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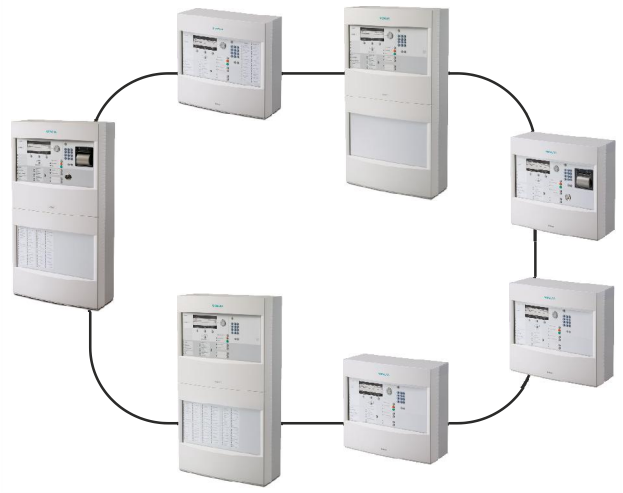

FS20

Fire detection system

Product Data

MP-EN 4.0

008837_q_en_--
14.05.2012

Building Technologies

Control Products and Systems

Legal notice

Technical specifications and availability subject to change without notice.

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Table of contents

1 About this document

Goal and purpose

This document describes the components of the fire detection system. It especially provides information on the following:

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

This document does not include any instructions about planning, installation, commissioning, etc. You will find these instructions in the corresponding documents.

The document 008836 System description contains the overview of the structure and function of the fire detection system and of the structure of the documentation.

Scope

The information contained in this document is valid for the market package MP-EN 4.0.

The document also contains information on country-specific components. The country-specific components are marked with square brackets, e. g. [DE], and may not be sold/used in your country.

Target groups

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

Target group	Activity	Qualification
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.
Commissioning personnel	● Configure the product at the place of installation according to customer-specific requirements. ● Check the product operability and release 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.

Reference document and source language

- The source 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.

The reference document has the following designation:

ID_x_en_--

x = modification index, en = English, -- = international

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_--_--

Conventions for text marking

Markups

Special markups are shown in this document as follows:

▷	Requirement for a behavior instruction
⇨	Intermediate result of a behavior instruction
⇨	End result of a behavior instruction
[➙ X]	Reference to a page number
'Text'	Quotation, reproduced identically
<Key>	Identification of keys

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
008836	FS20 Fire Detection System, System Description
A6V10281424	Technical Manual FG2020-D1
009771	Open-source software (OSS) licenses

1.2 Technical terms

You will find technical terms and their explanation in document 008836, in the chapter 'Glossary'. See the chapter 'Applicable documents [➙ 14]'.

1.3 History of changes

The reference document's modification index 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 have the modification index 'd' instead of 'a' if the reference document already has this modification index.

The table below shows this document's history of changes:

Modification index	Edition date	Brief description
q	05.2012	Expansion of compact control panels FC2030 and FC2060 for I/O card (remote transmission) in chapter Description and Technical Data
p	03.2012	Corrected technical data in chapter Power Supply (150 W) SV 24V-150W-A4
o	02.2012	Edition MP-EN 4.0 **Fire control panel FC2080:** ● Housing (19", pedestal cabinet) FH2080-AA ● Processor unit (19", FC2080) FCC2002-A1 ● CPU card (FC2080) FCC2004-A1 ● Communication card (FC2080) FCC2005-A1 ● Network module (SAFEDLINK, CC) FN2010-A1 ● I/O card (RT) FCI2007-A1 **Fire control panel FC2060/FC2080:** ● I/O card (horn/monitored) FCI2009-A1 ● Fiber optic cable network module (SM/MM) FN2006-A1/FN2007-A1 ● Power supply unit (150 W) Version A5 **FG2020-D1:** ● Communication card (FG2020-D1) FCC2008-D1 **Revision of:** ● Power supply unit (150 W) Version A4 ● Chapter structure
n	05.2010	Third edition MP3.0 ● History of changes redefined and standardized ● Integration of PMI & mainboard FCM2027 ● EVAC-NL connector board FTI2002-N1 revised ● EVAC-NL mimic display driver FT2003-N1 revised ● Power supply 70 W, fuse corrected ● Pin assignment for event printer FTO2001-A1
m	03.2010	Second edition MP3.0 for VdS: ● Assignment of manufacturer designation "Scalance" to BT designation
l	09.2009	First edition MP3.0 for VdS New components: ● Scalance switch X204-2 ● Scalance firewall/router S612
k	02.2009	Fifth edition MP2.1: ● EVAC-NL mimic display driver FT2003-N1 integrated ● Operating add-on FCM2015-D1 deleted

Modification index	Edition date	Brief description
j	01.2009	Fourth edition MP2.1: ● Chap. 25.5, EVAC-NL operating unit FCM2007-N1 modified (adjustment elements) ● Chap. 25.3, remote EVAC-NL modified ● Chap. 26.3, EVAC-NL connector board FTI2002-N1 modified
i	11.2008	Third edition MP2.1: ● Revised and extended edition ● Fibre optic cable converter module
h	08.2008	Second edition MP2.1: ● Corrected and extended edition
g	05.2008	First edition MP2.1: New components: ● Card cage 2 and 5 slots ● Connection module (card cage) ● Line cards and I/O card ● EVAC-NL modules ● LED emergency alarm indicator [AT] ● Changed components: ● Reset key FT2010/11 eliminated
f	01.2008	Newly integrated: ● Sounder module FCA2005-A1 ● RT interface [CH] FCI2006-C1 ● Updated: ● Mimic display driver FT2001-A1
e	10.2007	Newly integrated: ● Event printer FTO2001-A1 ● Mimic display driver FT2001-A1
d	08.2007	Second extended edition MP1.2
c	06.2007	Extended edition MP1.2
b	02.2007	MP1.2 edition for VdS
a	09.2006	First edition MP1.1

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 possible damage to property that may result from non-observance.

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, assembly, 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 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.

Assembly, 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.

2.3.1 CPD conformity and firmware version

In order to satisfy Directive 89/106/EEC (the Construction Products Directive – CPD), the firmware of a newly installed fire detection installation must be current market package version MP2.1 or higher.

!	*NOTICE*
	Firmware version of a newly installed fire detection installation not updated No CPD conformity • Compare the firmware version of a newly installed fire detection installation with the firmware version MP2.1. • Update the firmware if necessary.

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

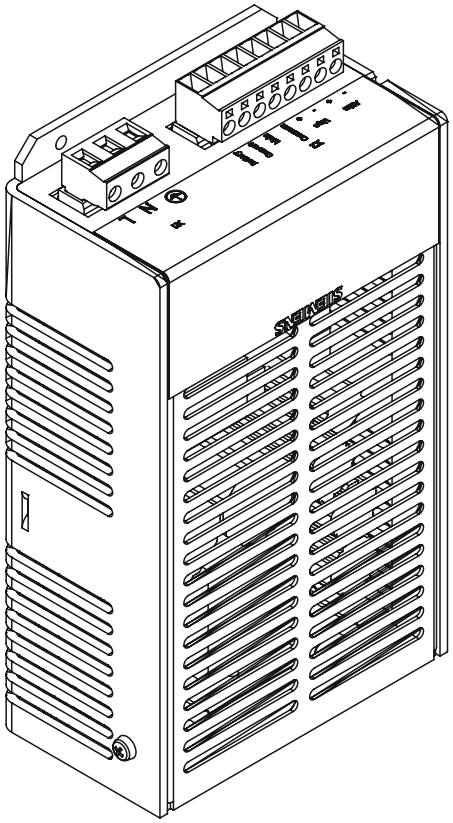
Important standards and specifications are not satisfied.

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



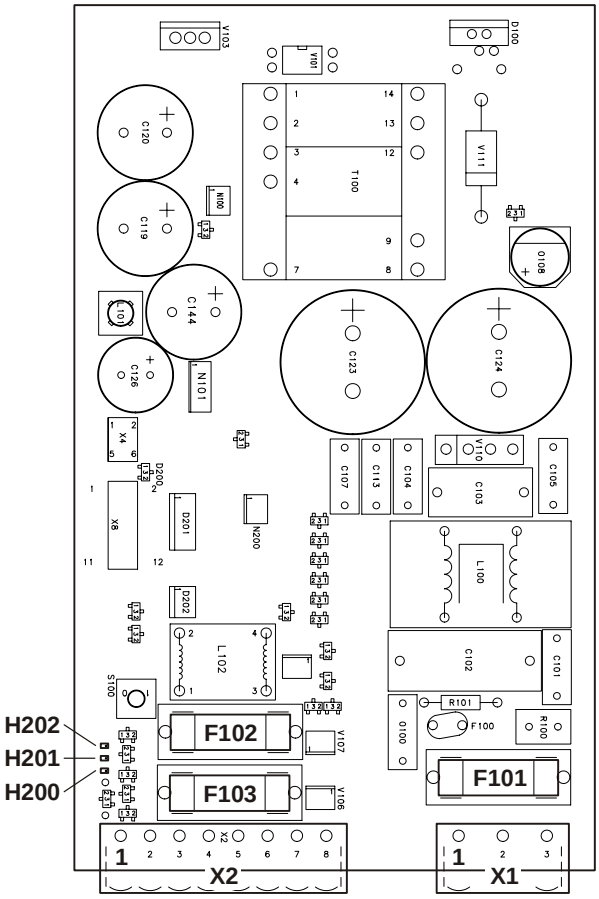
3.1 Description

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 voltage surveillance
- 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



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 voltage surveillance
	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

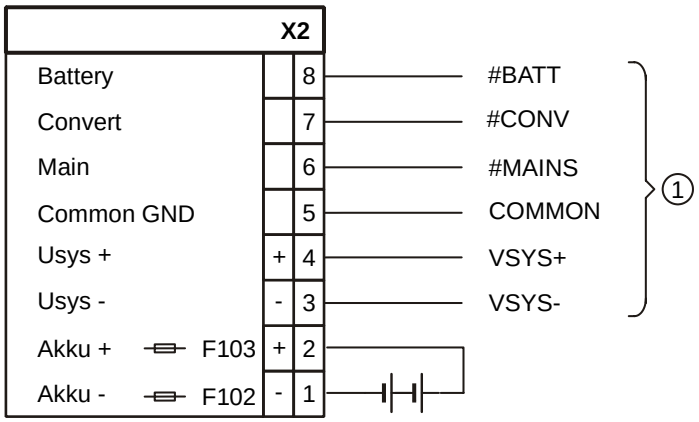
Pin	Designation	Description
1	⏚	Ground (protective conductor PE)
2	N	Neutral conductor
3	L	External conductor (L1)

Admissible cable cross-section: 0.2…2.5 mm²

3.3.2 X2 monitoring signals

Pin	Designation	Description
8	Battery	Detection line (#BATT): Battery fault
7	Convert	Detection line (#CONV): Power supply fault
6	Main	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 [→ 46]
- X1 supply [→ 70]
- X1 supply [→ 57]

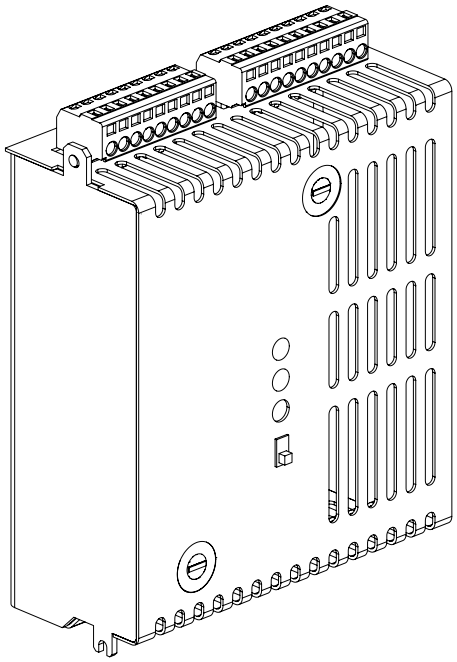
3.4 Indicators

LED	Color	Function	Condition	Meaning
MAINS (H202)	Yellow	Monitoring of voltage surveillance	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 008843)
	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	'Main'
	Active in event of	No mains voltage (signal 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	800 g
Standards and approvals	Standards	EN 54-4:1997
	Approvals	VdS G206112
	CPD certificate	0786-CPD-20266
	CE conformity mark	Yes

