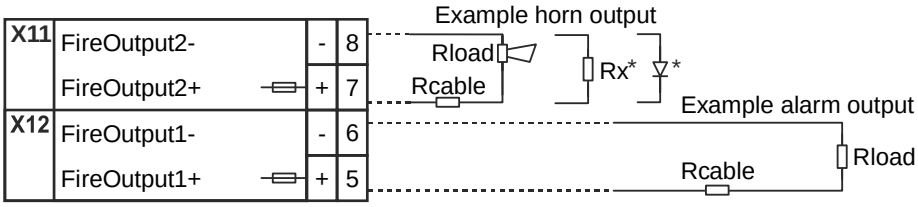


Figure 59: Switching examples for monitored alarm and horn outputs with load resistance monitoring (VdS)

Rload	Load resistance	Rx	Additional load resistance
Rcable	Line resistance	*	If necessary

* Adaptation of the load resistance.

You will find detailed information regarding the determination of the resistances for the monitored outputs in the document Planning A6V10210362.

Switching for configurable inputs/outputs

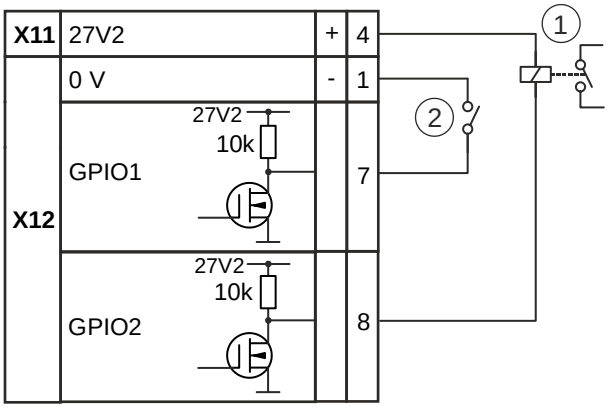


Figure 60: Switching for relays

1 Configured as output

2 Configured as input

Switching for relays ↑ RT alarm and RT fault

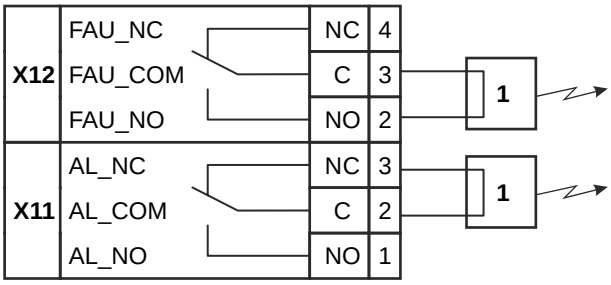


Figure 61: Switching for relays RT Alarm and RT Fault

1	Remote transmission
FAU_…	Configured as RT fault relay output - ↑ Normal operation (no fault) = contact 2/3 closed Configured as universal relay output - Normal operation (no fault) = contact 3/4 closed
AL_…	Configured as RT alarm or universal relay output - Normal operation (no alarms) = contact 2/3 closed

34.4 Indicators

Standard LED indicators

LED	Color	Function	State	Meaning
H301	Yellow	Status Module bus driver	Off	Normal condition
			Flashes slowly	Degraded mode
			1 x flashing (every 2 s)	Update begins
			2 x flashing (every 2 s)	Update running
			3 x flashing (every 2 s)	Update failed
			Flashes rapidly	Faulty test Update required
IO_2	Yellow	Status Programmable I/O 2	Off	Input/output not active
			On	Input/output active
IO_1	Yellow	Status Programmable I/O 1	Off	Input/output not active
			On	Input/output active
OUT1	Yellow	Status of monitored output 1	Off	Normal operation
			Slow	Fault: Connection interrupted or short-circuited (Priority 2)
			Fast	Fault: Overload fuse active (Priority 1)
			Pulsating	- Calibration invalid - Calibration running (maximum 25 seconds) (Priority 3)
			On	Output activated (Priority 4)
OUT2,3	In accordance with OUT1, although at monitored output 2 and 3			
FA_R	Yellow	Relay fault output	Off	Output is not activated
			On	Output is activated
AL_R	Yellow	Relay alarm output	Off	Output is not activated
			On	Output is activated
MSP	Yellow	Status ↑ Line driver	Off	Normal operation
			Slow	Line driver in ↑ degraded mode (Priority 2)
			Fast	General fault or fault at supply input 27V2 (Priority 1)
			Pulsating	---
			On	---

34.5 Adjustment elements

Button	Meaning	Function
CALIB, S501	Calibration	Starts the calibration of the monitored outputs

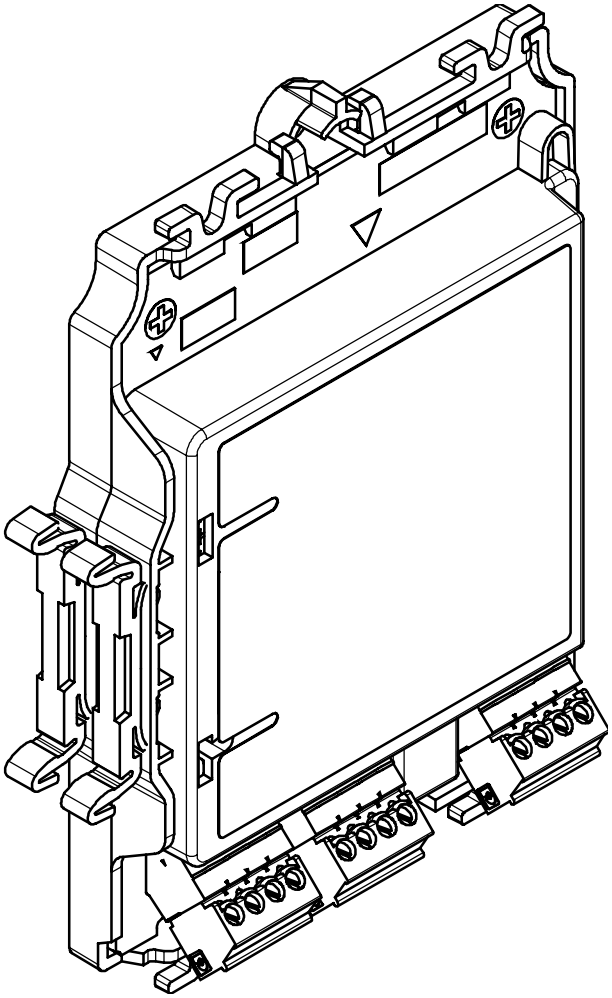
34.6 Technical data

General	Ground fault detection	• In the case of the FC723 and FC726: via the PMI & mainboard
Supply	Operating voltage	DC 20…30 V
	Quiescent operating current	70 mA with Vsys 24 V
	Max. operating current (at max. load)	5.6 A with Vsys 20 V 4.7 A with Vsys 24 V
Maximum load on the outputs	Total current from the supply output, monitored and configurable outputs	Max. 4 A
Supply output	Designation	'0 V', '27V2'
	Voltage	DC 26.4…27.6 V (DC 27.2 V - 3 % +1.5 %)
	Current	Max. 2 A (electronically fused)
Changeover contacts RT alarm	Designation	’AL_NO’; ’AL_COM’; ’AL_NC’
	Design	• Relay output • Break or make contact • Activated in degraded mode
	Switching voltage	Max. DC 36 V
	Switching current	Max. 400 mA
Changeover contacts RT fault	Designation	'FAU_NO'; 'FAU_COM'; 'FAU_NC'
	Design	• Relay output • Break or make contact • Activated in degraded mode
	Switching voltage	Max. DC 36 V
	Switching current	Max. 400 mA
Monitored output Fault	Designation	'RT_Fault+'; 'RT_Fault-'
	Design	• Load monitoring with calibration • Activated in degraded mode operation (fault can be switched off)
	Output voltage	DC 26.4…27.6 V (DC 27.2 V - 3 % +1.5 %)
	Output current	Max. 0.3 A
	Loading capacity	Max. 470 µF

	Monitored for (active and inactive)	• Short-circuit • Open line
	Measuring range, monitoring resistor	120…6000 Ω
	• Range of load resistor (Rload)	150…4300 Ω
	Line resistance (both cables)	Max. 200 Ω
	Monitoring tolerance	±25 %
	Measurement cycle	1 s
	Status monitoring	4 s
	Duration of monitoring interruption after switchover	30 s
	Duration of calibration	20 s
Monitored output RT alarm/horn	Designation	'Fire Output 1+'; 'Fire Output 1-' 'Fire Output 2+'; 'Fire Output 2-'
	Design	• Load or • EOL monitoring with calibration • Monitored fuse in operation • Activated in degraded mode operation (RT alarm/horn can be switched off)
	Output voltage	DC 26.4…27.6 V (DC 27.2 V - 3 % +1.5 %)
	Output current	Max. 2 A
	Loading capacity	Max. 470 µF
	Monitored for (active and inactive)	• Short-circuit • Open line
	Measuring range, monitoring resistor	40…6100 Ω
	• Range of termination resistor (Reol) for load with diode decoupled (EN54)	45…5500 Ω
	• Range of the load resistance (Rload) with load resistor monitoring (VdS)	45…5200 Ω
	Line resistance (both cables)	Max. 200 Ω
	Monitoring tolerance	• Load resistance monitoring (VdS): ±10 % • Load with diode decoupled (EN 54): ±7.1 % transient ±2.5 %
	Measurement cycle	1 s
	Status monitoring	4 s
	Duration of the monitoring interruption when activation was deactivated.	30 s
	Duration of calibration	25 s

Configurable inputs/outputs 1…2	Designation	'RT_Response/GPIO1' and 'GPIO2'
	Individually configurable as	• Input • Output
	Configured as input:	
	• Design • Threshold values	• Digital • Not monitored • GPIO1 configurable as RT_Response possible • >18 V = off • <9 V = on
	Configured as output:	
	Design	• Open drain • Inherently short-circuit-proof
	Output voltage	DC 26.4…27.6 V (DC 27.2 V - 3 % +1.5 %)
	Output current per output	Max. 300 mA
Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	119 g
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 ℃ max. +60 ℃
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VdS QA Standards CE conformity mark LPCB	

35 Sounder module FCA2005-A1



35.1 Description

The sounder module FCA2005 makes it possible to assign a monitored horn output of a FS720 periphery board to up to four horn outputs. Each of these four lines has the same features as the sounder output of the periphery board and can control and monitor ↑ alarm devices. Supply is ensured via the supply output of the periphery board.

The sounder module may only be fitted and operated in a fire control panel.

It can be fitted as follows:

- Engaged on a U-rail TS35
- Screwed onto an even surface (mounting plate)
- Clamped into an FDCH221 housing. This housing can also be screwed onto an even surface (mounting plate).

35.2 Views

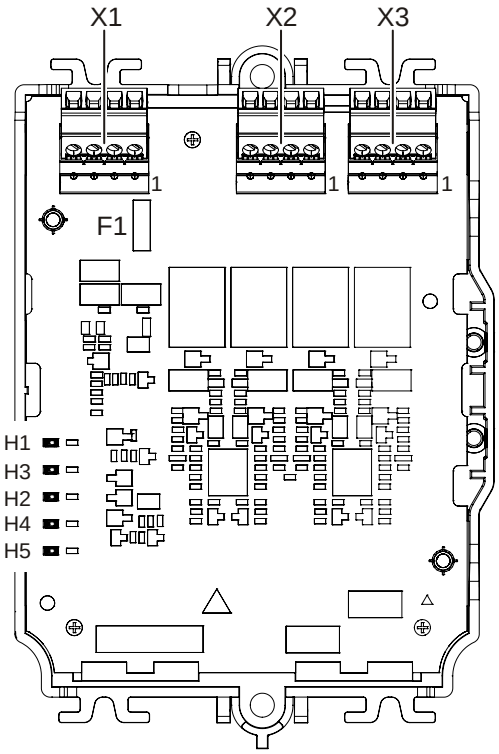


Figure 62: Printed circuit board view of sounder module FCA2005A1

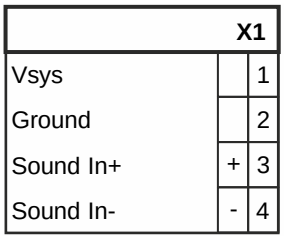
Element	Des.	Function
Connector and terminals	X1	Supply input and input sounder from the periphery board
	X2	Sounder 1 and 2 outputs 'S1 out', 'S2 out'
	X3	Sounder 3 and 4 outputs 'S3 out', 'S4 out'
LEDs	H1 'Power'	Supply control
	H3 'Fault_S1'	Sounder 1 fault
	H2 'Fault_S2'	Sounder 2 fault
	H4 'Fault_S3'	Sounder 3 fault
	H5 'Fault_S4'	Sounder 4 fault
Fuses	F1	Fuse supply input (2 AT); Schurter OMT 125

35.3 Pin assignments

35.3.1 X1 supply input and sounder input from the periphery board

X1 sounder module			Periphery board 2 loops		Periphery board 4 loops	
Pin	**Designation**	**Description**	**Pin**	**Designation**	**Pin**	**Designation**
1	+Vsys	Supply input from the periphery board (+)	X8-5	VSYS_01 (+)	X8-7	VSYS_01 (+)
2	Ground	Supply input from the periphery board (-)	X8-6	GND_01 (-)	X8-8	GND_01 (-)
3	Sound In +	Sounder input from the periphery board (+)	X6-1	SOUND1+	X5-1	SOUND1+
4	Sound In -	Sounder input from the periphery board (-)	X6-2	SOUND1-	X5-2	SOUND1-

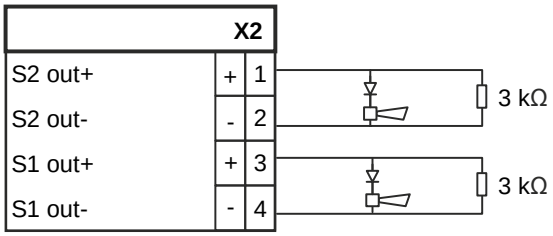
Permissible conductor cross-section: 0.2…1.5 mm²



35.3.2 X2 sounder 1 and 2 outputs

Pin	Designation	Description
1	S2 out+	Sounder output 2 (+)
2	S2 out-	Sounder output 2 (-)
3	S1 out+	Sounder output 1 (+)
4	S1 out-	Sounder output 1 (-)

Permissible conductor cross-section: 0.2…1.5 mm²

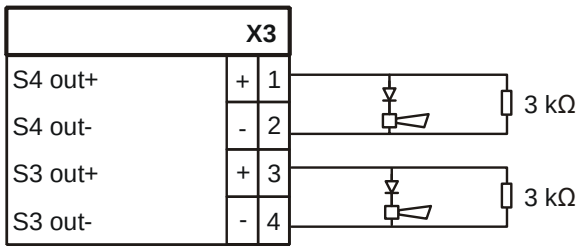


The terminating resistor of 3 kΩ has to be connected even when the output is not in use.

35.3.3 X3 sounder 3 and 4 outputs

Pin	Designation	Description
1	S4 out+	Sounder output 4 (+)
2	S4 out-	Sounder output 4 (-)
3	S3 out+	Sounder output 3 (+)
4	S3 out-	Sounder output 3 (-)

Permissible conductor cross-section: 0.2…1.5 mm²



The terminating resistor of 3 kΩ has to be connected even when the output is not in use.

35.3.4 Connecting two sounder modules

A maximum of two sounder modules may be connected.

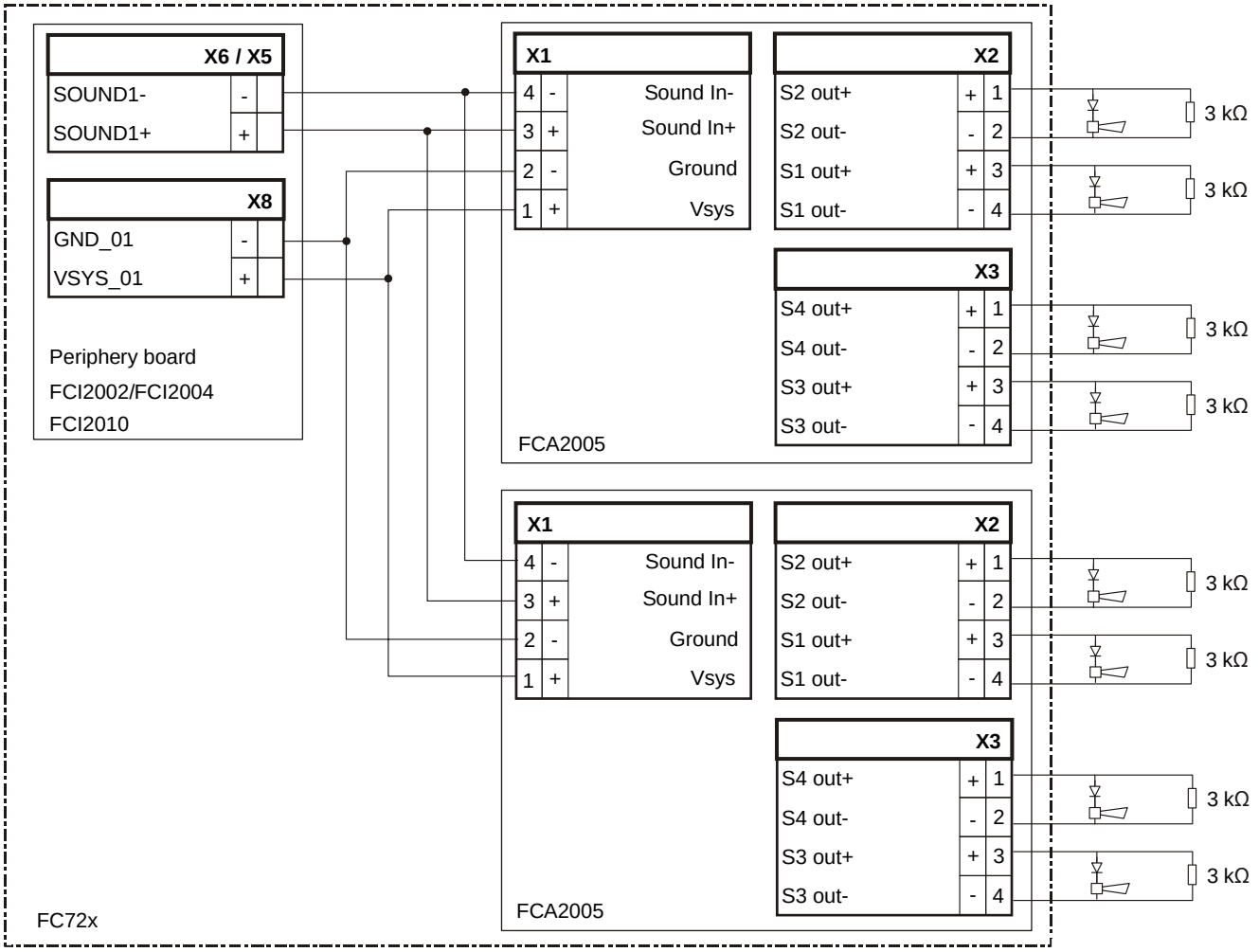


Figure 63: Connecting two sounder modules FCA2005-A1

35.4 Indicators

LED	Color	Function	State	Meaning
Power (H1)	Green	Supply	Off	No supply (fuse may be defective)
			On	Normal condition
Fault_S1 (H3)	Yellow	Sounder 1 fault	Off	Normal condition (default)
			On	Sounder 1 fault (open line, short-circuit)
Fault_S2 (H2)	Yellow	Sounder 2 fault	Off	Normal condition (default)
			On	Sounder 2 fault (open line, short-circuit)
Fault_S3 (H4)	Yellow	Sounder 3 fault	Off	Normal condition (default)
			On	Sounder 3 fault (open line, short-circuit)
Fault_S4 (H5)	Yellow	Sounder 4 fault	Off	Normal condition (default)
			On	Sounder 4 fault (open line, short-circuit)

35.5 Technical data

Supply input [3]	Designation	'Vsys', 'Ground'
	Operating voltage	DC 20…30 V
	Quiescent current	20 mA, typical
	Operating current	Max. 2 A, protected with 2AT [2]
Monitored sound input	Designation	'Sound In+', 'Sound In-'
	Individual sounder module:	
	Resistance value standby	4900 Ω
	Tolerance	±300 Ω
	Two sounder modules parallel:	
	Resistance value standby	2450 Ω
	Tolerance	±300 Ω
Monitored sound output 1, 2, 3, 4	Designation	• 'S1 out+', 'S1 out-' • 'S2 out+', 'S2 out-' • 'S3 out+', 'S3 out-' • 'S4 out+', 'S4 out-'
	Design	Relay reversed polarity
	Output voltage	DC 20…30 V
	Output current	Max. 1 A / sounder (observe maximum current) [2]
	Guaranteed output current (monitored for short-circuit and open line)	15 mA when U_{outmin} = 16 V
	Monitored for (if output inactive)	• Short-circuit • Open line
	Monitoring resistance	3 kΩ [1]
	With tolerance	±500 Ω
	Max. connection distance	1000 m

Terminals	All connectors:	
	Design	Screw terminals
	Permissible conductor cross-section	0.2…1.5 mm²
Mechanical data	Dimensions (L x W x H)	132 x 90 x 24 mm
	Weight	0.12 kg

[1] The monitoring resistance must also be connected when the sound output is not used.

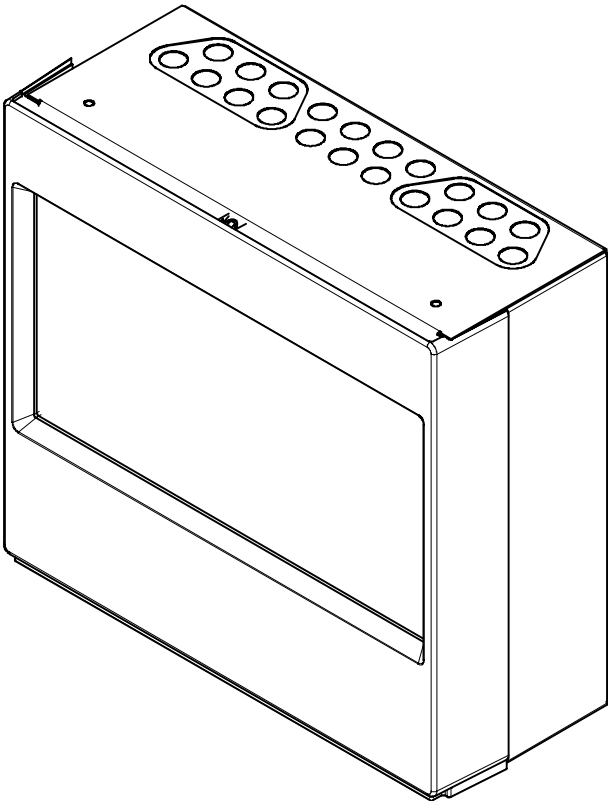
[2] The operating current is max. 2 A (fuse protection 2 AT) although the max. output current per sounder is 1 A.

$I_{total\ max.}$ 2 A = $I_{Out1} + I_{Out2} + I_{Out3} + I_{Out4}$

[3] The sounder module must only be operated when installed in a fire control panel, and must be supplied with power from the control panel. The sounder module FCA2005 can only be operated without restriction when it is supplied with power from the I/O card (remote transmission) FCI2007. In all other cases, the $I_{total\ max.}$ is limited to 1 A.

- Supply from the periphery board: $I_{total\ max.}$ 1 A
- Supply from I/O card (programmable) FCI2008: $I_{total\ max.}$ 1 A
- Supply from I/O card (remote transmission) FCI2007: $I_{total\ max.}$ 2 A

36 Housing for wall mounting



36.1 Description

The housings for wall mounting are used for the following ↑ stations:

- All compact control panels
- Fire terminal FT724

The empty housings are used for extensions, add-ons or for building in options. Empty housings have the following features:

- Delivered as kit, including cover cap and carrier plate
- Construction identical to the housings of the different station types
- The housings have the same cable breakout openings as the stations
- Easy wall mounting
- Can be screwed onto the stations of the same construction type from below or above
- Fixation points for cable ties
- Built-in DIN rail for mains separation terminals and accessories

You will find an overview of the components or batteries that can be fitted in document A6V10210355 and in document A6V10210362.

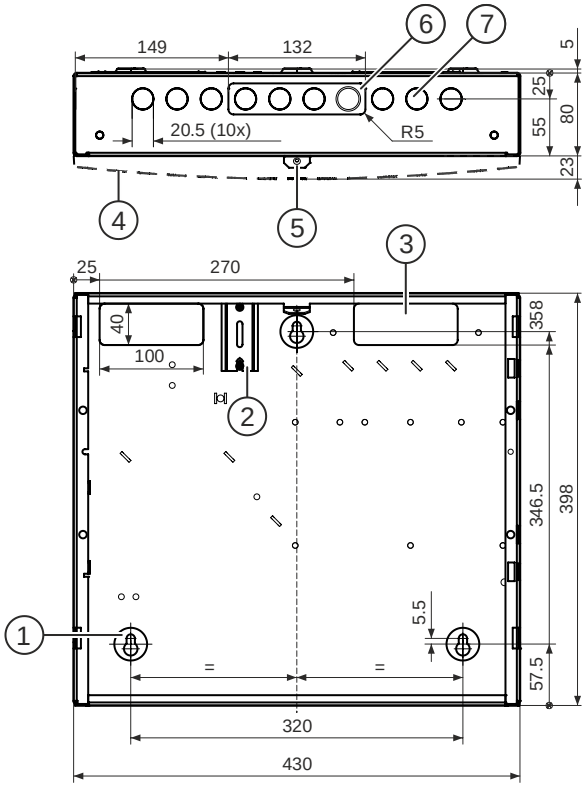
36.2 Views

The empty housings consist of the following components:

- Rear panel made of sheet metal
- Cover cap made from synthetic material
- Carrier plate covered with design foil

36.2.1 Housing (Eco)

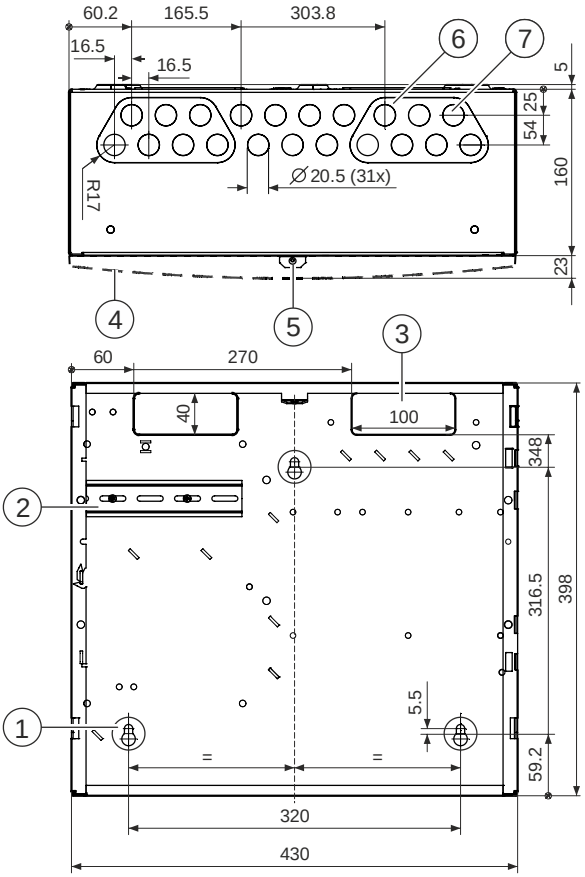
Dimensions of housing (Eco) FH7201-Z3



1 Fixation holes (3 pcs.)
2 DIN rail, length 70 mm
3 Breakout openings for cable entries from the back (2 pcs.)
4 Cover cap
5 Flap with screw for the fixation of the cover cap
6 Breakout opening for cable entries from the top
7 Breakouts Ø 20 mm for cable gland grommets (10 pcs.)

36.2.2 Housing (Standard)

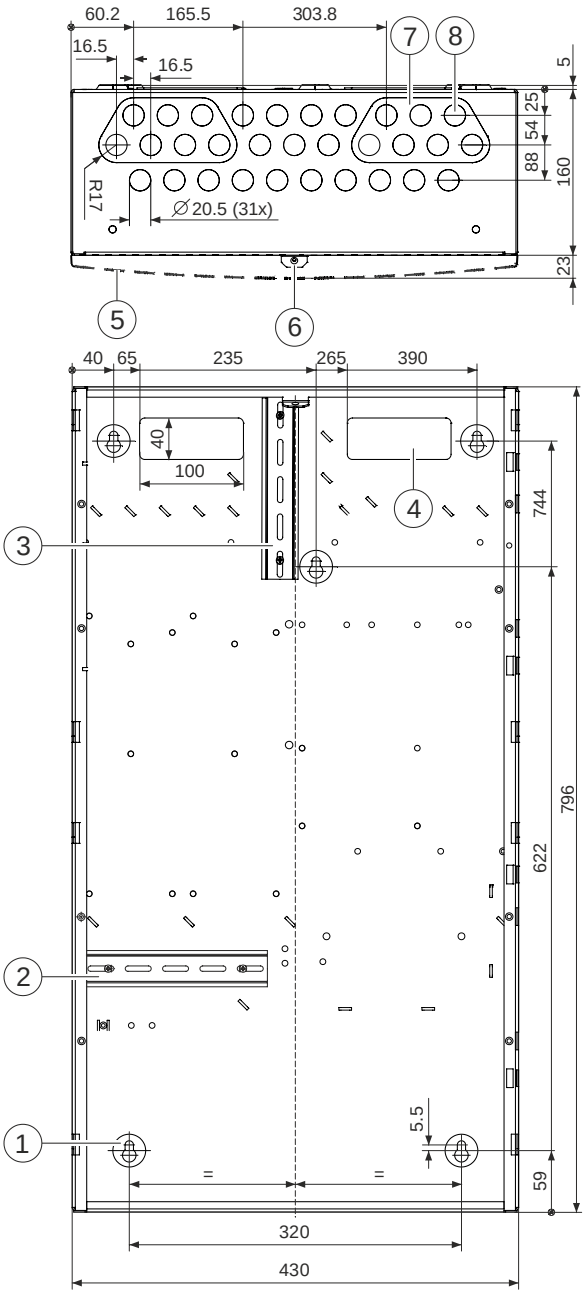
Dimensions of housing (Standard) FH7202-Z3



1 Fixation holes (3 pcs.)
2 DIN rail, length 150 mm
3 Breakout openings for cable entries from the back (2 pcs.)
4 Cover cap
5 Flap with screw for the fixation of the cover cap
6 Breakout opening for cable entries from the top
7 Breakouts Ø 20 mm for cable gland grommets (21 pcs.)

36.2.3 Housing (Comfort)

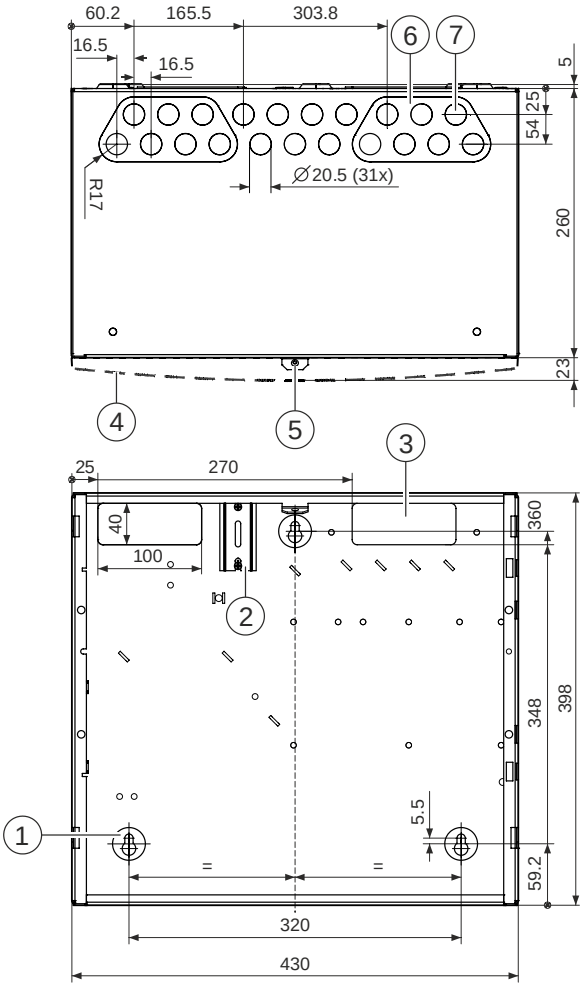
Dimensions of housing (Comfort) FH7203-Z3



1 Fixation holes (5 pcs.)
2 DIN rail for mains separation terminals and socket, length 175 mm
3 DIN rail for relays and additional accessories, length 175 mm
4 Breakout openings for cable entries from the back (2 pcs.)
5 Cover caps
6 Flap with screw for the fixation of the top cover cap
7 Breakout opening for cable bushings from the top (2 pcs.)
8 Breakouts Ø 20 mm for cable gland grommets (31 pcs.)

36.2.4 Housing (Large Extension)

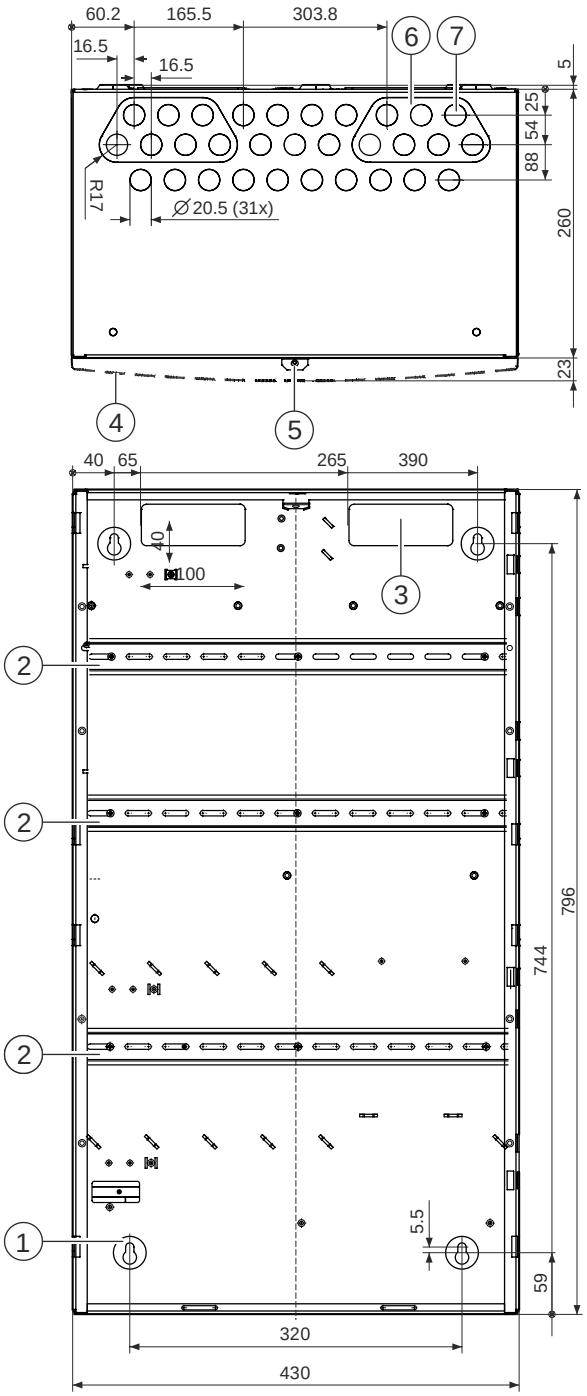
Dimensions of housing (Large Extension) FH7204-Z3



1 Fixation holes (3 pcs.)
2 DIN rail for mains separation terminals, length 70 mm
3 Breakout openings for cable entries from the back (2 pcs.)
4 Cover cap
5 Flap with screw for the fixation of the cover cap
6 Breakout opening for cable bushings from the top (2 pcs.)
7 Breakouts Ø 20 mm for cable gland grommets (21 pcs.)

36.2.5 Housing (Large)

Dimensions of housing (Large) FH7205-Z3



1 Fixation holes (4 pcs.)

2 DIN rail for mains separation terminals and socket, length 175 mm

3 DIN rail for relays and additional accessories, length 175 mm

4 Breakout openings for cable entries from the back (2 pcs.)

5 Cover caps (2 pcs.)
6 Flap with screw for the fixation of the top cover cap
7 Breakout opening for cable bushings from the top (2 pcs.)
8 Breakouts Ø 20 mm for cable gland grommets (31 pcs.)