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

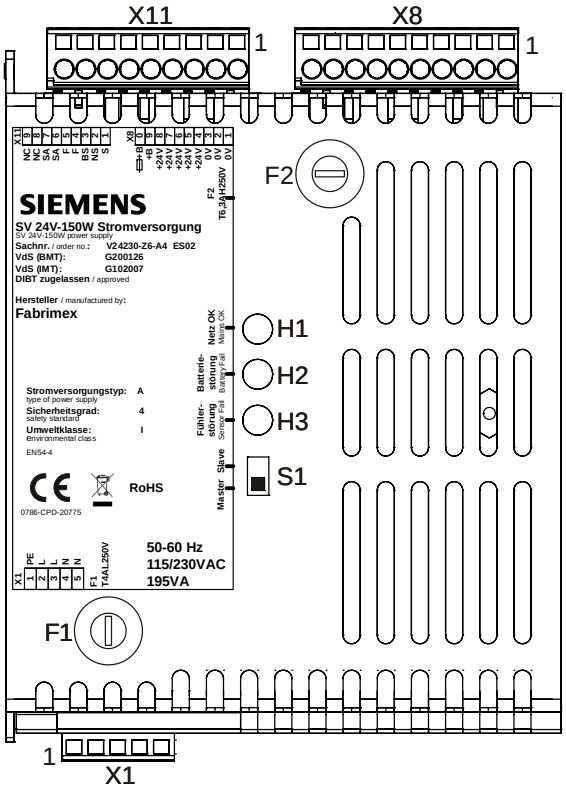


4.1 Description

The power supply (150 W) SV 24 V - 150 W-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 voltage surveillance
- 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)

4.2 Views



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 of battery
	H3	Status display of 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)

4.3 Pin assignments

4.3.1 X1 mains connection

Pin	Designation	Description
1	PE	Ground (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

4.3.2 X8 output voltage

Pin	Designation	Description
10	$+B_{l\text{-}begr.}$	Connection for battery, current limited via internal battery fuse F2 (without parallel switching)
9	$+B_{l\text{-}unbegr.}$	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

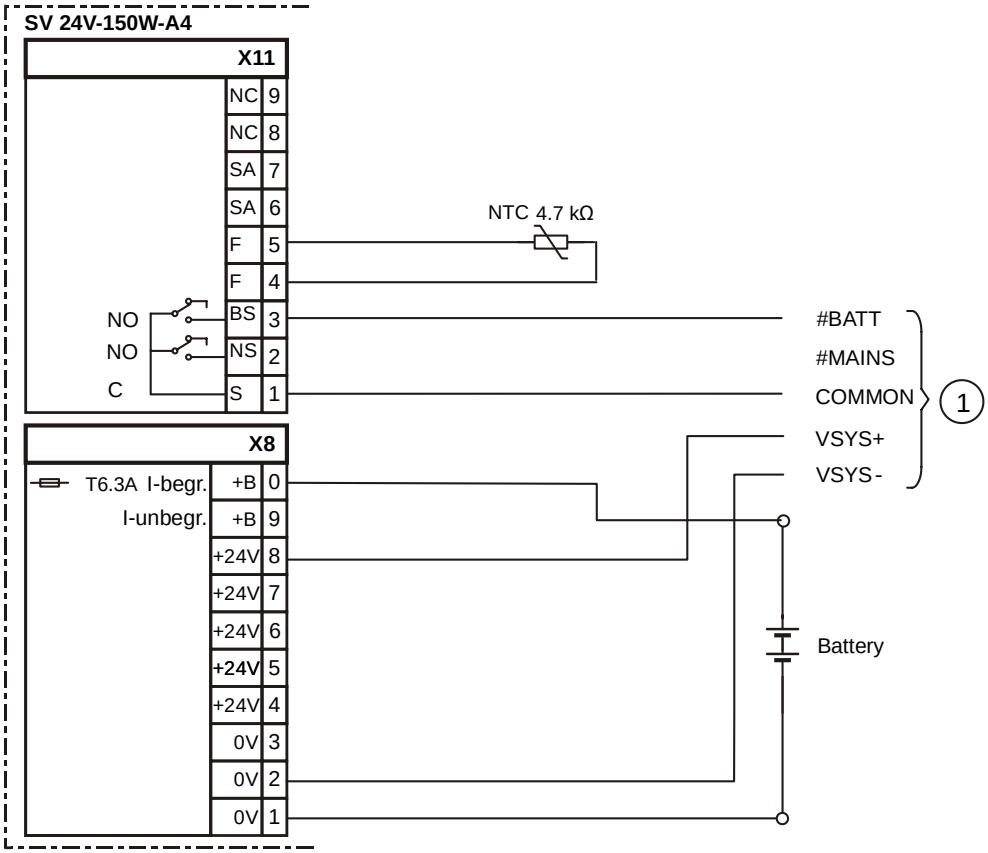
Admissible cable cross-section: 0.2…2.5 mm²

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

4.3.3 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



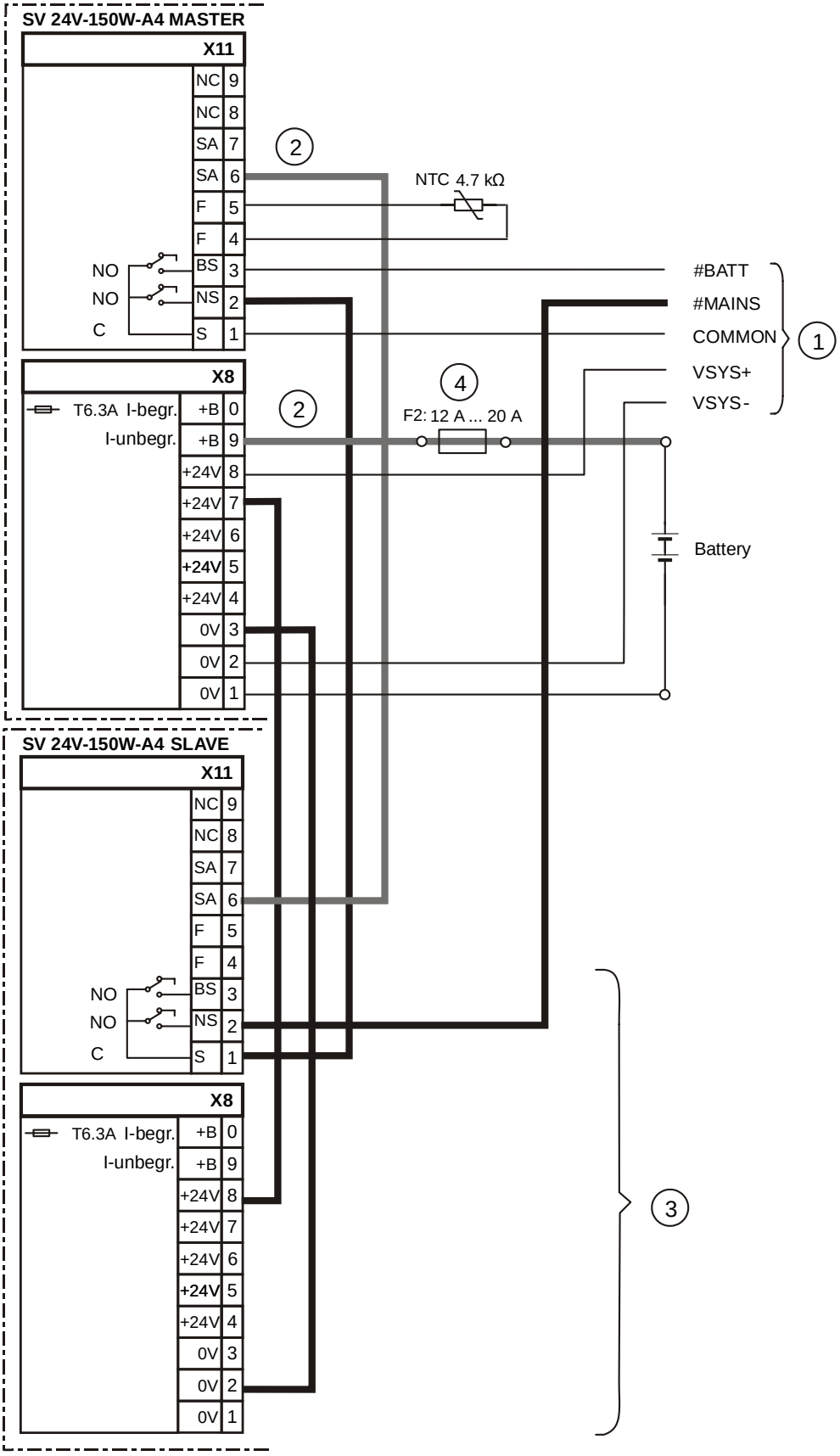
Wiring of the single power supply SV 24V-150W-A4

1 Cable tree to periphery board or fire terminal board

See also

- X1 supply [→ 46]
- X1 supply [→ 70]
- X1 supply [→ 57]

4.3.4 Parallel switching of two supply units



Parallel switching of two power supply units (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 ambient 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 re-wired on 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 008851).

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

4.4 Indicators

LED	Color	Function	Condition	Meaning
H1	Green	Monitoring of voltage surveillance	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)

4.5 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. 12…max. 65 Ah ● Parallel operation: min. 45…max. 100 Ah (use only battery types recommended by Siemens in acc. with document 008843)
	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 mm^2
	Battery supply and monitoring signals:	Spring clips / pluggable block, max. 2.5 mm^2
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 ● CPD 0786-CPD-20775
	CE conformity mark	Yes

[1] Battery connection:

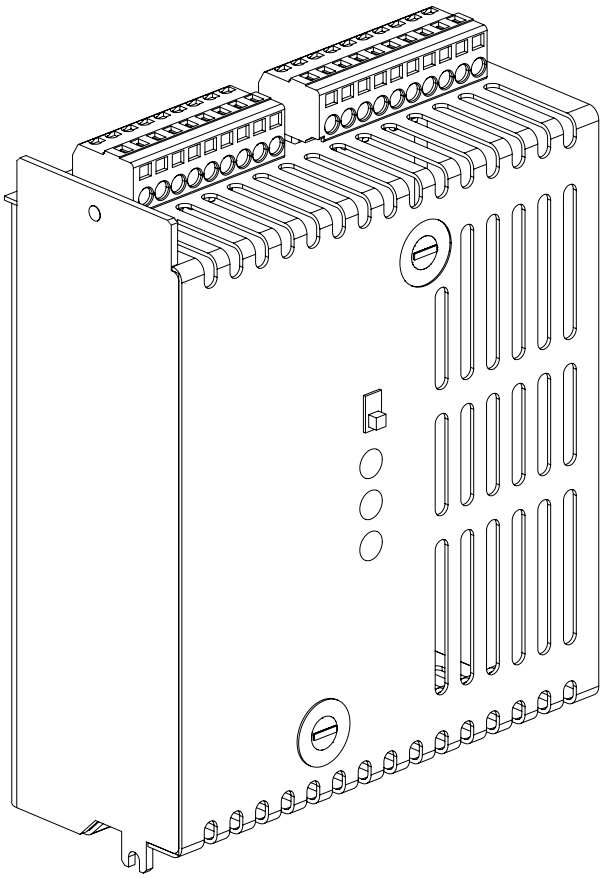
- Single operation: Terminal X8/10 +BI-limited
- Parallel operation: Terminal X8/9 +BI-unlimited(external fuse needed)

Permitted current loads for the SV24V-150W-A4

		12 Ah	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	2.1	2,1	2.1	2.1	2.1	-
$I_{max.\ a}$ [A] (2 parallel)	Max. permanent current to load for switching two power supply units in parallel	-	-	-	4.2	4.2	4.2
$I_{max.\ b}$ [A]	Max. current peak to load	4.2					

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 008843.

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

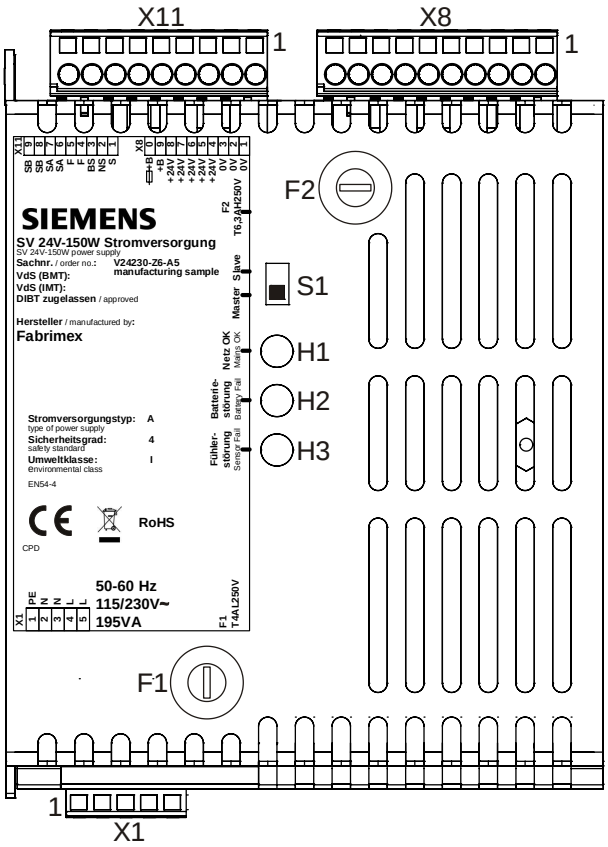


5.1 Description

The power supply (150 W) SV 24 V - 150 W-A5 converts the mains voltage to system voltage and charges the batteries. The power supply (150 W) SV 24V-150W-A5 replaces that of 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 voltage surveillance
- 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



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 of battery
	H3	Status display of 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	Ground (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.