36.2.6 Operating unit carrier

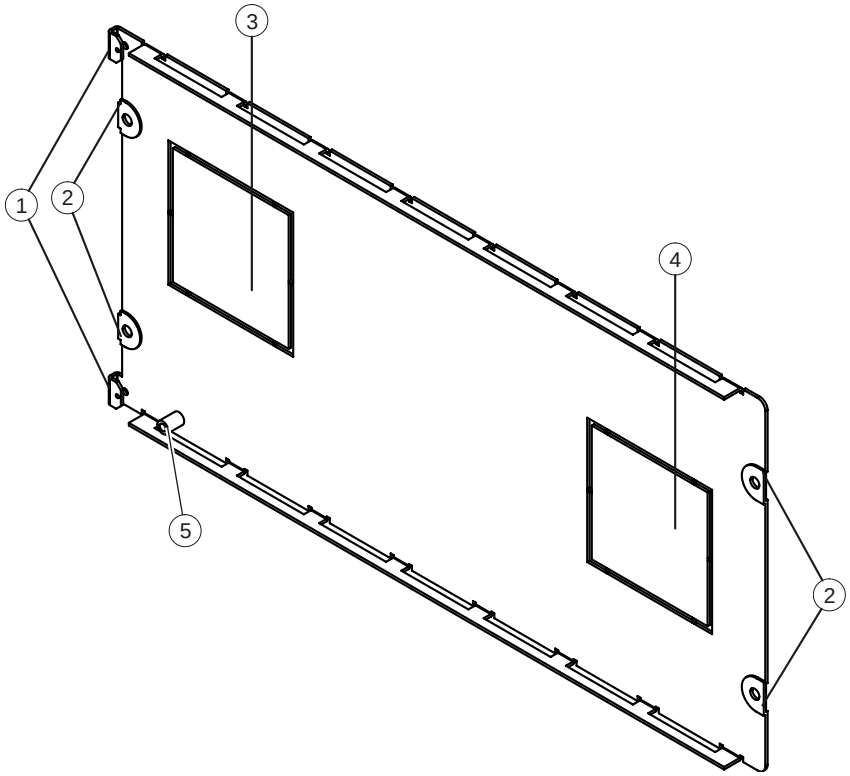


Figure 64: Carrier plate, interior view

1 2 hinges for fixation on the housing
2 4 holes to fix the carrier plate on the housing
3 Breakout opening on right for event printer
4 Breakout opening on left for event printer
5 Welded-on screw bushing M4-12

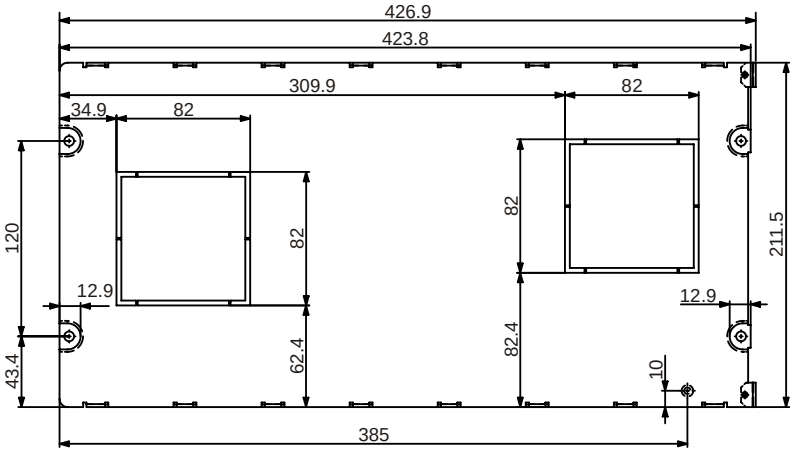


Figure 65: Carrier plate dimensions

36.2.7 Cover cap

Cover cap for Cerberus PRO FHA7201-A3

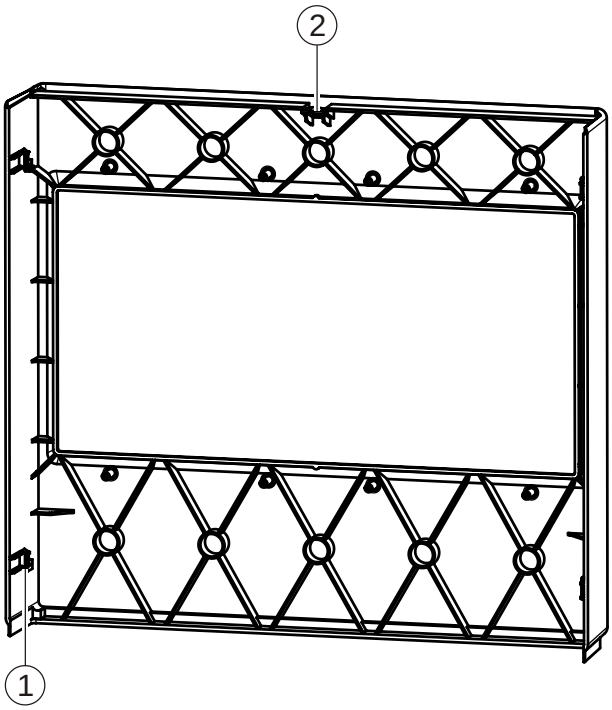


Figure 66: View of cover cap from rear

1 Support cams (4 pcs.)

2 Fixing screw

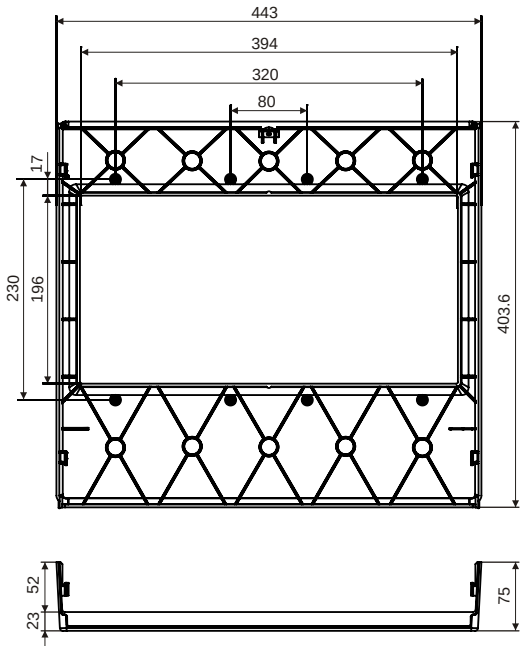


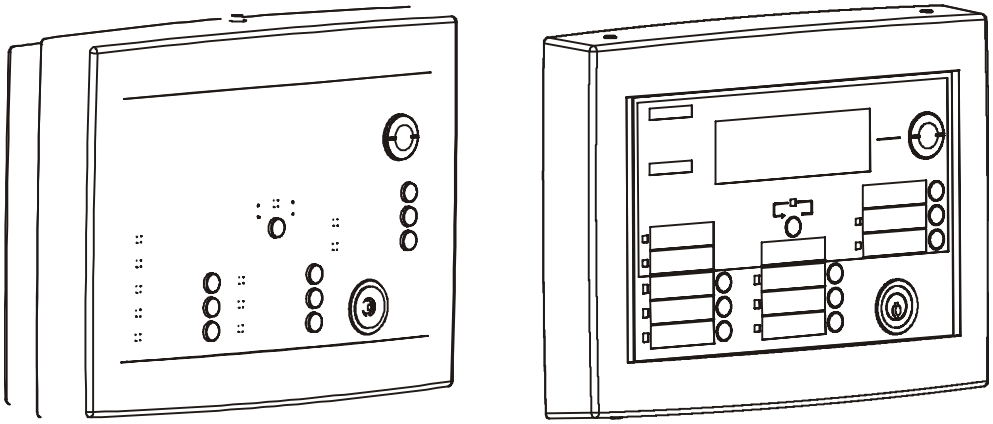
Figure 67: Dimensions of the cover cap

36.3 Technical data

Housing	Housing material	Steel sheet, electrolytically tin-plated
	Surface treatment	Powder-coated
	Color	RAL 7035 (light gray)
	Protection category	IP30
Cover cap	Material	ABS
	Color	RAL 9010 (pure white)
Weight	FH7201-Z3 housing (Eco)	3.8 kg
	FH7202-Z3 housing (Standard)	5.4 kg
	FH7203-Z3 housing (Comfort)	9 kg
	FH7204-Z3 housing (Large Extension)	9.5 kg
	FH7205-Z3 housing (Large)	16 kg
	Cover cap	0.64 kg
Overall dimensions (W x H x D)	FH7201-Z3 housing (Eco)	430 x 398 x 80 (103)[1] mm
	FH7202-Z3 housing (Standard)	430 x 398 x 160 (183)[1] mm
	FH7203-Z3 housing (Comfort)	430 x 796 x 160 (183)[1] mm
	FH7204-Z3 housing (Large Extension)	430 x 398 x 260 (283)[1] mm
	FH7205-Z3 housing (Large)	430 x 796 x 260 (283)[1] mm
	Cover cap	443 x 403 x 75 mm
Miscellaneous	CE conformity mark	Yes

[1] depth indications in brackets with mounted cover cap

37 Floor repeater terminal FT2010



37.1 Description

The ↑ floor repeater terminal FT2010 is used for users whose indication and operation requirements are restricted to the main functions. Applications include e.g. sister stations in hospitals. The floor repeater terminal FT2010 is connected directly to the C-NET detector line.

The floor repeater terminal comes in two versions:

- FT2010-A1 with plastic rear panel and an attachment depth of 79 mm
- FT2010-C1 with flat rear panel made from steel plate and an attachment depth of 45 mm

The floor repeater terminal has the following features:

- Connection to the C-NET detector line
- Power supply possible via the C-NET detector line
- Power supply possible via external, electrically isolated AC or DC supply
- 8-line display with 40 characters per line and backlight
- Operation enabled by key switch
- Operation: Acknowledge and reset
- Buzzer
- Six configurable LEDs and keys (with Cerberus-Engineering-Tool)
- Insertable inscription strips
- You will find a description of how to operate and label the key switches and LEDs in document 009310.
- You will find templates for the inscription strips in document A6V10217440.

37.2 Views

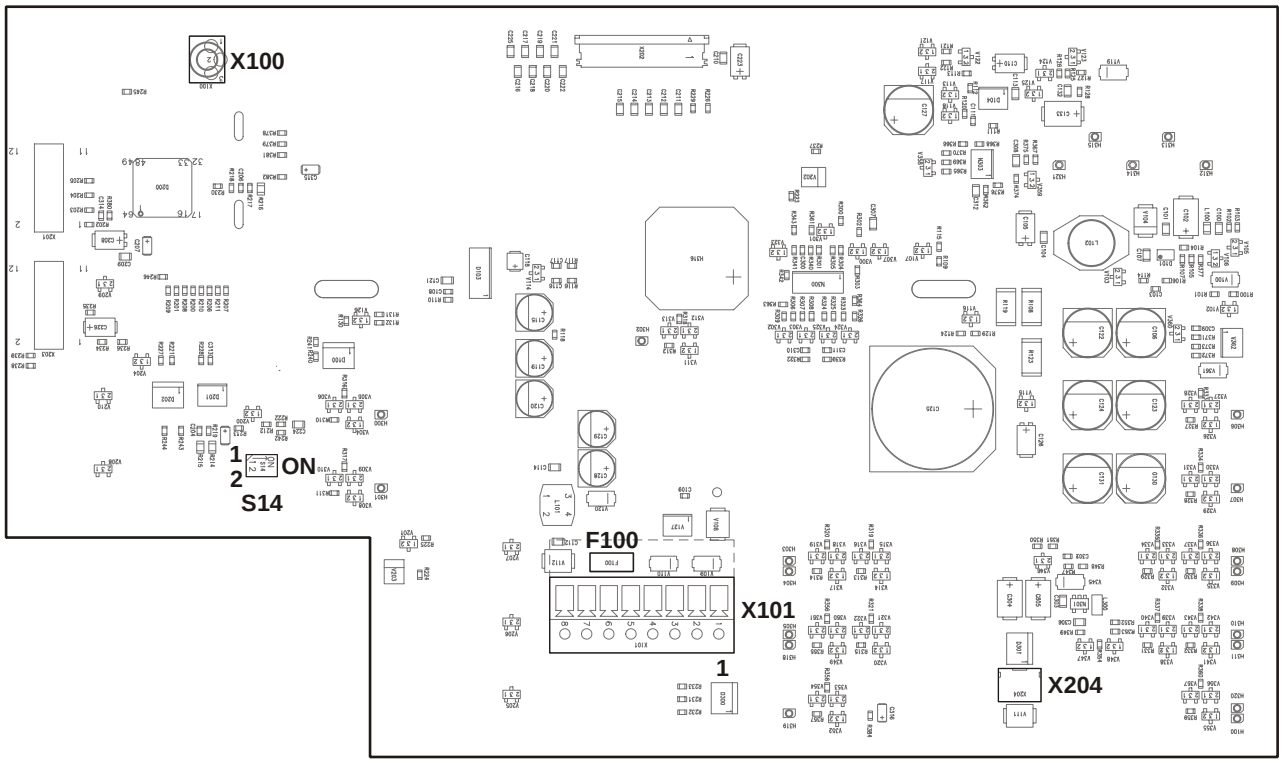


Figure 68: Printed circuit board view of ↑ floor repeater terminal FT2010

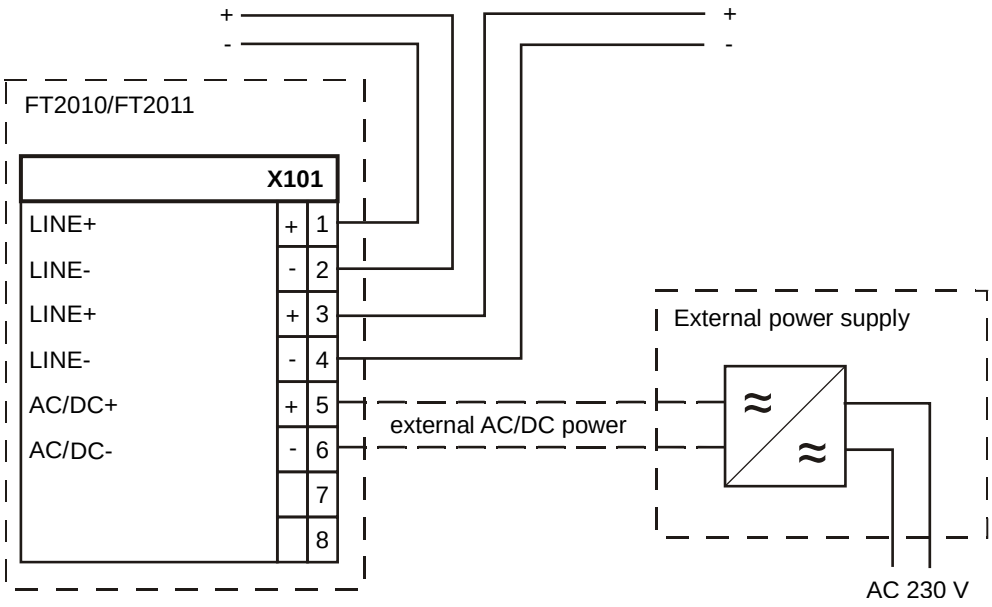
X100	Connection to detector exchanger and tester (MC-LINK)
X101	Connection to ↑ detector line and external supply
X204	9 V battery connection [FR]
S14	DIP switch
F100	Fuse for external supply, 1 A/T (not exchangeable)

37.3 Pin assignments

37.3.1 X101 detector line and external supply

Pin	Designation	Description
1	LINE+	↑ Detector line (+)
2	LINE–	Detector line (-)
3	LINE+	Detector line (+)
4	LINE–	Detector line (-)
5	AC+	External supply DC+/AC [1]
6	AC-	External supply DC-/AC [1]
7		Not connected
8		Not connected

[1] External supplies must be electrically isolated from the system and other line devices.



37.4 Adjustment elements

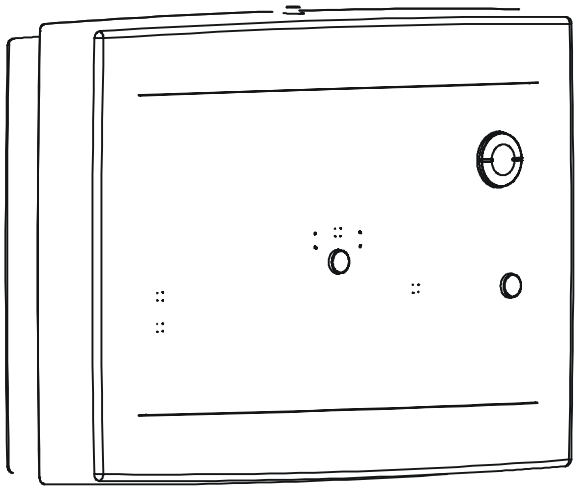
DIP switch S14	Des.	Function	Position	Meaning
1	3TE_OFF	Acoustic signaling in case of failure of the C-NET supply and external supply	ON	Acoustic signaling deactivated
			OFF	Acoustic signaling activated (ex-works default setting)
2	WD_OFF	No function; switch must always be in position 'OFF'.	OFF	Factory setting

37.5 Technical data

FT2010-A1 / FT2010-C1 / FT2011-A1	
Supply via C-NET	
Designation	'LINE+', 'LINE–'
Operating voltage	DC 16…33 V
Power consumption:	
• Without external supply	4…40 mA
• With external supply	Max. 5 mA
Line separator	
Line voltage:	
• Nominal	DC 32 V (= V_{nom})
• Minimum	DC 16 V (= V_{min})
• Maximum	DC 33 V (= V_{max})
Voltage at which the line separator opens:	
• Minimum	DC 7.5 V (= $V_{SO\ min}$)
• Maximum	DC 10.5 V (= $V_{SO\ max}$)
Permanent current when switches are closed	Max. 1.5 A (= $I_{C\ max}$)
Switching current	Max. 2 A (= $I_{S\ max}$)
Leakage current	Max. 1 mA (= $I_{L\ max}$)
Serial impedance when switches are closed	Max. 0.4 Ω (= $Z_{C\ max}$)
The line separator is closed via an actuation signal from the control panel. Required line voltage: DC 16…33 V (normal range)	
External supply	
Designation	'AC+', 'AC–'
External supply input:	
• DC	20…30 V, electrically isolated, EN54-4 conformity not required
• AC	15…18 V, electrically isolated, EN54-4 conformity not required
Power consumption	10…50 mA
Connections	
Design	Screw terminals
Conductor cross section	0.08…1.5 mm^2

FT2010-A1 / FT2010-C1 / FT2011-A1	
Key figures	
Address connection factor	1
Quiescent current connection factor:	
• Without external supply	20
• With external supply	20
Maximum current connection factor:	
• Without external supply	160
• With external supply	20
↑ Separator connection factor	1
Interfaces	
Communication protocol	C-NET
Ambient conditions	
Operating temperature	-8…+42 °C
Storage temperature	-20...+60 °C
Air humidity (no condensation permitted)	≤95 % rel.
Max. application height	4000 m above sea level
Mechanical data	
Dimensions (W x H x D):	
• FT2010-A1; FT2011-A1	283 x 207 x 79 mm
• FT2010-C1	283 x 207 x 45 mm
Protection category (IEC 60529)	IP30
Color	~RAL 7035 light gray

38 Floor repeater display FT2011



38.1 Description

The ↑ floor repeater display FT2011 is used for users whose indication requirements are restricted to the main functions. Applications include e.g. sister stations in hospitals. The floor repeater display FT2011 is connected directly to the C-NET detector line.

The floor repeater display has the following features:

- Connection to the C-NET detector line
- Power supply possible via the C-NET detector line
- Power supply possible via external, electrically isolated AC or DC supply
- 8-line display with 40 characters per line and backlight
- Buzzer
- Insertable inscription strips
- You will find a description of how to operate and label the key switches and LEDs in document 009311.
- You will find templates for the inscription strips in document A6V10217440.

38.2 Views

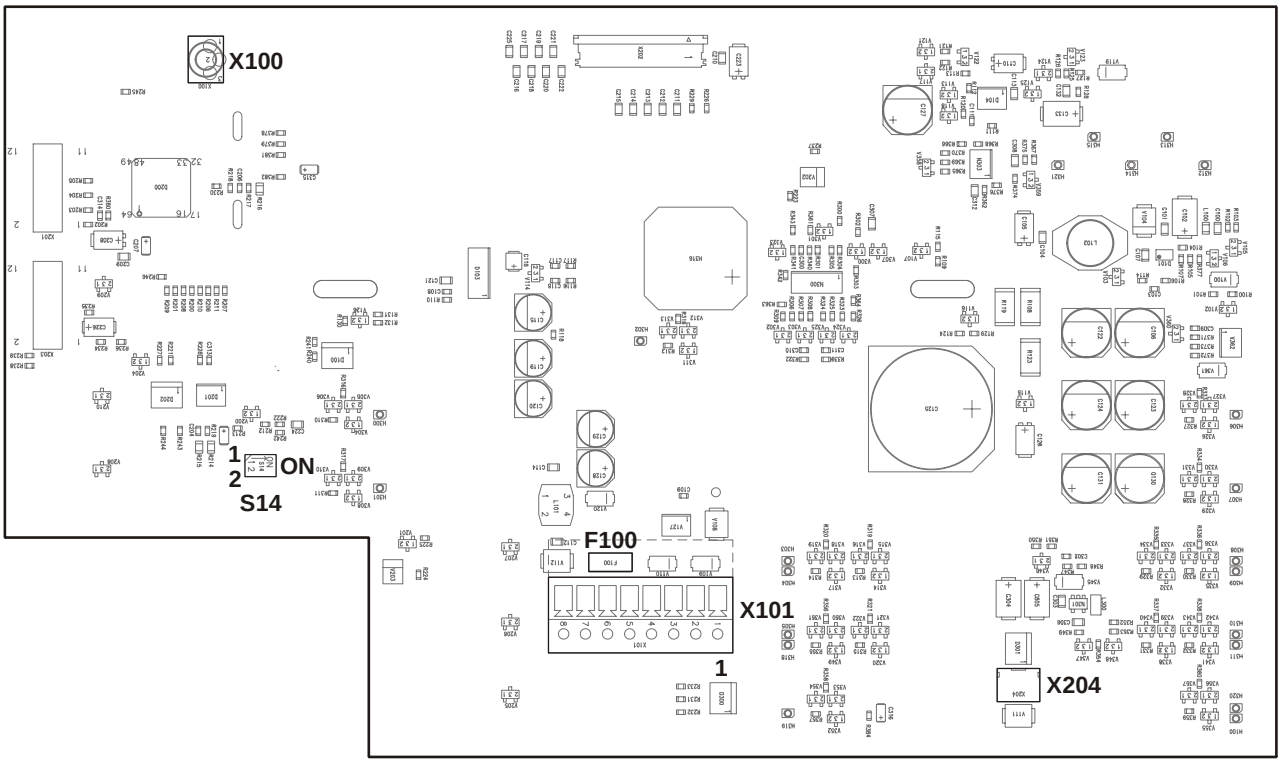


Figure 69: Printed circuit board view of ↑ floor repeater display FT2011

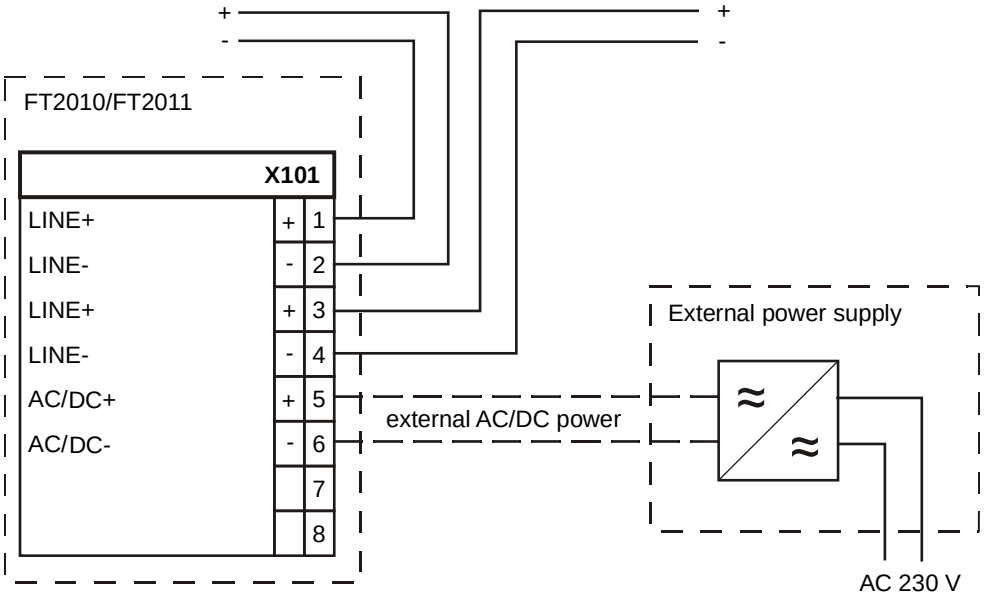
X100	Connection to detector exchanger and tester (MC-LINK)
X101	Connection of ↑ detector line and external supply
X204	9 V battery connection [FR]
S14	DIP switch
F100	Fuse for external supply, 1 A/T (not exchangeable)

38.3 Pin assignments

38.3.1 X101 detector line and external supply

Pin	Designation	Description
1	LINE+	↑ Detector line (+)
2	LINE–	Detector line (-)
3	LINE+	Detector line (+)
4	LINE–	Detector line (-)
5	AC+	External supply DC+/AC [1]
6	AC-	External supply DC-/AC [1]
7		Not connected
8		Not connected

[1] External supplies must be electrically isolated from the system and other line devices.



38.4 Adjustment elements

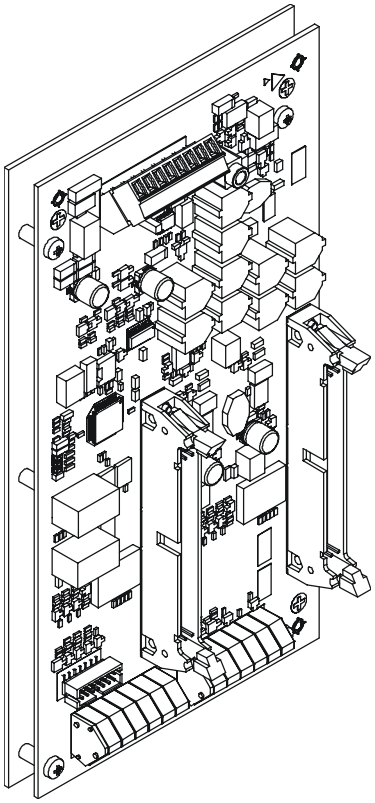
DIP switch S14	Des.	Function	Position	Meaning
1	3TE_OFF	Acoustic signaling in case of failure of the C-NET supply and external supply	ON	Acoustic signaling deactivated
			OFF	Acoustic signaling activated (ex-works default setting)
2	WD_OFF	No function; switch must always be in position 'OFF'.	OFF	Factory setting

38.5 Technical data

FT2010-A1 / FT2010-C1 / FT2011-A1	
Supply via C-NET	
Designation	'LINE+', 'LINE–'
Operating voltage	DC 16…33 V
Power consumption:	
• Without external supply	4…40 mA
• With external supply	Max. 5 mA
Line separator	
Line voltage:	
• Nominal	DC 32 V (= V_{nom})
• Minimum	DC 16 V (= V_{min})
• Maximum	DC 33 V (= V_{max})
Voltage at which the line separator opens:	
• Minimum	DC 7.5 V (= $V_{SO\ min}$)
• Maximum	DC 10.5 V (= $V_{SO\ max}$)
Permanent current when switches are closed	Max. 1.5 A (= $I_{C\ max}$)
Switching current	Max. 2 A (= $I_{S\ max}$)
Leakage current	Max. 1 mA (= $I_{L\ max}$)
Serial impedance when switches are closed	Max. 0.4 Ω (= $Z_{C\ max}$)
The line separator is closed via an actuation signal from the control panel. Required line voltage: DC 16…33 V (normal range)	
External supply	
Designation	'AC+', 'AC–'
External supply input:	
• DC	20…30 V, electrically isolated, EN54-4 conformity not required
• AC	15…18 V, electrically isolated, EN54-4 conformity not required
Power consumption	10…50 mA
Connections	
Design	Screw terminals
Conductor cross section	0.08…1.5 mm^2

FT2010-A1 / FT2010-C1 / FT2011-A1	
Key figures	
Address connection factor	1
Quiescent current connection factor:	
• Without external supply	20
• With external supply	20
Maximum current connection factor:	
• Without external supply	160
• With external supply	20
↑ Separator connection factor	1
Interfaces	
Communication protocol	C-NET
Ambient conditions	
Operating temperature	-8…+42 °C
Storage temperature	-20...+60 °C
Air humidity (no condensation permitted)	≤95 % rel.
Max. application height	4000 m above sea level
Mechanical data	
Dimensions (W x H x D):	
• FT2010-A1; FT2011-A1	283 x 207 x 79 mm
• FT2010-C1	283 x 207 x 45 mm
Protection category (IEC 60529)	IP30
Color	~RAL 7035 light gray

39 Mimic display driver FT2001-A1



39.1 Description

The mimic display driver FT2001-A1 is operated on the C-NET detector line and permits simple display of events, e.g. alarms and faults. 48 driver outputs are available, to which the LED ribbon cable F50F410 can be connected, for example.

The synoptic driver is supplied without housing. It is mounted on a carrier plate that permits installation in any housing. The housing used (by the customer) must have at least protection category IP30.

The mimic display driver is powered via the C-NET or via an external power supply.

Properties

- 48 freely programmable driver outputs
- Configuration of the driver outputs with Cerberus-Engineering-Tool
- Communication via C-NET
- Power supply via C-NET or an external, electrically isolated DC/AC supply
- Connections for buzzer, 'buzzer OFF' button and lamp test
- Connection for operating LED
- Two plug-type connections for one ribbon cable each with 24 user-positionable LEDs

39.2 Views

39.2.1 PCB

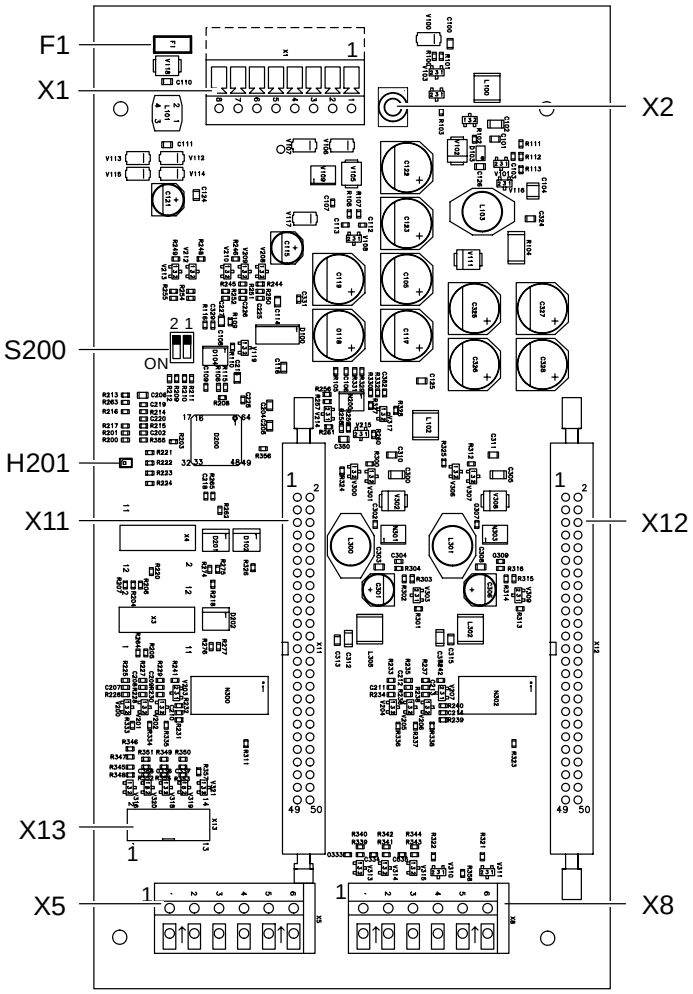


Figure 70: Printed circuit board view FT2001-A1

Element	Designation	Function
Plugs and terminals	X1	Connection terminal line (C-NET) and external supply
	X2	Jack socket MC-Link cable for software update
	X5	Connection terminal for expanded periphery
	X8	Connection terminal for supply monitoring and operating LED
	X11	Driver output 1…24 connector
	X12	Driver output 25…48 connector
	X13	Not used
LEDs	H201	Display update mode
Switch	S200	DIP switch for manual activation of the update mode
Fuse	F1	Fuse for external supply, 1A/T (not exchangeable)

39.2.2 Carrier

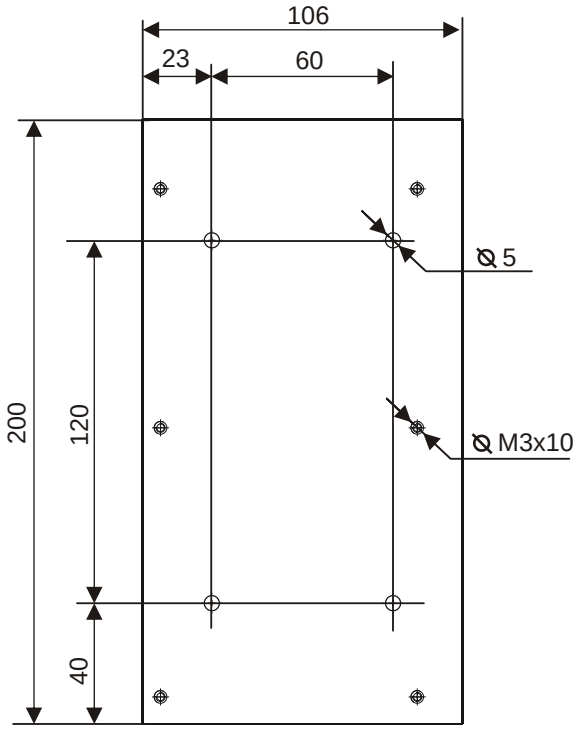


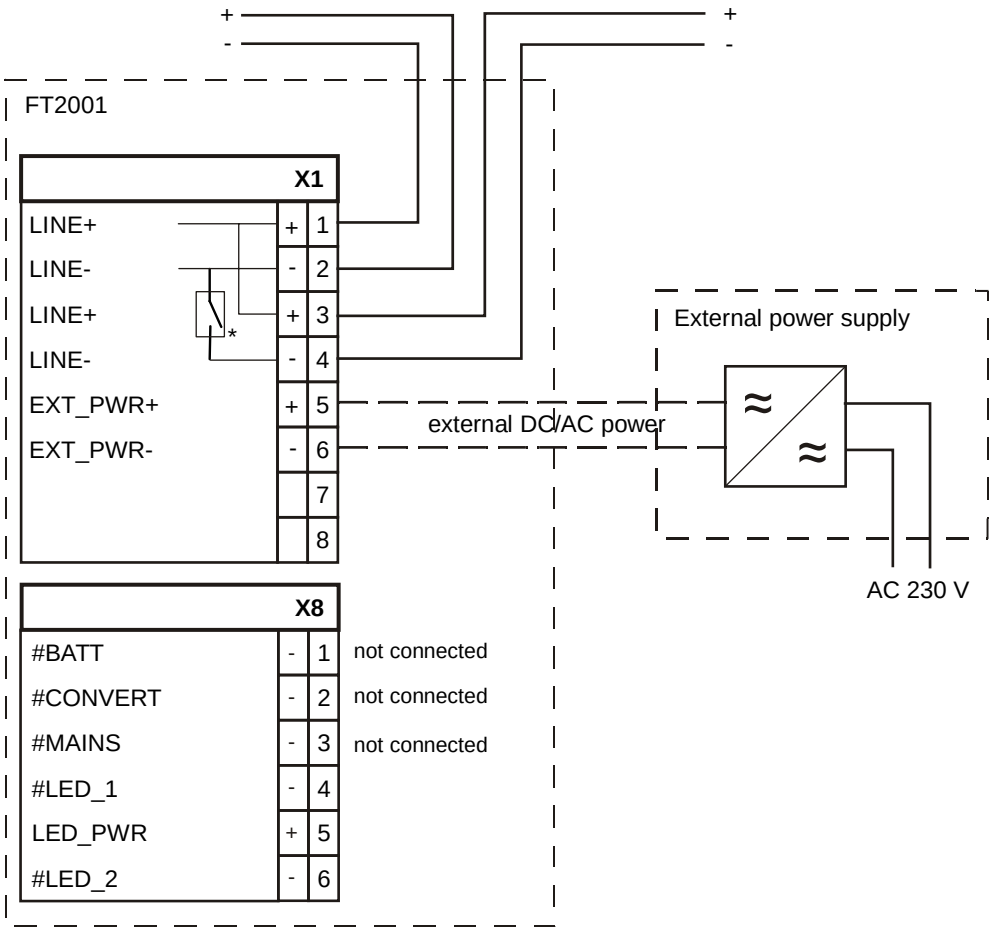
Figure 71: Dimensions of carrier plate for FT2001

39.3 Pin assignments

39.3.1 X1 detector line and external supply

Pin	Designation	Description
1	LINE+	↑ Detector line +
2	LINE-	Detector line -
3	LINE+	Detector line +
4	LINE-	Detector line -
5	EXT_PWR+	Input for external supply DC+ / AC[1]
6	EXT_PWR-	Input for external supply DC- / AC[1]
7		Not used
8		Not used

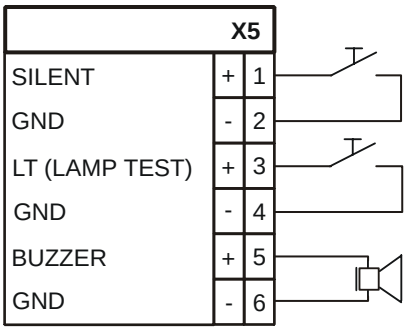
[1] External supplies must be electrically isolated from the system and other line devices.



* Integrated ↑ line separator

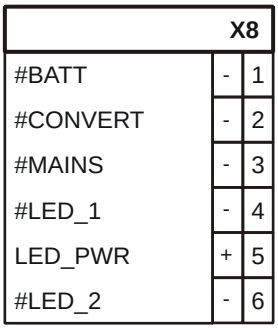
39.3.2 X5 expanded periphery

Pin	Designation	Description
1	SILENT	Connection +, 'Local buzzer OFF' button
2	GND	Connection -, 'Local buzzer OFF' button
3	LT	Connection +, 'Lamp test' button
4	GND	Connection -, 'Lamp test' button
5	BUZZER	Connection + (12 V) for buzzer
6	GND	Connection - (12 V) for buzzer



39.3.3 X8 monitoring external supply and operating LED

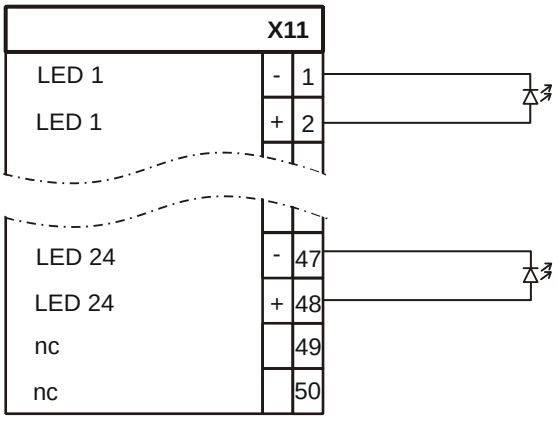
Pin	Designation	Description
1	#BATT	Message input from the external power supply: Battery malfunction (not used)
2	#CONVERT	Message input from the external power supply: Converter fault (not used)
3	#MAINS	Message input from the external power supply: Mains failure (not used)
4	#LED_1	Signal for operating LED 'LED_1'
5	LED_PWR	Supply + for 'LED_1' and 'LED_2'
6	#LED_2	Signal 'LED_2' (not used)



39.3.4 X11 driver outputs 1…24

Pin	Designation	Description
1(-), 2(+)	LED 1	External LED power source or logic output
3(-), 4(+)	LED 2	External LED power source or logic output
5(-), 6(+)	LED 3	External LED power source or logic output
7(-), 8(+)	LED 4	External LED power source or logic output
9(-), 10(+)	LED 5	External LED power source or logic output
11(-), 12(+)	LED 6	External LED power source or logic output
13(-), 14(+)	LED 7	External LED power source or logic output
15(-), 16(+)	LED 8	External LED power source or logic output
17(-), 18(+)	LED 9	External LED power source or logic output
19(-), 20(+)	LED 10	External LED power source or logic output
21(-), 22(+)	LED 11	External LED power source or logic output
23(-), 24(+)	LED 12	External LED power source or logic output
25(-), 26(+)	LED 13	External LED power source or logic output
27(-), 28(+)	LED 14	External LED power source or logic output
29(-), 30(+)	LED 15	External LED power source or logic output
31(-), 32(+)	LED 16	External LED power source or logic output
33(-), 34(+)	LED 17	External LED power source or logic output
35(-), 36(+)	LED 18	External LED power source or logic output
37(-), 38(+)	LED 19	External LED power source or logic output
39(-), 40(+)	LED 20	External LED power source or logic output
41(-), 42(+)	LED 21	External LED power source or logic output
43(-), 44(+)	LED 22	External LED power source or logic output
45(-), 46(+)	LED 23	External LED power source or logic output
47(-), 48(+)	LED 24	External LED power source or logic output
49(-), 50(+)	nc	Not connected

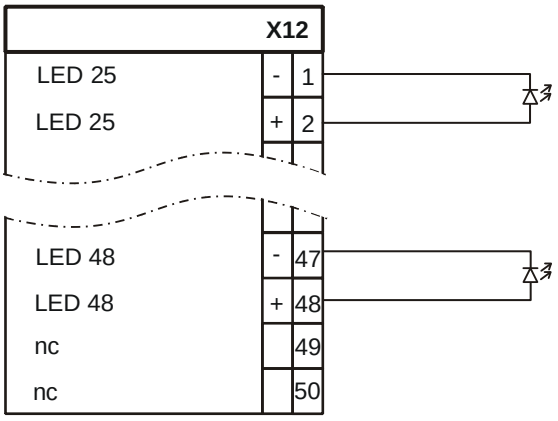
The ribbon cable with the LEDs is connected to the periphery plug X11 depending on the application.



39.3.5 X12 driver outputs 25…48

Pin	Designation	Description
1(-), 2(+)	LED 25	External LED power source or logic output
3(-), 4(+)	LED 26	External LED power source or logic output
5(-), 6(+)	LED 27	External LED power source or logic output
7(-), 8(+)	LED 28	External LED power source or logic output
9(-), 10(+)	LED 29	External LED power source or logic output
11(-), 12(+)	LED 30	External LED power source or logic output
13(-), 14(+)	LED 31	External LED power source or logic output
15(-), 16(+)	LED 32	External LED power source or logic output
17(-), 18(+)	LED 33	External LED power source or logic output
19(-), 20(+)	LED 34	External LED power source or logic output
21(-), 22(+)	LED 35	External LED power source or logic output
23(-), 24(+)	LED 36	External LED power source or logic output
25(-), 26(+)	LED 37	External LED power source or logic output
27(-), 28(+)	LED 38	External LED power source or logic output
29(-), 30(+)	LED 39	External LED power source or logic output
31(-), 32(+)	LED 40	External LED power source or logic output
33(-), 34(+)	LED 41	External LED power source or logic output
35(-), 36(+)	LED 42	External LED power source or logic output
37(-), 38(+)	LED 43	External LED power source or logic output
39(-), 40(+)	LED 44	External LED power source or logic output
41(-), 42(+)	LED 45	External LED power source or logic output
43(-), 44(+)	LED 46	External LED power source or logic output
45(-), 46(+)	LED 47	External LED power source or logic output
47(-), 48(+)	LED 48	External LED power source or logic output
49(-), 50(+)	nc	Not connected

The ribbon cable with the LEDs is connected to the periphery plug X12 depending on the application.



39.4 Indicators

LED	Color	Function	State	Meaning
LED_1 (X8)	(Green)	Operating LED	Lit up	Normal condition
			Fast flashing (0.5 s)	Communication error C-NET or degraded mode of the control panel
			Slow flashing (1 s)	Voltage error of the external supply or not yet configured
H201	Yellow	Update mode	Off	Normal status (update mode inactive)
			Flashes	Update mode active

39.5 Adjustment elements

DIP switch S200 activates update mode manually via the MC-Link connection.

Firmware update mode is generally started automatically and the switch S200 does not have to be changed over. If update mode is not started automatically, it is possible to switch over manually with S200.

Switch	Function	Position	Meaning
S200-1	Firmware update mode	ON	Update mode active
		OFF	Update mode inactive
S200-2	Not connected	–	–
		–	–

39.6 Technical data

FT2001-A1	
C-NET	
Operating voltage	DC 16…33 V
Max. operating current	45 mA
Max. quiescent current	5 mA
Max. capacitive load to ground	C = 500 nF
Max. capacitive load to ground with external supply	C = 100 nF
Line separator	
Line voltage:	
• Nominal	DC 32 V (= V_{nom})
• Minimum	DC 16 V (= V_{min})
• Maximum	DC 33 V (= V_{max})
Voltage at which the line separator opens:	
• Minimum	DC 7.5 V (= $V_{SO\ min}$)
• Maximum	DC 10.5 V (= $V_{SO\ max}$)
Permanent current when switches are closed	Max. 1.5 A (= $I_{C\ max}$)
Switching current	Max. 2 A (= $I_{S\ max}$)
Leakage current	Max. 1 mA (= $I_{L\ max}$)
Serial impedance when switches are closed	Max. 0.4 Ω (= $Z_{C\ max}$)
The line separator is closed via an actuation signal from the control panel. Required line voltage: DC 16…33 V (normal range)	
Supply	
External supply input	
• DC	14…32 V, electrically isolated, EN54-4 conformity not required
• AC	11…22 V, electrically isolated, EN54-4 conformity not required
Key figures	
Address connection factor	AK = 1
Quiescent current connection factor	RK = 16
Maximum current connection factor:	
• Without external supply: – With 24 LEDs – With 36 LEDs – With 48 LEDs	 MK = 52…80 MK = 68…130 MK = 80…165
• With external supply	MK = max. 16

FT2001-A1	
Outputs	
Operation LED (X8; 'LED_1')	
• Max. output current	2.5 mA constant at Usys (12 … 32 V)
Driver outputs (X11/X12)	
• Max. output current with LED operation	2.5 mA and DC 2.5 V
Buzzer (X5/5.6)	
• Max. output current	5 mA and DC 12 V
Connections	
LED signal outputs	Plug-type connection with flat-ribbon cable
Connection terminal	0.08…1.5 mm^2
Ambient conditions	
Operating temperature	0…+40 °C
Storage temperature	-20...+60 °C
Air humidity	≤95 % rel.
Mechanical data	
Dimensions (W x H x D)	106 x 200 x 45 mm
Min. protection category (IEC 60529) of the housing (provided by the customer)	IP30

40 Event printer FTO2001-A1

40.1 Pin assignments

40.1.1 Connection on printer side

Product version (ES) 01

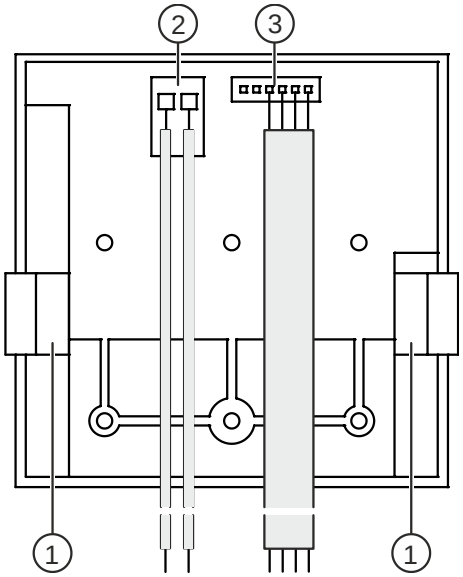
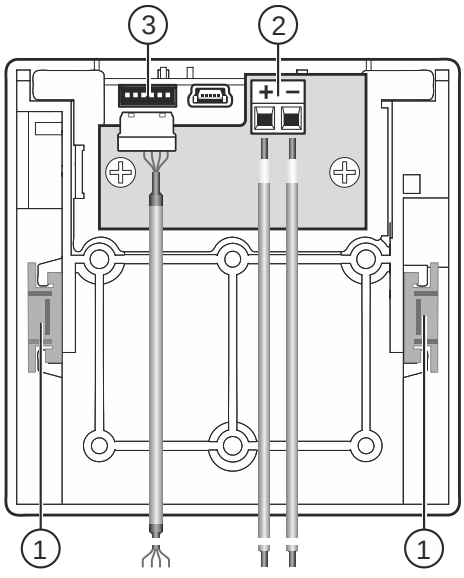


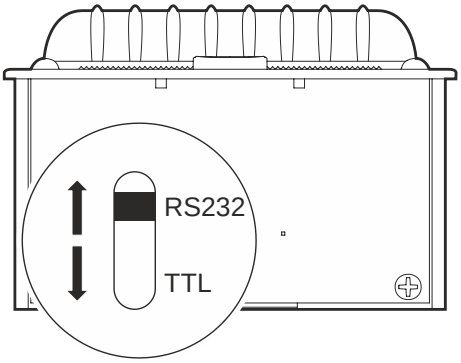
Figure 72: Rear view ES01

Product version (ES) 02



Rear view ES02

ES02: Serial interface settings



Top view

1 Fastening clamps
2 Supply connection
3 Data line connection

40.1.2 Connection on station side

The event printer must be directly connected to the power supply.

Connecting the event printer to the power supply (70 W)

Connector	From printer	To	Power supply terminal X2
2	Positive supply (red)	=>	X2, PIN 4 (Usys +)
	Negative supply (blue)	=>	X2, PIN 3 (Usys -)

Table 6: Pin assignment for power supply (70 W)

Connecting the event printer to the power supply (150 W)

Connector	From printer	To	Power supply terminal X8
2	Positive supply (red)	=>	X8, PIN 4, 5, 6, 7, or 8 (+24 V)
	Negative supply (blue)	=>	X8, PIN 1, 2, or 3 (0 V)

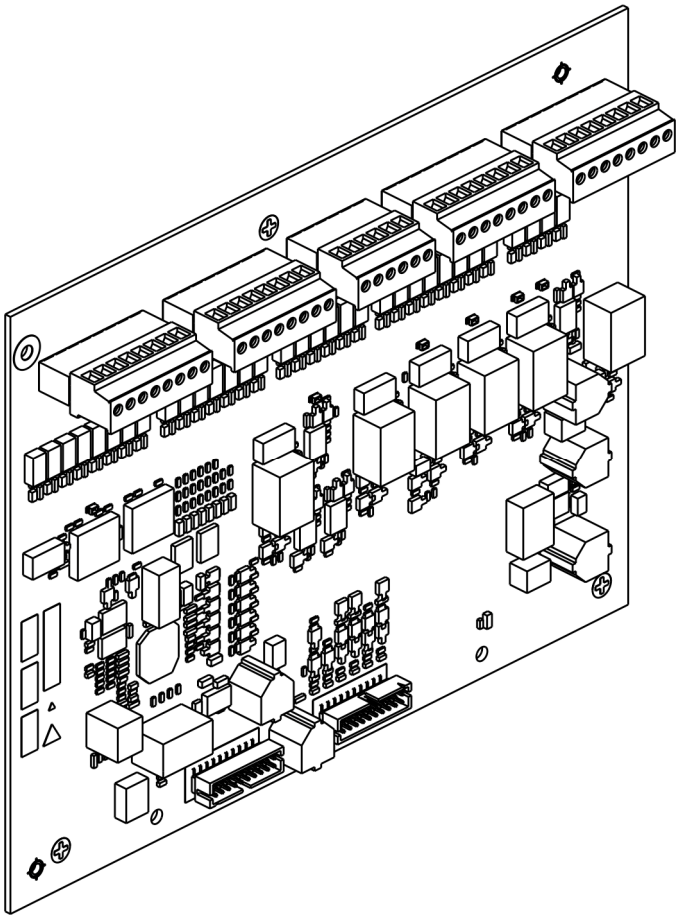
Table 7: Pin assignment for power supply (150 W)

Connection of event printer to RS232 module

Connector	From printer	To	Terminal X3 of RS232 module
3	Data (white)	=>	(X3) PIN 6 (CTS)
	Data (brown)	=>	(X3) PIN 4 (RXD)
	Data (green)	=>	(X3) PIN 2 (TXD)
	Data (yellow)	=>	(X3) PIN 5 (0 V)

Table 8: Pin assignment for RS232 module

41 Fire brigade periphery module FCI2001-D1 [DE]



41.1 Description

The fire brigade periphery module makes the connection of the following peripheral devices possible, in compliance with the ↑ VdS:

- Fire brigade operating panel (FBF)
- Remote transmission (RT) or remote device (RD)
- Releasing element (FSE)
- Fire brigade key depot (FSD)
- Identification lamp (KL)
- Local alarm (LA)
- Intrusion detection system (EMA)

The fire brigade periphery module is connected to the periphery board and has the following features:

- All inputs and outputs to the peripheral devices are provided with EMI- and overvoltage protection.
- Activation of ↑ RT, RD, FSD, and LA in degraded mode operation.
- The lines to RT, RD, FSE, FSD and LA are monitored.

41.2 Views

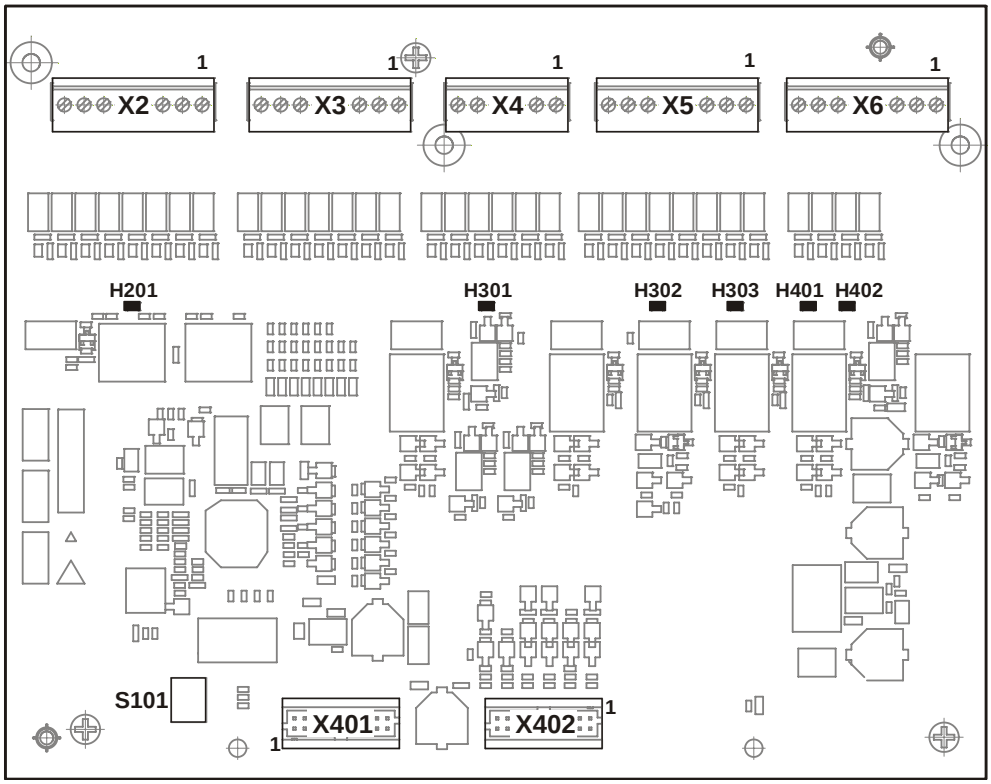


Figure 73: Printed circuit board view of fire brigade periphery module FCI2001-D1

Element	Des.	Function
Plugs and terminals	X2	Fire brigade operating panel: Outputs
	X3	Fire brigade operating panel: Inputs
	X4	Remote equipment or remote device and release element
	X5	Fire brigade key depot
	X6	Identification lamp, local alarm and intrusion detection system
	X401	Peripheral data bus and supply
	X402	Peripheral data bus and supply
LEDs	H201	Fire brigade operating panel
	H301	Remote transmission
	H302	Fire brigade key depot: Unlocking
	H303	Fire brigade key depot: Heater
	H401	Identification lamp
	H402	Local alarm
Button	S101	Reading in the measuring values of all monitored inputs and outputs

41.3 Pin assignments

Inputs and outputs which are not used do not require termination.

41.3.1 X2 fire brigade operating panel / X3 fire brigade operating panel

X2 fire brigade operating panel

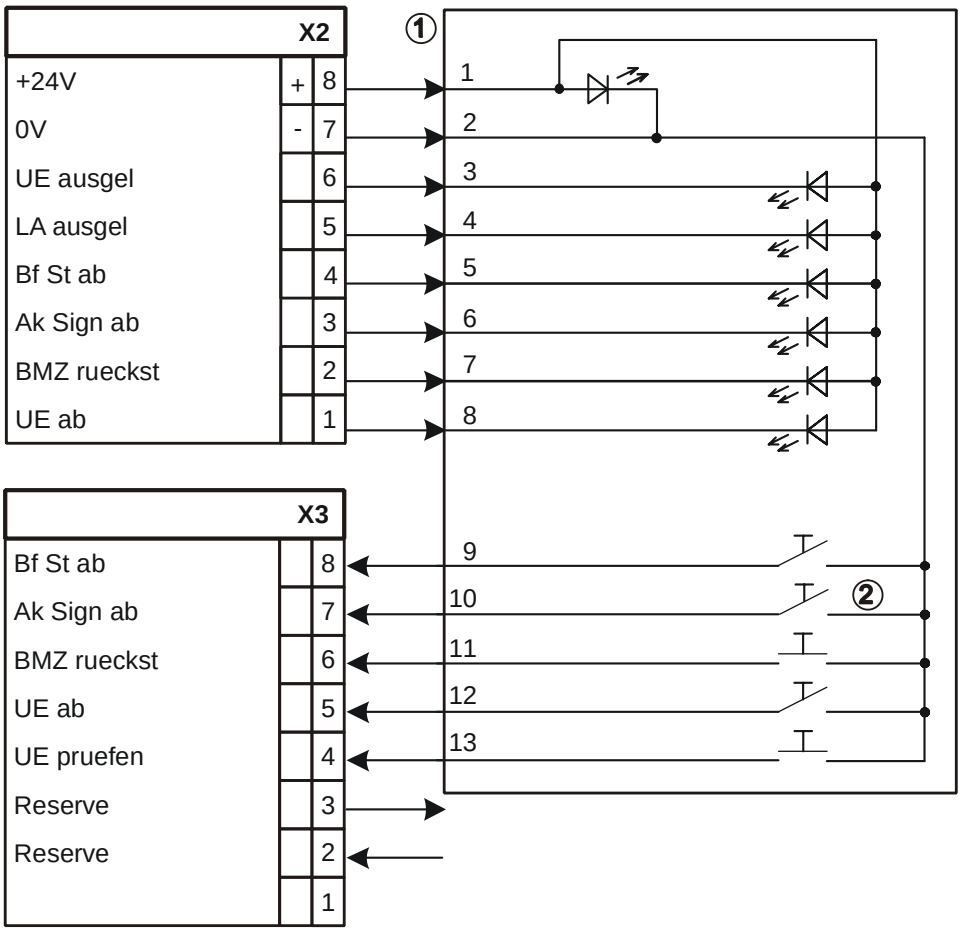
Pin	Designation	Description
8	+24V	Operating voltage (+24 V)
7	0 V	Operating voltage (-)
6	↑ UE ausgel	↑ Remote transmission triggered
5	LA ausgel	Extinguishing system triggered
4	Bf St ab	Fire controls off
3	Ak Sign ab	Acoustic signals off
2	BMZ rueckst	Reset fire control panel
1	UE ab	Remote transmission off

Admissible cable cross-section: 0.2…1.5 mm²

X3 fire brigade operating panel

PIN	Designation	Description
8	Bf St ab	Fire controls off
7	Ak Sign ab	Acoustic signals off
6	BMZ rueckst	Reset fire control panel
5	↑ UE ab	↑ Remote transmission off
4	UE pruefen	Check remote transmission
3	Reserve	Reserve output
2	Reserve	Reserve input
1		Not used

Admissible cable cross-section: 0.2…1.5 mm²



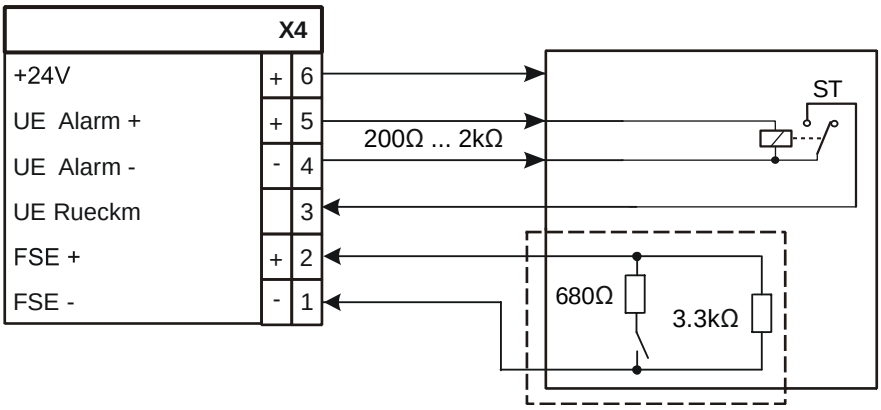
1 The connection details correspond to the FBF Type Wiesmeier FBF0770

2 Only switch possible

41.3.2 X4 remote transmission /release element

Pin	Designation	Description
6	+24V	Operating voltage (+24 V)
5	↑ UE Alarm+	↑ Remote transmission/device alarm (+)
4	UE Alarm-	Remote transmission/device alarm (-)
3	UE Rueckm	Remote transmission /device acknowledgement (+)
2	FSE+	Release element with monitored remote switching output or separately monitored key switch
1	FSE-	

Admissible cable cross-section: 0.2…1.5 mm²

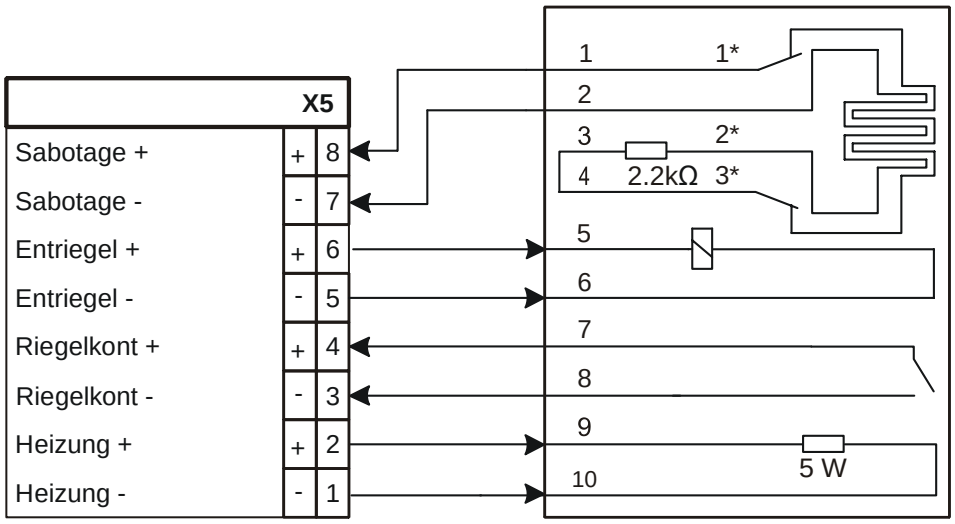


ST Fault contact of the transmission device

41.3.3 X5 fire brigade key depot

Pin	Designation	Description
8	Sabotage +	Tamper monitoring (+)
7	Sabotage -	Tamper monitoring (-)
6	Entriegel +	Unlocking (+)
5	Entriegel -	Unlocking (-)
4	Riegelkont +	Latch contact (+)
3	Riegelkont -	Latch contact (-)
2	Heizung +	Heating (+)
1	Heizung -	Heating (-)

Admissible cable cross-section: 0.2…1.5 mm²



1* Door contact

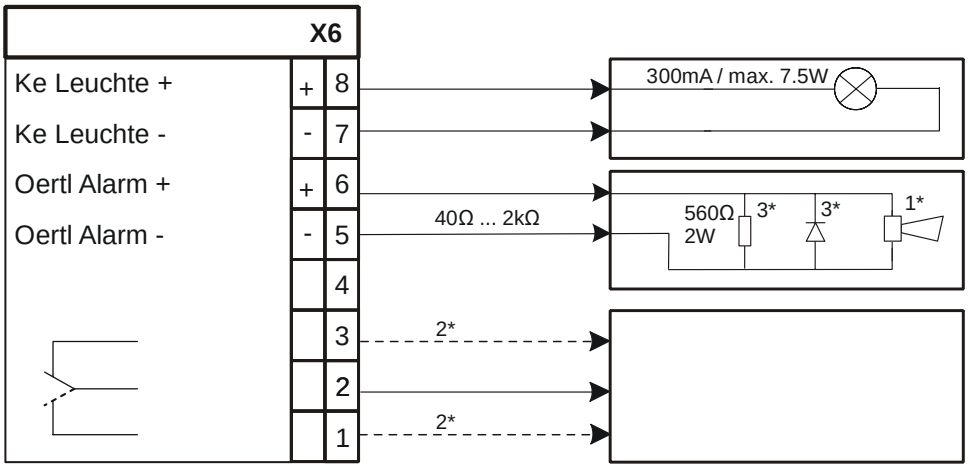
2* Drill protection

3* Key contact

41.3.4 X6 intrusion detection system / local alarm / identification lamp

Pin	Designation	Description
8	Ke Leuchte +	Identification lamp (+)
7	Ke Leuchte -	Identification lamp (-)
6	Oertl Alarm +	Local alarm (+)
5	Oertl Alarm -	Local alarm (-)
4	-	Not used
3		FSD sabotage, closer (normally open)
2		FSD sabotage, common
1		FSD sabotage, opener (normally open)

Admissible cable cross-section: 0.2…1.5 mm²



1* Horn or beacon

2* FSD sabotage, connection for "Transmission intrusion detection system" (can be connected as NO or NC)

3* If necessary

41.4 Indicators

LED	Color	Function	State	Meaning
H201	Yellow	Fire brigade operating panel	Off	↑ Normal operation
			On	Fault: Overload protection active (short-circuit)
H301	Yellow	Remote transmission and transmission device	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H302	Yellow	Fire brigade key depot: Unlocking	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H303	Yellow	Fire brigade key depot: Heater	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H401	Yellow	Identification lamp	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H402	Yellow	Local alarm	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)

41.5 Technical data

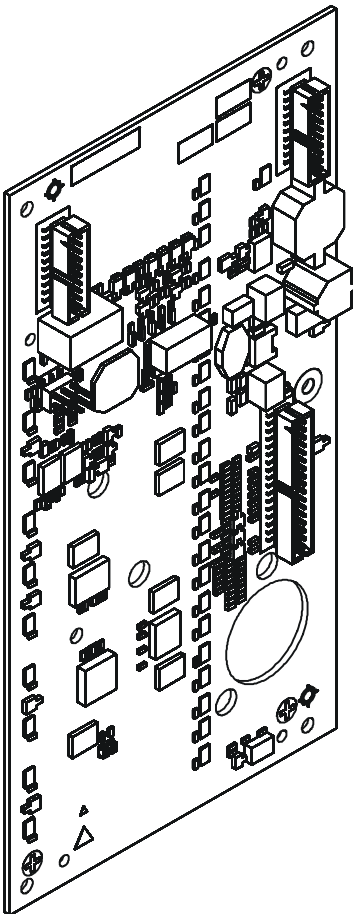
Fire brigade operating panel (FBF)	Supply voltage	DC 20…30 V
	Supply current	Typ. <50 mA, max. 1 A (current-limited)
	Design of the inputs and outputs	• Active low • Short-circuit-proof
	Line resistance per wire	Max. 10 Ω
Remote transmission / Transmission device	Supply voltage	DC 25…29 V
	Supply current	Typ. <30 mA; max. 1 A (current-limited)
	Output (RT/RD alarm):	
	Voltage/current (if active)	DC 25…29 V; 12…120 mA; max. 1 A
	Design	• Active high • Short-circuit-proof • Current limited
	In quiescent condition monitored for	• Short-circuit (incl. gradual) • Open line (incl. gradual)
	Load resistance	200 Ω…2 kΩ
	Line resistance per wire	Max. 10 Ω
	Input (RT/RD confirmation):	

	Design	• Active low • Short-circuit-proof
	Line resistance per wire	Max. 10 Ω
Releasing element (FSE)	Input FSE:	
	Design	Short-circuit-proof
	Termination resistor for quiescent condition	3.3 kΩ
	Termination resistor for alarm	3.3 kΩ parallel 680 Ω
	Monitored for	• Short-circuit • Open line
	Line resistance per wire	Max. 10 Ω
Fire brigade key depot	Tamper input:	
	Design	Short-circuit-proof
	Termination resistor for quiescent condition	2.2 kΩ
	Monitored for	Deviation >40 % of 2.2 Ω
	Line resistance per wire	Max. 10 Ω
	Deblocking output:	
	Voltage/current (if active)	DC 25…29 V; typ. 260 mA; max. 1 A
	Design	• Active high • Short-circuit-proof • Current limited
	Line resistance per wire	Max. 5 Ω
	Input latch contact:	
	Design	• Active low • Short-circuit-proof
	Line resistance per wire	Max. 10 Ω
	Output heating:	
	Voltage/current (if active)	DC 20…30 V, typ. 200 mA (5 W); max. 1 A
	Design	• Active high • Short-circuit-proof • Current limited
	Line resistance per wire	Max. 5 Ω
	Output tamper transmission:	
	Switching voltage/switching current	AC 30 V / 1 A max. (max. 30 W)
	Design	• Quiescent current relay • Potential-free

Identification lamp (KL)	Voltage/current (if active)	DC 20…30 V; typ. 300 mA (max. 1 A)
	Design of the output	• Active high • Short-circuit-proof • Current limited
	Line resistance per wire	Max. 5 Ω
Local alarm (LA)	Voltage/current (if active)	DC 25…29 V; typ. 12…600 mA (max. 1 A)
	Design of the output	• Active high • Short-circuit-proof • Current limited
	In quiescent condition monitored for	• Short-circuit • Open line
	Load resistance	40 Ω…2 kΩ
	Line resistance per wire	Max. 5 % of the load resistance
Connections	VdS peripheral devices	Screw terminals; 0.2…1.5 mm²
	Power supply	Screw terminals; 0.5…2.5 mm²
	Periphery board	Plug-type connection
Mechanical data	Dimensions (L x W x H)	190 x 150 x 40 mm
	Weight	200 g

!	*NOTICE*
	VdS stipulates a range of 24 V +/- 15% for the supply to RT/RD, FSD, and LA devices. To ensure that the limit values are not exceeded, the max. input voltage must not be more than 28.6 V.

42 EVAC-NL operating unit FTO2007-N1



42.1 Description

The EVAC-NL operating unit FTO2007-N1 is an evacuation control unit for the Dutch market. It is built in the operating unit or the operating add-on and facilitates the operation of at max. ten evacuation zones. In addition, the EVAC-NL operating unit has indication and operating elements.

As operating add-on FCM7221-H3, the EVAC-NL operating unit is available with another ten zones, i.e., 20 zone indicators in total. The printed circuit board used is the same, except it is fitted with another indicator panel without control elements.

The EVAC-NL operating unit FTO2007-N1 is connected to the peripheral data bus and has the following features:

- Controlling the alarm sounders on the C-NET
- Up to ten evacuation zones possible
- Master indication and operation of all EVAC zones
- Key switch (Nordic) to release operation

42.2 Views

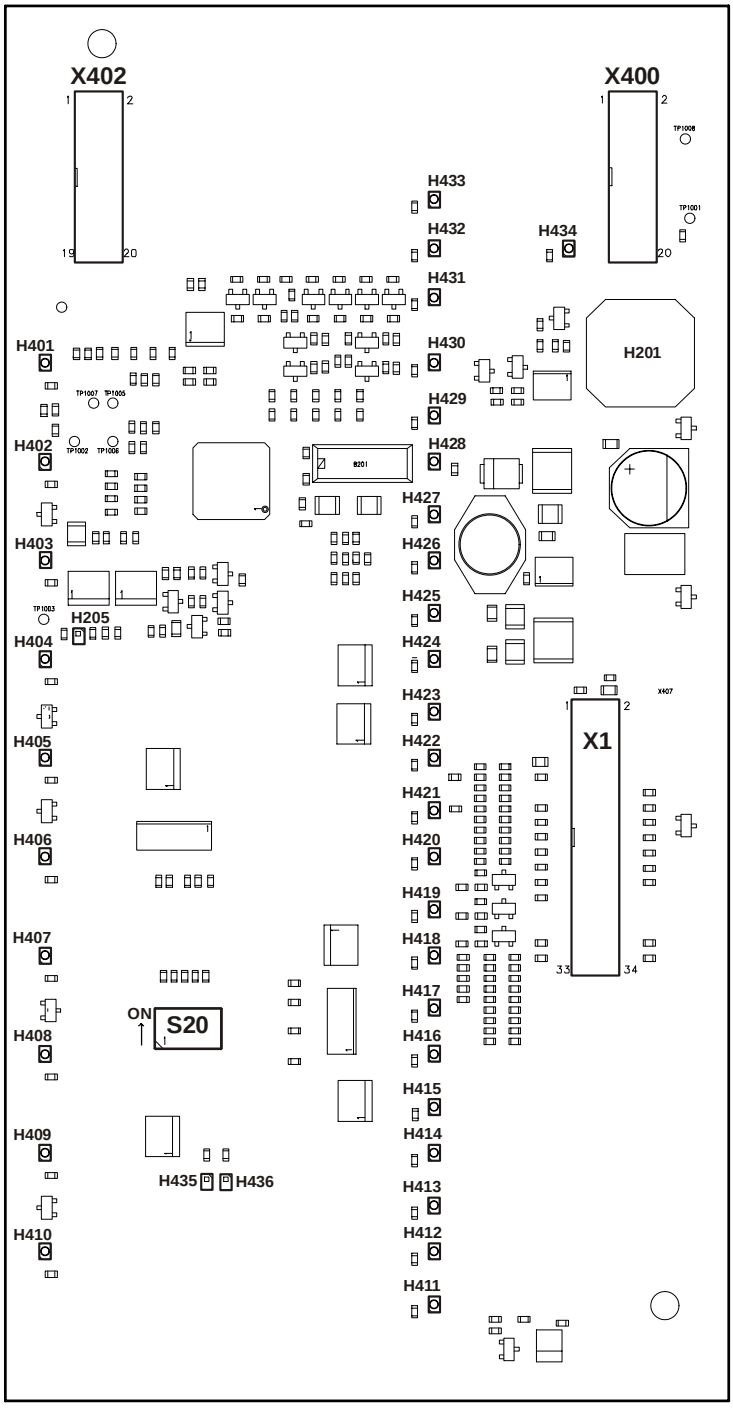


Figure 74: PCB view of EVAC-NL operating unit FTO2007-N1

X400	Connection peripheral data bus, input
X402	Connection periphery bus, output for additional EVAC
H401…H434	LEDs for operating indication (designation on printed circuit board)
H205	Watchdog
H201	Buzzer
S20 (1…6)	DIP switch for configuration
X1	Connection for EVAC-NL connector board FTI2002-N1 (only with remote EVAC)

42.3 Pin assignments

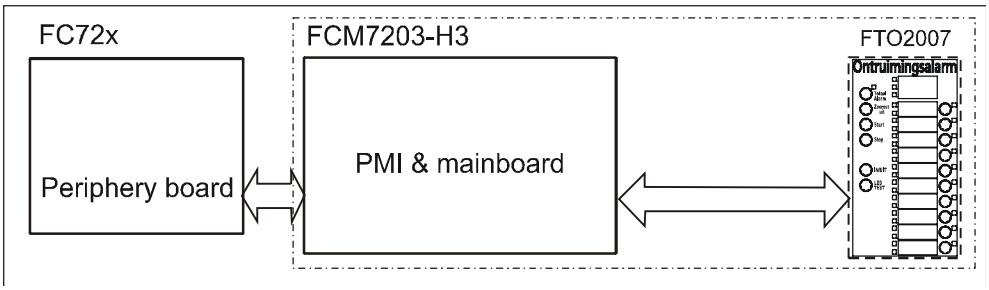


Figure 75: Wiring of integrated EVAC 10-zone display

The EVAC-NL operating unit FTO2007-N1 as 10-zone indicator is used as standard in the operating unit of the following fire control panels:

- FC722-HA
- FC724-ZE

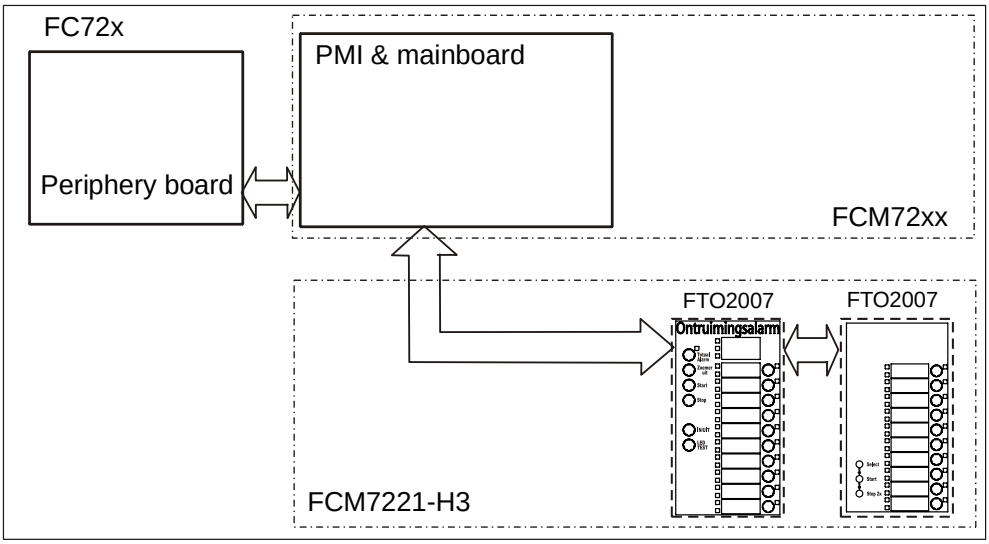


Figure 76: Wiring of integrated EVAC 20-zone display

The operating add-on FCM7221-H3 (option) is installed in the bottom part of the fire control panel and is connected via the peripheral data bus.