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, 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

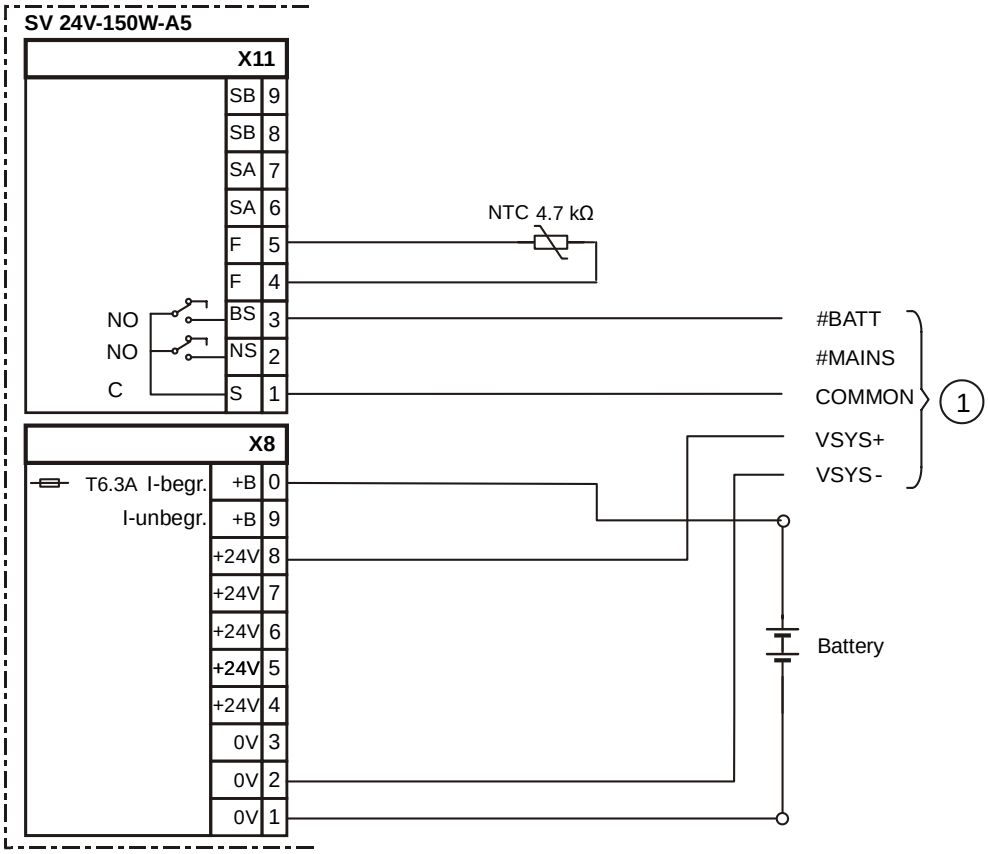
Admissible cable cross-section: 0.2…2.5 mm²

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

5.3.3 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

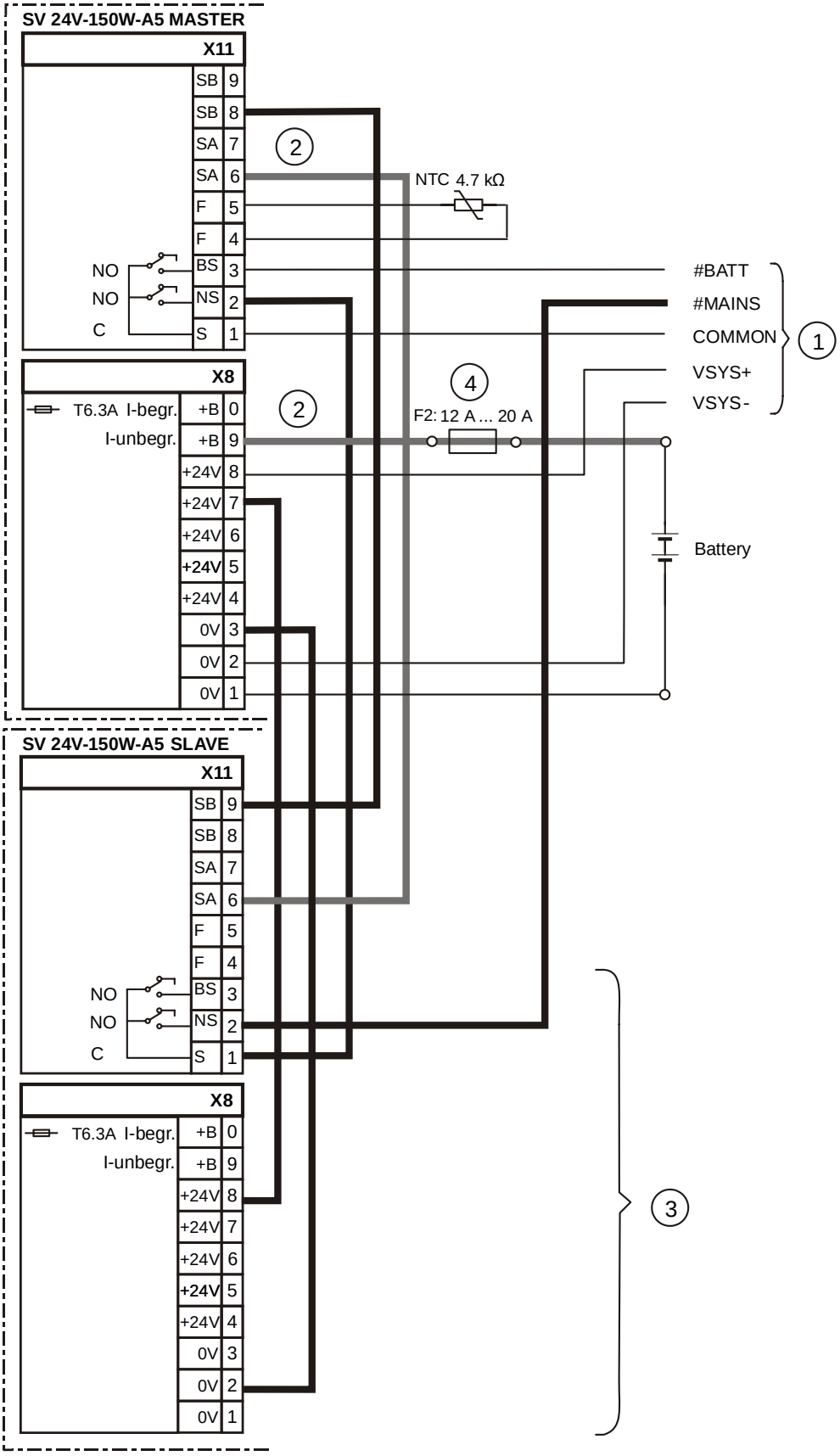
Admissible cable cross-section: 0.2…2.5 mm²



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

1 Cable tree to periphery board or fire terminal board

5.3.4 Parallel switching of two supply units



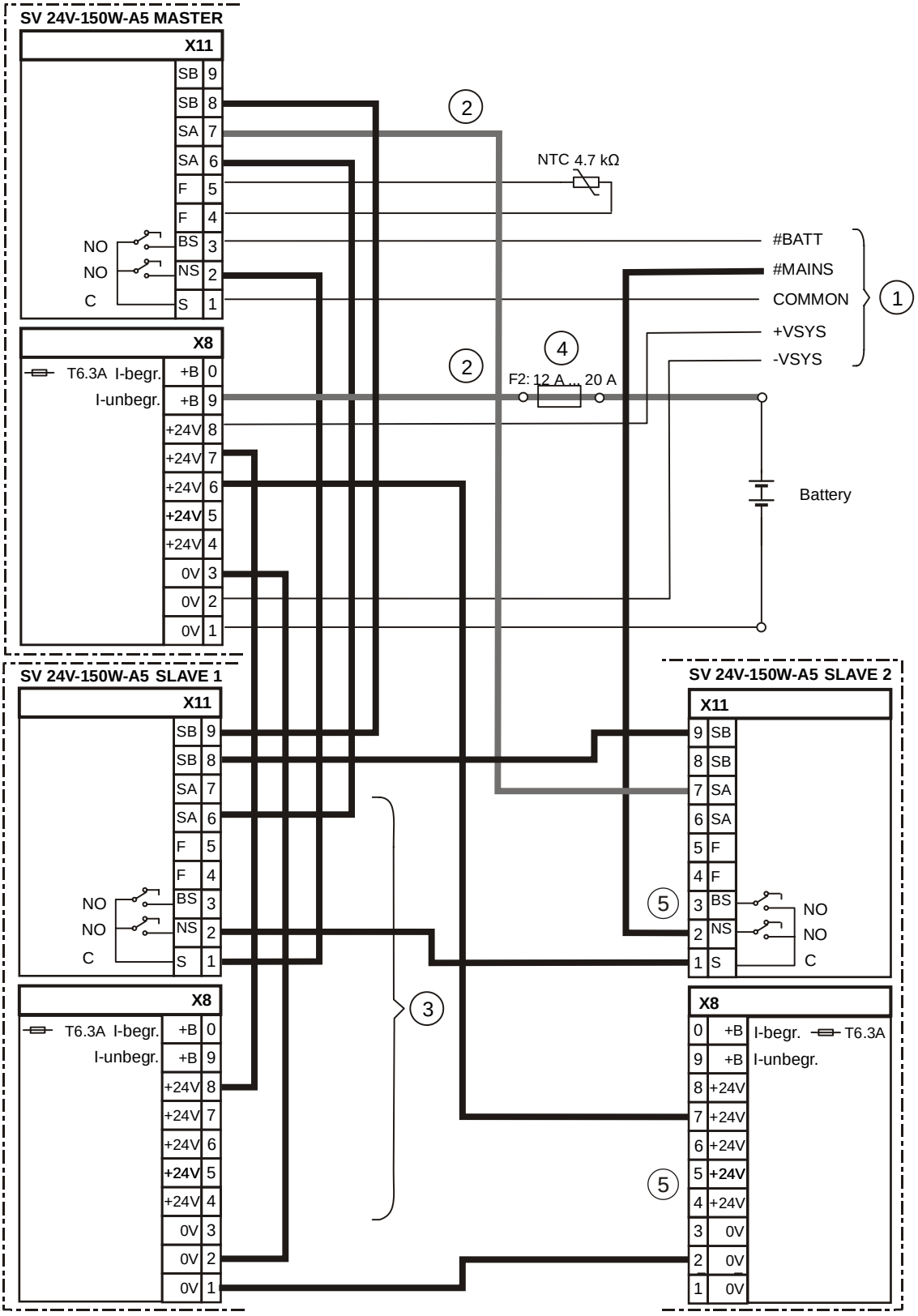
Parallel switching of two power supply units (150 W)-A5

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 ambient 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 008851).

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

5.3.5 Parallel switching of three supply units



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 ambient temperature differences, the 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 008851).