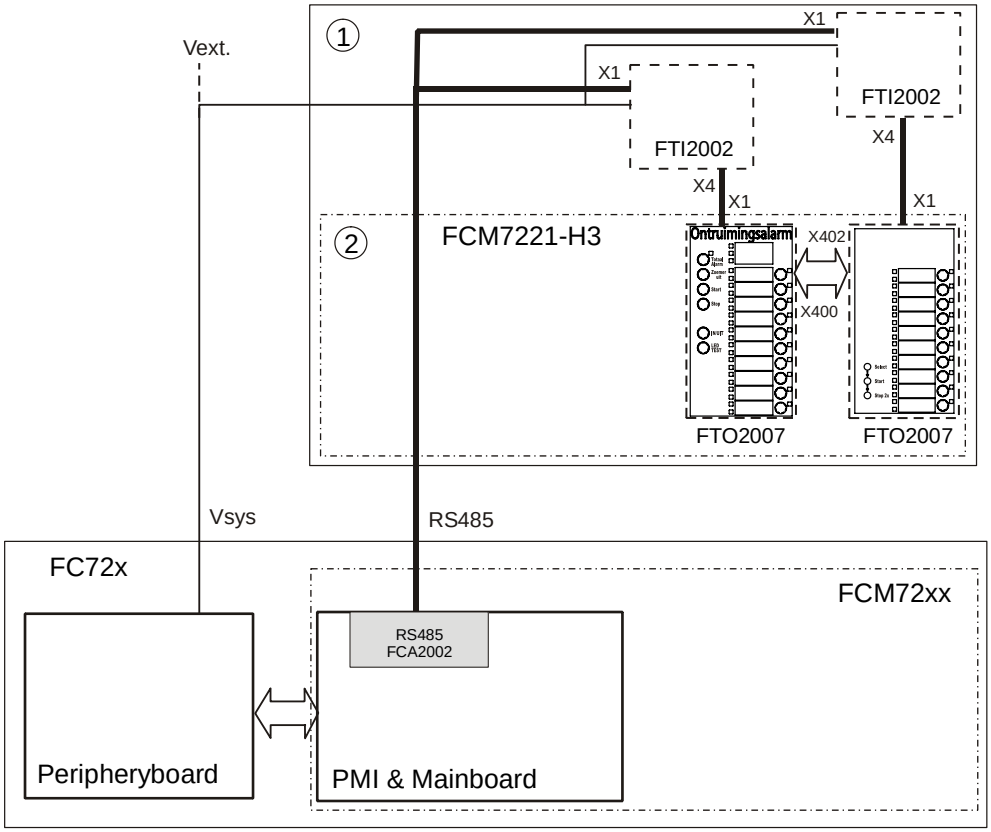


Figure 77: Wiring of the remote EVAC 20-zone display via the RS485 interface

1 Any housing (e.g. ECO housing)

2 Operating add-on FCM7221-H3 with 2x EVAC-NL FTO2007-N1 (option)

The two EVAC-NL operating units FTO2007-NL must be linked to each other for synchronization via the peripheral data bus (X400 - X402). If the LED indicators on the two components do not flash in synch, this indicates that they are not connected to one another.

42.4 Indicators

Display and operating elements on the front panel

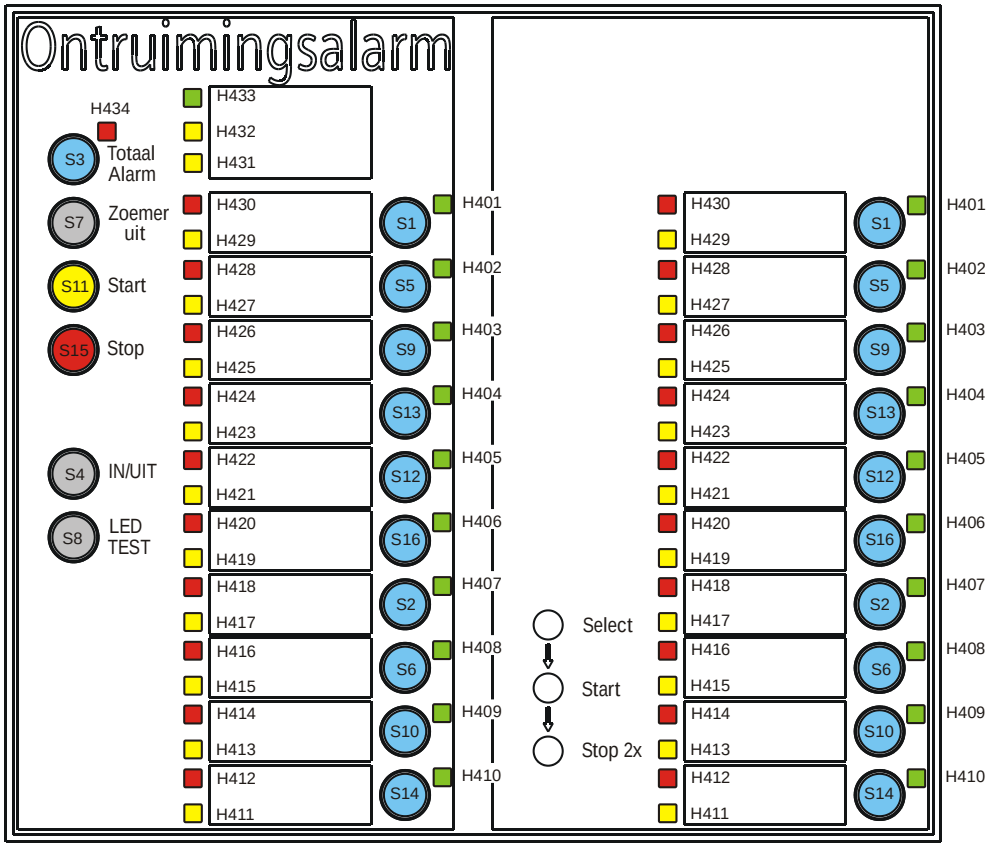


Figure 78: EVAC master unit (left), EVAC slave unit (right)

Indicators on the print plate

LED	Color	Function	State	Meaning
H205	Yellow	Watchdog	Off	Normal condition
			On	Function failure of the processor

42.5 Adjustment elements

The EVAC-NL indicator is configured with the switch S20.

Setting for one or the first EVAC-NL

Switch S20						Meaning
1	2	3	4	5	6	
S0	S1	S2	Master	Syn	(Empty)	
			ON	**OFF**		**Device address 1** [1]
ON			ON	OFF		Device address 2
	ON		ON	OFF		Device address 3
ON	ON		ON	OFF		Device address 4
		ON	ON	OFF		Device address 5
X	X	X	ON	ON		Mimic display outputs are actuated and polled (LED, keys and key switch)

Blank fields = Switch in 'OFF' position

X = Switch position according to addresses 1 to 5

[1] If working with a **single** EVAC-NL indicator (10 zones) and if working with the **first** EVAC-NL indicator, S20/4 (Master) must always be set to **ON**. If used in the EVAC-NL mimic display driver, the S20/5 (Syn) switch must also be **ON**.

Each address can be assigned only once per ↑ station.
The factory setting is always made for the application in question.

Setting for the second and/or any subsequent EVAC-NL indicator

Switch S20						Meaning
1	2	3	4	5	6	
S0	S1	S2	Master	Syn	(Empty)	
			OFF	OFF		Device address 1
ON			**OFF**	**OFF**		**Device address 2** [1]
	ON		OFF	OFF		Device address 3
ON	ON		OFF	OFF		Device address 4
		ON	OFF	OFF		Device address 5
X	X	X	OFF	ON		Mimic display outputs are actuated and polled (LED, keys and key switch)

Blank fields = Switch in 'OFF' position

X = Switch position according to addresses 1 to 5

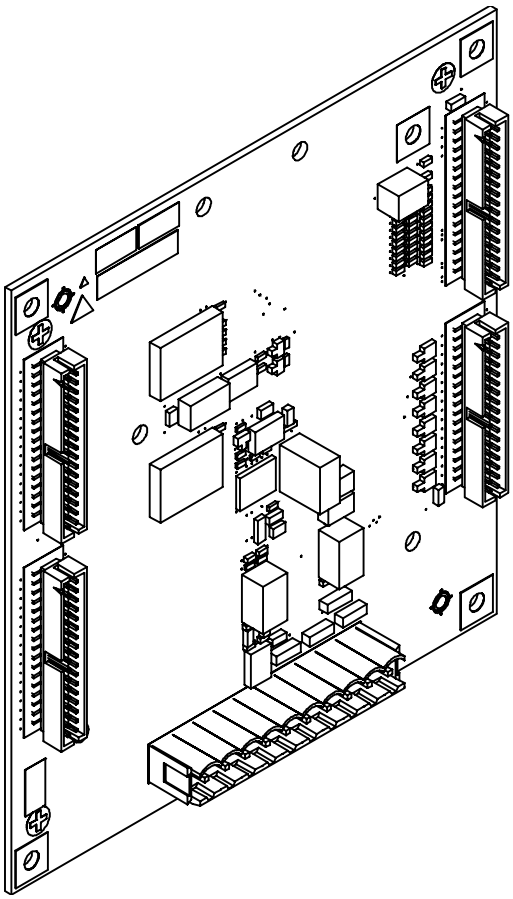
[1] 2 EVAC-NL indicators must not be operated on the same address (per station). On the second or any subsequent indicator, the address must always be set 1 higher (slave). If used in the EVAC-NL mimic display driver, the S20/5 (Syn) switch must also be **ON**.

Each address can be assigned only once per station.
The factory setting is always made for the application in question.

42.6 Technical data

Supply input	Voltage	DC 20…32 V
	Current	Max. 34 mA (21 V)
Supply output	Voltage	DC 20…32 V
	Current	Looped through, max. 1 A
LEDs	Number	34 for operating indication 1 for fault (watchdog)
	Function	Can be configured with Cerberus-Engineering-Tool
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable
Mechanical data	Dimensions (W x H x D)	185 x 96 x 12 mm
	Weight	70 g

43 EVAC-NL connector board FTI2002-N1 [NL]



43.1 Description

The EVAC-NL connector board FTI2002-N1 is the interface to EVAC-NL operating unit FTO2007-N1 and is needed as a connection module from the RS485 interface of the fire control panel to the operating add-on FCM7221-H3 or the mimic display indicator (EVAC) FT2003-N1. The FTI2002-N1 is installed in the same housing as the EVAC-NL operating unit.

Applications

- As an interface in a remote operating add-on FCM7221-H3.
- As an interface in the mimic display driver (EVAC) FT2003-N1 (without operating unit) for the EVAC-NL operating unit and the external operating and indication elements.

Properties

- Communication interface via RS485 to FS720 fire control panel.
- Supply inputs for an external 24 V supply.
- Monitoring signals for external supply.
- Connection for external operating and indication elements (mimic display indicator).

43.2 Views

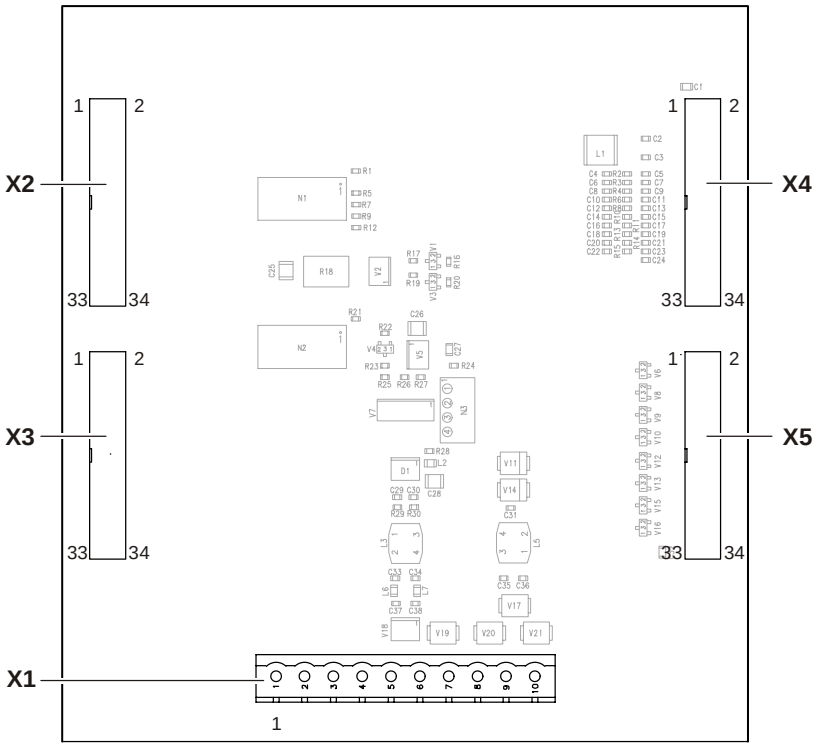


Figure 79: Printed circuit board view of EVAC-NL connector board FTI2002-N1

Element	Des.	Function
Plugs and terminals	X1	Supply, monitoring signals of the power supply and RS485 connection
	X2	Connections of LED mimic display indicator 1…17
	X3	Connections of LED mimic display indicator 18…34
	X4	Connection to EVAC-NL operating unit
	X5	Connections of mimic display operating elements (16)

43.3 Pin assignments

The EVAC-NL connector board FTI2002-N1 is used as an interface from the EVAC-NL operating unit FTO2007-N1 to the RS485 card in the control panel.

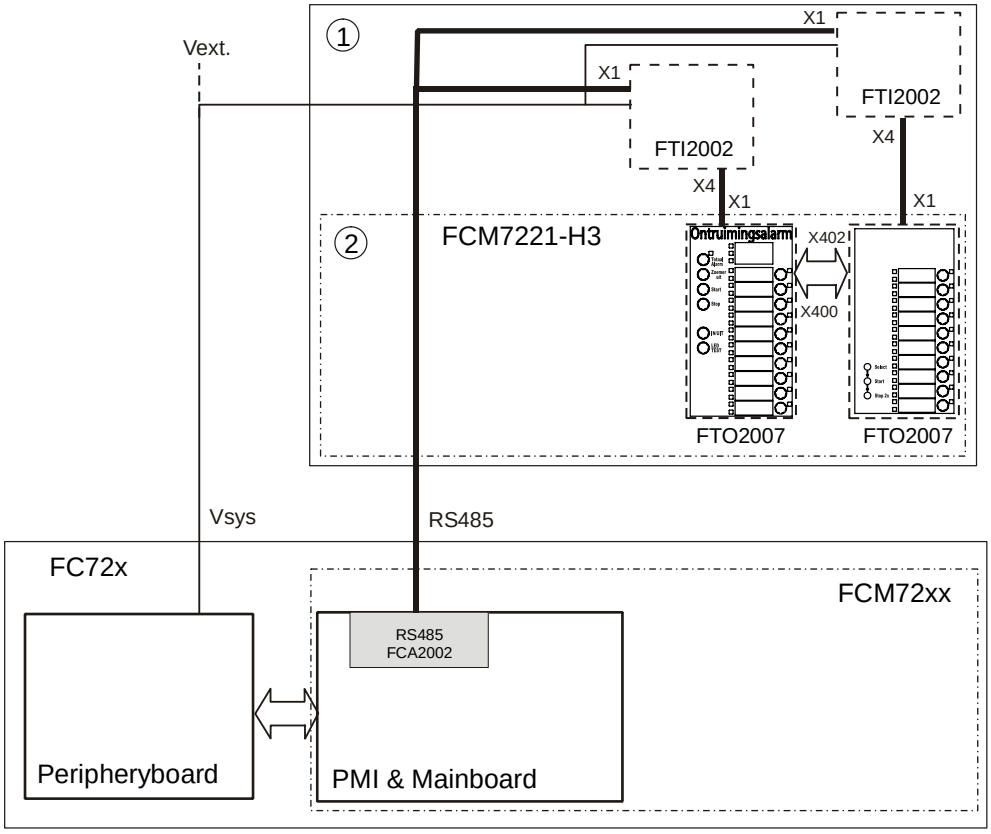


Figure 80: Wiring of the EVAC-NL connector board FTI2002-N1 in a remote EVAC 20-zone indicator

1	Any housing (e.g. ECO housing)
2	Operating add-on FCM7221-H3
FTI2002	EVAC-NL connector board
FTO2007	EVAC-NL operating unit

The two EVAC-NL operating units FTO2007-NL must be linked to each other for synchronization via the peripheral data bus (X400 –X402). If the LED indicators on the two components do not flash in synch, this indicates that they are not connected to one another.

In the EVAC mimic display FT2003-N1, the EVAC-NL connector board FTI2002-N1 is supplied together with the EVAC-NL operating unit FTO2007-N1.

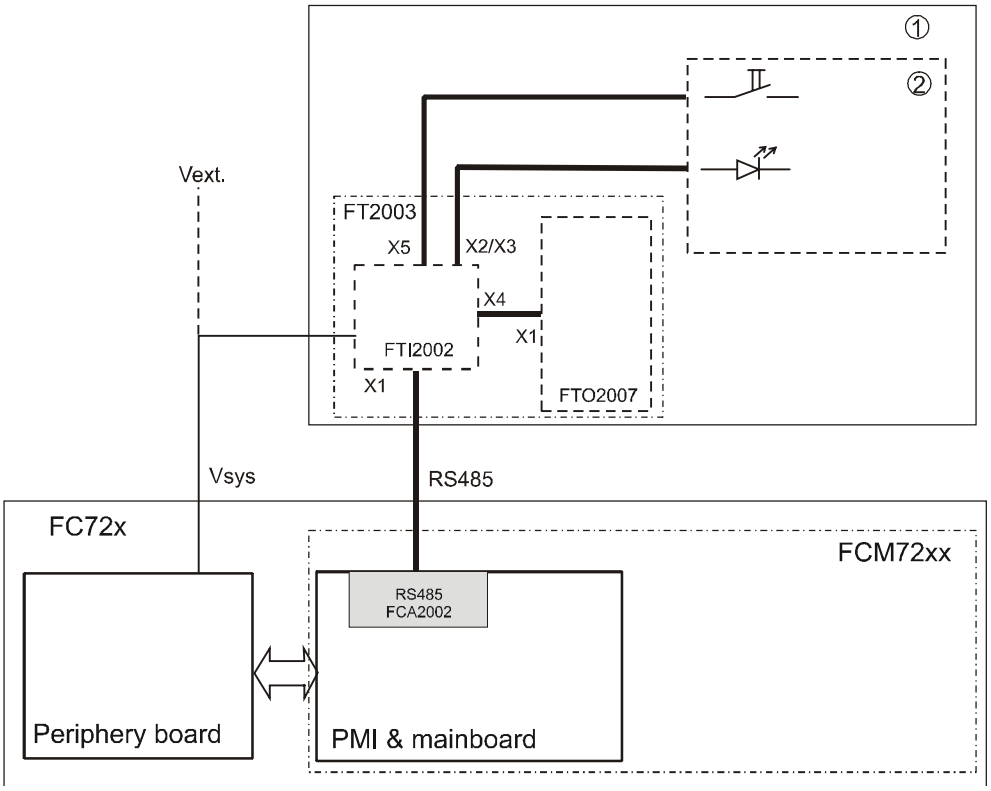


Figure 81: Wiring for EVAC-NL mimic display FT2003-N1

1	Any housing IP30 (e.g. ECO housing)
2	Any mimic display indicator and operation
FT2003	EVAC-NL mimic display
FTO2007	EVAC-NL operating unit
FTI2002	EVAC-NL connector board

43.3.1 Cable length and cable resistance

If using a remote EVAC-NL indicator and the EVAC mimic display driver, the length of the power supply cable is limited if the component is supplied internally via the periphery board.

The diagram below can be used to determine the maximum cable lengths for both cases.

The following cable is specified for the power supply:

- No shielding
- Twisted pair cable
- With at least 10 twists.

Please refer to the data for the corresponding component for the maximum RS485 interface cable length.

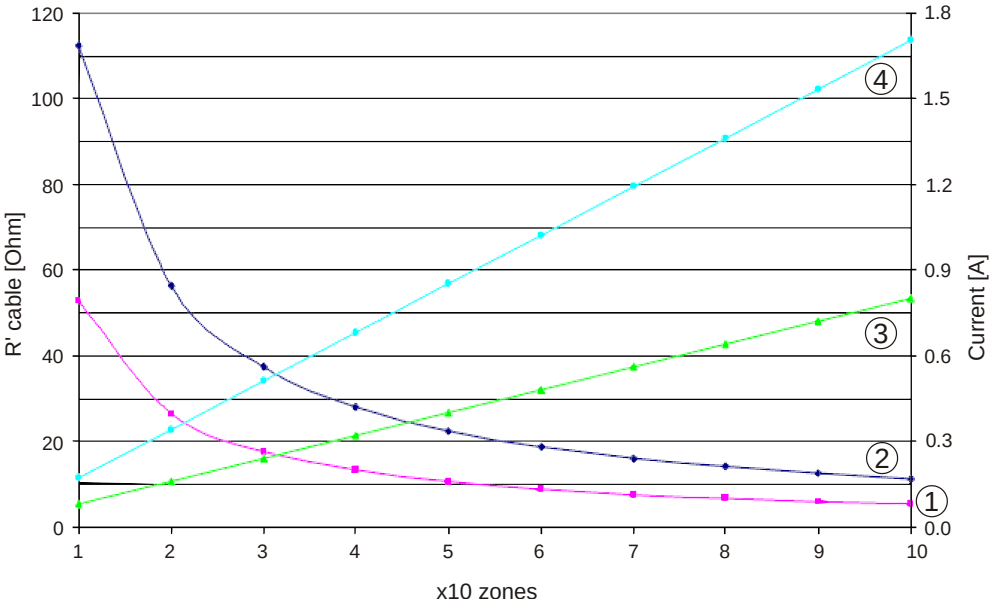


Figure 82: Diagram for calculating the max. cable resistance

1 Max. cable resistance R' for EVAC-NL mimic display driver

2 Max. cable resistance R' for remote EVAC-NL indicator

3 Max. current for remote EVAC-NL indicator

4 Max. current for EVAC-NL mimic display driver

Example of using the diagram

Two remote EVAC-NL indicators, one with 20 zones, the other with 30 zones, are supplied by the periphery board of the same ↑ station.

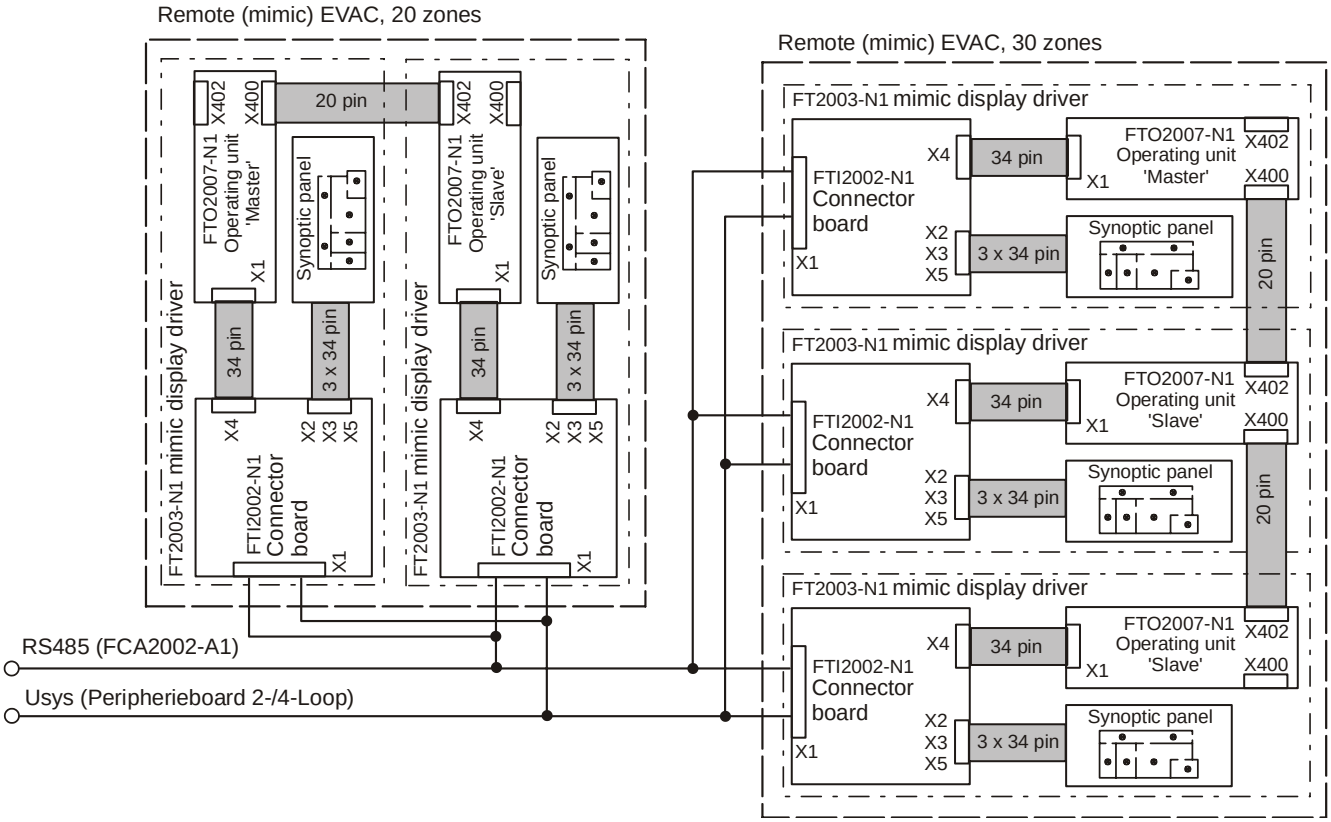


Figure 83: Wiring example for calculating the cable resistance

Number of zones via the same supply cable: 50 (20 from panel 1 and 30 from panel 2)

According to the diagram, this results in the following values for the EVAC-NL mimic display driver:

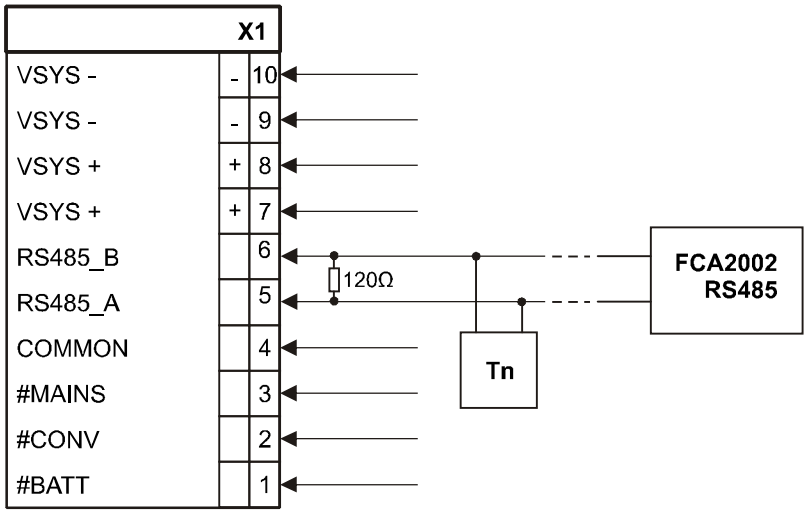
- Maximum cable resistance R' is 10 Ω (curve 1)
- Maximum current is 0.85 A (curve 4)

In the same way, this would result in the following for a remote EVAC-NL indicator:

- Maximum cable resistance R' is 22 Ω (curve 2)
- Maximum current is 0.4 A (curve 3)

43.3.2 X1 supply

Pin	Designation	Description
10	VSYS–	Supply input from the power supply (–)
9	VSYS–	Supply input from the power supply (–)
8	VSYS+	Supply input from the power supply (+)
7	VSYS+	Supply input from the power supply (+)
6	RS485_B	Input connection B [1]
5	RS485_A	Input connection A [1]
4	COMMON	Ground
3	#MAINS	Message input from the power supply: Mains failure
2	#CONV	Message input from the power supply: Converter fault
1	#BATT	Message input from the power supply: Battery fault

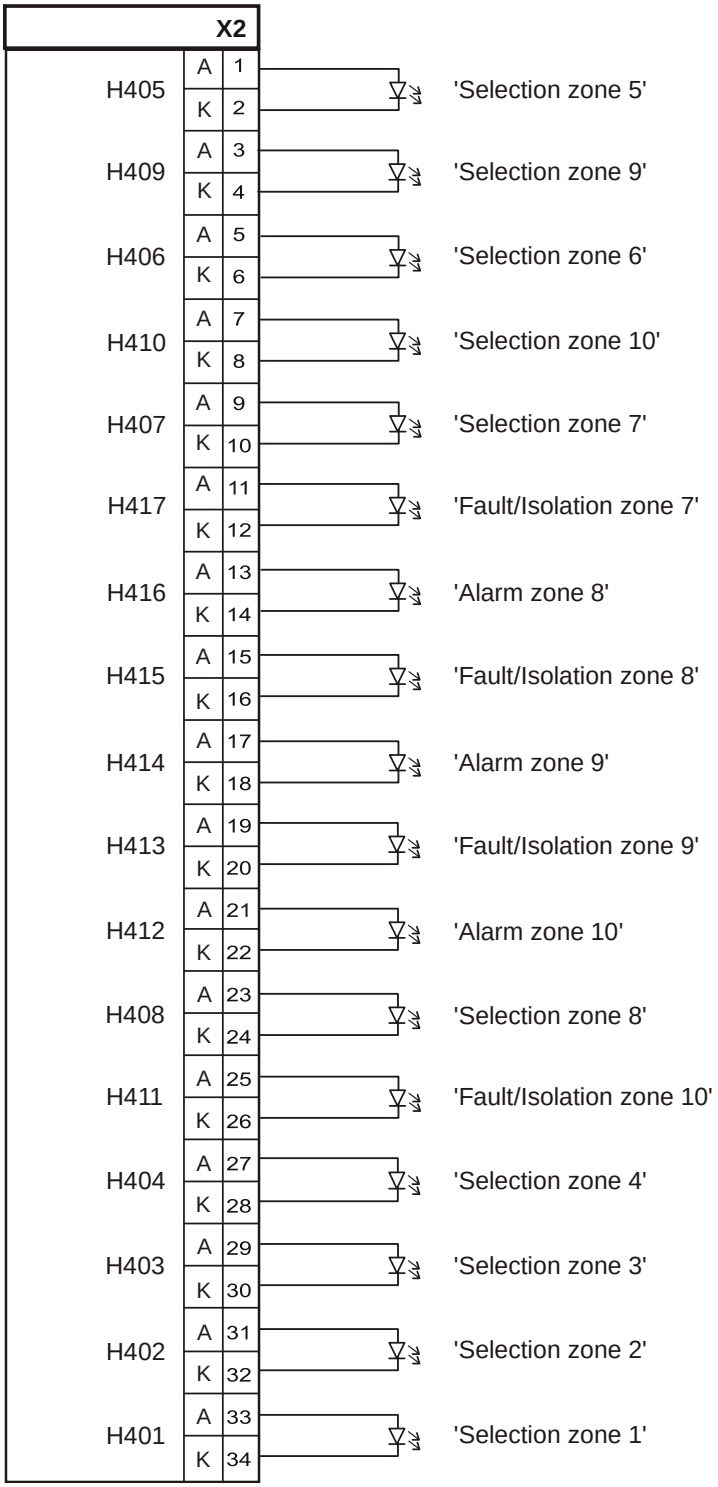


Tn = Last participant

!	*NOTICE*
	[1] Note the polarity of connections A and B. The last participant connection must have a resistance of 120 Ω.

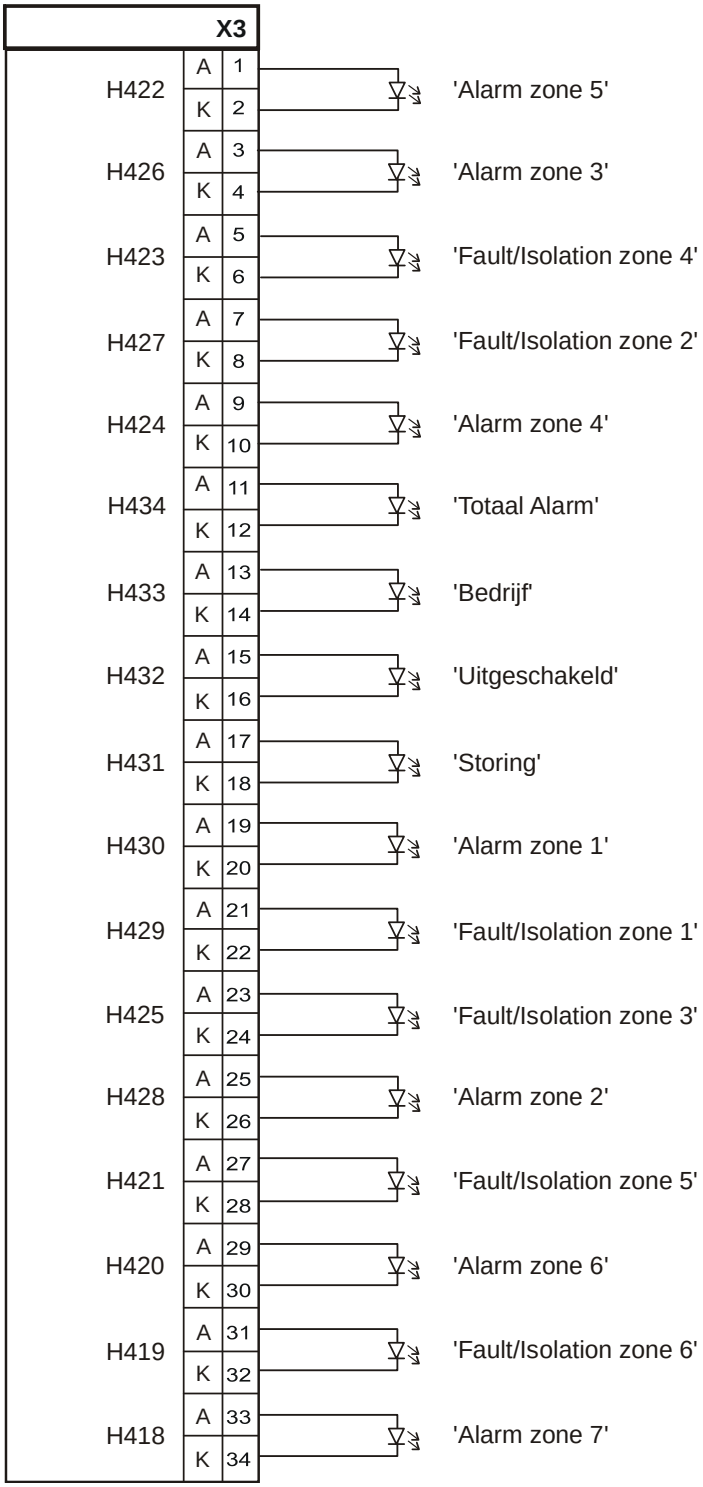
43.3.3 X2 LED mimic display

Pin	Connection for LED	Master description	Slave description
1, 2	H405 (green)	Selection zone 5	Selection zone 5
3, 4	H409 (green)	Selection zone 9	Selection zone 9
5, 6	H406 (green)	Selection zone 6	Selection zone 6
7, 8	H410 (green)	Selection zone 10	Selection zone 10
9, 10	H407 (green)	Selection zone 7	Selection zone 7
11, 12	H417 (yellow)	Fault/Isolation zone 7	Fault/Isolation zone 7
13, 14	H416 (red)	Alarm zone 8	Alarm zone 8
15, 16	H415 (yellow)	Fault/isolation zone 8	Fault/isolation zone 8
17, 18	H414 (red)	Alarm zone 9	Alarm zone 9
19, 20	H413 (yellow)	Fault/isolation zone 9	Fault/isolation zone 9
21, 22	H412 (red)	Alarm zone 10	Alarm zone 10
23, 24	H408 (green)	Selection zone 8	Selection zone 8
25, 26	H411 (yellow)	Fault/isolation zone 10	Fault/isolation zone 10
27, 28	H404 (green)	Selection zone 4	Selection zone 4
29, 30	H403 (green)	Selection zone 3	Selection zone 3
31, 32	H402 (green)	Selection zone 2	Selection zone 2
33, 34	H401 (green)	Selection zone 1	Selection zone 1


X2
H405 A 1 K 2 'Selection zone 5'
H409 A 3 K 4 'Selection zone 9'
H406 A 5 K 6 'Selection zone 6'
H410 A 7 K 8 'Selection zone 10'
H407 A 9 K 10 'Selection zone 7'
H417 A 11 K 12 'Fault/Isolation zone 7'
H416 A 13 K 14 'Alarm zone 8'
H415 A 15 K 16 'Fault/Isolation zone 8'
H414 A 17 K 18 'Alarm zone 9'
H413 A 19 K 20 'Fault/Isolation zone 9'
H412 A 21 K 22 'Alarm zone 10'
H408 A 23 K 24 'Selection zone 8'
H411 A 25 K 26 'Fault/Isolation zone 10'
H404 A 27 K 28 'Selection zone 4'
H403 A 29 K 30 'Selection zone 3'
H402 A 31 K 32 'Selection zone 2'
H401 A 33 K 34 'Selection zone 1'

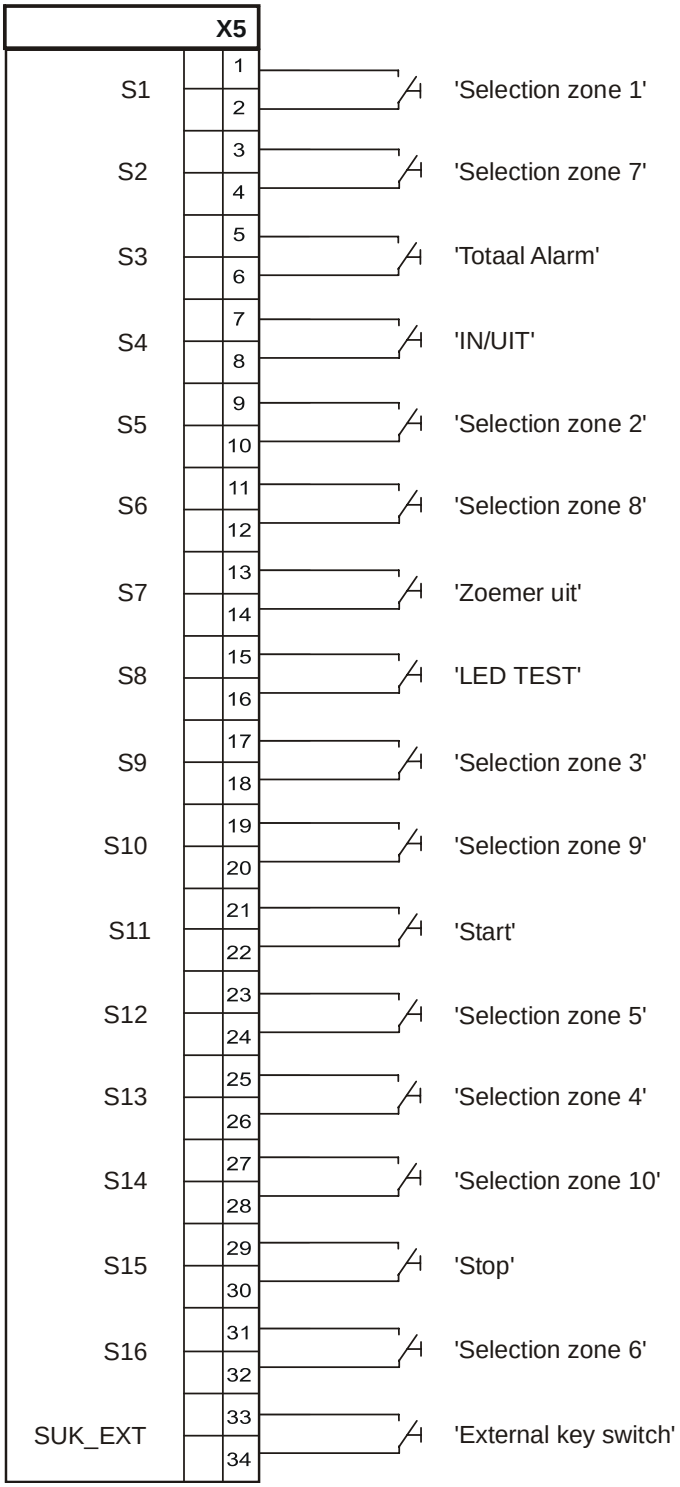
43.3.4 X3 LED mimic display

Pin	LED connection	Master description	Slave description
1, 2	H422 (red)	Alarm zone 5	Alarm zone 5
3, 4	H426 (red)	Alarm zone 3	Alarm zone 3
5, 6	H423 (yellow)	Fault/isolation zone 4	Fault/isolation zone 4
7, 8	H427 (yellow)	Fault/isolation zone 2	Fault/isolation zone 2
9, 10	H424 (red)	Alarm zone 4	Alarm zone 4
11, 12	H434 (red)	Totaal alarm	--
13, 14	H433 (green)	Bedrijf	--
15, 16	H432 (yellow)	Uitgeschakeld	--
17, 18	H431 (yellow)	Storing	--
19, 20	H430 (red)	Alarm zone 1	Alarm zone 1
21, 22	H429 (yellow)	Fault/isolation zone 1	Fault/isolation zone 1
23, 24	H425 (yellow)	Fault/isolation zone 3	Fault/isolation zone 3
25, 26	H428 (red)	Alarm zone 2	Alarm zone 2
27, 28	H421 (yellow)	Fault/isolation zone 5	Fault/isolation zone 5
29, 30	H420 (red)	Alarm zone 6	Alarm zone 6
31, 32	H419 (yellow)	Fault/isolation zone 6	Fault/isolation zone 6
33, 34	H418 (red)	Alarm zone 7	Alarm zone 7


X3
H422 A 1 K 2 'Alarm zone 5'
H426 A 3 K 4 'Alarm zone 3'
H423 A 5 K 6 'Fault/Isolation zone 4'
H427 A 7 K 8 'Fault/Isolation zone 2'
H424 A 9 K 10 'Alarm zone 4'
H434 A 11 K 12 'Totaal Alarm'
H433 A 13 K 14 'Bedrijf'
H432 A 15 K 16 'Uitgeschakeld'
H431 A 17 K 18 'Storing'
H430 A 19 K 20 'Alarm zone 1'
H429 A 21 K 22 'Fault/Isolation zone 1'
H425 A 23 K 24 'Fault/Isolation zone 3'
H428 A 25 K 26 'Alarm zone 2'
H421 A 27 K 28 'Fault/Isolation zone 5'
H420 A 29 K 30 'Alarm zone 6'
H419 A 31 K 32 'Fault/Isolation zone 6'
H418 A 33 K 34 'Alarm zone 7'

43.3.5 X5 mimic display operation

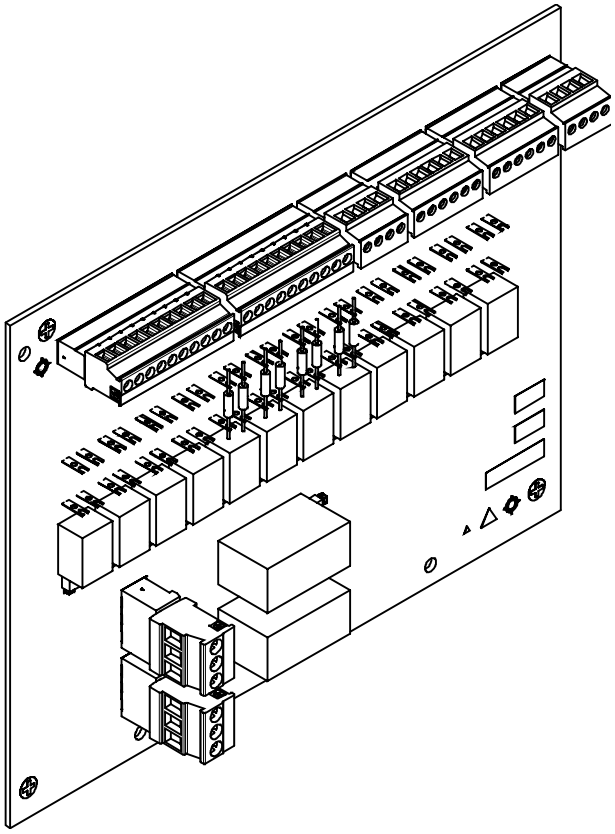
Pin	LED connection	Master description	Slave description
1, 2	S1	Selection zone 1	Selection zone 1
3, 4	S2	Selection zone 7	Selection zone 7
5, 6	S3	Totaal alarm	--
7, 8	S4	IN/UIT	--
9, 10	S5	Selection zone 2	Selection zone 2
11, 12	S6	Selection zone 8	Selection zone 8
13, 14	S7	Zoemer uit	--
15, 16	S8	LED TEST	--
17, 18	S9	Selection zone 3	Selection zone 3
19, 20	S10	Selection zone 9	Selection zone 9
21, 22	S11	Start	--
23, 24	S12	Selection zone 5	Selection zone 5
25, 26	S13	Selection zone 4	Selection zone 4
27, 28	S14	Selection zone 10	Selection zone 10
29, 30	S15	Stop	--
31, 32	S16	Selection zone 6	Selection zone 6
33	SUK_EXT	Key switch (external)	Key switch (external)
34	(GND)	(GND for key switch)	(GND for key switch)


X5
S1
1
2
'Selection zone 1'
S2
3
4
'Selection zone 7'
S3
5
6
'Totaal Alarm'
S4
7
8
'IN/UIT'
S5
9
10
'Selection zone 2'
S6
11
12
'Selection zone 8'
S7
13
14
'Zoemer uit'
S8
15
16
'LED TEST'
S9
17
18
'Selection zone 3'
S10
19
20
'Selection zone 9'
S11
21
22
'Start'
S12
23
24
'Selection zone 5'
S13
25
26
'Selection zone 4'
S14
27
28
'Selection zone 10'
S15
29
30
'Stop'
S16
31
32
'Selection zone 6'
SUK_EXT
33
34
'External key switch'

43.4 Technical data

Supply	Operating voltage	DC 20…32 V
	Operating current	Max. 1 A (21 V) Depending on configuration
LED operating currents	Master indicator	34 x 13 mA / 3.3 V / 1.5 W
	Slave indicator	30 x 13 mA / 3.3 V / 1.3 W
Connection terminals	Supply, monitoring, and RS485 connection	
	Design	Screw terminals
	Admissible cable cross-section	0.2…1.5 mm²
	Inputs and outputs	
	Mimic display connections and peripheral data bus	Plug connection for ribbon cable
Mechanical data	Dimensions (L x W x H)	130 x 121 x 32 mm
	Weight	90 g

44 RT interface FCI2005-N1 [NL]



44.1 Description

The RT interface FCI2005-N1 makes the electrically isolated control of different functions possible. The RT interface is controlled and fed via the configurable inputs and outputs of the periphery board. The RT interface is tailored to the Dutch market.

The RT interface is directly built in on the mounting plate on top of the periphery board, or next to the periphery board on the housing rear panel if there is enough space.

44.2 Views

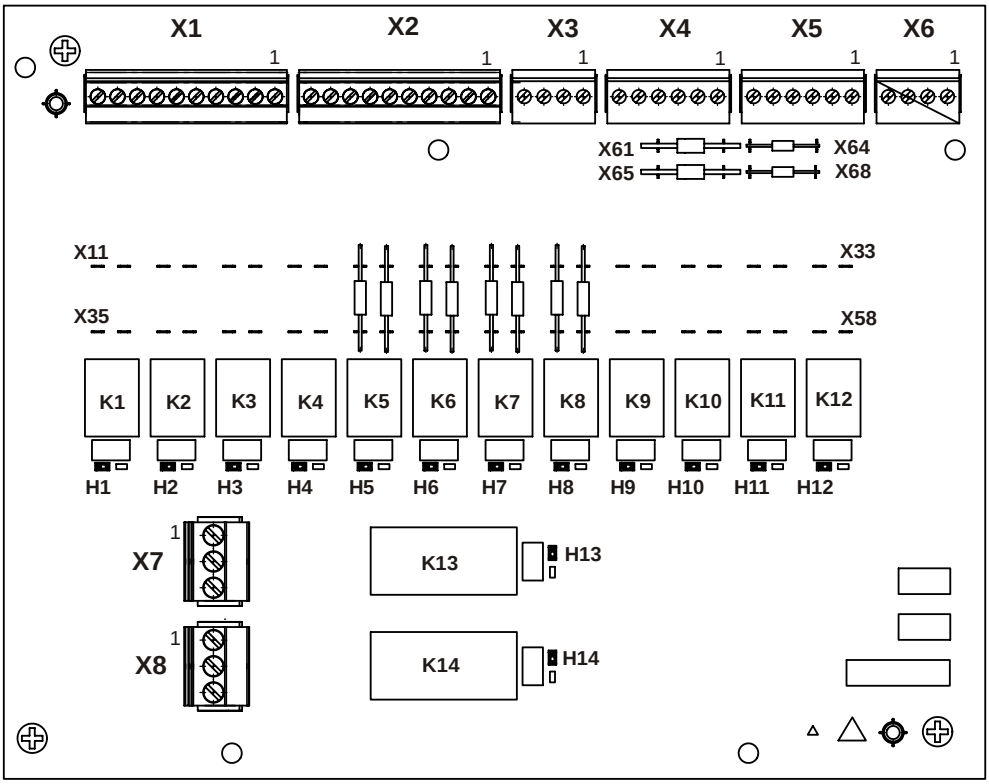


Figure 84: Printed circuit board display RT Interface FCI2005

Element	Des.	Function
Connector	X1	Switching contacts relays 1 … 5
	X2	Relay 6…10 switching contacts
	X3	Relay 11 + 12 switching contacts
	X4	Relay supply Vsys+ and relay coils 1 … 5
	X5	Relay supply Vsys+ and relay coils 6…10
	X6	Relay coils 11 … 14
	X7	Relay 13 switching contacts
	X8	Relay 14 switching contacts
LEDs	H1	Relay 1 indication
	H2	Relay 2 display
	H3	Relay 3 display
	H4	Relay 4 display
	H5	Relay 5 display
	H6	Relay 6 display
	H7	Relay 7 display
	H8	Relay 8 display
	H9	Relay 9 display
	H10	Relay 10 display

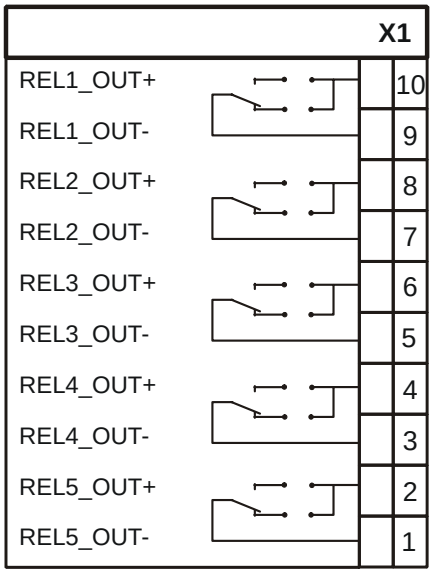
Element	Des.	Function
	H11	Relay 11 display
	H12	Relay 12 display
	H13	Relay 13 display
	H14	Relay 14 display

44.3 Pin assignments

44.3.1 X1 switching contacts relays 1…5

Pin	Designation	Description
10	REL1_OUT+	Relay 1 switching contact (configurable as NO or NC)
9	REL1_OUT-	Relay 1 switching contact
8	REL2_OUT+	Relay 2 switching contact (configurable as NO or NC)
7	REL2_OUT-	Relay 2 switching contact
6	REL3_OUT+	Relay 3 switching contact (configurable as NO or NC)
5	REL3_OUT-	Relay 3 switching contact
4	REL4_OUT+	Relay 4 switching contact (configurable as NO or NC)
3	REL4_OUT-	Relay 4 switching contact
2	REL5_OUT+	Relay 5 switching contact (configurable as NO or NC)
1	REL5_OUT-	Relay 5 switching contact

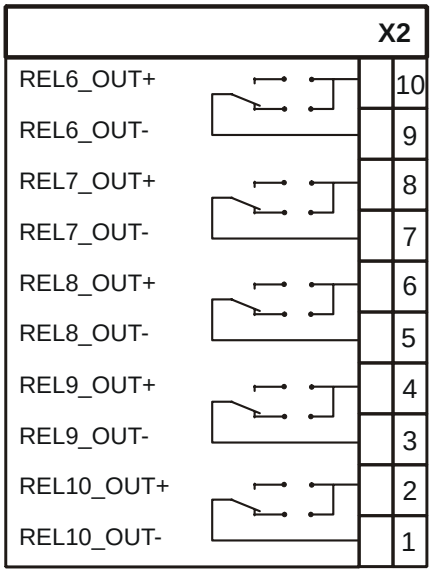
NO = Normally open
NC = Normally closed
Admissible cable cross-section: 0.14…1.5 mm²



44.3.2 X2 switching contacts relays 6…10

Pin	Designation	Description
10	REL6_OUT+	Relay 6 switching contact (configurable as NO or NC)
9	REL6_OUT-	Relay 6 switching contact
8	REL7_OUT+	Relay 7 switching contact (configurable as NO or NC)
7	REL7_OUT-	Relay 7 switching contact
6	REL8_OUT+	Relay 8 switching contact (configurable as NO or NC)
5	REL8_OUT-	Relay 8 switching contact
4	REL9_OUT+	Relay 9 switching contact (configurable as NO or NC)
3	REL9_OUT-	Relay 9 switching contact
2	REL10_OUT+	Relay 10 switching contact (configurable as NO or NC)
1	REL10_OUT-	Relay 10 switching contact

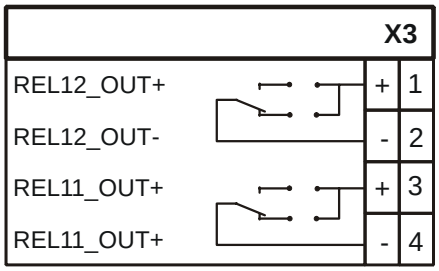
NO = Normally open
NC = Normally closed
Admissible cable cross-section: 0.14…1.5 mm²



44.3.3 X3 relay 11 + 12 switching contacts

PIN	Designation	Description
1	REL12_OUT+	Relay 12 switching contact (configurable as NO or NC)
2	REL12_OUT-	Relay 12 switching contact
3	REL11_OUT+	Relay 11 switching contact (configurable as NO or NC)
4	REL11_OUT-	Relay 11 switching contact

NO = Normally open
NC = Normally closed
Admissible cable cross-section: 0.14…1.5 mm²



44.3.4 X4 relay supply Vsys+ and relay coils 1…5

Pin	Designation	Description
6	20V-30V/VSYS+	Supply Vsys+ (connected to X5, PIN 6)
5	REL1_IN-	Relay coil 1, active low
4	REL2_IN-	Relay coil 2, active low
3	REL3_IN-	Relay coil 3, active low
2	REL4_IN-	Relay coil 4, active low
1	REL5_IN-	Relay coil 5, active low

Admissible cable cross-section: 0.14…1.5 mm²

44.3.5 X5 relay supply Vsys+ and relay coils 6…10

Pin	Designation	Description
6	20V-30V/VSYS+	Supply Vsys+ (connected to X4, PIN 6)
5	REL6_IN-	Relay coil 6, active low
4	REL7_IN-	Relay coil 7, active low
3	REL8_IN-	Relay coil 8, active low
2	REL9_IN-	Relay coil 9, active low
1	REL10_IN-	Relay coil 10, active low

Admissible cable cross-section: 0.14…1.5 mm²

44.3.6 X6 relay coils 11…14

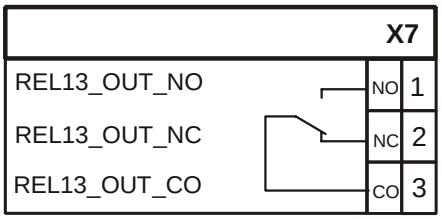
Pin	Designation	Description
4	REL11_IN-	Relay coil 11, active low
3	REL12_IN-	Relay coil 12, active low
2	REL13_IN-	Relay coil 13, active low
1	REL14_IN-	Relay coil 14, active low

Admissible cable cross-section: 0.14…1.5 mm²

44.3.7 X7 relay 13 switching contacts

Pin	Designation	Description
1	REL13_OUT_NO	Relay 13 switching contact, normally open
2	REL13_OUT_NC	Relay 13 switching contact, normally closed
3	REL13_OUT_CO	Relay 13 switching contact, common

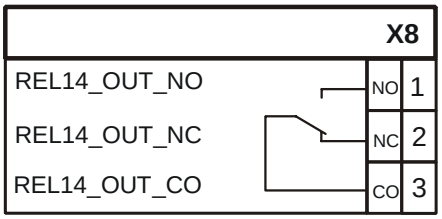
Admissible cable cross-section: 0.2…2.5 mm²



44.3.8 X8 relay 14 switching contacts

Pin	Designation	Description
1	REL14_OUT_NO	Relay 14 switching contact, normally open
2	REL14_OUT_NC	Relay 14 switching contact, normally closed
3	REL14_OUT_CO	Relay 14 switching contact, common

Admissible cable cross-section: 0.2…2.5 mm²



44.3.9 Connection of cable tree to periphery board

RT interface		Cable tree		Periphery board 4 loops		Periphery board 2 loops	
Pin	**Designation**	**Cable color**	**Signal**	**Pin**	**Designation**	**Pin**	**Designation**
X4-6	20V-30V/VSYS+	White-green	Supply (+)	X8-7	VSYS_01	X8-5	VSYS_01
X4-5	REL1_IN-	Blue/red	Manual	X7-1	AL_NO	X7-1	AL_NO
X4-4	REL2_IN-	Gray/pink	Auto	X8-1	I/O1	X8-1	I/O1
X4-3	REL3_IN-	--	Alarm 2	--	--	--	--
X4-2	REL4_IN-	Violet	Fault	X7-6	FAU_NC	X7-6	FAU_NC
X4-1	REL5_IN-	Black	Alarm 1	X8-2	I/O2	X8-2	I/O2
X5-6	20V-30V/VSYS+	--	Supply (+)	X8-15	VSYS_02	X9-5	VSYS_02
X5-5	REL6_IN-	--	Alarm 2	--	--	--	--
X5-4	REL7_IN-	Red	Fault	X8-3	I/O3	X8-3	I/O3
X5-3	REL8_IN-	Blue	Isolation	X8-4	I/O4	X8-4	I/O4
X5-2	REL9_IN-	Pink	Technical sprinkler	X8-5	I/O5	X9-1	I/O5
X5-1	REL10_IN-	Gray	Supervision sprinkler	X8-6	I/O6	X9-2	I/O6
X6-4	REL11_IN-	Yellow	Fire alarm sprinkler	X8-9	I/O7	X9-3	I/O7
X6-3	REL12_IN-	Green	--	X8-10	I/O8	X9-4	I/O8
X6-2	REL13_IN-	Brown	--	X8-11	I/O9	--	--
X6-1	REL14_IN-	White	--	X8-12	I/O10	--	--

44.4 Indicators

LED	Color	Function	State	Meaning
H1	Green	Relay 1	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H2	Green	Relay 2	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H3	Green	Relay 3	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H4	Green	Relay 4	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H5	Green	Relay 5	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H6	Green	Relay 6	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H7	Green	Relay 7	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H8	Green	Relay 8	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H9	Green	Relay 9	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H10	Green	Relay 10	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H11	Green	Relay 11	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H12	Green	Relay 12	Off	Quiescent condition, depending on configuration NO or NC
			On	Relay switched
H13	Green	Relay 13	Off	Quiescent condition
			On	Relay switched
H14	Green	Relay 14	Off	Quiescent condition
			On	Relay switched

NO = normally open
NC = normally closed

44.5 Adjustment elements

The switching contacts of the relays K1…K12 must be configured as 'normally open' (NO) or 'normally closed' (NC). The application-specific settings are made by inserting a wire jumper or a resistor between the corresponding solder pins.

The following figure shows the setting of the relay K5 as an example.

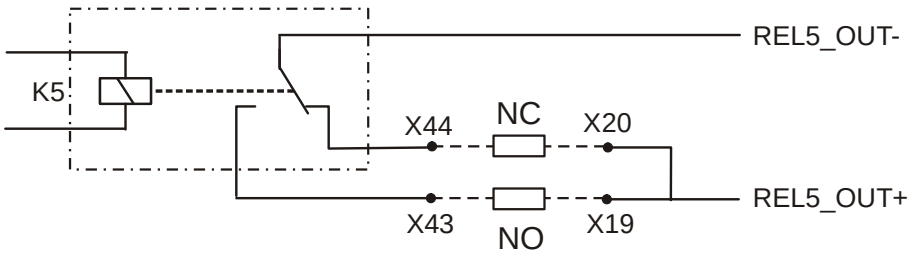


Figure 85: Example: Setting the switching contacts

Settings

NO = wire jumper or resistor between solder pins X19 and X43

NC = wire jumper or resistor between solder pins X20 and X44

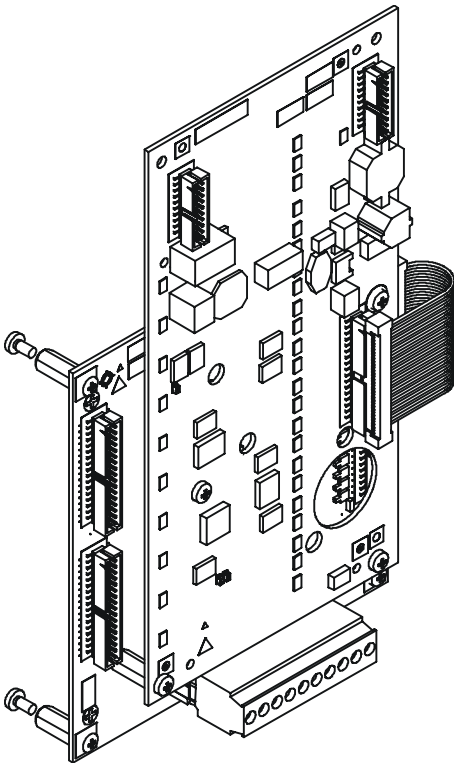
Settings for Holland (default)

Relay	Contact	Solder pins	NO/NC	Resistance
K5	REL5_OUT+	X19…X43	NO	680 Ω
		X20…X44	NC	3.3 kΩ
K6	REL6_OUT+	X21…X45	NO	680 Ω
		X22…X46	NC	3.3 kΩ
K7	REL7_OUT+	X23…X47	NO	680 Ω
		X24…X48	NC	3.3 kΩ
K8	REL8_OUT+	X25…X49	NO	680 Ω
		X26…X50	NC	3.3 kΩ

44.6 Technical data

Supply input	Designation	'20 V-30 V VSYS+'
	Voltage	DC 17…30 V
	Quiescent current	Typically 0 mA
	Quiescent current (all relays switched)	Max. 240 mA
Relay 1…12	Designation	'REL1' … 'REL12'
	Design	Relay reversed polarity
	Operating current/relay	Max. 12 mA
	DC switching voltage	Max. DC 30 V
	DC switching current	Max. 2 A
	AC switching voltage	Max. AC 125 V
	AC switching current	Max. 0.5 A
Relays 13 + 14	Designation	'REL13', 'REL14'
	Design	Relay reversed polarity
	Operating current/relay	Max. 30 mA
	DC switching voltage	Max. DC 30 V
	DC switching current	Max. 5 A
	AC switching voltage	Max. AC 250 V
	AC switching current	Max. 5 A
LEDs	Status indication relay	Lights up when relay is switched
Connection terminals	All connectors:	
X1…X6	Design	Screw clamps, grid 3.81 mm
	Admissible cable cross-section	0.14…1.5 mm^2 rigid/flexible
X7 + X8	Design	Screw clamps, grid 5 mm
	Admissible cable cross-section	0.2 … 2.5 mm^2 rigid/flexible
Mechanical data	Dimensions (L x W x H)	190 x 150 x 36 mm
	Weight	240 g

45 EVAC-NL mimic display driver FT2003-N1 [NL]



45.1 Description

The EVAC-NL mimic display driver FT2003-N1 is a remote EVAC indication and operation unit for the Dutch market.

The EVAC-NL mimic display driver is supplied without a housing or indicator panel. It consists of an EVAC-NL operating unit FTO2007-N1 and an EVAC-NL connector board FTI2002-N1 which are screwed together. Four spacer bolts allow it to be fitted in any housing. The housing used (by the customer) must have at least protection category IP30.

The EVAC-NL mimic display driver is supplied by a separate power supply or by the system supply of the associated ↑ station.

Properties

- Communication interface via RS485 to FS720 fire control panel
- Supply inputs for a 24 V supply
- Monitoring signals for external supply
- Connections for 34 external LED mimic displays
- Connections for 16 external mimic display buttons
- Connection for an external key switch

45.2 Views

45.2.1 FTO2007-N1 view

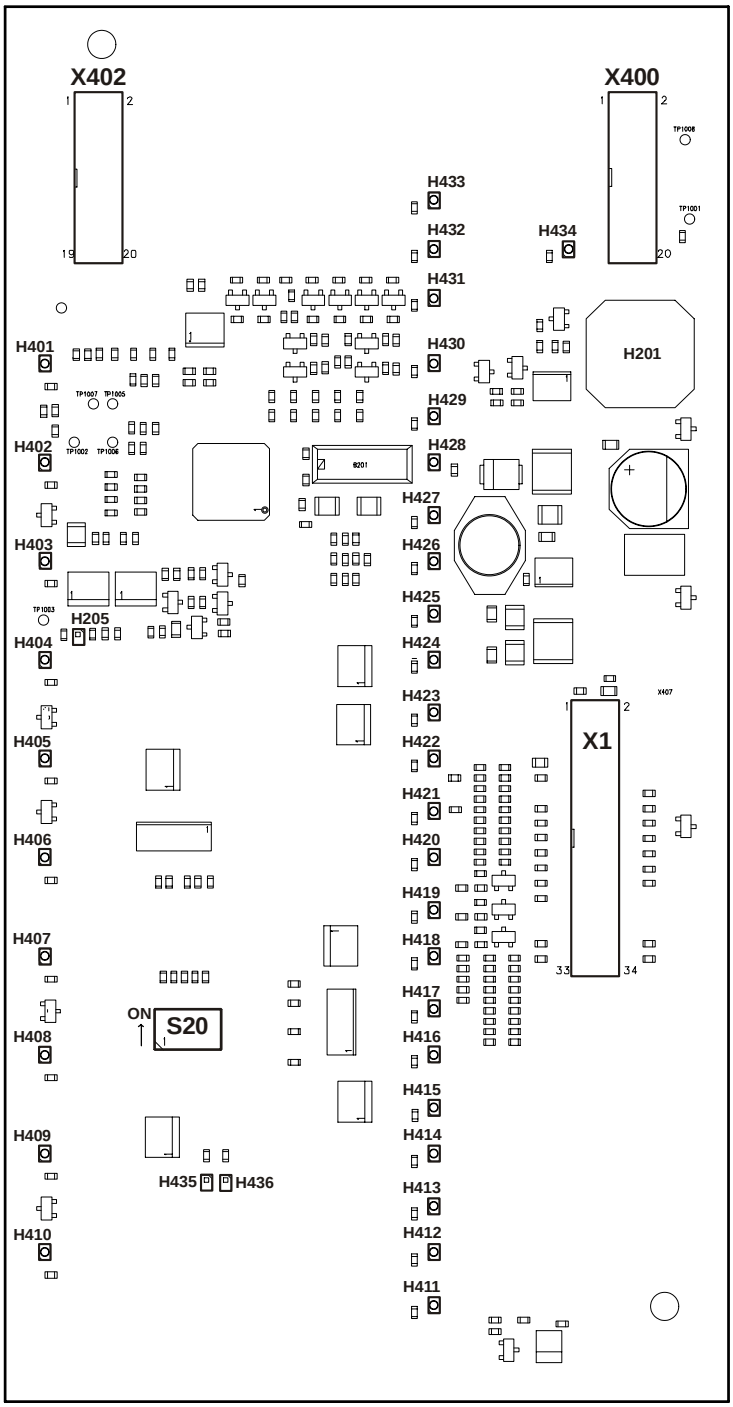


Figure 86: PCB view of EVAC-NL operating unit FTO2007-N1

X400	Connection peripheral data bus, input
X402	Connection periphery bus, output for additional EVAC
H401…H434	LEDs for operating indication (designation on printed circuit board)
H205	Watchdog
H201	Buzzer
S20 (1…6)	DIP switch for configuration
X1	Connection for EVAC-NL connector board FTI2002-N1 (only with remote EVAC)

45.2.2 FTI2002-N1 view

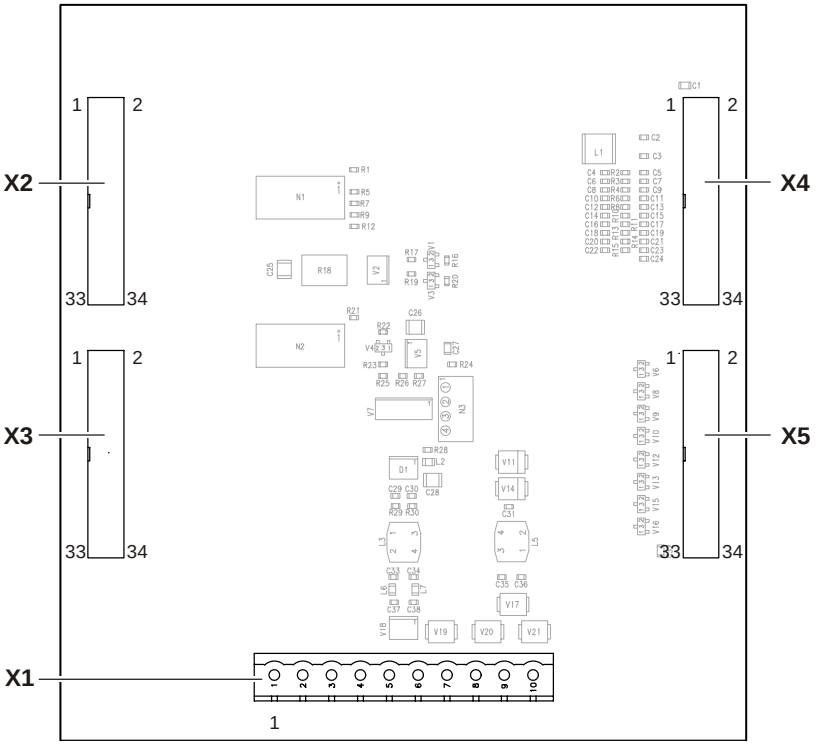


Figure 87: Printed circuit board view of EVAC-NL connector board FTI2002-N1

Element	Des.	Function
Plugs and terminals	X1	Supply, monitoring signals of the power supply and RS485 connection
	X2	Connections of LED mimic display indicator 1…17
	X3	Connections of LED mimic display indicator 18…34
	X4	Connection to EVAC-NL operating unit
	X5	Connections of mimic display operating elements (16)

45.3 Pin assignments

45.3.1 Cable length and cable resistance

If using a remote EVAC-NL indicator and the EVAC mimic display driver, the length of the power supply cable is limited if the component is supplied internally via the periphery board.

The diagram below can be used to determine the maximum cable lengths for both cases.

The following cable is specified for the power supply:

- No shielding
- Twisted pair cable
- With at least 10 twists.

Please refer to the data for the corresponding component for the maximum RS485 interface cable length.

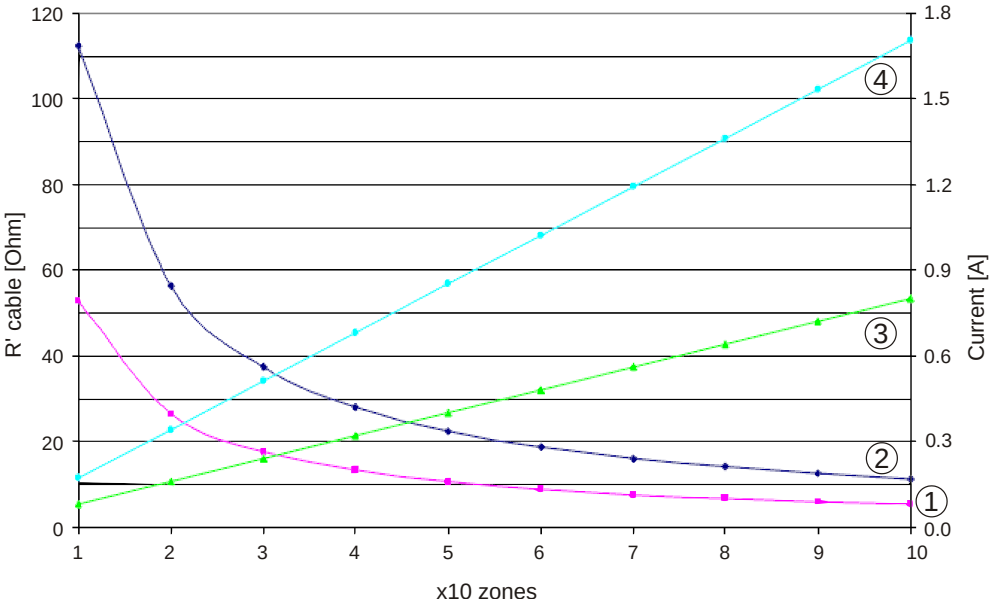


Figure 88: Diagram for calculating the max. cable resistance

1 Max. cable resistance R' for EVAC-NL mimic display driver

2 Max. cable resistance R' for remote EVAC-NL indicator

3 Max. current for remote EVAC-NL indicator

4 Max. current for EVAC-NL mimic display driver

Example of using the diagram

Two remote EVAC-NL indicators, one with 20 zones, the other with 30 zones, are supplied by the periphery board of the same ↑ station.