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

5.4 Indicators

LED	Color	Function	Condition	Meaning
H1	Green	Monitoring of voltage surveillance	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 (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. 12…max. 65 Ah ● Parallel operation: min. 45…max. 100 Ah (use only battery types recommended by Siemens in acc. with doc. no. 008843)
	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 mm^2
	Battery supply and monitoring signals:	Spring clips / pluggable block, max. 2.5 mm^2
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:

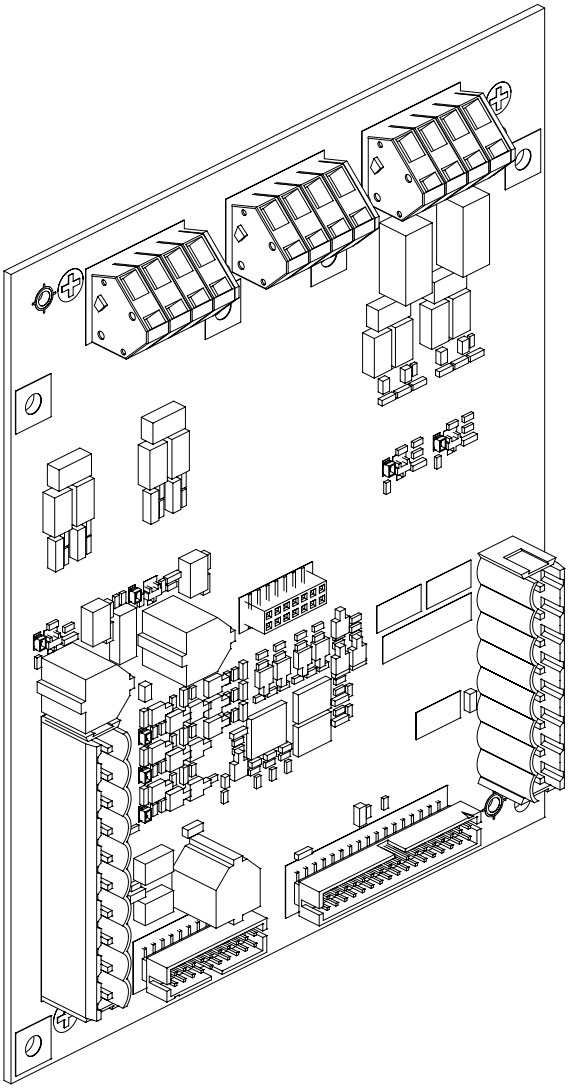
- Single operation: Terminal X8/10 +BI-limited
- Parallel operation: Terminal X8/9 +BI-unlimited(external fuse needed)

Permitted current loads for the SV24V-150W-A5

		12 Ah	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	4,4	4,2	3,9	3,0	2,1	-
$I_{max.\ a}$ [A] (2 parallel)	Max. permanent current to load 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 for switching three power supply units in parallel	-	-	-	-	7,6	7,6
$I_{max.\ b}$ [A]	Max. current peak to load	5,0			7,6		

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 008843.

6 Fire terminal board FTI2001-A1

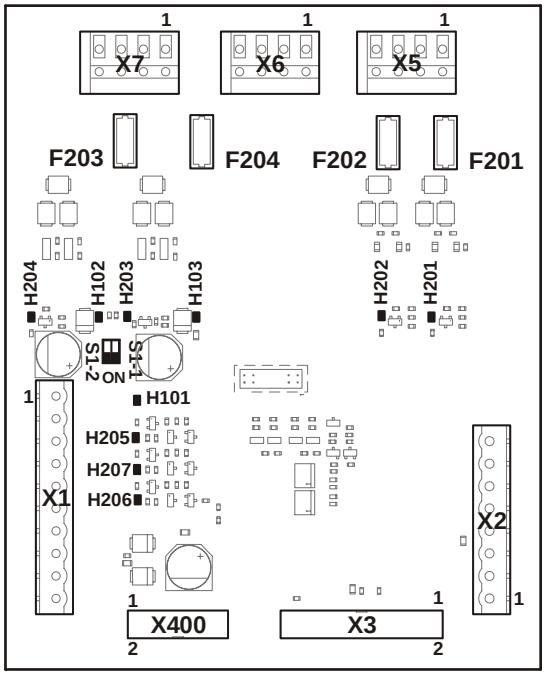


6.1 Description

The fire terminal board FTI2001-A1 is used in the fire terminal FT2040. 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)

6.2 Views



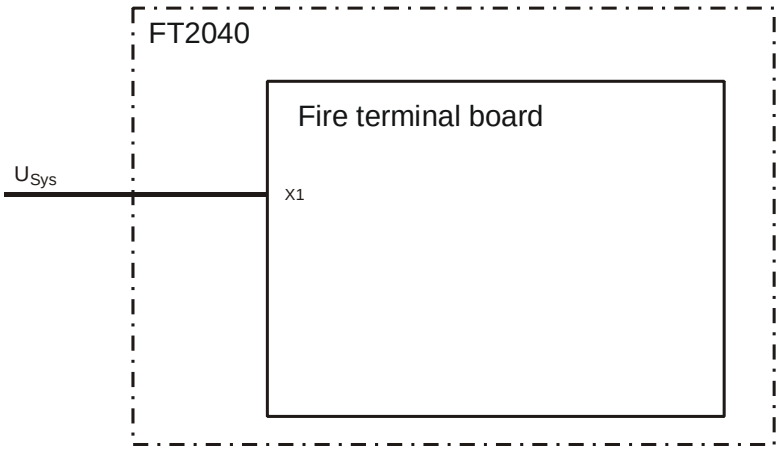
Printed circuit board view FTI2001 fire terminal board

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 voltage surveillance
	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

6.3 Pin assignments

6.3.1 X1 supply

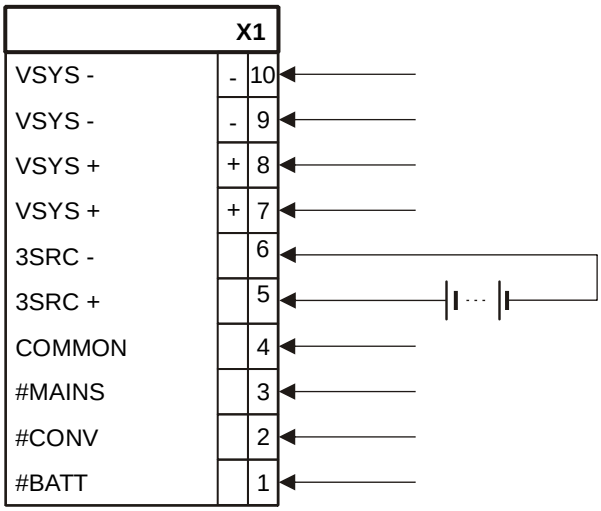
The optional power supply or the external 24 V supply is connected to supply input X1.



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

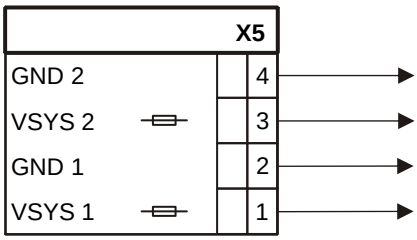
Admissible cable cross-section: 0.2…2.5 mm²



6.3.2 X5 supply output

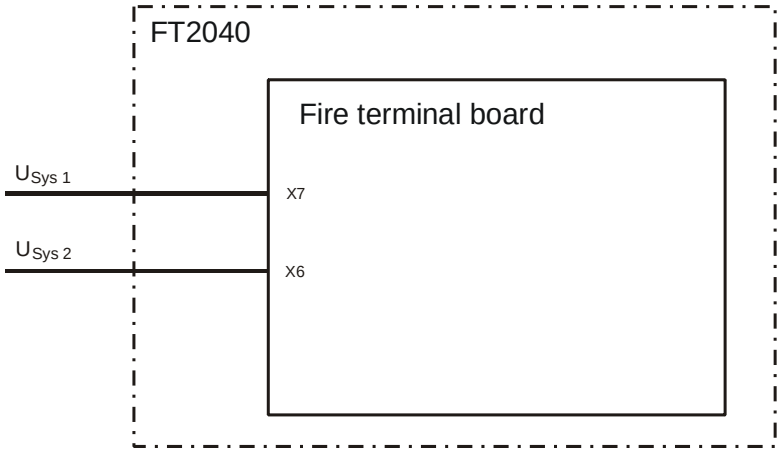
Pin	Designation	Description
4	GND 2	Ground
3	VSYS 2	System supply DC 21…28.6 V (+) (1 A/T)
2	GND 1	Ground
1	VSYS 1	System supply DC 21…28.6 V (+) (1 A/T)

Admissible cable cross-section: 0.2…2.5 mm²



6.3.3 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.

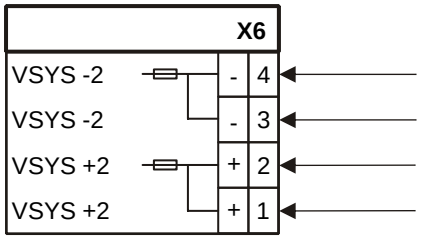


FTI2001-A1, supply via a fire control panel

X6, supply input 2

Pin	Designation	Description
4	VSYS - 2	Ground
3	VSYS - 2	Ground
2	VSYS + 2	System supply DC 21…28.6 V (+)
1	VSYS + 2	System supply DC 21…28.6 V (+)

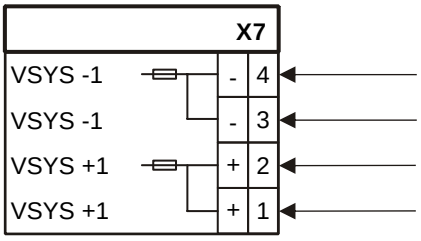
Admissible cable cross-section: 0.2…2.5 mm²



X7, supply input 1

Pin	Designation	Description
4	VSYS - 1	Ground
3	VSYS - 1	Ground
2	VSYS + 1	System supply DC 21…28.6 V (+)
1	VSYS + 1	System supply DC 21…28.6 V (+)

Admissible cable cross-section: 0.2…2.5 mm²



6.4 Indicators

LED	Color	Function	Condition	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!

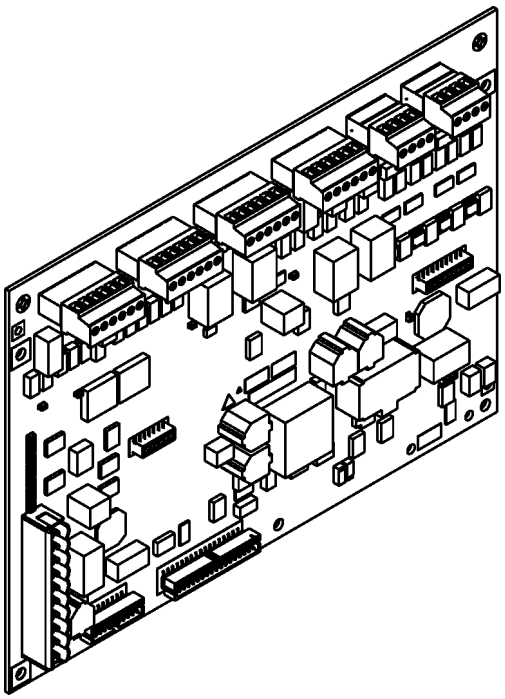
6.5 Adjustment elements

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)

6.6 Technical data

Supply	Designation	'VSYS+'; 'VSYS-'
(connector X1)	Operating voltage	DC 21…28.6 V (= Usys)
	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 21…28.6 V (= Usys)
	Current	Max. 2 A
Power supply input 2	Designation	'VSYS +2', 'VSYS -2'
(connector X6)	Voltage	DC 21…28.6 V (= Usys)
	Current	Max. 2 A
Supply output	Designation	'VSYS 1', 'VSYS 2'; 'GND 1', 'GND 2'
(connector X5)	Voltage	DC 21…28.6 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

7 Periphery board (2 loops) FCI2002-A1

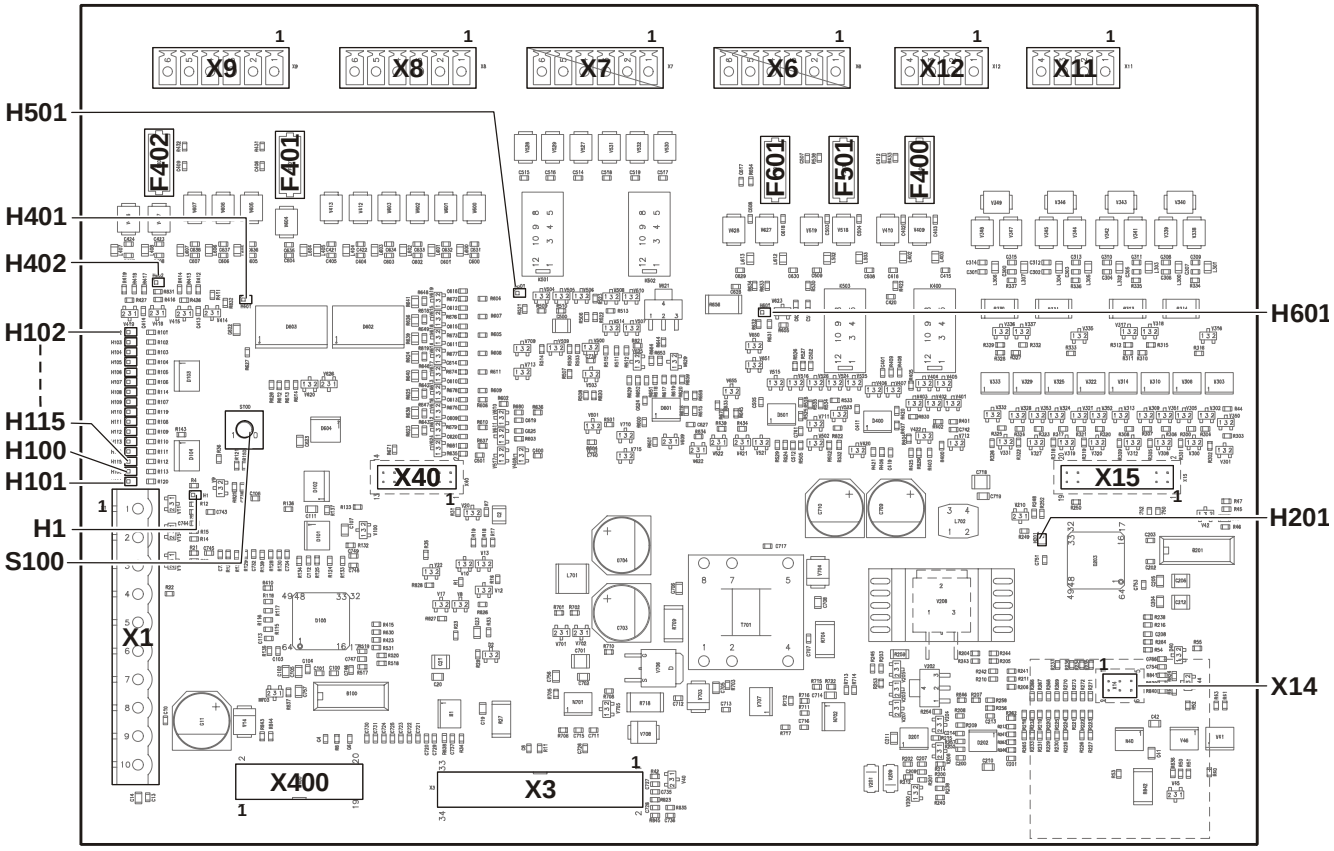


7.1 Description

The periphery board (2 loops) is used in the fire control panel FC2020. It has the following features:

- 1 integrated line card for the connection of 2 FDnet 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 (FDnet) 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

7.2 Views



Printed circuit board 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	FDnet detector line, loop 1 (mod. 2)
	X12	FDnet detector line, loop 2 (mod. 2)
	X400	Connection periphery bus for additional peripherals
Slots for modules	X15	Loop extension (FDnet) FCI2003 for the integrated line card
	X40	Not used
	X14	Connection to the LED emergency alarm indicator FTO2003 for the integrated line card

Element	Des.	Function
LEDs	H1	Power Down Ready
	H201	Display FDnet 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

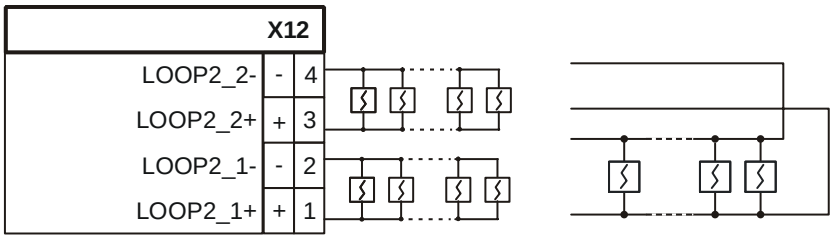
7.3 Pin assignments

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

7.3.1 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

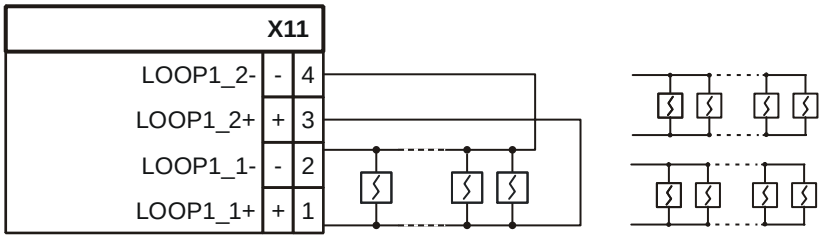


One loop or two stubs can be connected.

7.3.2 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

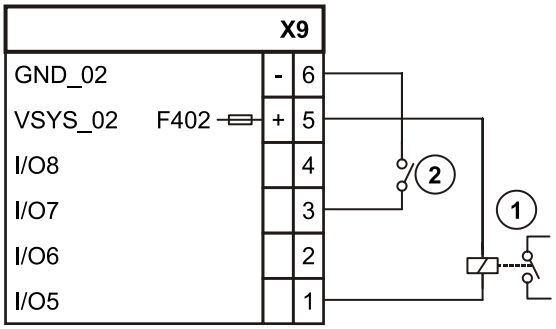


One loop or two stubs can be connected.

7.3.3 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:

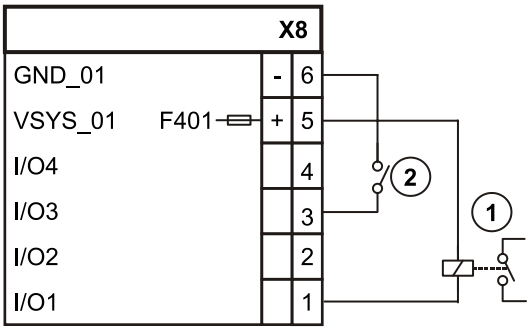
1 Configured as output

2 Configured as input

7.3.4 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



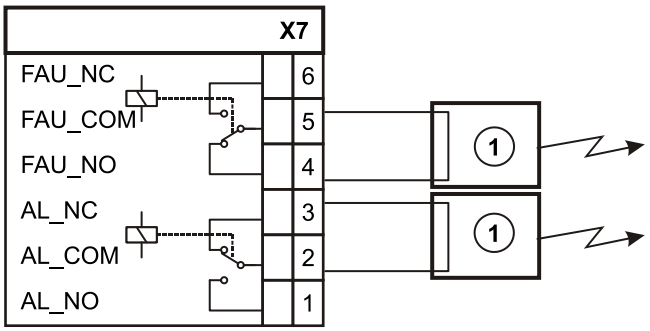
All inputs/outputs can be connected as follows:

1 Configured as output
2 Configured as input

7.3.5 X7 RT alarm and RT fault changeover contacts

Pin	Designation	Description
6	FAU_NC	RT fault break contact (normally closed)
5	FAU_COM	RT fault center tap (common)
4	FAU_NO	RT fault make contact (normally open)
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

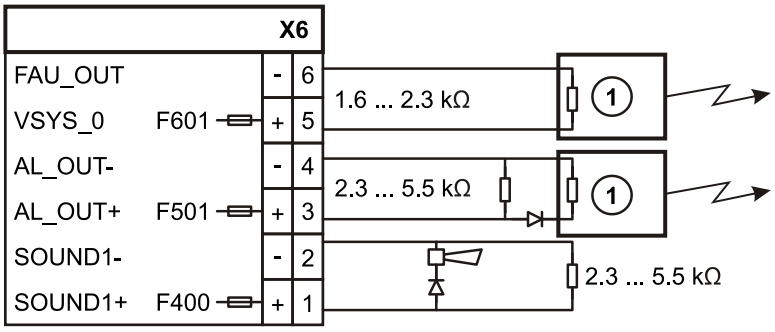
FAU_… Relay in normal operation = contact 5/4 closed

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

7.3.6 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

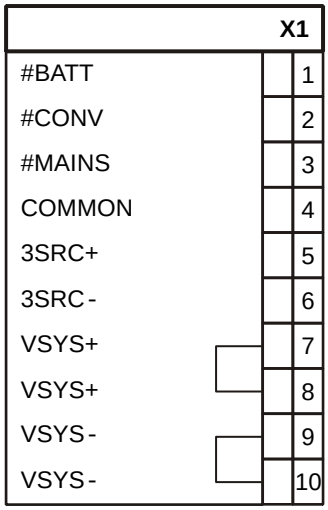


1 Remote transmission

7.3.7 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



7.4 Indicators

Indications of supply and system

LED	Color	Function	Condition	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	Condition	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	Condition	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

FDnet indicators

LED	Color	Function	Condition	Meaning
H201	Yellow	FDnet loop 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 FDnet loop 1 and 2, module 2 (clock)

7.5 Adjustment elements

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

7.6 Technical data

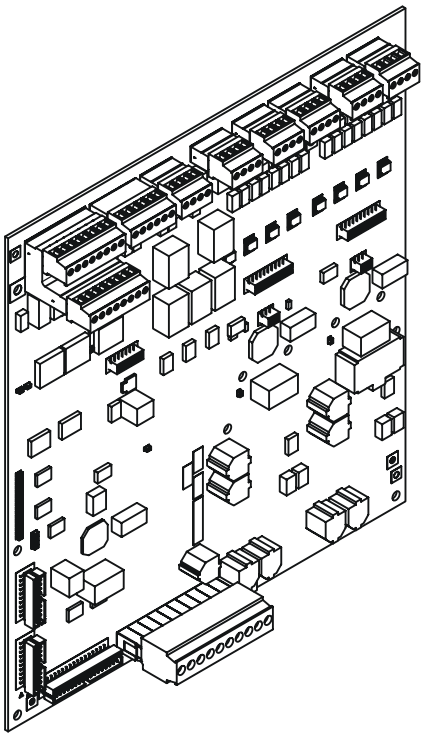
Supply input	Designation	'VSYS+'; 'VSYS-'
	Operating voltage	DC 21…28.6 V (= Vsys)
	Operating current	Max. 5 A
Input 3rd supply source [FR]	Designation	'3SRC+'; '3SRC-'
	Voltage	DC 7…30 V
	Current	Max. 40 mA
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 21…28.6 V
	Current	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	FDnet
	Cable types	All types (recommended: twisted); for detailed specifications see document 008843
	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 21…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	DC 21…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	DC 21…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 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 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] Some voltage ranges of certified horns are limited to 28 V. This maximum voltage can only be guaranteed if the control panel temperature is >5 °C.

8 Periphery board (4 loops) FCI2004-A1

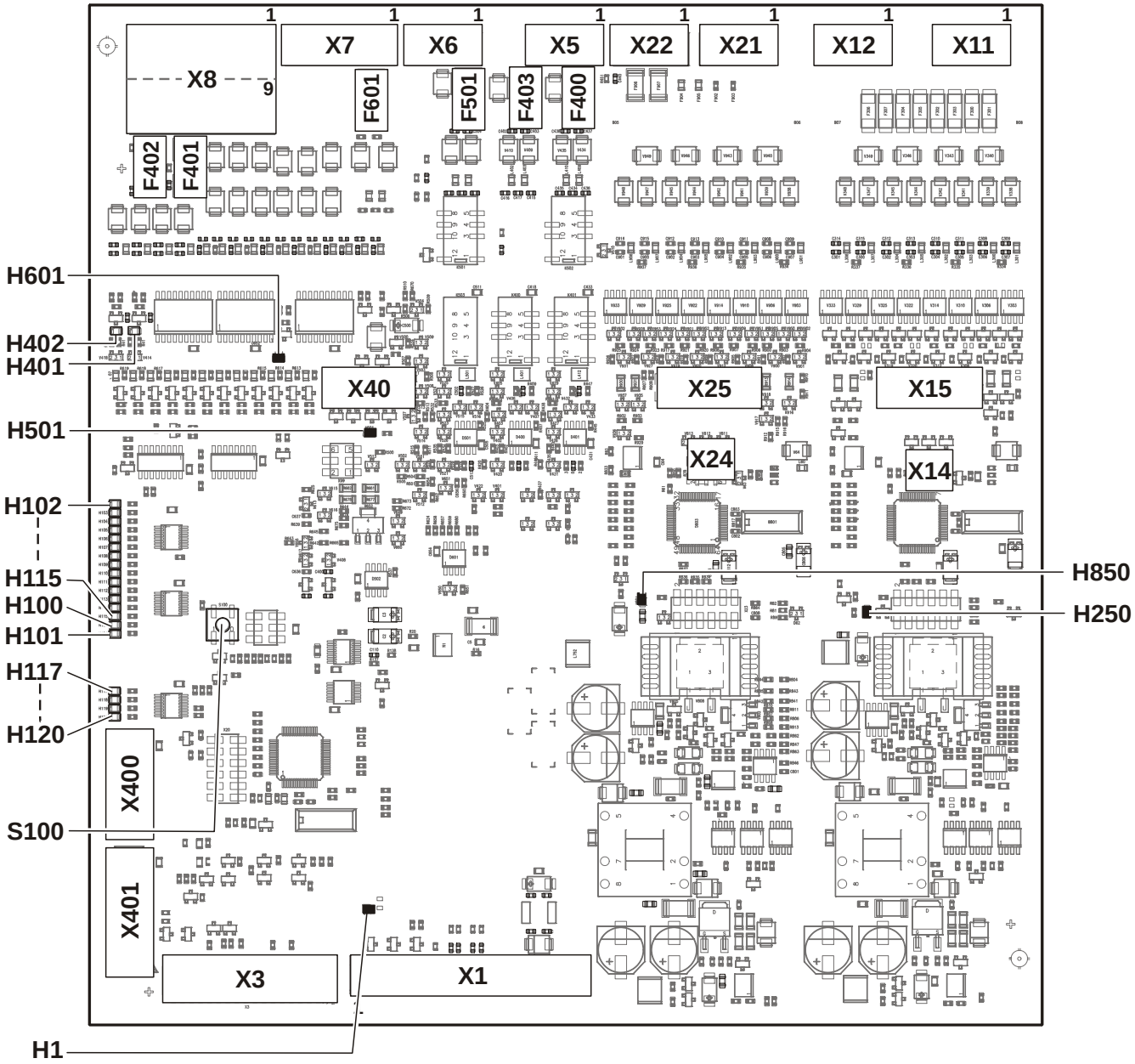


8.1 Description

The periphery board (4 loops) is used in the fire control panel FC2040. It has the following features:

- 2 integrated line cards for the connection of 4 FDnet 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 (FDnet) 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

8.2 Views



Printed circuit board view 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	FDnet detector line, loop 1 (module 2)
	X12	FDnet detector line, loop 2 (module 2)
	X21	FDnet detector line, loop 1 (module 3)
	X22	FDnet detector line, loop 2 (module 3)
	X400	Connection periphery bus for additional peripherals
	X401	Connection periphery bus for additional peripherals
Slots for modules	X14	Connection to the LED emergency alarm indicator FTO2003 for the integrated line card 1
	X15	Loop extension (FDnet) FCI2003 for the integrated line card 1
	X24	Connection to the LED emergency alarm indicator FTO2003 for the integrated line card 2
	X25	Loop extension (FDnet) FCI2003 for the integrated line card 2
	X40	Not used
LEDs	H1	Power Down Ready
	H250	Display FDnet module 2
	H850	Display FDnet 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

8.3 Pin assignments

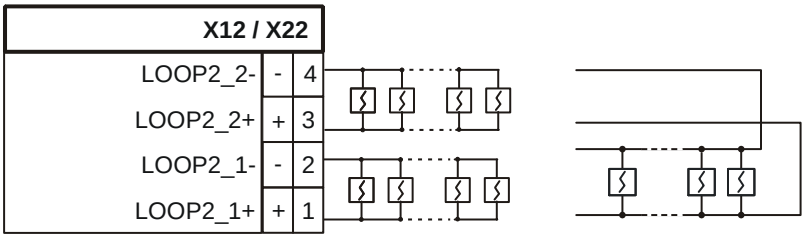
Inputs and outputs which are not used do not require termination.
FDnet detector lines which are not used must not be terminated.

8.3.1 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



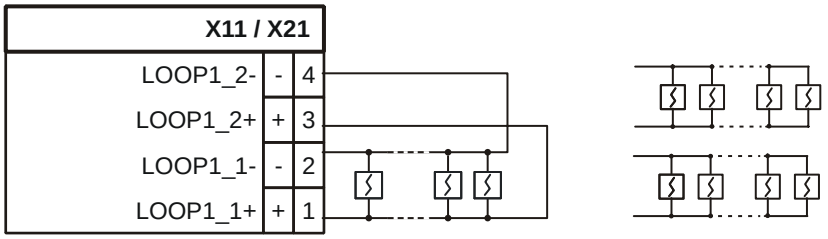
- The technical term LOOP 2 applies to both loops on connectors X12 and X22.
- One loop or two stubs can be connected.

8.3.2 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

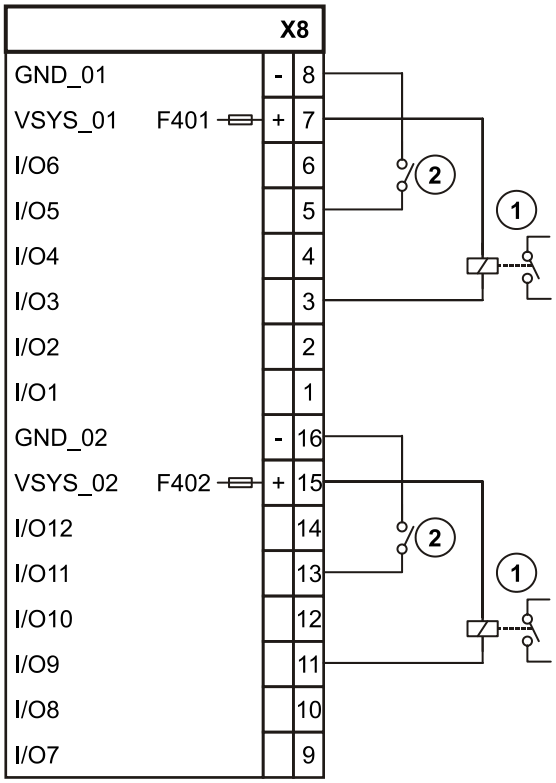


- The technical term LOOP 1 applies to both loops on connectors X11 and X21.
- One loop or two stubs can be connected.

8.3.3 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:

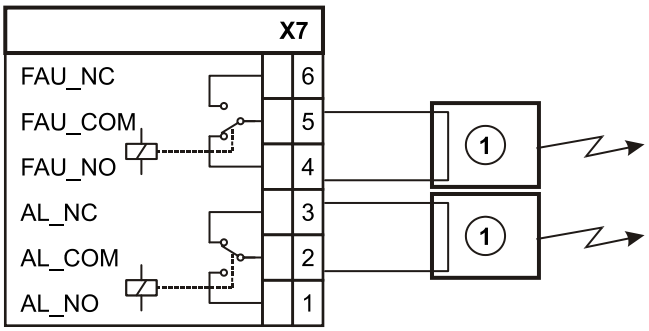
1 Configured as output

2 Configured as input

8.3.4 X7 RT alarm and RT fault changeover contacts

Pin	Designation	Description
6	FAU_NC	RT fault break contact (normally closed)
5	FAU_COM	RT fault center tap (common)
4	FAU_NO	RT fault make contact (normally open)
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

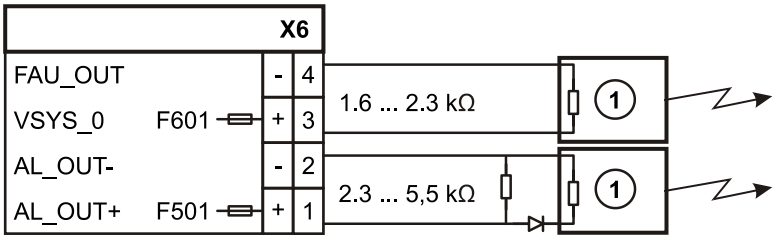
FAU_… Relay in normal operation = contact 5/4 closed

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

8.3.5 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

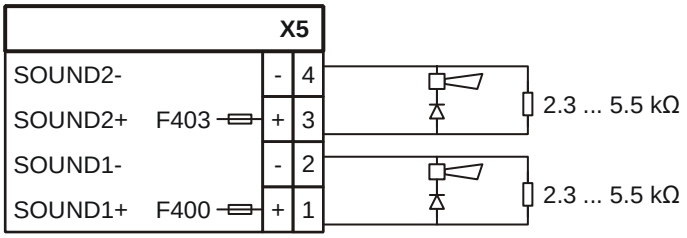


1 Remote transmission

8.3.6 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 (+)

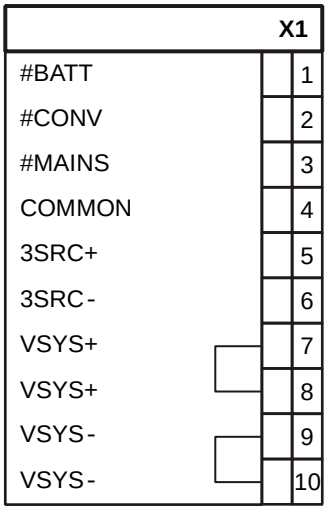
Admissible cable cross-section: 0.2…1.5 mm²



8.3.7 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



8.4 Indicators

Indications of supply and system

LED	Color	Function	Condition	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	Condition	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	Condition	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

LED	Color	Function	Condition	STATUS	DIRECTION
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

FDnet indicators

LED	Color	Function	Condition	Meaning
H250	Yellow	FDnet 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	Startup problems FDnet module 2 (clock)
H850	Yellow	FDnet 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 FDnet 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

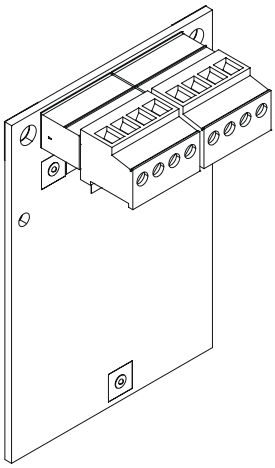
Supply input	Designation	'VSYS+'; 'VSYS-'
	Operating voltage	DC 21…28.6 V (= Vsys)
	Operating current	Max. 5 A
Input 3rd supply source	Designation	'3SRC+'; '3SRC-'
	Voltage	DC 7…30 V
	Current	Max. 40 mA
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 21…28.6 V
	Current	Max. 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	FDnet
	Cable types	All types (recommended: twisted); for detailed specifications see document 008843
	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 21…28.6 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 21…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 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 21…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 min. tolerance	2.3…5.5 kΩ +/–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 21…28.6 V
	● Output current per output	Max. 300 mA
	● Output current of all outputs (total)	1.5 A
Connection terminals	Inputs, outputs and FDnet	
	● 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

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

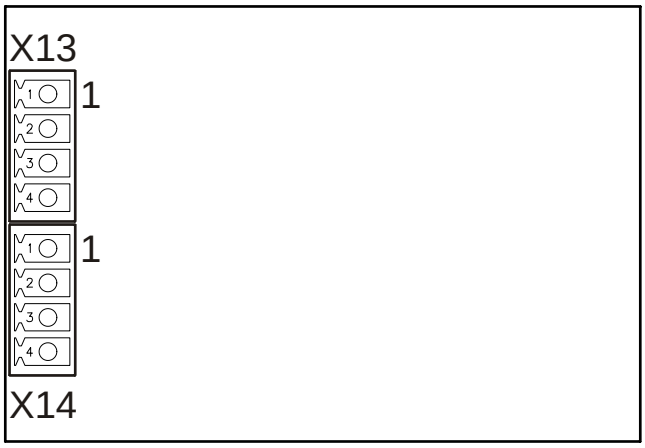
9 Loop extension FCI2003-A1



9.1 Description

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

9.2 Views



Printed circuit board view loop extension FCI2003-A1

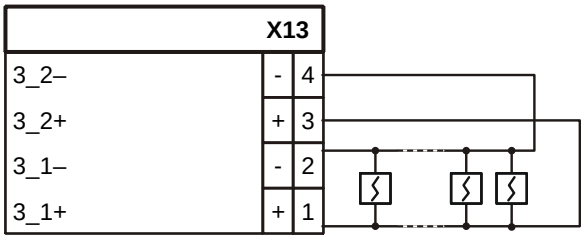
X13	Connections for loop 3
X14	Connections for loop 4

9.3 Pin assignments

9.3.1 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

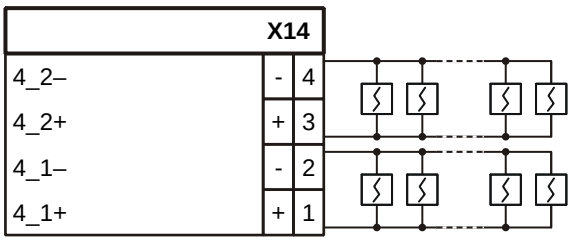


- One loop or two stubs can be connected to the loop extension (FDnet).
- The plug for the loop extension (FDnet) is always located at the corresponding detector line connection.