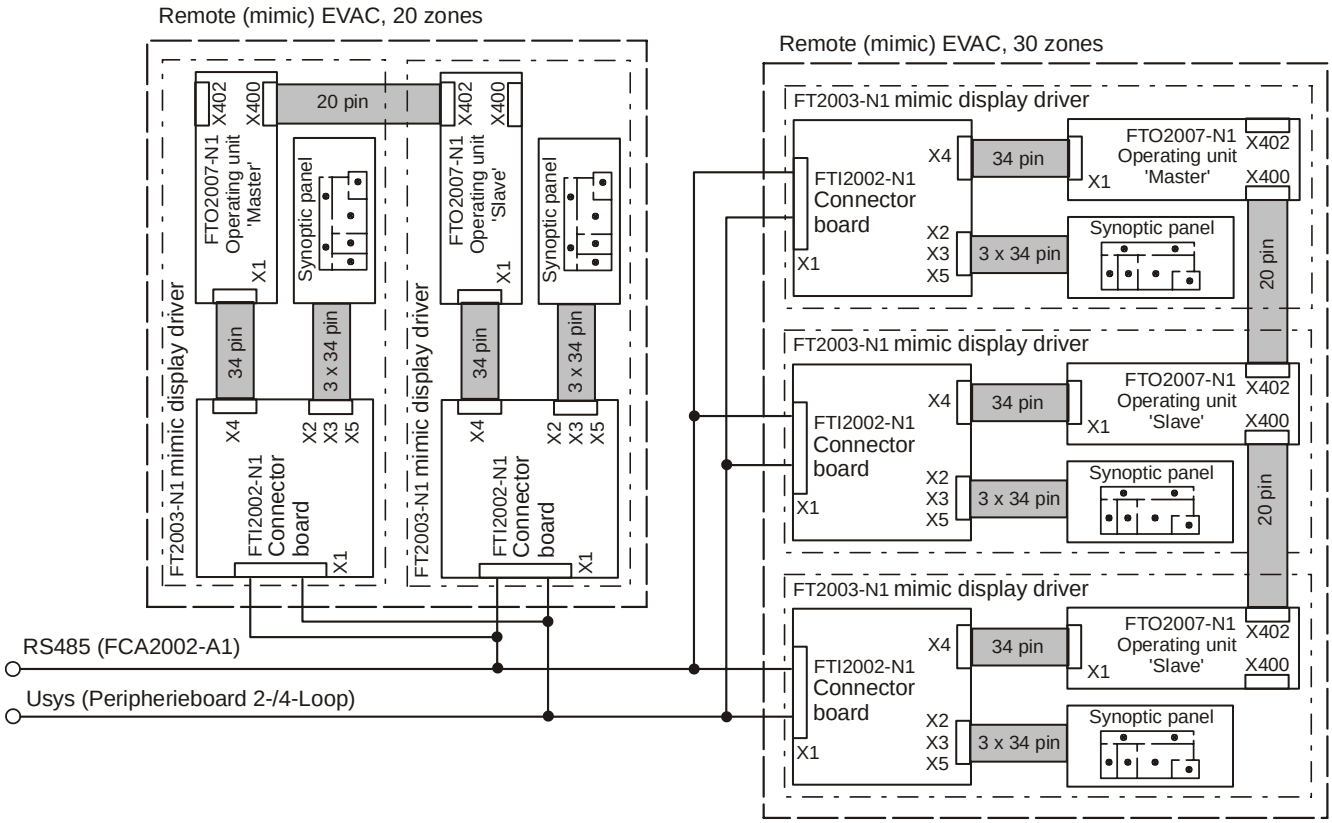


Figure 89: Wiring example for calculating the cable resistance

Number of zones via the same supply cable: 50 (20 from panel 1 and 30 from panel 2)

According to the diagram, this results in the following values for the EVAC-NL mimic display driver:

- Maximum cable resistance R' is 10 Ω (curve 1)
- Maximum current is 0.85 A (curve 4)

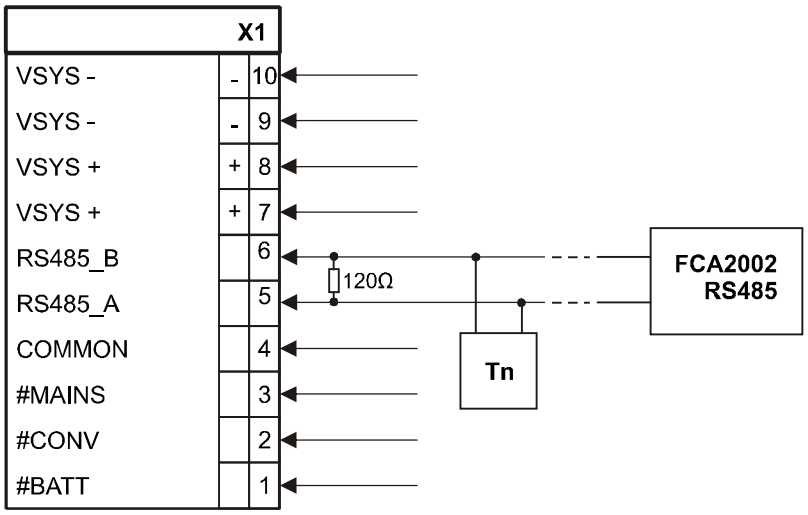
In the same way, this would result in the following for a remote EVAC-NL indicator:

- Maximum cable resistance R' is 22 Ω (curve 2)
- Maximum current is 0.4 A (curve 3)

45.3.2 EVAC-NL connector board FTI2002-N1

45.3.2.1 X1 supply

Pin	Designation	Description
10	VSYS–	Supply input from the power supply (–)
9	VSYS–	Supply input from the power supply (–)
8	VSYS+	Supply input from the power supply (+)
7	VSYS+	Supply input from the power supply (+)
6	RS485_B	Input connection B [1]
5	RS485_A	Input connection A [1]
4	COMMON	Ground
3	#MAINS	Message input from the power supply: Mains failure
2	#CONV	Message input from the power supply: Converter fault
1	#BATT	Message input from the power supply: Battery fault

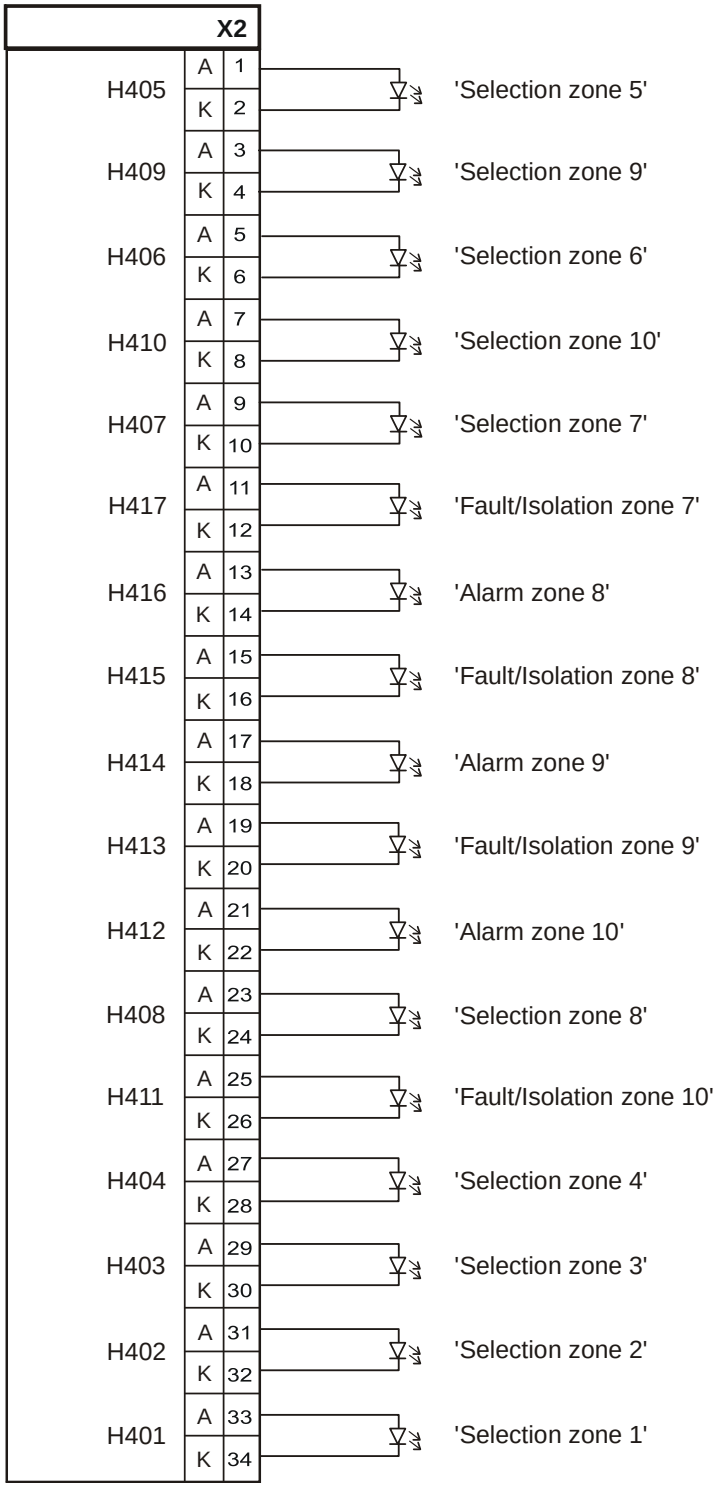


Tn = Last participant

!	*NOTICE*
	[1] Note the polarity of connections A and B. The last participant connection must have a resistance of 120 Ω.

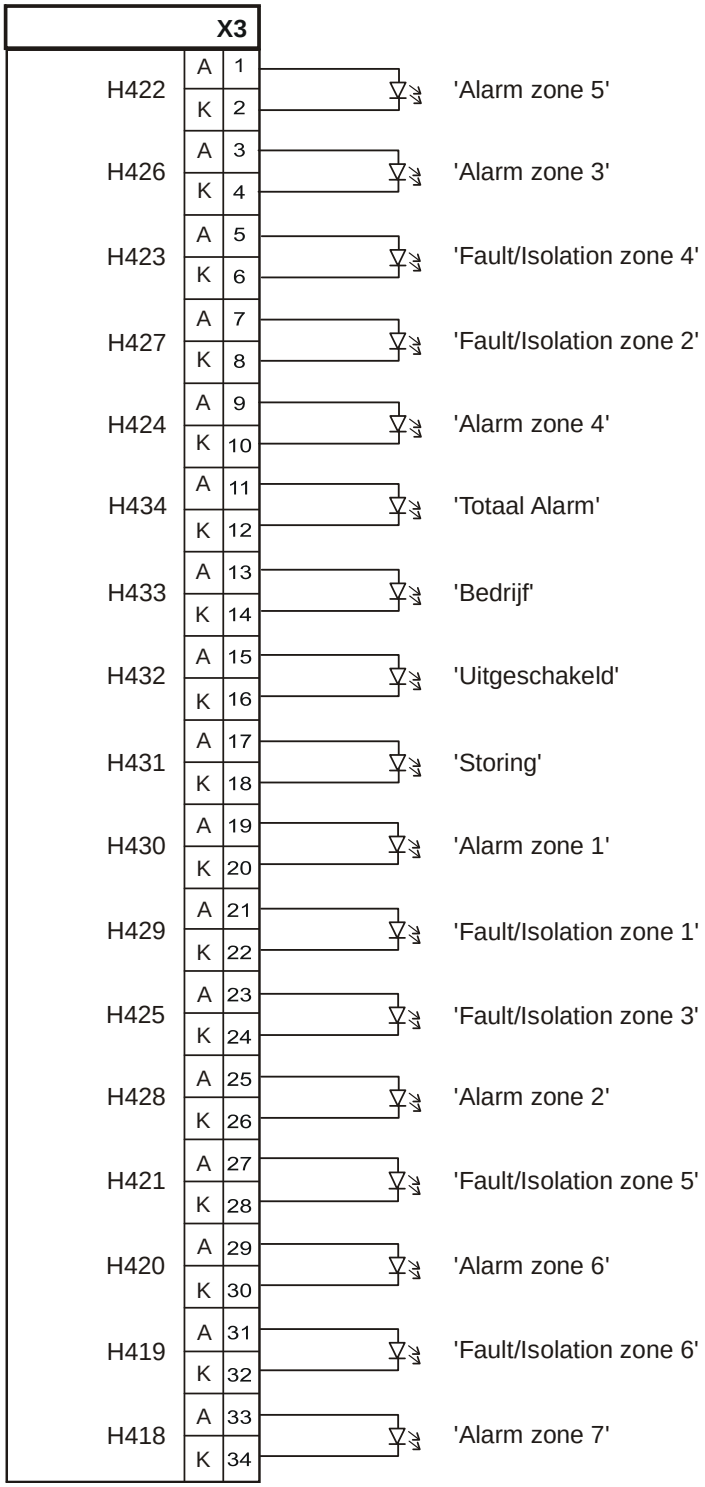
45.3.2.2 X2 LED mimic display

Pin	Connection for LED	Master description	Slave description
1, 2	H405 (green)	Selection zone 5	Selection zone 5
3, 4	H409 (green)	Selection zone 9	Selection zone 9
5, 6	H406 (green)	Selection zone 6	Selection zone 6
7, 8	H410 (green)	Selection zone 10	Selection zone 10
9, 10	H407 (green)	Selection zone 7	Selection zone 7
11, 12	H417 (yellow)	Fault/Isolation zone 7	Fault/Isolation zone 7
13, 14	H416 (red)	Alarm zone 8	Alarm zone 8
15, 16	H415 (yellow)	Fault/isolation zone 8	Fault/isolation zone 8
17, 18	H414 (red)	Alarm zone 9	Alarm zone 9
19, 20	H413 (yellow)	Fault/isolation zone 9	Fault/isolation zone 9
21, 22	H412 (red)	Alarm zone 10	Alarm zone 10
23, 24	H408 (green)	Selection zone 8	Selection zone 8
25, 26	H411 (yellow)	Fault/isolation zone 10	Fault/isolation zone 10
27, 28	H404 (green)	Selection zone 4	Selection zone 4
29, 30	H403 (green)	Selection zone 3	Selection zone 3
31, 32	H402 (green)	Selection zone 2	Selection zone 2
33, 34	H401 (green)	Selection zone 1	Selection zone 1


X2
H405
A 1
K 2
'Selection zone 5'
H409
A 3
K 4
'Selection zone 9'
H406
A 5
K 6
'Selection zone 6'
H410
A 7
K 8
'Selection zone 10'
H407
A 9
K 10
'Selection zone 7'
H417
A 11
K 12
'Fault/Isolation zone 7'
H416
A 13
K 14
'Alarm zone 8'
H415
A 15
K 16
'Fault/Isolation zone 8'
H414
A 17
K 18
'Alarm zone 9'
H413
A 19
K 20
'Fault/Isolation zone 9'
H412
A 21
K 22
'Alarm zone 10'
H408
A 23
K 24
'Selection zone 8'
H411
A 25
K 26
'Fault/Isolation zone 10'
H404
A 27
K 28
'Selection zone 4'
H403
A 29
K 30
'Selection zone 3'
H402
A 31
K 32
'Selection zone 2'
H401
A 33
K 34
'Selection zone 1'

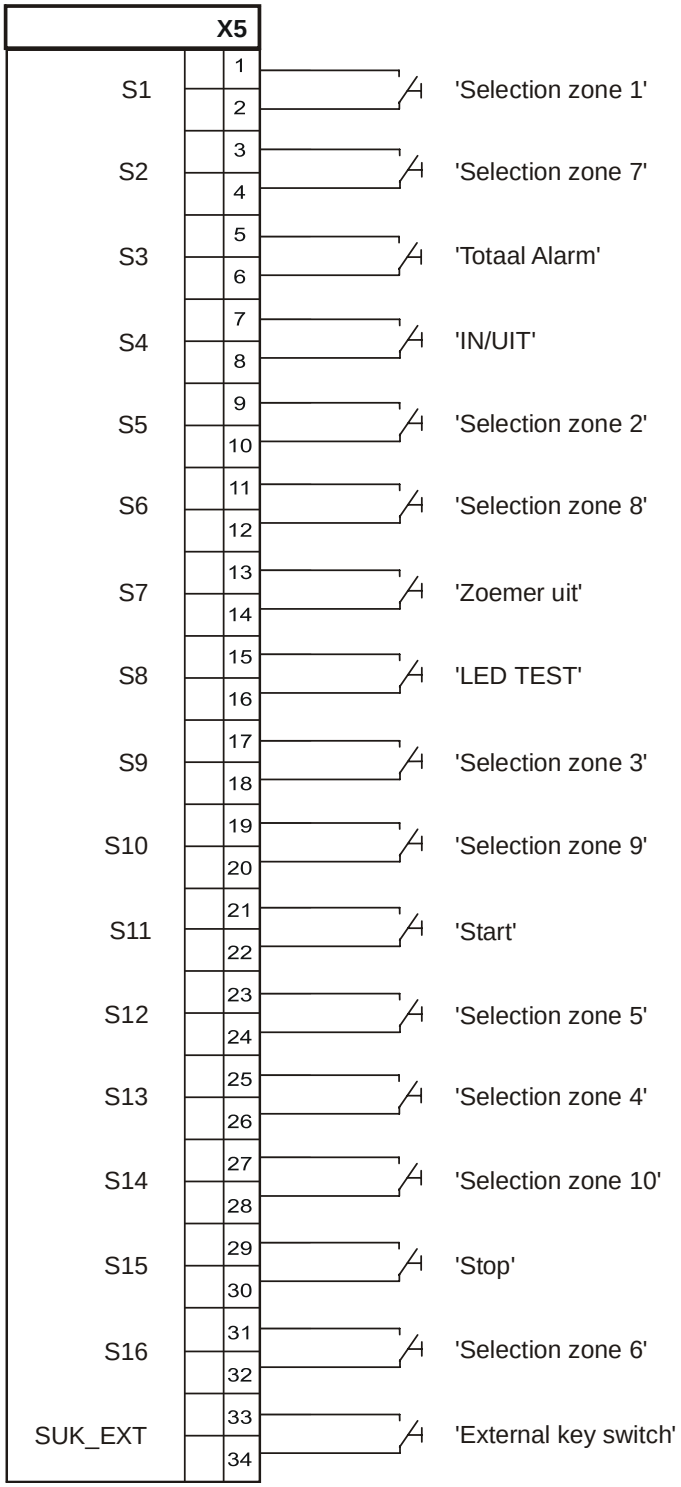
45.3.2.3 X3 LED mimic display

Pin	LED connection	Master description	Slave description
1, 2	H422 (red)	Alarm zone 5	Alarm zone 5
3, 4	H426 (red)	Alarm zone 3	Alarm zone 3
5, 6	H423 (yellow)	Fault/isolation zone 4	Fault/isolation zone 4
7, 8	H427 (yellow)	Fault/isolation zone 2	Fault/isolation zone 2
9, 10	H424 (red)	Alarm zone 4	Alarm zone 4
11, 12	H434 (red)	Totaal alarm	--
13, 14	H433 (green)	Bedrijf	--
15, 16	H432 (yellow)	Uitgeschakeld	--
17, 18	H431 (yellow)	Storing	--
19, 20	H430 (red)	Alarm zone 1	Alarm zone 1
21, 22	H429 (yellow)	Fault/isolation zone 1	Fault/isolation zone 1
23, 24	H425 (yellow)	Fault/isolation zone 3	Fault/isolation zone 3
25, 26	H428 (red)	Alarm zone 2	Alarm zone 2
27, 28	H421 (yellow)	Fault/isolation zone 5	Fault/isolation zone 5
29, 30	H420 (red)	Alarm zone 6	Alarm zone 6
31, 32	H419 (yellow)	Fault/isolation zone 6	Fault/isolation zone 6
33, 34	H418 (red)	Alarm zone 7	Alarm zone 7


X3
H422
A 1
K 2
'Alarm zone 5'
H426
A 3
K 4
'Alarm zone 3'
H423
A 5
K 6
'Fault/Isolation zone 4'
H427
A 7
K 8
'Fault/Isolation zone 2'
H424
A 9
K 10
'Alarm zone 4'
H434
A 11
K 12
'Totaal Alarm'
H433
A 13
K 14
'Bedrijf'
H432
A 15
K 16
'Uitgeschakeld'
H431
A 17
K 18
'Storing'
H430
A 19
K 20
'Alarm zone 1'
H429
A 21
K 22
'Fault/Isolation zone 1'
H425
A 23
K 24
'Fault/Isolation zone 3'
H428
A 25
K 26
'Alarm zone 2'
H421
A 27
K 28
'Fault/Isolation zone 5'
H420
A 29
K 30
'Alarm zone 6'
H419
A 31
K 32
'Fault/Isolation zone 6'
H418
A 33
K 34
'Alarm zone 7'

45.3.2.4 X5 mimic display operation

Pin	LED connection	Master description	Slave description
1, 2	S1	Selection zone 1	Selection zone 1
3, 4	S2	Selection zone 7	Selection zone 7
5, 6	S3	Totaal alarm	--
7, 8	S4	IN/UIT	--
9, 10	S5	Selection zone 2	Selection zone 2
11, 12	S6	Selection zone 8	Selection zone 8
13, 14	S7	Zoemer uit	--
15, 16	S8	LED TEST	--
17, 18	S9	Selection zone 3	Selection zone 3
19, 20	S10	Selection zone 9	Selection zone 9
21, 22	S11	Start	--
23, 24	S12	Selection zone 5	Selection zone 5
25, 26	S13	Selection zone 4	Selection zone 4
27, 28	S14	Selection zone 10	Selection zone 10
29, 30	S15	Stop	--
31, 32	S16	Selection zone 6	Selection zone 6
33	SUK_EXT	Key switch (external)	Key switch (external)
34	(GND)	(GND for key switch)	(GND for key switch)


X5
S1
1
2
'Selection zone 1'
S2
3
4
'Selection zone 7'
S3
5
6
'Totaal Alarm'
S4
7
8
'IN/UIT'
S5
9
10
'Selection zone 2'
S6
11
12
'Selection zone 8'
S7
13
14
'Zoemer uit'
S8
15
16
'LED TEST'
S9
17
18
'Selection zone 3'
S10
19
20
'Selection zone 9'
S11
21
22
'Start'
S12
23
24
'Selection zone 5'
S13
25
26
'Selection zone 4'
S14
27
28
'Selection zone 10'
S15
29
30
'Stop'
S16
31
32
'Selection zone 6'
SUK_EXT
33
34
'External key switch'

45.4 Indicators

Indication and operating elements for EVAC-NL operating unit FTO2007-N1

In the case of the EVAC mimic display driver, all display and operating elements are wired to the mimic display panel via three 34-pin ribbon cables.

Display and operating elements on the front panel

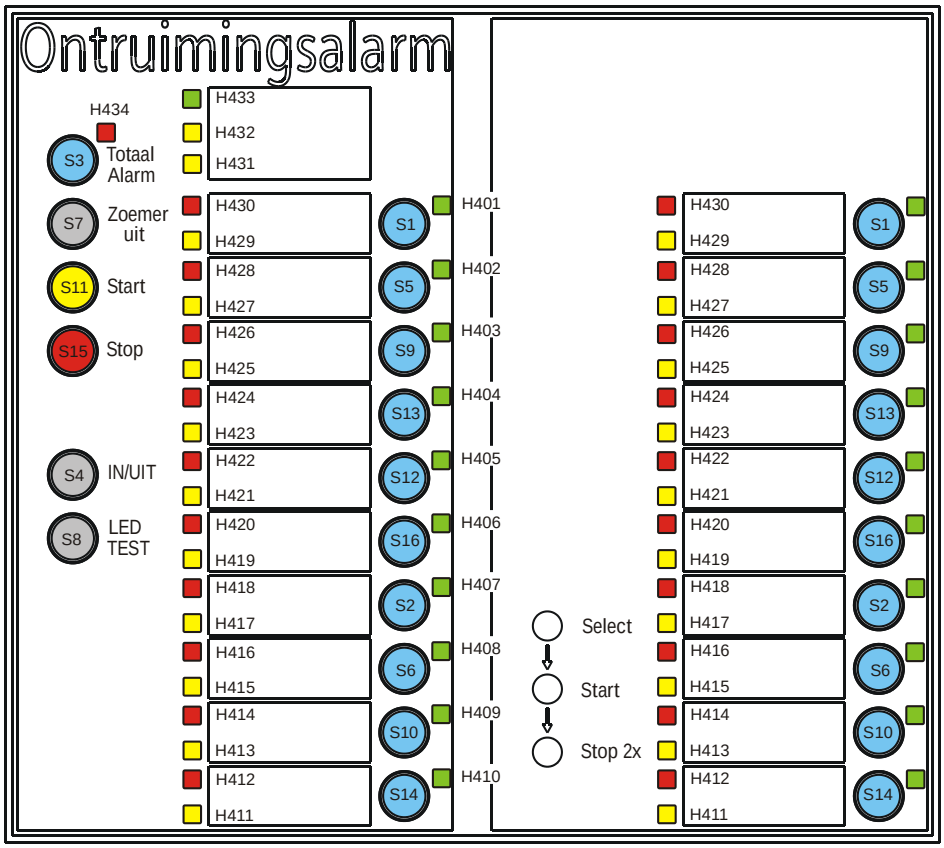


Figure 90: EVAC master unit (left), EVAC slave unit (right)

Indicators on the print plate

LED	Color	Function	State	Meaning
H205	Yellow	Watchdog	Off	Normal condition
			On	Function failure of the processor

45.5 Adjustment elements

The EVAC-NL indicator is configured with the switch S20.

Setting for one or the first EVAC-NL

Switch S20						Meaning
1	2	3	4	5	6	
S0	S1	S2	Master	Syn	(Empty)	
			ON	**OFF**		**Device address 1** [1]
ON			ON	OFF		Device address 2
	ON		ON	OFF		Device address 3
ON	ON		ON	OFF		Device address 4
		ON	ON	OFF		Device address 5
X	X	X	ON	ON		Mimic display outputs are actuated and polled (LED, keys and key switch)

Blank fields = Switch in 'OFF' position

X = Switch position according to addresses 1 to 5

[1] If working with a **single** EVAC-NL indicator (10 zones) and if working with the **first** EVAC-NL indicator, S20/4 (Master) must always be set to **ON**. If used in the EVAC-NL mimic display driver, the S20/5 (Syn) switch must also be **ON**.

Each address can be assigned only once per ↑ station.

The factory setting is always made for the application in question.

Setting for the second and/or any subsequent EVAC-NL indicator

Switch S20						Meaning
1	2	3	4	5	6	
S0	S1	S2	Master	Syn	(Empty)	
			OFF	OFF		Device address 1
ON			**OFF**	**OFF**		**Device address 2** [1]
	ON		OFF	OFF		Device address 3
ON	ON		OFF	OFF		Device address 4
		ON	OFF	OFF		Device address 5
X	X	X	OFF	ON		Mimic display outputs are actuated and polled (LED, keys and key switch)

Blank fields = Switch in 'OFF' position

X = Switch position according to addresses 1 to 5

[1] 2 EVAC-NL indicators must not be operated on the same address (per station). On the second or any subsequent indicator, the address must always be set 1 higher (slave). If used in the EVAC-NL mimic display driver, the S20/5 (Syn) switch must also be **ON**.

Each address can be assigned only once per station.
The factory setting is always made for the application in question.

45.6 Technical data

FT2003-N1 EVAC-NL mimic display driver

Mechanical data	Dimensions (L x W x H)	206 x 121 x 50 mm
	Weight	200 g

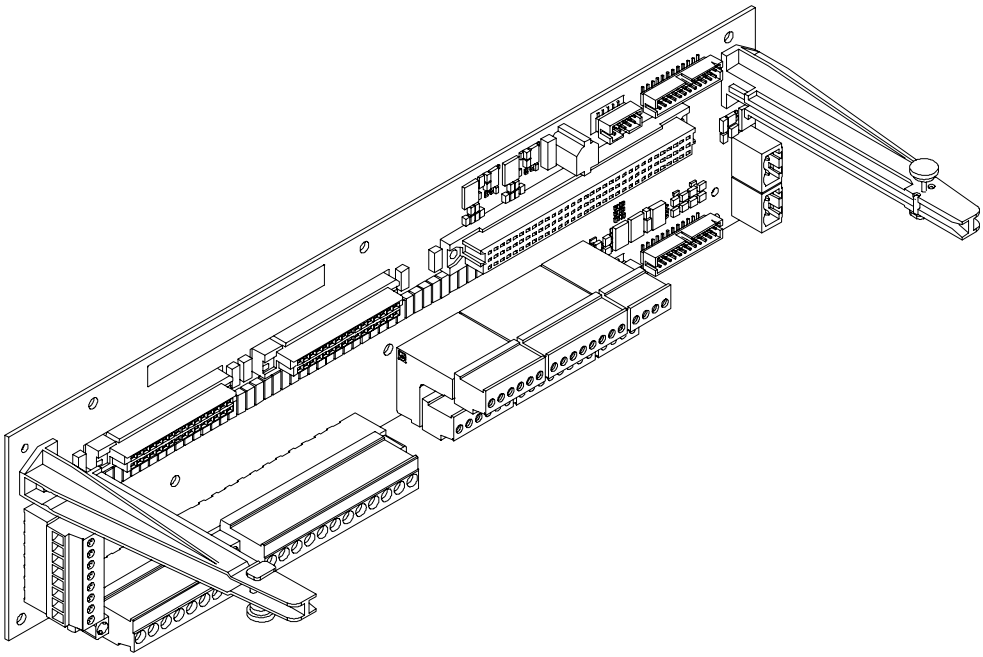
FTI2002-N1 EVAC-NL connector board

Supply	Operating voltage	DC 20…32 V
	Operating current	Max. 1 A (21 V) Depending on configuration
LED operating currents	Master indicator	34 x 13 mA / 3.3 V / 1.5 W
	Slave indicator	30 x 13 mA / 3.3 V / 1.3 W
Connection terminals	Supply, monitoring, and RS485 connection	
	Design	Screw terminals
	Admissible cable cross-section	0.2…1.5 mm²
	Inputs and outputs	
	Mimic display connections and peripheral data bus	Plug connection for ribbon cable
Mechanical data	Dimensions (L x W x H)	130 x 121 x 32 mm
	Weight	90 g

FTO2007-N1 EVAC-NL operating unit

Supply input	Voltage	DC 20…32 V
	Current	Max. 34 mA (21 V)
Supply output	Voltage	DC 20…32 V
	Current	Looped through, max. 1 A
LEDs	Number	34 for operating indication 1 for fault (watchdog)
	Function	Can be configured with Cerberus-Engineering-Tool
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable
Mechanical data	Dimensions (W x H x D)	185 x 96 x 12 mm
	Weight	70 g

46 Card cage (1 sector exting.) FCA2046



46.1 Description

The card cage (1 sector exting.) FCA2046 is a carrier for an extinguishing card and periphery board with connections for internal and external signal transmission. The card cage is mounted on the rear panel of the extinguishing control panel or an FS720 station.

Properties

- Mechanical fixing of the extinguishing card
- Incl. metal bracket for cable attachment
- Integrated EMC protection
- Module bus connection with terminating resistor
- Module bus, X bus, and supply looped (input and output)

46.2 Views

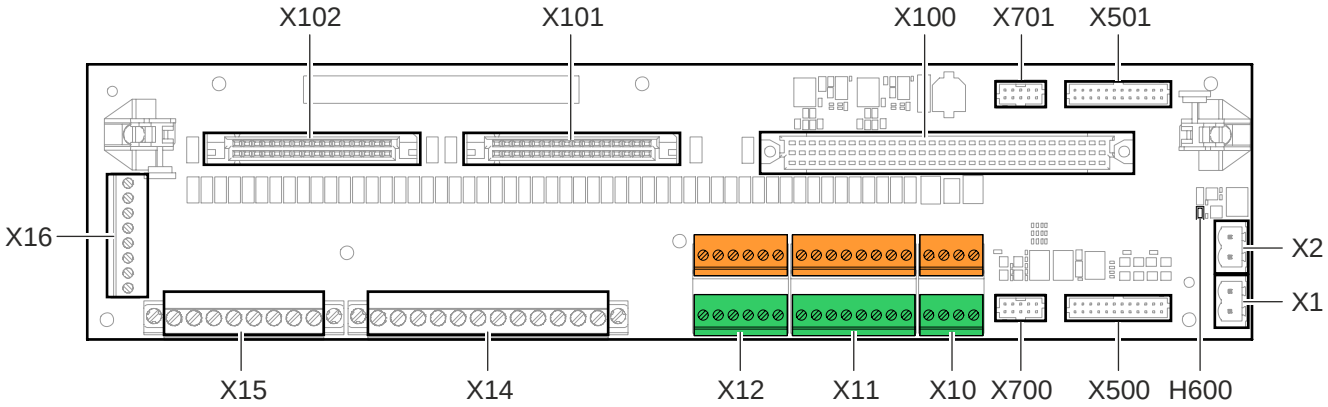


Figure 91: View of the connector configuration for the card cage (1 sector) FCA2046

Element	Des.	Function
Slots	X100 X101 X102	Connector strips for extinguishing card
Connector strips	X500	Module bus output connection (looped)
	X501	Module bus input connection (looped)
	X700	X bus output connection (looped)
	X701	X bus input connection (looped)
Terminal strips	X1, X2	Supply connection
	X10	Internal and external extinguishing terminal connection
	X11	Collective inputs 'INPUT_COL_MON' 1…4, Outputs 'OUTPUT' 1…6, supply output
	X12	Monitored inputs 'INPUT_MON' 5…10
	X14	Monitored outputs 'OUTPUT_MON' 5…10
	X15	Monitored outputs 'OUTPUT_MON' 1…4
	X16	Monitored outputs 'OUTPUT_MON' 1…4, looped
Indicators	H600	'Supply polarity reversed' indicator

46.3 Pin assignments

46.3.1 X1 and X2, supply

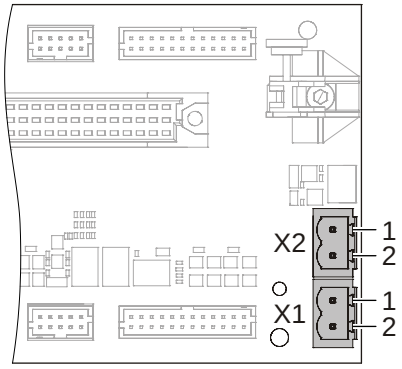
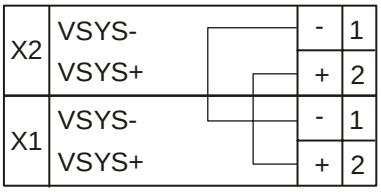


Figure 92: Detailed view of supply input, X1 and X2

PIN	Designation	Description
X2/1	VSYS-	Supply output (-) to next card cage
X2/2	VSYS+	Supply output (+) to next card cage
X1/1	VSYS-	Supply input (-)
X1/2	VSYS+	Power supply input (+)

Admissible cable cross-section: 0.2... 2.5 mm²



46.3.2 X10, extinguishing terminal

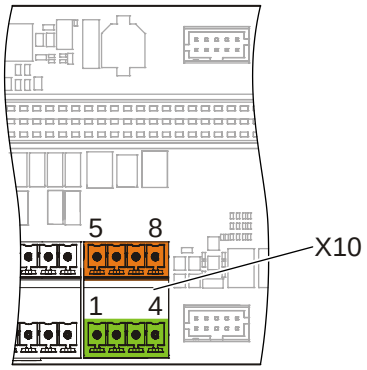
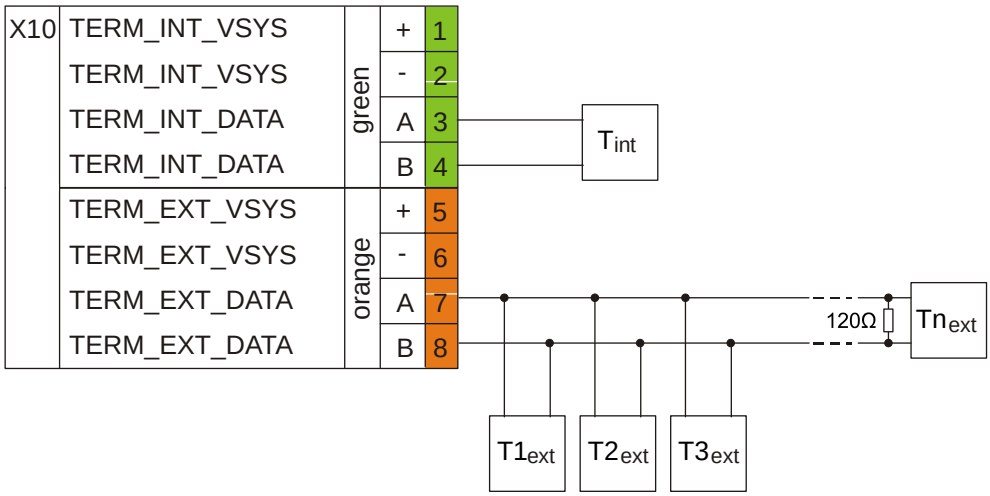


Figure 93: Detailed view of terminal X10, extinguishing terminal

PIN	Designation	Color	Description
1	TERM_INT_VSYS+	Green	Supply output (+), primary extinguishing terminal
2	TERM_INT_VSYS-	Green	Supply output (-), primary extinguishing terminal
3	TERM_INT_DATA_A	Green	Data line A, primary extinguishing terminal
4	TERM_INT_DATA_B	Green	Data line B, primary extinguishing terminal
5	TERM_EXT_VSYS+	Orange	Supply output (+), secondary extinguishing terminal
6	TERM_EXT_VSYS-	Orange	Supply output (-), secondary extinguishing terminal
7	TERM_EXT_DATA_A	Orange	Data line A, secondary extinguishing terminal
8	TERM_EXT_DATA_B	Orange	Data line B, secondary extinguishing terminal

Admissible cable cross-section: 0.2…1.5 mm²



- Observe polarity A/B
- Max. length of line A/B, internal; 10 m (no EOL)
- Max. length of line A/B, external; 1200 m (EOL 120 Ω at furthest extinguishing terminal)
- A primary (internal) extinguishing terminal (T_{int}.) must always be connected
- A maximum of 5 secondary (external) extinguishing terminals (T_{ext}.) may also be connected
- Observe address settings on the extinguishing terminal

46.3.3 X11, outputs

Outputs 1...8 are 'open drain' driver outputs, not monitored, short-circuit-proof, and protected against ground faults.

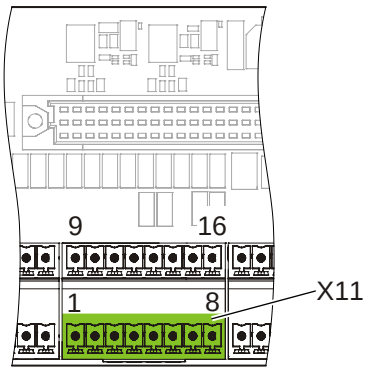


Figure 94: FCA2046 connection X11/1-8

PIN	Designation	Color	Description
1	OUTPUT_1	Green	Output 1
2	OUTPUT_2	Green	Output 2
3	OUTPUT_3	Green	Output 3
4	OUTPUT_4	Green	Output 4
5	OUTPUT_5	Green	Output 5
6	OUTPUT_6	Green	Output 6
7	SUPPLY_25V8	Green	Supply output + DC 25.8 V
8	SUPPLY_0V	Green	Supply output – 0 V

Admissible cable cross-section: 0.2... 1.5 mm²

X11	OUTPUT_1	green		1
	OUTPUT_2			2
	OUTPUT_3			3
	OUTPUT_4			4
	OUTPUT_5			5
	OUTPUT_6			6
	SUPPLY_25V8		+	7
	SUPPLY_0V		-	8

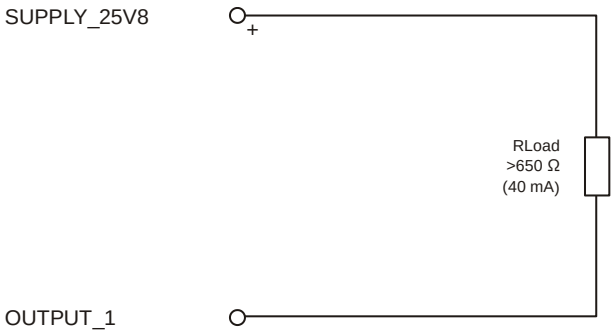


Figure 95: Output circuit for 'open drain' driver output

46.3.4 X11, collective monitored inputs

Collective devices ('manual release' or 'emergency hold') can be connected to inputs 1...4; a max. of 8 devices per input.

The inputs can also be used as monitored standard inputs. They can be configured to the different monitoring functions. All inputs offer 2-way monitoring.