9.3.2 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

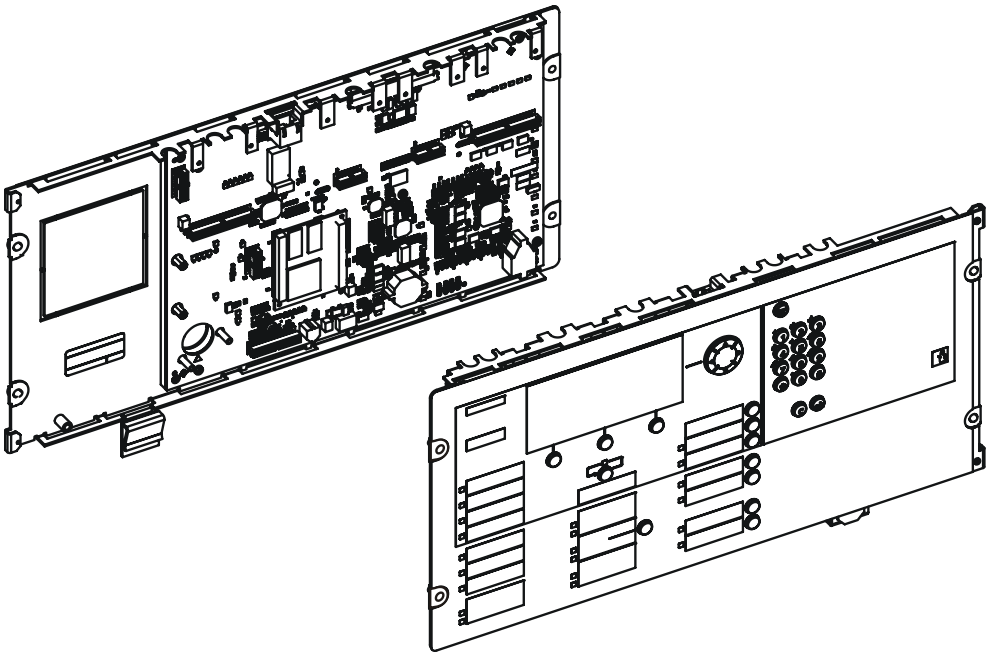


- One loop or two stubs can be connected to the loop extension (FDnet).
- The plug for the loop extension (FDnet) is always located at the corresponding detector line connection.

9.4 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	FDnet
	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

10 Operating unit with PMI & mainboard FCM2004



10.1 Description

The operating unit with PMI & mainboard FCM2004 includes the CPU module and the Person Machine Interface. The operating unit is used in all stations and contains different options, depending on the type of station.

The PMI & mainboard FCM2004 has the following interfaces:

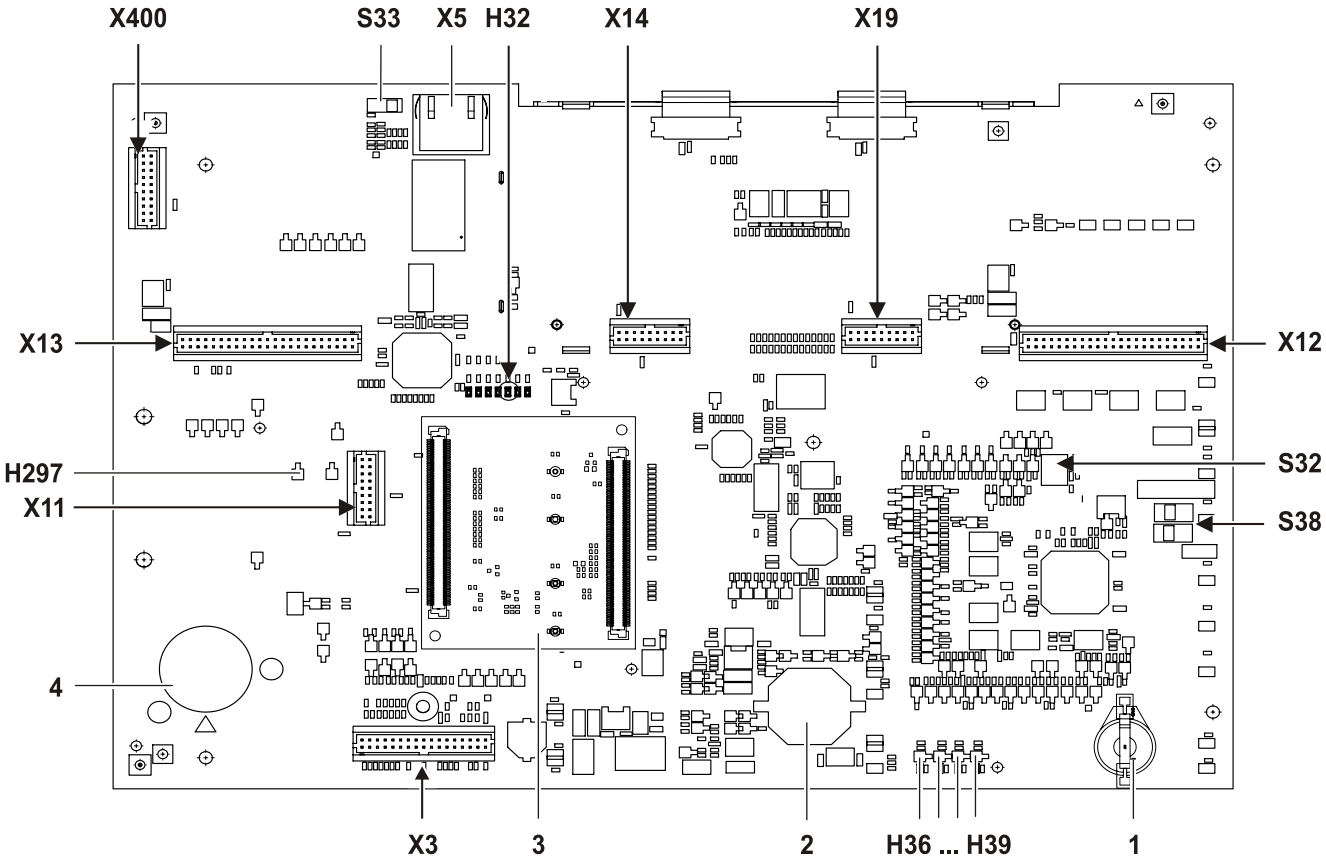
- Interface to the periphery board
- Slot for a networking module (SAFEDLINK) with full functionality
- Slot for a networking module (SAFEDLINK) with degraded mode function
- Ethernet connection for:
  - maintenance PC or
  - networking via LAN
- Slots for serial options:
  - RS232 module for the connection of an event printer
  - RS485 module for the connection of 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)
  - FBA terminal [CH]
  - EVAC-NL operation (internal)
- Support for the license key (L1 or L2)

The PMI 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)
- You will find the operation and designation of the keys and indicators in document 008838.
- You will find templates for inscription strips in document 009026.

10.2 View of PMI & mainboard



Printed circuit board view of PMI & mainboard

1	Support for license key	X13	Slot for network module (SAFEDLINK) FN2001-A1; master module
2	Buzzer	X14	SER_OPT1, slot for series module (RS232 module or RS485 module) [1]
3	CPU module	X19	SER_OPT2, slot for series module (RS232 module or RS485 module) [1]
4	Key switch (optional)	X400	Connection for peripheral data bus
X3	Connection for periphery board or fire terminal board (supply and data signals)	S32	Reset key
X5	Ethernet connection	S33	Switch for ground fault monitoring of the Ethernet connection

X11 Slot for connection module (card cage) FCA2006-A1

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

S38 Switches for booting and operation system options

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

10.3 Indicators

LED	Color	Function	Condition	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	Installation 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		

10.4 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

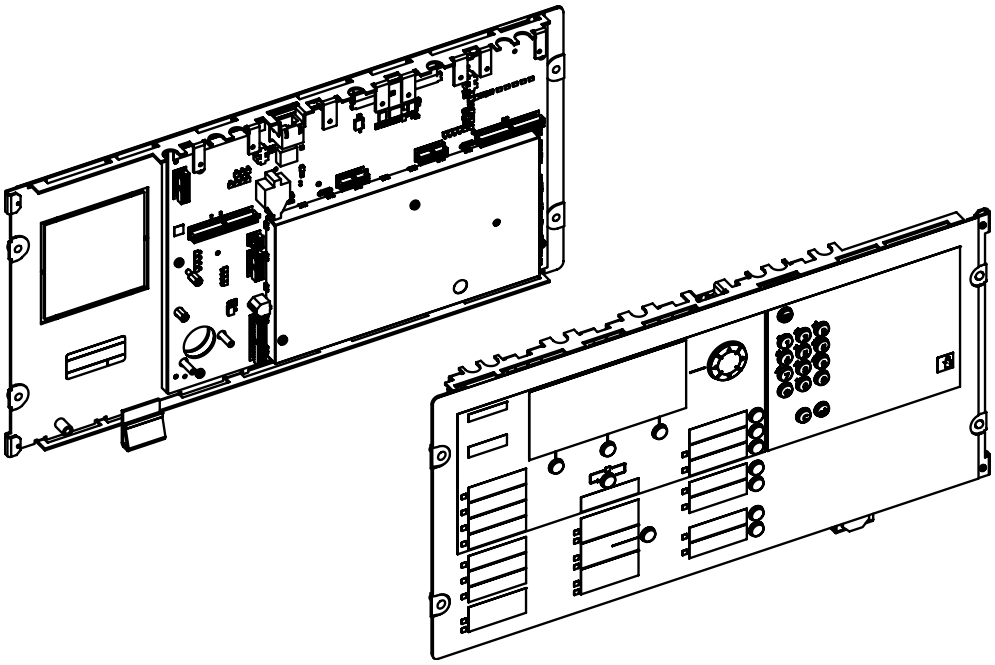
Both switches must be in the same position.

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

10.5 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, UGA or remote EVAC-NL operation
	Slots for network modules (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
	Weight	1800 g

11 Operating unit with PMI & mainboard FCM2027



11.1 Description

The operating unit with PMI & mainboard FCM2027 includes the CPU module (MPC8248) and the Person Machine Interface. The PMI & mainboard FCM2027 is used in all operating units from MP-EN 4.0 onwards.

The optional operating units of the panels FC2080 and FG2020-D1 must be equipped with the PMI & mainboard FCM2027. Panels with index ES20 or higher come with the PMI & mainboard FCM2027 included.

The PMI & mainboard FCM2027 has the following features:

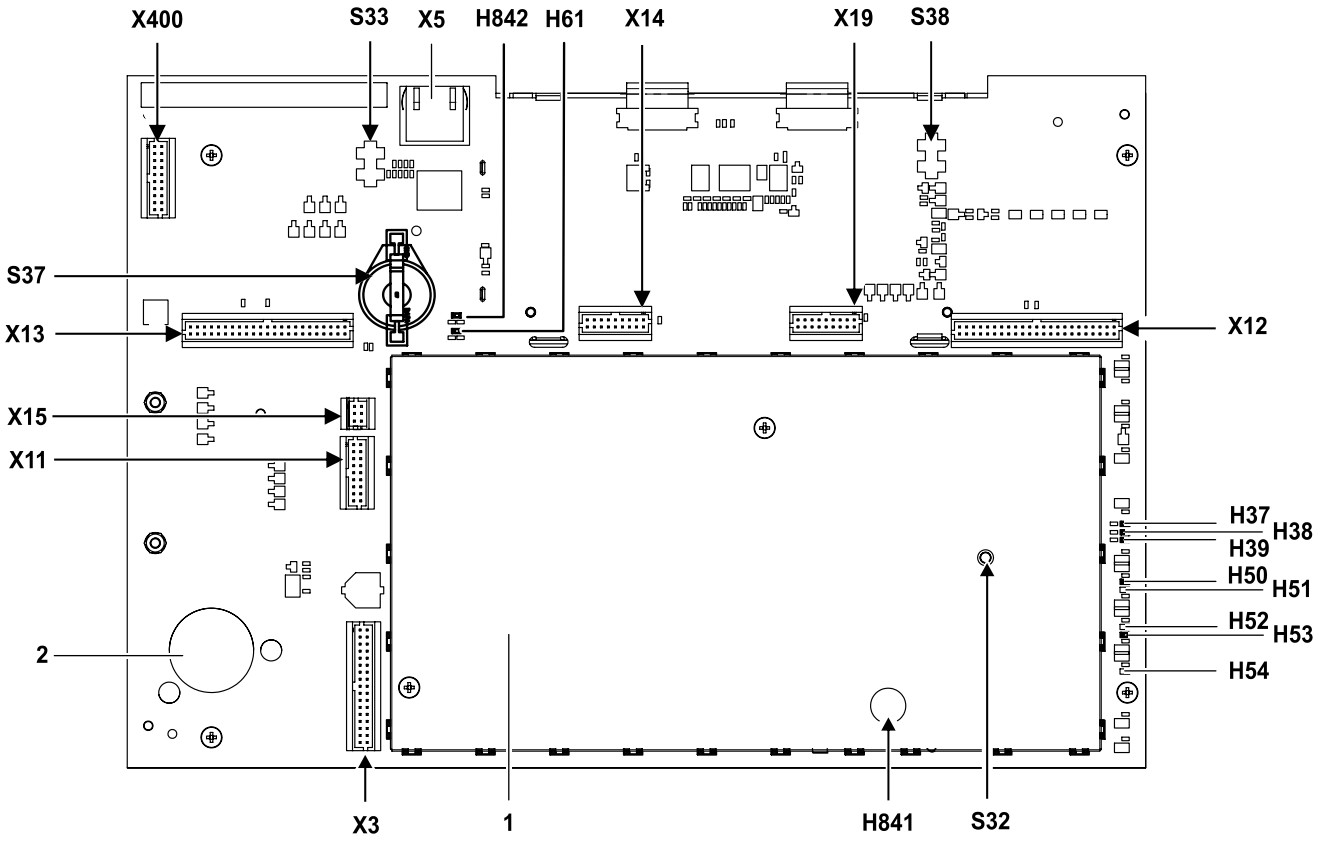
- Ground fault monitoring of system supply
- Integrated real time clock, maintains the time function for at least 2 days in the event of power failure.
- Shield plate
- Interface to the periphery board
- Slot for a networking module (SAFEDLINK) with full functionality
- Slot for a networking module (SAFEDLINK) 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 the connection of 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)
  - FBA terminal [CH]
  - EVAC-NL operation (internal)
- Support for the license key (L1 or L2)

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)
- You will find the operation and designation of the keys and indicators in document 008838.
- You will find templates for inscription strips in document 009026.