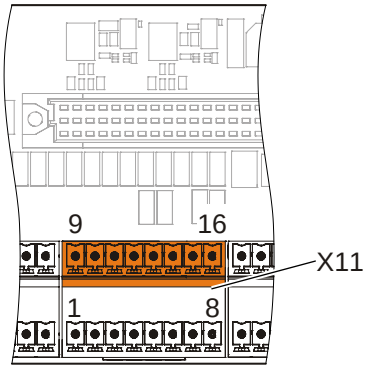


Figure 96: FCA2046 connection X11/9-16

PIN	Designation	Color	Description
9	INPUT_COL_MON_1 +	Orange	Input 1+, collective, monitored
10	INPUT_COL_MON_1 -	Orange	Input 1-, collective, monitored
11	INPUT_COL_MON_2 +	Orange	Input 2+, collective, monitored
12	INPUT_COL_MON_2 -	Orange	Input 2-, collective, monitored
13	INPUT_COL_MON_3 +	Orange	Input 3+, collective, monitored
14	INPUT_COL_MON_3 -	Orange	Input 3-, collective, monitored
15	INPUT_COL_MON_4 +	Orange	Input 4+, collective, monitored
16	INPUT_COL_MON_4 -	Orange	Input 4-, collective, monitored

Admissible cable cross-section: 0.2... 1.5 mm²

X11	INPUT_COL_MON_1	orange	+	9
	INPUT_COL_MON_1		-	10
	INPUT_COL_MON_2		+	11
	INPUT_COL_MON_2		-	12
	INPUT_COL_MON_3		+	13
	INPUT_COL_MON_3		-	14
	INPUT_COL_MON_4		+	15
	INPUT_COL_MON_4		-	16

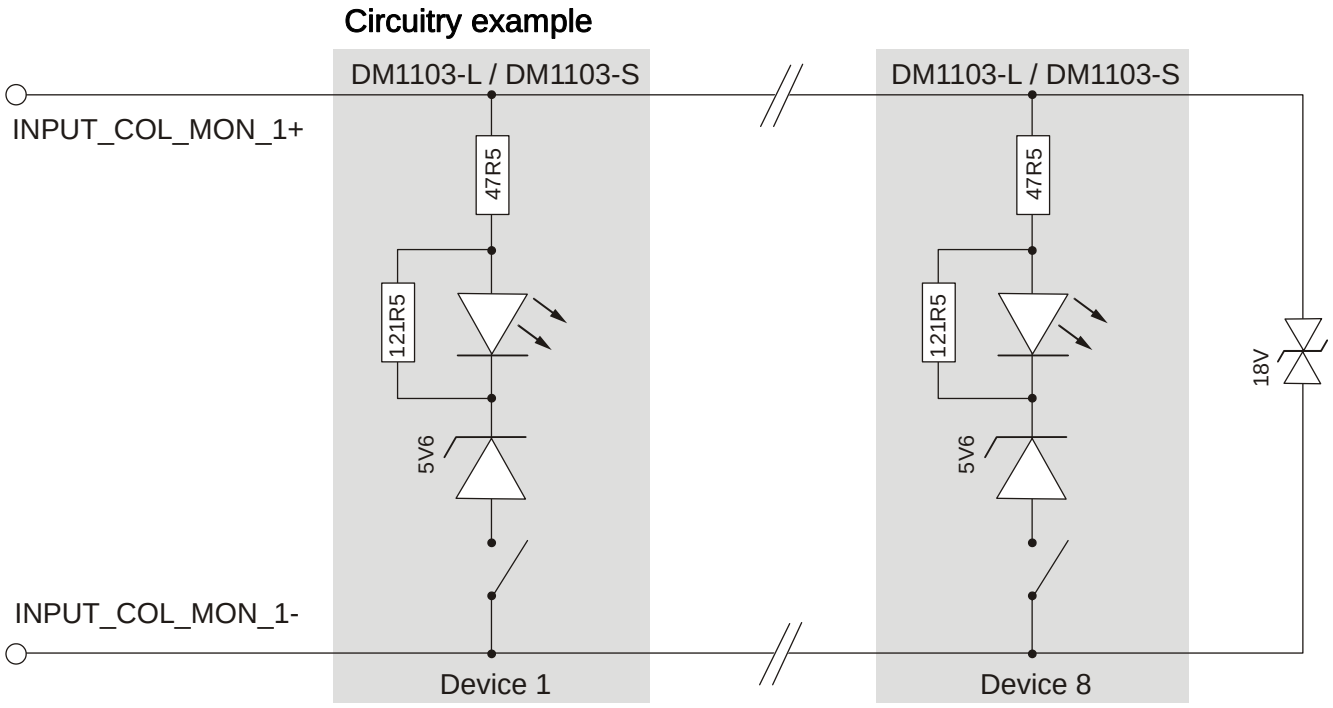


Figure 97: Collective monitored input with 'Manual release' and 'Emergency hold'

- EOL resistor: 18 V voltage reference diode / bidirectional / min. 600 W (e.g., P6KE18CA)
- Max. line resistance, both conductors: 80 Ω

46.3.5 X12, monitored inputs

Inputs 5...10 (X12) are monitored standard inputs without the collective function. The inputs can be configured to the different monitoring functions. All inputs offer 2-way monitoring.

Inputs 1...4 (X11) can also be used as monitored standard inputs.

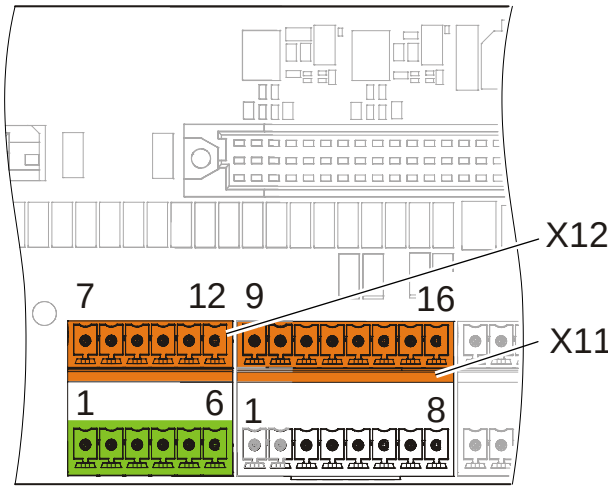
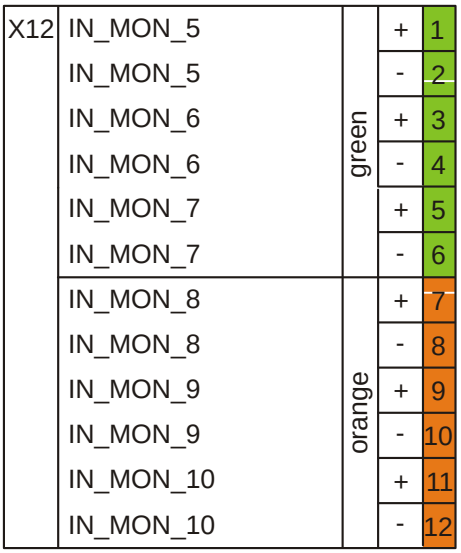


Figure 98: FCA2046 connection X12

PIN	Designation	Color	Description
1	IN_MON_5+	Green	Input 5+, monitored
2	IN_MON_5-	Green	Input 5-, monitored
3	IN_MON_6+	Green	Input 6+, monitored
4	IN_MON_6-	Green	Input 6-, monitored
5	IN_MON_7+	Green	Input 7+, monitored
6	IN_MON_7-	Green	Input 7-, monitored
7	IN_MON_8+	Orange	Input 8+, monitored
8	IN_MON_8-	Orange	Input 8-, monitored
9	IN_MON_9+	Orange	Input 9+, monitored
10	IN_MON_9-	Orange	Input 9-, monitored
11	IN_MON10+	Orange	Input 10+, monitored
12	IN_MON_10-	Orange	Input 10-, monitored

Admissible cable cross-section: 0.2...1.5 mm²



- EOL resistor: 3.3 kΩ
- Max. cable resistance, both conductors: 80 Ω

Input monitoring

The resistance range of the entire line – measured at the input terminals 'IN_MON+' and 'IN_MON-' when the site is switched off – determines the defined state of the input status. The status varies depending on the input type configured.

The status ACTIVE has two values:

- ACTIVE 1 is when the 1200 Ω resistor is used
- ACTIVE 2 is when the 680 Ω resistor is used and
- ACTIVE 1 + 2 is when both resistors are used ('simple switchable' and 'complex switchable')

The circuits and the definition of the coverage areas per input type are listed below.

INPUT_MON_TYPE_1: 'Normally open'

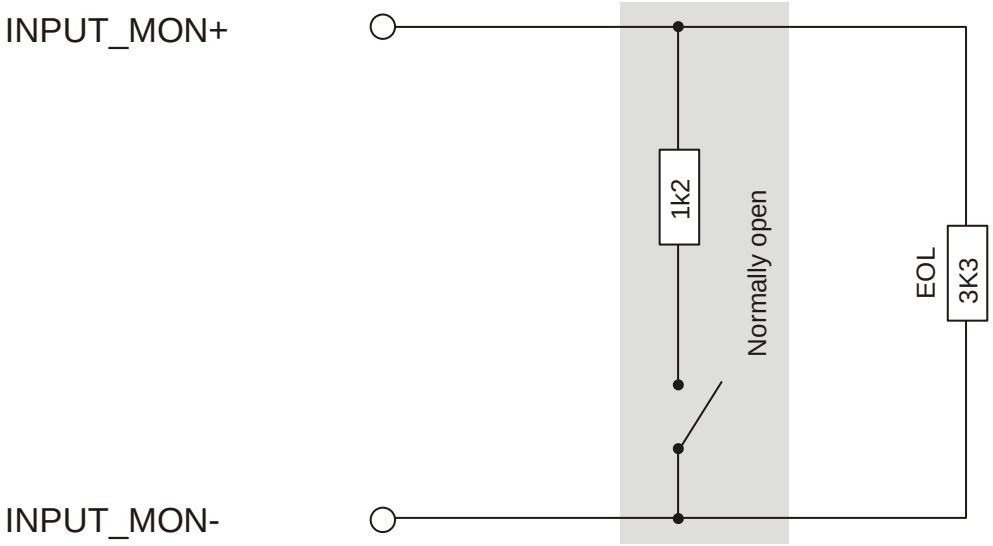


Figure 99: MON_INPUT_TYPE_1, 'Normally open'

- 'Normally open'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	QUIET
0520…0799 Ω	QUIET
0800…1099 Ω	ACTIVE 1
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	QUIET
≥4000 Ω	OPEN (Fault)

- 'Normally open', VdS-compliant

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	QUIET
0520…0799 Ω	ACTIVE 1
0800…1099 Ω	QUIET
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	QUIET
≥4000 Ω	OPEN (Fault)

INPUT_MON_TYPE_2: 'Normally closed'

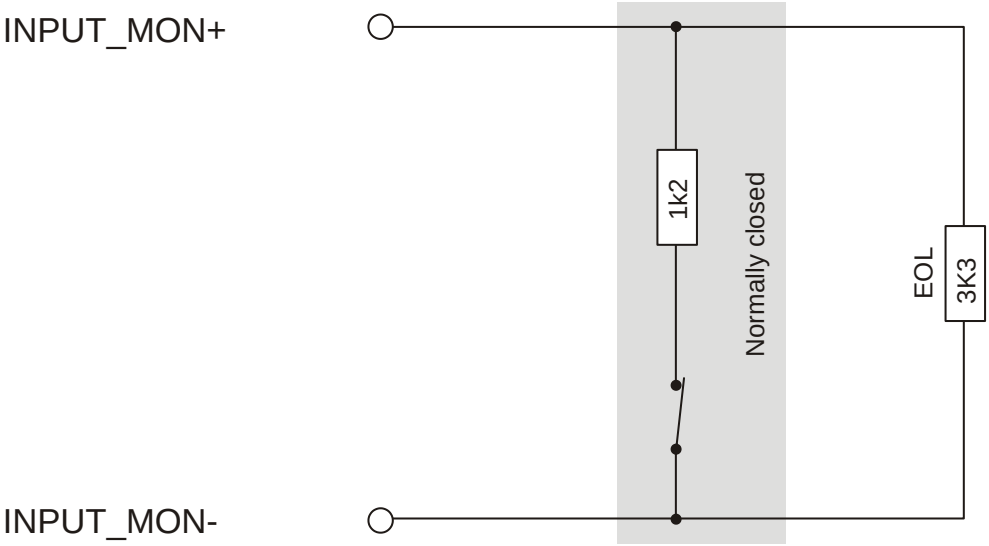


Figure 100: MON_INPUT_TYPE_2, 'Normally closed'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	QUIET
0520…0799 Ω	QUIET
0800…1099 Ω	QUIET
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	ACTIVE 1
≥4000 Ω	OPEN (Fault)

INPUT_MON_TYPE_2: "Loss of agent' closed during pressure'

- "Loss of agent' closed during pressure'
- Maximum line resistance 160 Ω (pressure gauge, cable, and plug)
- The maximum number of pressure gauges is calculated according to the max. line resistance

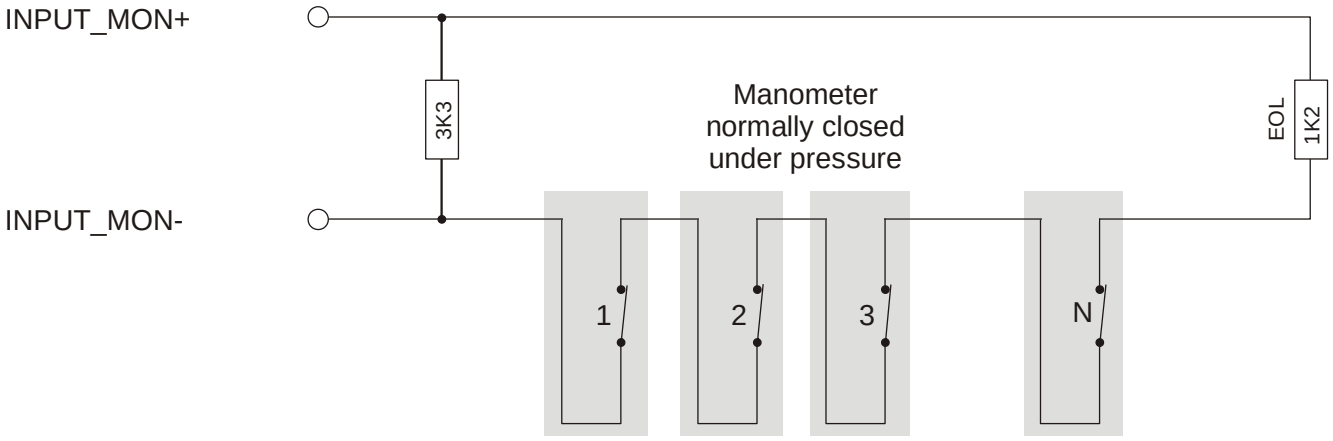


Figure 101: MON_INPUT_TYPE, "Loss of agent' closed during pressure'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	QUIET
0520…0799 Ω	QUIET
0800…1099 Ω	QUIET
1100…1499 Ω	QUIET
1500…3999 Ω	ACTIVE 1
≥4000 Ω	OPEN (Fault)

INPUT_MON_TYPE_3: 'Simple switchable'

- Selector valve input

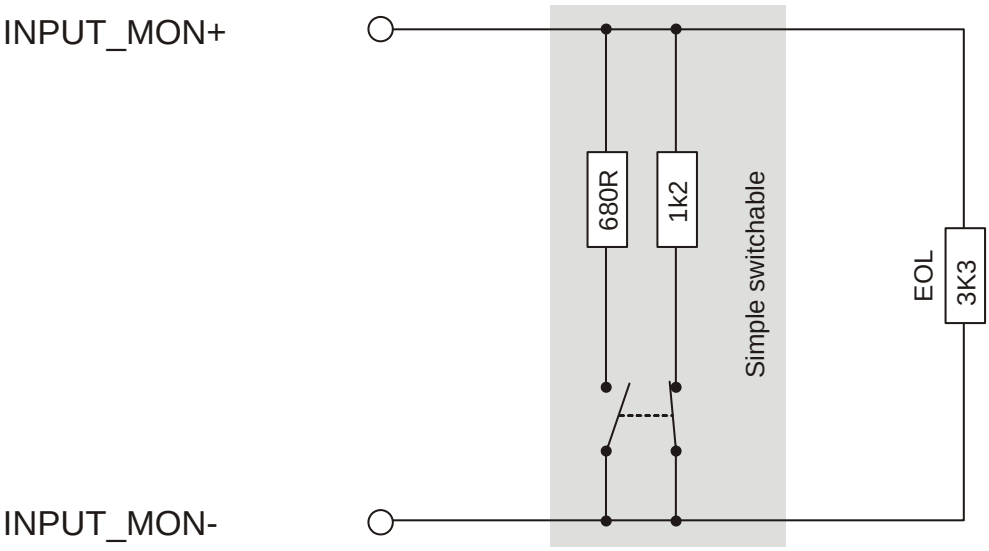


Figure 102: MON_INPUT_TYPE_3, 'Simple switchable'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	INCORRECT STATUS
0520…0799 Ω	QUIET
0800…1099 Ω	ACTIVE 1
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	INCORRECT STATUS
≥4000 Ω	OPEN (Fault)

INPUT_MON_TYPE_4: 'Complex switchable'

- Automatic blocking
- Manual blocking
- Automatic and manual blocking

INPUT_MON_TYPE_4 also contains type 1...3

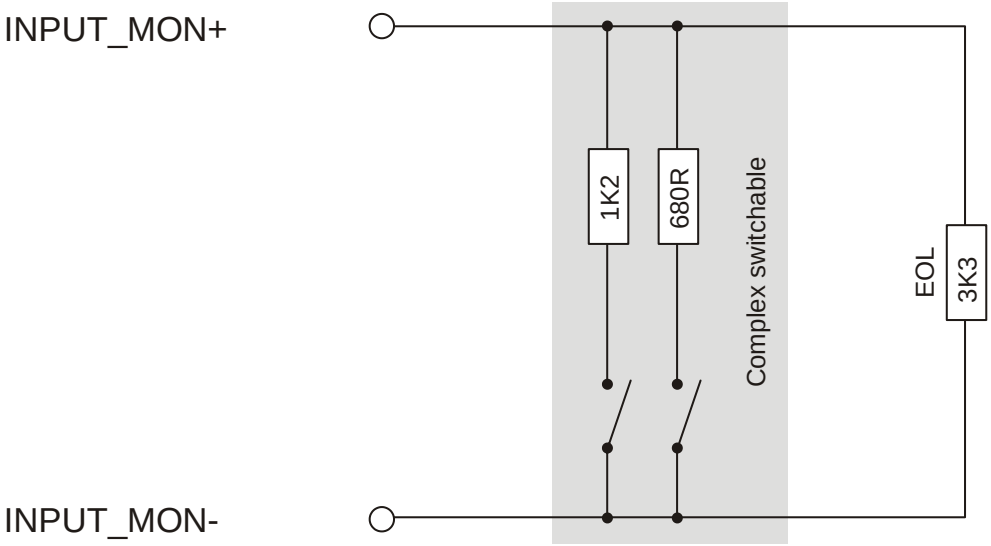


Figure 103: MON_INPUT_TYPE_4, 'Complex switchable'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	ACTIVE 1 + 2
0520…0799 Ω	ACTIVE 2 (only 680 Ω)
0800…1099 Ω	ACTIVE 1 (only 1200 Ω)
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	QUIET
≥4000 Ω	OPEN (Fault)

INPUT_MON_TYPE_5: "Loss of agent' open during pressure'

- Maximum line resistance 100 Ω (pressure gauge, cable, and plug)
- The maximum number of pressure gauges (n) is calculated according to the max. line resistance

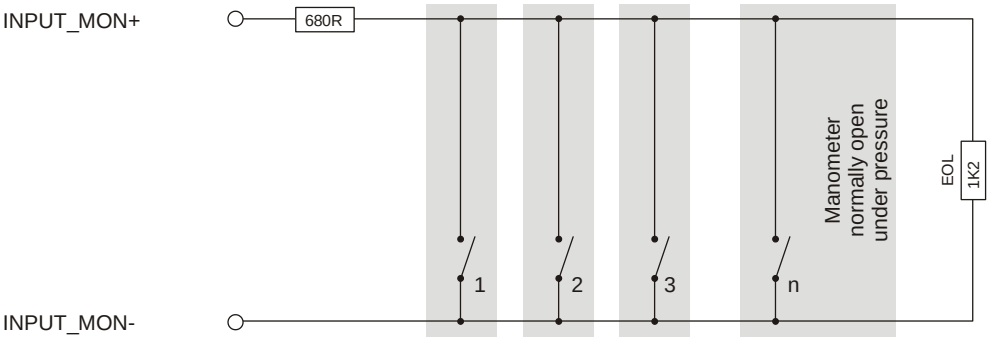
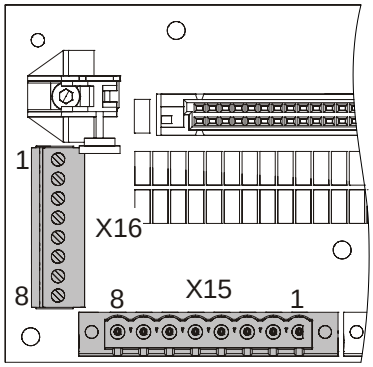


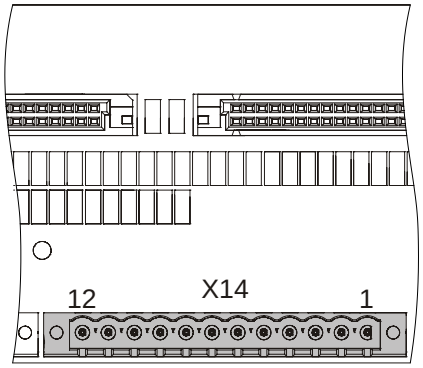
Figure 104: MON_INPUT_TYPE, "Loss of agent' open during pressure'

Resistance range	Input status
0000…0249 Ω	SHORT (Fault)
0250…0519 Ω	SHORT (Fault)
0520…0799 Ω	ACTIVE 1
0800…1099 Ω	ACTIVE 1
1100…1499 Ω	OPEN (Fault)
1500…3999 Ω	QUIET
≥4000 Ω	OPEN (Fault)

46.3.6 X14/X15/X16, monitored outputs



Detailed view X15, X16,
outputs 1…4, monitored



Detailed view X14,
outputs 5…10, monitored

PIN	Designation	Description
X15/8 X16/1	OUT_MON_1+	Output 1+, monitored
X15/7 X16/2	OUT_MON_1-	Output 1-, monitored
X15/6 X16/3	OUT_MON_2+	Output 2+, monitored
X15/5 X16/4	OUT_MON_2-	Output 2-, monitored
X15/4 X16/5	OUT_MON_3+	Output 3+, monitored
X15/3 X16/6	OUT_MON_3-	Output 3-, monitored
X15/2 X16/7	OUT_MON_4+	Output 4+, monitored
X15/1 X16/8	OUT_MON_4-	Output 4-, monitored
X14/12	OUT_MON_5+	Output 5+, monitored
X14/11	OUT_MON_5-	Output 5-, monitored
X14/10	OUT_MON_6+	Output 6+, monitored
X14/9	OUT_MON_6-	Output 6-, monitored
X14/8	OUT_MON_7+	Output 7+, monitored
X14/7	OUT_MON_7-	Output 7-, monitored
X14/6	OUT_MON_8+	Output 8+, monitored
X14/5	OUT_MON_8-	Output 8-, monitored
X14/4	OUT_MON_9+	Output 9+, monitored
X14/3	OUT_MON_9-	Output 9-, monitored
X14/2	OUT_MON_10+	Output 10+, monitored
X14/1	OUT_MON_10-	Output 10-, monitored

Admissible cable cross-section: 0.2…2.5 mm²

OUT_MON_1	X15	+	8	X16	+	1
OUT_MON_1		-	7		-	2
OUT_MON_2		+	6		+	3
OUT_MON_2		-	5		-	4
OUT_MON_3		+	4		+	5
OUT_MON_3		-	3		-	6
OUT_MON_4		+	2		+	7
OUT_MON_4		-	1		-	8

X14	OUT_MON_5	+	12
	OUT_MON_5	-	11
	OUT_MON_6	+	10
	OUT_MON_6	-	9
	OUT_MON_7	+	8
	OUT_MON_7	-	7
	OUT_MON_8	+	6
	OUT_MON_8	-	5
	OUT_MON_9	+	4
	OUT_MON_9	-	3
	OUT_MON_10	+	2
	OUT_MON_10	-	1

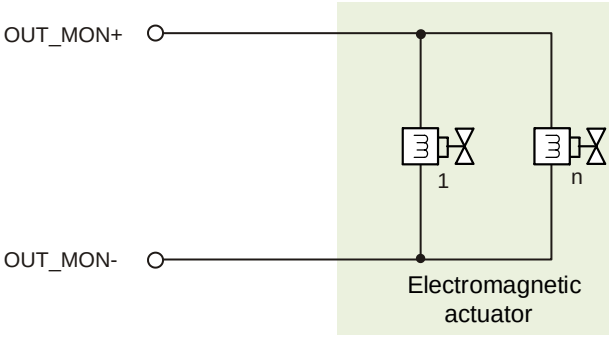
Output circuits

Three output circuits are possible

- 'TYPE_LOAD', valves (2-way monitoring with and without 2-way connection box)
- 'TYPE_EOL', visual or acoustic warning devices
- 'TYPE_LOAD_INVERS', door magnets
- 'TYPE_LOAD', pyrotechnic valves (2-way monitoring with and without 2-way connection box)

Monitored output type LOAD

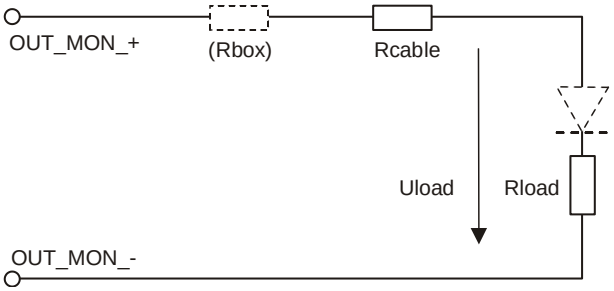
Use	Valves, etc.
Monitoring polarity	Normal polarity
Monitoring	Only in inactive state
Calibration	Yes
2-way monitoring	Permitted
Total load resistance, incl. cable	• 14…1000 Ω, max. 2 A • 14…780 Ω with 2-way connection box
Max. cable resistance	80 Ω, both lines
Monitoring tolerance	• ± 33 % at ≤ 200 Ω • ± 16 % at > 200 Ω • ± 2.5 % dynamic



A maximum of 10 electromagnetic valves can be switched in parallel.

In some applications, valves are used with blocking diodes as polarity protection.

Calculation of the cable resistance:



Step 1: calculate the critical cable resistance

RcableCrit = (24.8 V – UloadMin) / ILoadMin

RcableCrit	Critical cable resistance [Ω] at which a fault is still displayed and the voltage at the load is still supplied to a sufficient extent.
ULoadMin	Minimum voltage [V] at load, as per data sheet.
ILoadMin	Minimum current [A] due to load at min. voltage, as per data sheet.

Step 2: calculate the max. permitted cable resistance

RcableNom = 0.97 * RcableCrit – 0.029 * RLoad

RcableNom	Maximum nominal cable resistance [Ω] during commissioning, both conductors.
RLoad	Load resistance at UloadMin.

When using a 2-way connection box

RcableNom = 0.97 * RcableCrit – 0.029 * (Rload + 220)

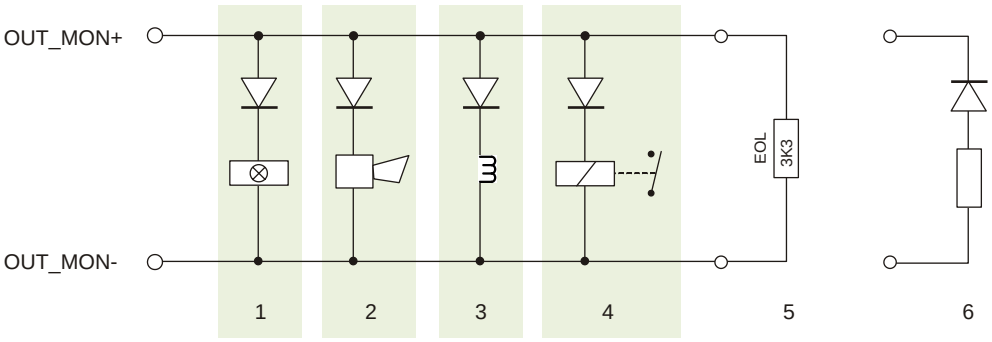
Rbox	Internal resistance [Ω] of an externally connected 2-way connection box (220 Ω).

Examples:

- B04420103 with Vnom 24 V ±10 % and 0.5 A
  RcableCrit = (24.8 V - 24 V 0.9) / 0.5 A = 6.4 Ω
  RcableNom = 0.97 * 6.4 Ω – 0.029 * (24 V *0.9 / 0.5 A) = 4.96 Ω
- FTEX 30 40 21 with Vnom 24 V ±15 % and Rload 60 Ω
  RcableCrit = (24.8 V - 24 V 0.85) / (24 V *0.85 / 60 Ω = 12.9 Ω
  RcableNom = 0.97 * 12.9 Ω – 0.029 * 60 Ω = 10.8 Ω

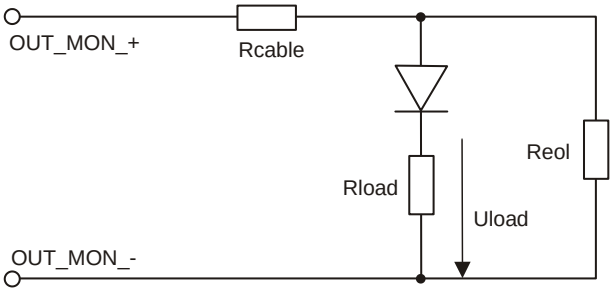
Monitored output type EOL

Use	Optical or acoustic warning devices, etc.
Monitoring polarity	Reverse polarity
Monitoring	Only in inactive state
Calibration	Yes
2-way monitoring	Not possible
Total load resistance, incl. cable	40…4000 Ω, EOL max. 3.3 kΩ
Max. cable resistance	80 Ω, both lines
Monitoring tolerance	±12.5 %, ±2.5 % dynamic



1 optical alarm device, illuminated warning panel
2 acoustic alarm devices, such as sounders, etc.
3 Fire controls
4 RT alarm
5 EOL standard value 3.3 kΩ, variable for EN 54-13
6 EOL for increased current loads, EN 54-13 outputs

Calculation of the cable resistance:



Step 1: calculate the critical cable resistance

RcableCrit = (24.8 V – UloadMin) / IloadMin + (UloadMin / Reol)

RcableCrit	Critical cable resistance [Ω] at which a fault is still displayed and the load is still supplied to a sufficient extent.
ULoadMin	Minimum voltage [V] at load, as per data sheet.
ILoadMin	Minimum current [A] due to load at min. voltage, as per data sheet.

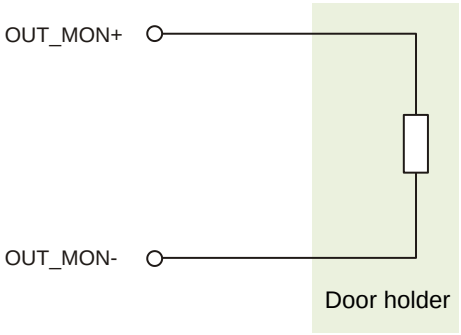
Step 2: calculate the max. permitted cable resistance

RcableNom = 0.97 * RcableCrit – 0.029 * Reol

RcableNom	Maximum nominal cable resistance [Ω], as per calibration, both conductors.
Reol	Termination resistor [Ω]

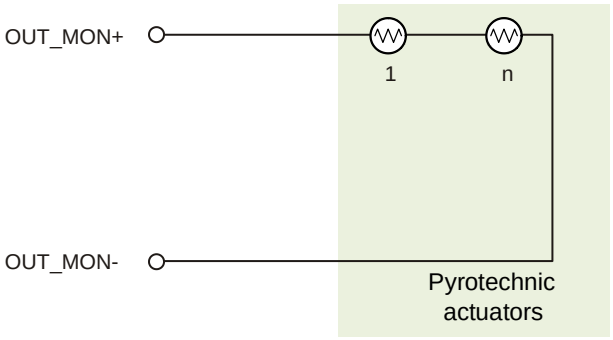
Monitored output type LOAD INVERTED

Use	Door magnets, etc.
Monitoring polarity	Not possible
Monitoring	Only in active state
Calibration	Yes
2-way monitoring	Not possible
Total load resistance, incl. cable	18…3500 Ω, load 20 mA…1.5 A
Max. cable resistance	80 Ω, both lines
Max. capacity	470 µF
Monitoring tolerance	±25 % of the calibrated value



Monitored output type LOAD PYRO

Use	Pyrotechnic valves
Monitoring polarity	Normal polarity
Monitoring	Only in inactive state
Calibration	Yes
2-way monitoring	Only permitted without 2-way connection box
Total load resistance, incl. cable	2…32 Ω, max. 10 pyrotechnic valves, 25.8 V / 0.8 A
Max. cable resistance	Depending on number of valves (see valve data sheet)
Monitoring tolerance	± 5 Ω, ± 1.2 Ω



A maximum of 10 pyrotechnic valves can be switched in series.

46.4 Indicators

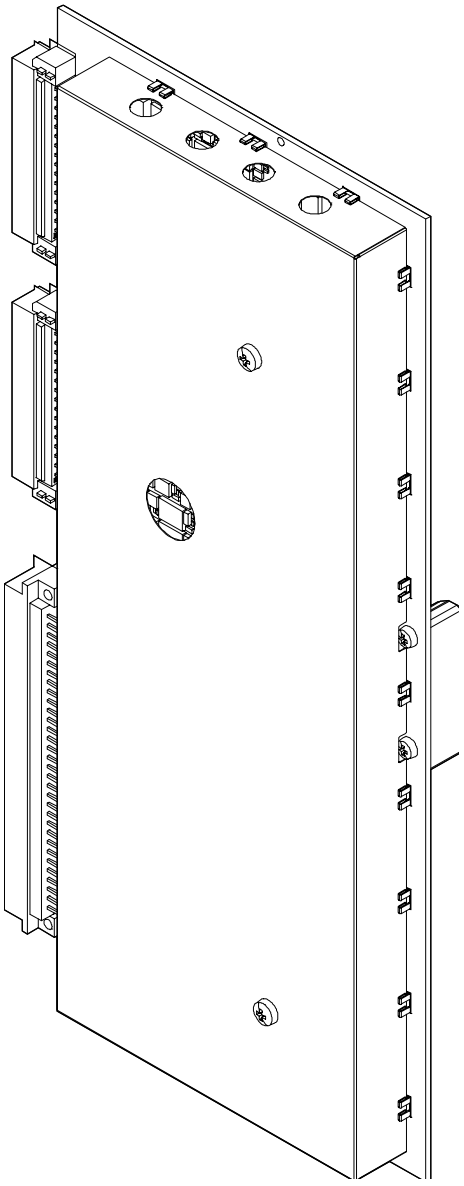
Status displays of the inputs/outputs

The status displays of the inputs/outputs are described with the extinguishing card XCI2005.

46.5 Technical data

Plug-in units	Slots	1x extinguishing card XCI2005
Supply	Operating voltage	DC 20…30 V
	Maximum current	9.5 A
Connections	Supply input connector	X1, X2
	Extinguishing card socket strip	X100, X101, X102
	Flat cable socket strip for XBUS, blocking, addressing	X700, X701
	Flat cable socket strip for module bus	X500, X501
	Input connector strip	X11, X12
	Output connector strip	X14, X15, X16, X11
	Connector strip for internal and external terminals	X10
	Permitted conductor cross-section of the screw terminals	0.5…2.5 mm²
Mechanical data	Dimensions (L x W x H)	296 x 70 x 105 mm
Ambient conditions	Operating temperature	Min. -5 °C max. +50 °C
	Storage temperature	Min. -20 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)

47 Extinguishing card XCI2005



47.1 Description

The extinguishing card XCI2005 is a module bus card with its own card cage, which can be installed in FS720 fire control panels if there is sufficient space. The extinguishing card controls and monitors the inputs and outputs for extinguishing for a sector and for the extinguishing terminals.

Properties

- For single-sector extinguishing
- 10 monitored outputs, can be configured as follows:
  - Valve output
  - Alarm output (acoustic or optical alarm devices)
  - Inverse output (e.g., for door magnets)

- The following peripheral devices can be connected:
  - Group valves, reserve group valves
  - Control valves, reserve control valves
  - Reserve emergency stop valve
  - Extended discharge extinguishing valve
  - Isolated zone valve
- 4 monitored collective inputs for up to 8 devices
- All collective inputs can be configured as monitored inputs
- 6 monitored inputs
- Inputs for 5 different circuits can be configured (normally open, normally closed, simple switchable, complex switchable, loss of agent)
- 6 open drain outputs
- 1x supply output DC 24 V for 'open drain' outputs
- Connection for 1x primary terminal
- Connection for max. 5 secondary terminals

47.2 Views

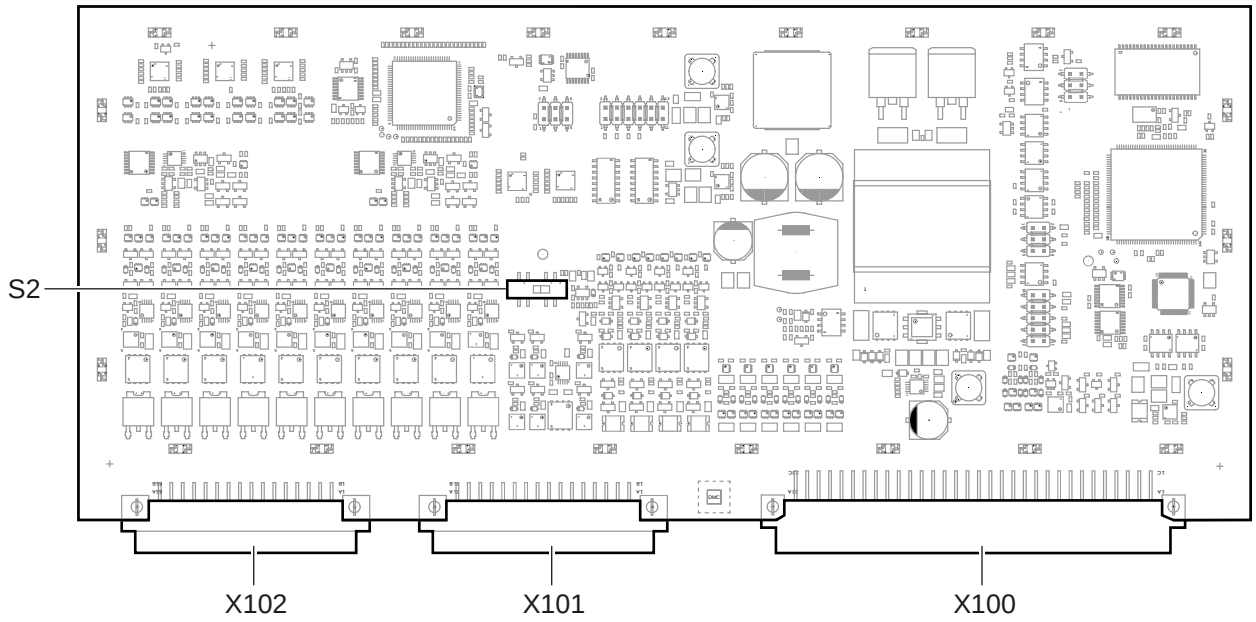


Figure 105: Extinguishing card XCI2005, equipment view

Element	Des.	Function
Connector	X100 X101 X102	Connector strips for card cage (1 sector exting.) FCA2046
Switches and keys	S2	Ground fault monitoring on/off switch
LEDs	H1…H31	LED indicators are on the back

47.3 Indicators

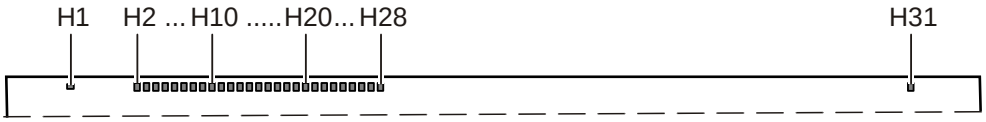


Figure 106: Extinguishing card, partial view of the printed circuit board on the rear

Element	Des.	Function
Status LEDs	H1	LED indicator for 'control test mode'
	H2	Processor status display
	H3…H12	Status LEDs 'Monitored output' 1…10
	H13…H22	Status LEDs 'Monitored output' 1…10
	H23…H28	Status LEDs 'Output' 1…6
	H31	Module bus status display

LED indicator status

LED	Color	Function	State	Meaning
H1	Red	Revision active	OFF	• Normal condition
			ON	• Revision switched on (test mode)
H2	Yellow	MSP status	OFF	• Normal condition
			Flashes slowly	• General fault, priority 2
			Flashes quickly	• Fault, priority 1
H3 to H12	Yellow	Status Outputs 1…10 monitored	OFF	• Normal condition
			Flashes slowly	• Fault, priority 3 (line)
			Flashes quickly	• Fault, priority 1 (fuse defective)
			Pulsating	• Fault, priority 2, invalid or defective calibration
			ON	• Fault, priority 4, output active
H13 to H22	Yellow	Status Inputs 1…10 monitored	OFF	• Normal condition
			Flashes slowly	• Fault, priority 1 (line) – Collective monitored inputs: open line, short-circuit, resistance too high, residual current – Monitored inputs: open line, short circuit, line error
			ON	• Fault, priority 2, input active
H23 to H28	Yellow	Status Outputs 1…8	OFF	• Output not active
			ON	• Output active

LED	Color	Function	State	Meaning
H31	Yellow	Module bus driver status	OFF	• Normal condition
			Flashes slowly	• Degraded mode
			Flashes every 2 sec 1x	• Update is starting
			Flashes every 2 sec 2x	• Update active
			Flashes every 2 sec 3x	• Update failed
			Flashes quickly	• Checksum error in Flash memory. Update needed

- Flashes slowly: ON 1.25 s / OFF 0.75 s
- Flashes quickly: ON 0.25 s / OFF 0.25 s
- Pulsating: ON 0.25 s / OFF 1.75 s

47.4 Adjustment elements

Ground fault supervision switch S2

Ground fault supervision affects all inputs and outputs on the extinguishing card. Ground fault supervision is therefore switched on as standard for each extinguishing card (see figure).

Activated: Switch S2 bottom, as per figure.

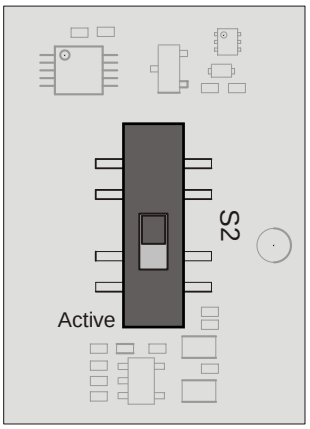


Figure 107: View of switch S2, card upright, connector strips left

- Ground fault supervision 'ON': Bottom switch (active)
- Ground fault supervision 'OFF': Top switch

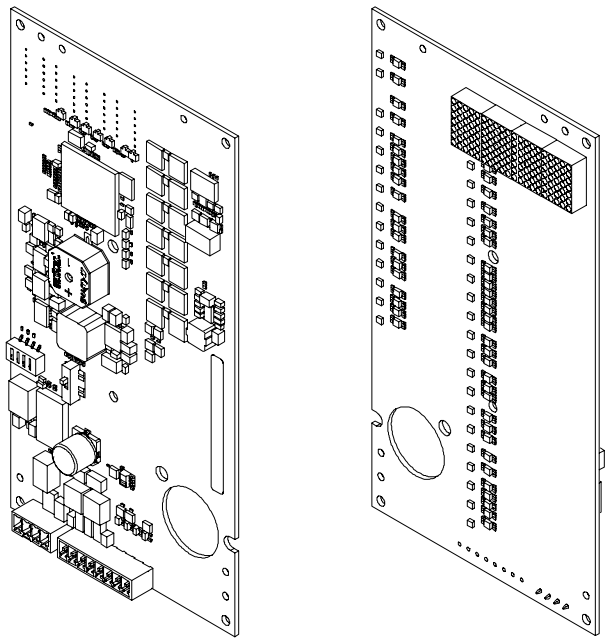
47.5 Technical data

Supply input	Voltage from card cage FC2046	DC 20…30 V
	Operating current	90 mA
	Maximum current	6.5 A
Monitored outputs	Valve, standard, and inverse outputs	Max. 10
	Output voltage	Max. DC 25.8 V
	Output current	Max. 2 A, short-circuit-proof
	Load capacitance	Max. 470 µF
	Line resistance	Max. 80 Ω, both conductors
	Monitored for	Ground fault, leakage current, open line
	Cable connection, via card cage	2-pin, max. 2.5 mm^2
Pyrotechnic valves	Load resistance	• Min. 2 Ω • Max. 32 Ω
Solenoid valves	Load resistance	• Min. 14 Ω • Max. 1000 Ω
Single-room solution	Cable length	Max. 30 m or in the same room as extinguishing Max. cable resistance: Load-dependent
	Monitoring	Direct monitoring Internal 2-way monitoring
	Valves	Max. 10 • Pyrotechnic: serial • Solenoid: parallel
Multi-room solution	Cable length	Max. 400 m Max. cable resistance: Load-dependent
	Monitoring	Direct monitoring External 2-way monitoring
	Valves	Max. 1
Standard output	Termination resistor	Min. EOL 40 Ω Max. EOL 4000 Ω
	Cable length	1000 m or 80 Ω Max. cable resistance: Load-dependent
Inverse output	Termination resistor	Min. 18 Ω Max. 1300 Ω
	Cable length	1000 m or 80 Ω Max. cable resistance: Load-dependent

Collective inputs, monitored (GPIO)	Collective inputs	Max. 4, can be configured as monitored inputs
	Open-circuit voltage	DC 17.1…19.3 V
	Alarm voltage	DC 5.5…16.5 V
	Quiescent current	5.3 mA, typical
	Alarm current	44 mA
	Number of devices per input:	Max. 8, collective
	'Manual release'	Max. 8 DM1103-S
	'Emergency hold'	Max. 8 DM1103-L
	End-of-line	18 V voltage reference EOL
	Line protocol	Collective
	Line resistance	Max. 80 Ω, both conductors
	Load capacitance	Max. 300 nF
	Monitored for	Ground fault, leakage current, open line
	Cable connection, via card cage	2-pin, max. 0.65 mm^2
Monitored inputs		Max. 6; 10 if collective inputs not used
	Possible input circuits, configurable	• 'Normally open' • 'Normally closed' • 'Simple switchable' (sector valve) • 'Complex switchable' ('Automatic blocked', 'Manual blocked', 'Automatic blocked' and 'Manual blocked') • Loss of agent
	Line resistance	Max. 80 Ω, both conductors
	Monitored for	Leakage current, open line, ground fault
	Termination resistor	3.3 kΩ
	Cable connection, via card cage	2-pin, max. 0.65 mm^2
'Loss of agent' outputs, not monitored	Driver outputs	6
	Circuit	Open drain, short-circuit-proof
	Current limiting	40 mA
	Monitored for	Ground fault
	Supply output	DC 25.8 V
	Output current	Max. 1 A, short-circuit-proof
	Cable connection, via card cage	1x per output 2x for supply output Max. 0.65 mm^2

Extinguishing terminal output	Protocol	RS485, half-duplex
	Number of participants per sector	• Primary 1 • Secondary max. 5
	Cable length	• Primary max. 10 m • Secondary max. 1200 m
	Data rate	57.6 kbit/s, twisted, unshielded
	Monitored for	Ground fault
	Supply output	• Primary: Vsys, max. 1 A, short-circuit-proof • Secondary: Vsys, max. 2 A, short-circuit-proof
	Cable connection, via card cage	2x 2-pin bus connection 2x 2-pin bus supply output Min. 1.5 mm^2
XBUS connection	Protocol	XBUS, half-duplex
	Number of participants	Max. 16
	Cable length	Max. 6.5 m, ribbon cable
	Data rate	57.6 kbit/s
	Cable connection, via card cage	2x flat cable, 0.08 mm^2 (28 AWG)
LEDs	Number: 29	H1…H30, 2x status LED 10x output, monitored 10x input, monitored 6x output, not monitored
Addressing		Automatic via card cage
Connections	Connector strip for card cage	X100, X101, X102
Mechanical data	Dimensions (L x W x H)	260 x 114 x 28 mm

48 Extinguishing terminal XTO2001-A1



48.1 Description

The extinguishing terminal XTO2001 is used for the indication and operating functions of the extinguishing card. It is part of the operating add-ons for extinguishing control panels and of the remote control panel. Every flooding zone has its own extinguishing terminal. The extinguishing terminal can be used as a primary Person Machine Interface installed in an extinguishing control panel or separately as a secondary Person Machine Interface in its own housing. The primary extinguishing terminal must always be present and, if possible, integrated into the control panel. The secondary extinguishing terminal is generally installed externally and is an additional terminal with full functionality.

The extinguishing terminal XTO2001 is used in the following components:

- Exting. terminal (1 sector) XCM2002-A2
- Exting. terminal (4 sectors) XCM2003-A2
- Extinguish. terminal (remote) XT2001-A2

Properties

- Supply via the extinguishing control panel
- Separate supply as secondary (remote) extinguishing terminal possible
- With a separate supply, monitoring for power loss, battery fault, and ground fault
- Connection of a 3rd source of voltage [FR] possible
- Addressable via DIP switch
- 6 freely programmable 3-color LED indicators
- 28 permanently assigned 3-color LED indicators
- 4 dot matrix displays (5 x 7) for countdown display
- 10 operating buttons, 4 of which are freely programmable
- Prepared for the installation of a key switch

48.2 Views

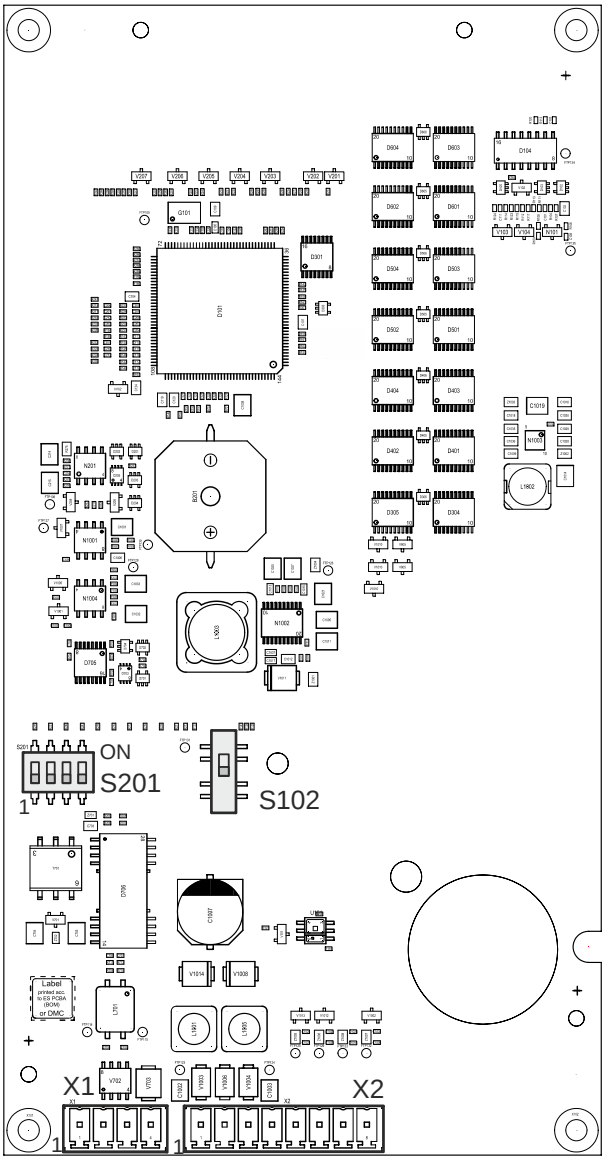


Figure 108: Extinguishing terminal XTO2001-A1, printed circuit board rear view

Element	Des.	Function
Connector	X1	Connector strip for RS485 connection
	X2	Connector strip for supply
Switches, buttons	S102	Switch for ground fault monitoring
	S201	DIP switch for address setting

48.3 Pin assignments

48.3.1 Primary extinguishing terminal, connections X1, X2

Connector X2, supply

PIN	Designation	Description
1	VSYS_POS	Supply input V+
2	VSYS_POS	Supply output V+ (looped through)
3	VSYS_NEG	Supply input V-
4	VSYS_NEG	Supply output V- (looped through)
5	#MAINS	Network monitoring connection
6	#BATTERY	Battery monitoring connector
7	-3SRC	Supply input V-, 3rd source of voltage
8	+3SRC	Supply input V+, 3rd source of voltage

Connector X1, RS485 connection

PIN	Designation	Description
1	DATA_A	Terminal line +
2	DATA_A	Terminal line + (looped through)
3	DATA_B	Terminal line -
4	DATA_B	Terminal line - (looped through)

Admissible cable cross-section: 1.5... 1.5 mm²

Wiring diagram

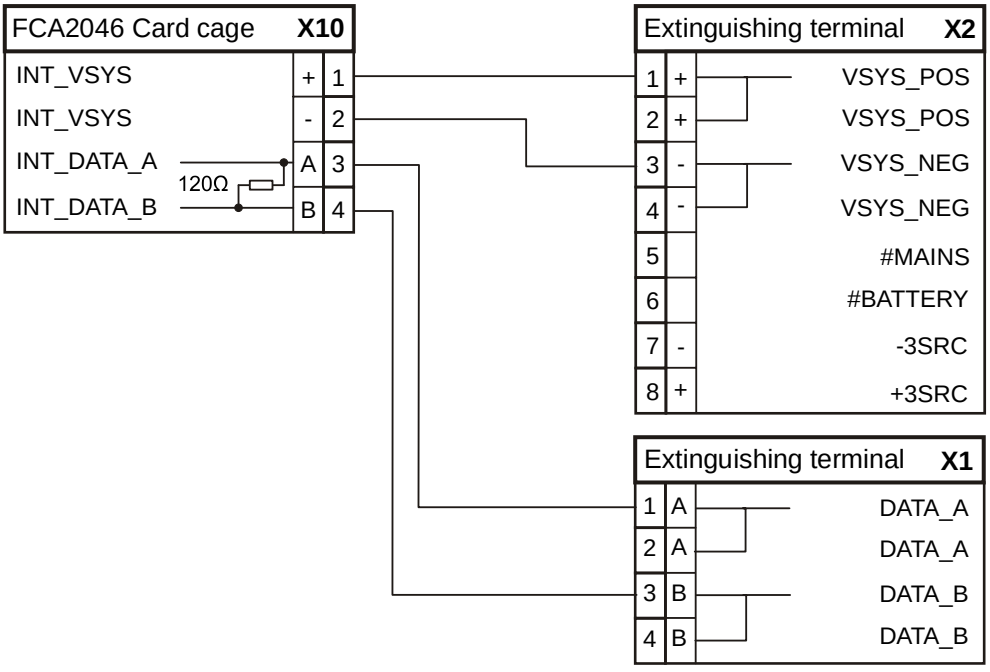


Figure 109: Wiring diagram for internal extinguishing terminal

48.3.2 Secondary extinguishing terminal, connections X1, X2

Connector X2, supply

PIN	Designation	Description
1	VSYS_POS	Supply input V+
2	VSYS_POS	Supply output V+ (looped through)
3	VSYS_NEG	Supply input V-
4	VSYS_NEG	Supply output V- (looped through)
5	#MAINS	Network monitoring connection
6	#BATTERY	Battery monitoring connector
7	-3SRC	Supply input V-, 3rd source of voltage
8	+3SRC	Supply input V+, 3rd source of voltage

Connector X1, RS485 connection

PIN	Designation	Description
1	DATA_A	Terminal line +
2	DATA_A	Terminal line + (looped through)
3	DATA_B	Terminal line -
4	DATA_B	Terminal line - (looped through)

Admissible cable cross-section: 1.5... 1.5 mm²

Wiring diagram

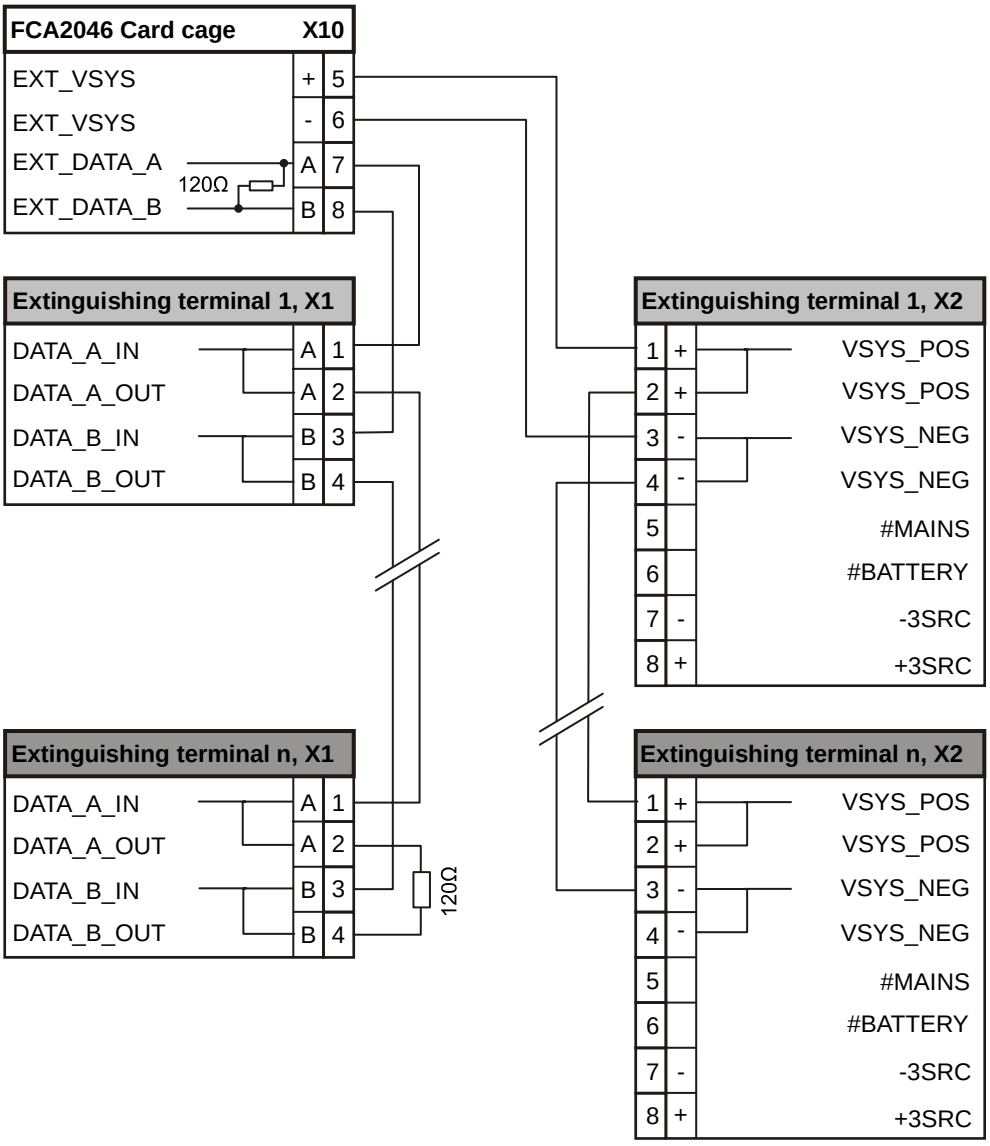


Figure 110: Wiring diagram for external extinguishing terminals

48.3.3 External power supply, connector X2

If the extinguishing terminal is supplied with power by an external power supply, ground fault monitoring must be switched on.

Connector X2, supply

PIN	Designation	Description
1	VSYS_POS	Supply input V+
2	VSYS_POS	Supply output V+ (looped through)
3	VSYS_NEG	Supply input V-
4	VSYS_NEG	Supply output V- (looped through)
5	#MAINS	Network monitoring connection
6	#BATTERY	Battery monitoring connector
7	-3SRC	Supply input V-, 3rd source of voltage
8	+3SRC	Supply input V+, 3rd source of voltage

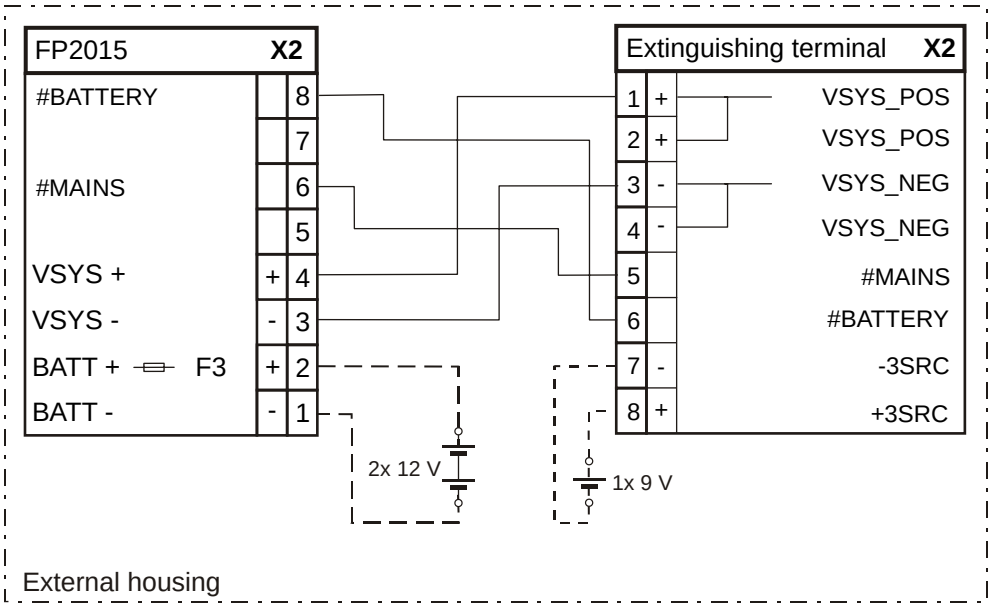


Figure 111: Wiring diagram of an external terminal with external power supply

48.3.4 Extinguishing terminal wiring

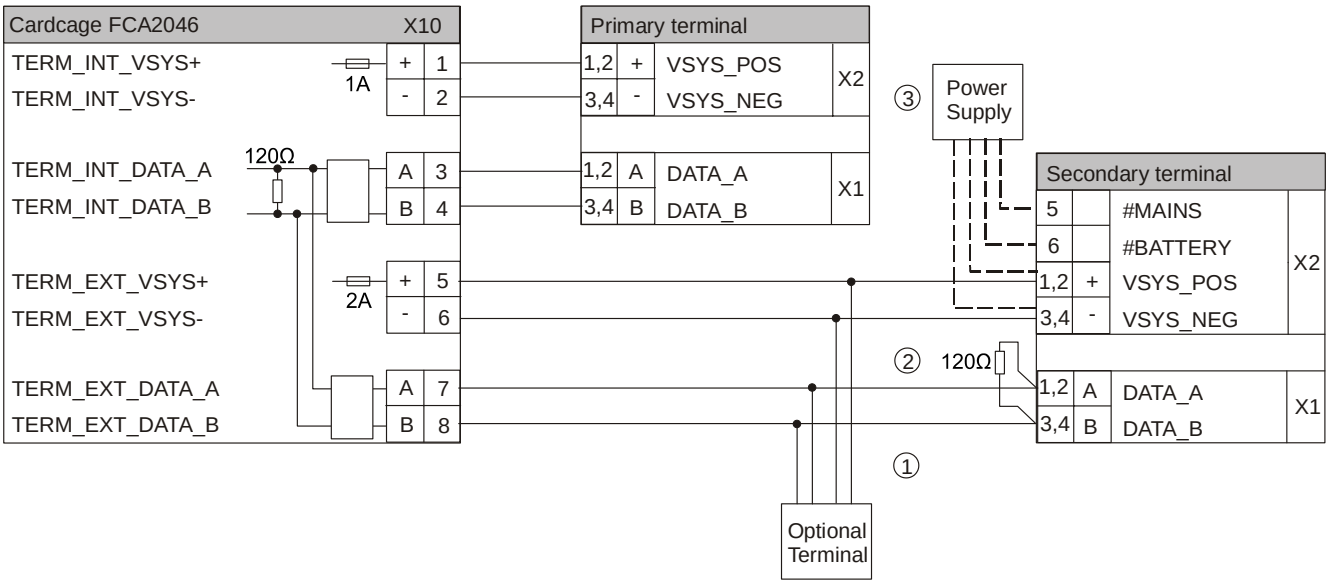


Figure 112: Wiring diagram of the primary and secondary extinguishing terminals

Primary terminal

- A maximum of 1 primary terminal may be connected; the address must always be '1'
- The maximum cable length for the primary terminal is 10 m; twisted and unshielded cable with min. 7 twists/meter.

The polarity must be observed (A, B) when connecting the data cable.

Secondary terminal

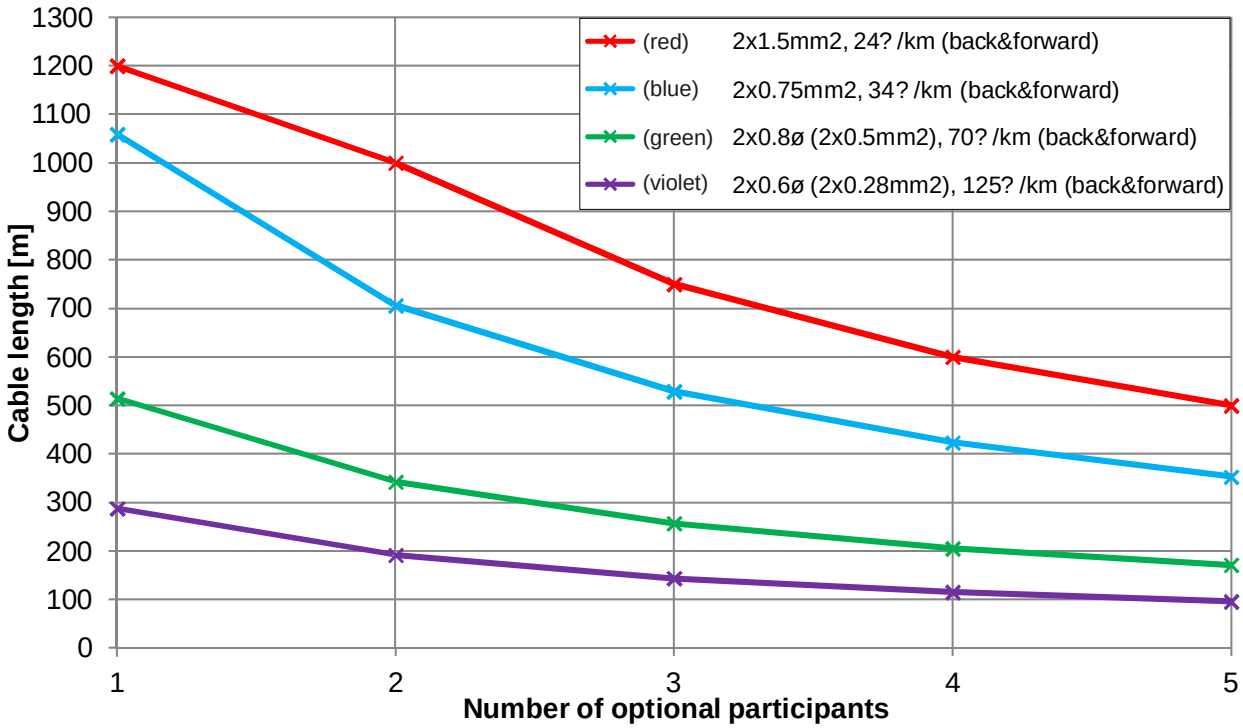
1) The maximum length of the stubs is 20 m for the secondary terminal

2) The line must be terminated at the furthest terminal with 120 Ω (secondary terminals only)

3) An external power supply, e.g., FP120, is required for long lines or when if back-up batteries are used.

- The address must always be ≥2; a maximum of 5 secondary terminals must be connected for each extinguishing card.
- The maximum cable length for the secondary terminal is 1200 m; twisted and unshielded cable with min. 7 twists/meter.
  When using shielded cables, the shielding must be connected on the terminal side.
- The cable resistance and the capacity is max. 80 Ω (on both sides) and max. 200 nF.

Diagram showing how to calculate the maximum cable length



48.4 Indicators

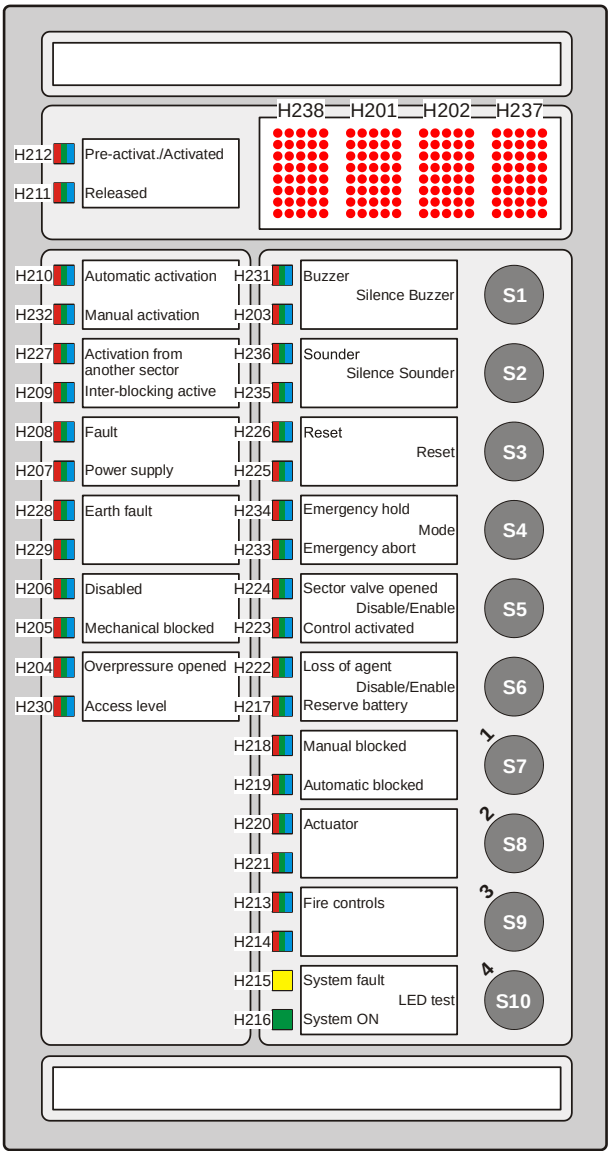


Figure 113: Extinguishing terminal XT2001 indication functions

Indicator block, top

LED	Color	Function
H212	R-G-B	Pre-activated/Activated
H211	R-G-B	Released
H238	7x5 dot, red	Matrix 1, evacuation and flooding time
H201	7x5 dot, red	Matrix 2, evacuation and flooding time
H202	7x5 dot, red	Matrix 3, evacuation and flooding time
H237	7x5 dot, red	Matrix 4, evacuation and flooding time

Indicator block, left-hand side

LED	Color	Function
H210	R-G-B	Automatic activation
H232	R-G-B	Manual activation
H227	R-G-B	Activation from
H209	R-G-B	Interlocked
H208	R-G-B	Fault
H207	R-G-B	Power supply
H228	R-G-B	Ground fault
H229	R-G-B	Freely programmable
H206	R-G-B	Disabled
H205	R-G-B	Mechanical blocked
H204	R-G-B	Overpressure flap open
H230	R-G-B	Access level

Indicator block, right-hand side

LED	Color	Function
H231	R-G-B	Sounder
H203	R-G-B	*Freely programmable*
H236	R-G-B	Sounder
H235	R-G-B	*Freely programmable*
H226	R-G-B	Reset
H225	R-G-B	*Freely programmable*
H234	R-G-B	Emergency hold
H233	R-G-B	Emergency abort
H224	R-G-B	Sector valve opened
H223	R-G-B	Control activated
H222	R-G-B	Loss of agent
H217	R-G-B	Reserve battery
H218	R-G-B	Manual blocked
H219	R-G-B	Automatic blocked
H220	R-G-B	Actuator
H221	R-G-B	*Freely programmable*
H213	R-G-B	Fire controls
H214	R-G-B	*Freely programmable*
H215	Yellow	System Fault
H216	Green	System ON

48.5 Adjustment elements

48.5.1 Address switch, S201

With the address switch S201, the binary address (1…16) of the extinguishing terminal is set and the 3rd source of voltage is switched on.

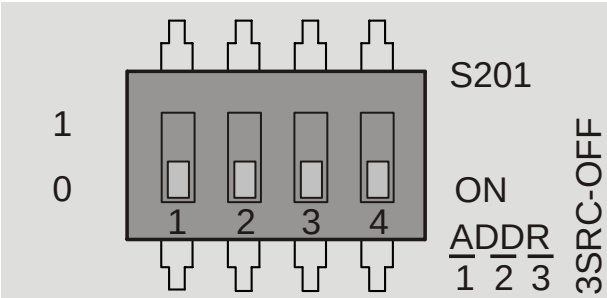
The address switches are preset as follows:

XCM2002 exting. terminal (1 sector) = address 1

XCM2003 exting. terminal (4 sectors) = each address 1

XT2001 exting. terminal (remote) = address 2

Switch pos.	Designation	Function
S201.1	ADDR1	Address bit 1
S201.2	ADDR2	Address bit 2
S201.3	ADDR3	Address bit 3
S201.4	3SRC-OFF	3rd source ON (default)



Address settings

S201.1	S201.2	S201.3	Address	Extinguishing terminal
Bit 1 [ADDR1]	Bit 2 [ADDR2]	Bit 3 [ADDR3]		
OFF	OFF	OFF	0	
ON	OFF	OFF	1	Primary
OFF	ON	OFF	2	1st secondary
ON	ON	OFF	3	2nd secondary
OFF	OFF	ON	4	3rd secondary
ON	OFF	ON	5	4th secondary
OFF	ON	ON	6	5th secondary

OFF = position 0

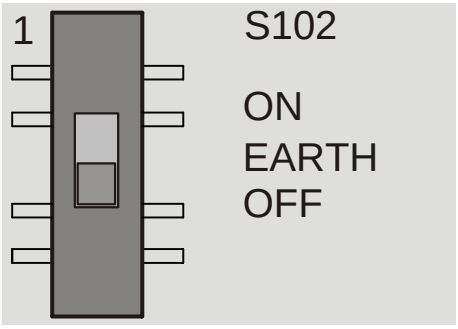
ON = position 1

48.5.2 Ground fault monitoring, S102

When connecting an external supply to a remote extinguishing terminal, ground fault monitoring must be switched on with the switch S102.

When ground fault monitoring is 'OFF', signal processing for monitoring the external supply is also switched off.

Switch pos.	Designation	Function
Top [1]	ON	• Ground fault monitoring ON, with external supply • Battery and mains monitoring supply 'ON'
Bottom	OFF	• Ground fault monitoring OFF (default) • Battery and mains monitoring supply 'OFF'



48.6 Technical data

Supply input	System supply	Via card cage FC2046
	Remote for XT2001:	Via power supply FP120 or FP2015
	• Monitoring signals	Mains, Batt
	• Ground fault monitoring (via switch S102)	
	• 3rd source [FR]	DC 8…30 V
	Voltage	DC 12…30 V
	Operating current	18 mA typical @ DC 24 V
	Maximum current	250 mA @ DC 12 V
Data transmission		Half-duplex RS485
	Addressing via DIP switch S201	Address 1…7
	Cable length	Max. 1200 m
	Cable cross-section	Min. 1.5 mm^2
	Data rate	57.6 kbit/s with cable unshielded and twisted at 1200 m
	Monitored for	Ground fault, via PMI
	Number of participants	Max. 6 per extinguishing card
	Termination resistor	120 Ω EOL, on the last (most distant) extinguishing terminal
LEDs	Number	34 LEDs RGB
		4x 5 x 7 dot matrix LED, red
Connections	RS485, terminal	X1, 4 pin
	Supply, terminal	X2, 8 pin

Glossary

Alarm device

Element in the fire detection system for acoustic and/or visual alarming, e.g. alarm sounder, beacon.

CPU

Abbreviation for 'Central Processing Unit'. The computing unit of the fire control panel.

Degraded mode

Defined reduced mode of operation which occurs when part of the fire detection installation (e.g., main CPU) fails.

Detector line

Electrical connection between the detectors and the fire control panel. There are collective detector lines and addressed detector lines.

Effect

An impact caused by a control, e.g., activation of a hardware output or a command.

Floor repeater display

A display device without operating elements.

Floor repeater terminal

A display device with operating elements for acknowledging and resetting alarms and faults.

Isolation

Status of one part of the fire detection installation, which suppresses the evaluation of all signals.

License key

Hardware modules for activating functions.

Line card

Card for connecting peripheral devices. The card can be a plug-in card or it can be integrated into the periphery board.

Line driver

Hardware driver (repeater) for detector lines.

Line separator

An electronic switch which automatically disconnects the defective part of the line in the event of a short-circuit.

Loop

Detector line topology which runs from the fire control panel via the fire detectors and back to improve operational reliability. This type of wiring allows all detectors to communicate with the control panel even in the event of an open line or short-circuit.

Network module (SAFEDLINK)

FS20/FS720 network card.

Normal operation

The fire detection installation is supplied with mains voltage.

Normally closed contact

Opens a power circuit when activated.

Normally open contact

Closes a power circuit when activated.

Remote transmission

Remote transmission.

RT

The abbreviation for 'remote transmission'.

RT

The abbreviation for remote transmission.

SAFEDLINK

Physical network of an FS20 / FS720 fire detection system with the network module (SAFEDLINK) and the network cable.

Separator connector factor

Specifies whether a device on the detector line features a line separator.

Site

Depiction of fire detection installation: The top level in the figure showing the installed system. Combines hardware tree, detection tree, and control tree.

Station

Unit for system control. Fire control panel or fire terminal.

Stub

Detector line which is only connected to the fire control panel on one side. In the event of an open line or short-circuit, it may no longer be possible for all fire detectors to communicate with the fire control panel.

System bus

Loop-shaped, redundant networking by means of FCnet / C-WEB / SAFEDLINK.

VdS

Abbreviation for 'Vertrauen durch Sicherheit', a company in the Gesamtverband der Deutschen Versicherungswirtschaft e.V. (GDV). Inspection and certification body for fire detection systems in Germany.

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