11.2 View of PMI & mainboard



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 for 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.

11.3 Indicators

LED	Color	Function	Condition	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', installation 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

LED	Color	Function	Condition	Meaning
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

11.4 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 009052. 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 009052. See chapter 'Applicable documents'.

S33: Switch for ground fault monitoring of the Ethernet connection

S33	Position	Function
Off		Default setting Setting for networking via FCnet
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.

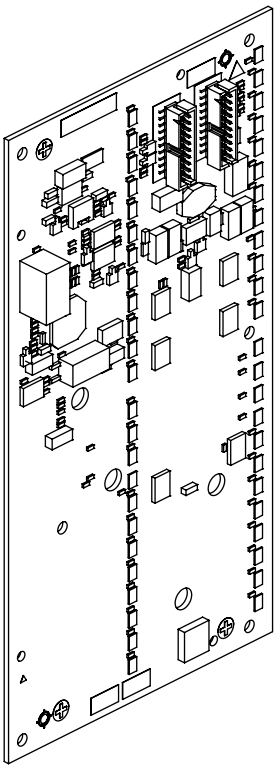
S38	Position	Function
On		Ground fault monitoring activated
Off		Ground fault monitoring deactivated

!	*NOTICE*
	Information If an operating unit is integrated in the FC2080 or in the FG2020-D1, then the ground fault monitoring of the system supply must be deactivated on the PMI & mainboard FCM2027 (S38 to OFF).

11.5 Technical data

Supply input	Voltage	DV 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
	Weight (without options)	1700 g

12 LED indicator (internal) FTO2002-A1



12.1 Description

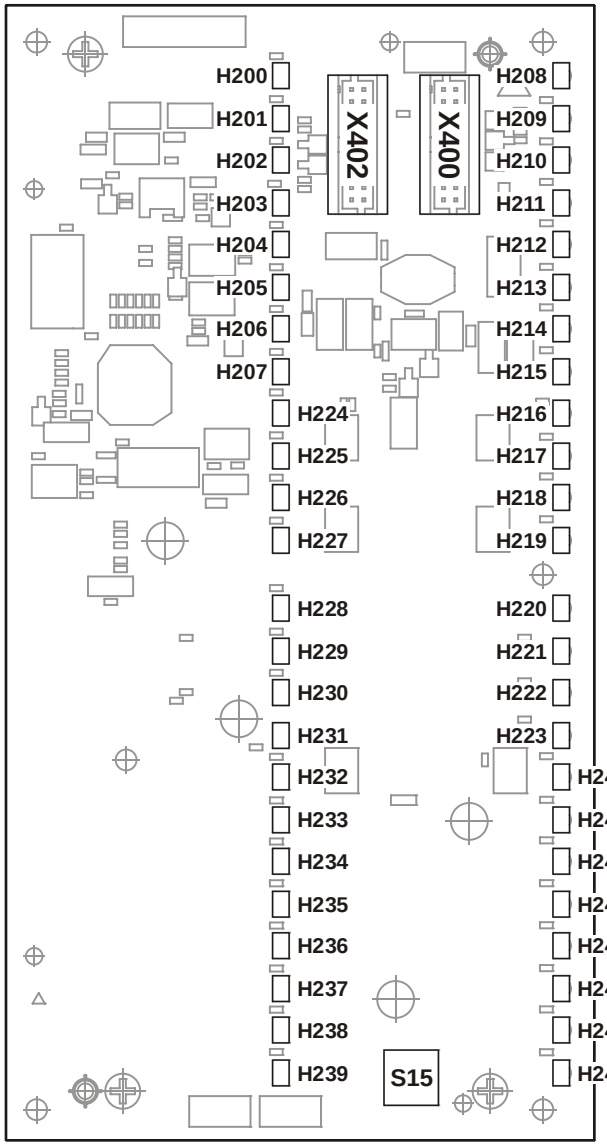
The LED indicator (internal) is integrated in the station and makes it possible to indicate events such as alarms and faults. In total, 48 LEDs are available (24 red and 24 yellow LEDs).

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 connected to the periphery bus and has the following features:

- Configuration of the LEDs with SintesoWorks
- Can be cascaded

12.2 Views



Printed circuit board view 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)

12.3 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						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

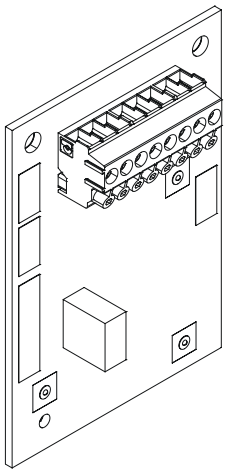
[1] Address, which is in SintesoWorks must be set to the corresponding switch setting.

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

12.4 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 SintesoWorks
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

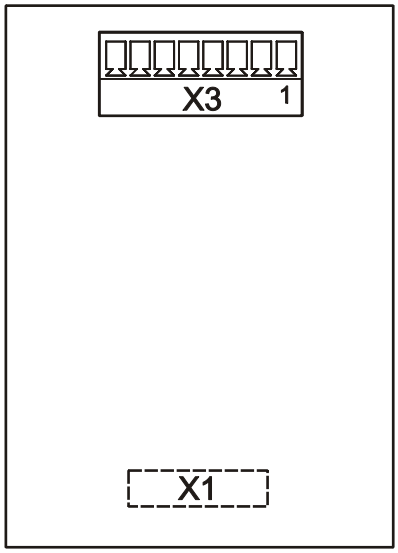
13 RS232 module (isolated) FCA2001-A1



13.1 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.

13.2 Views



Printed circuit board view RS232 module (isolated) FCA2001-A1

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

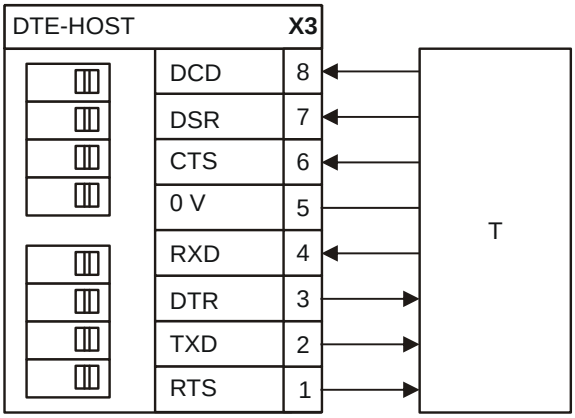
X2 Connection terminals for RS232 interface

13.3 Pin assignments

13.3.1 X3 DTE-HOST

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

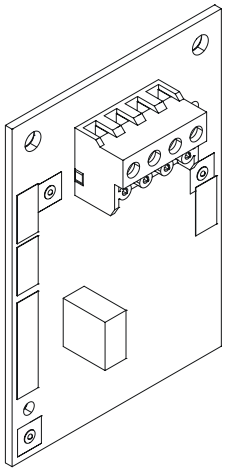


T Participant with RS232 interface

13.4 Technical data

Supply	Voltage	DC 3.3 V
	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

14 RS485 module (isolated) FCA2002-A1

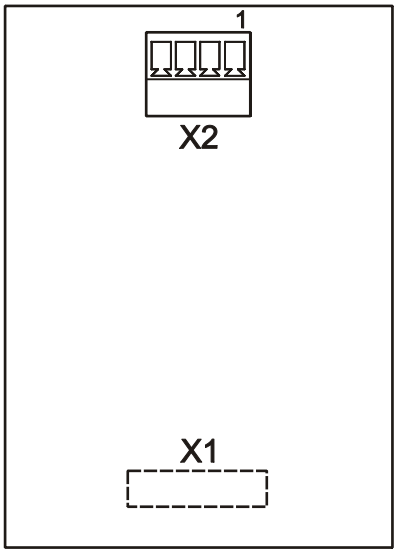


14.1 Description

The RS485 module (isolated) FCA2002 is plugged onto the PMI & mainboard and is required for the operation of peripherals 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

14.2 Views



Printed circuit board view RS485 module (isolated) FCA2002-A1

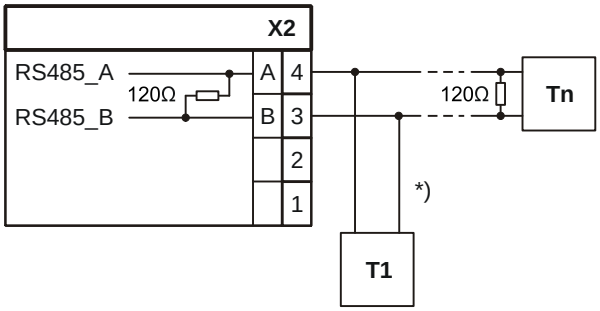
X1	Plug-type connection to the operating unit (rear panel)
X2	RS485 interface to the peripherals

14.3 Pin assignments

14.3.1 X2 connector

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

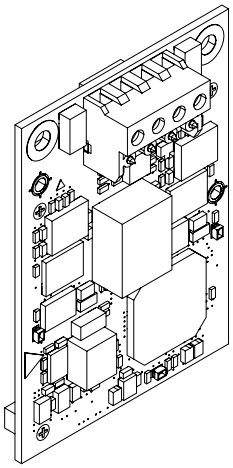
*) Stub lines must not exceed 20 m!

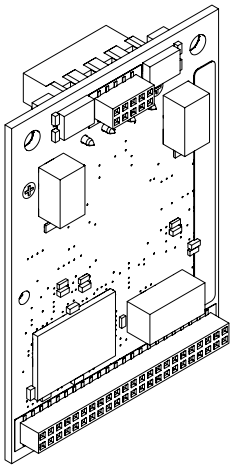
- Consider the polarity A, B!
- Terminate the line after the last participant (Tn) with 120 Ω!

14.4 Technical data

Supply input	Voltage	DC 3.3 V
	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

15 Network module (SAFEDLINK) FN2001-A1



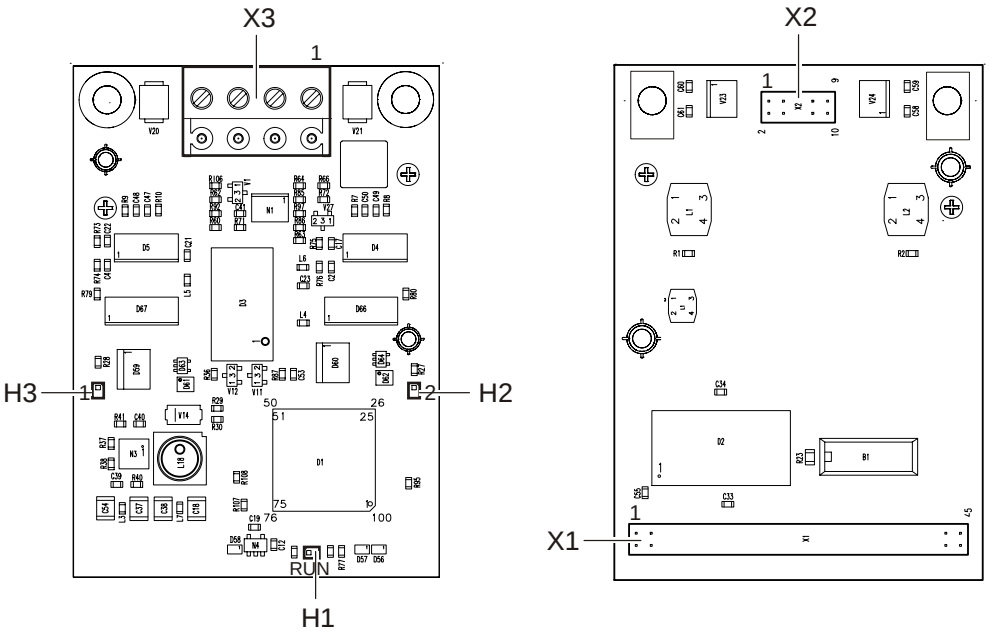


15.1 Description

The network module (SAFEDLINK) FN2001 is used to network several stations via the system bus FCnet. 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)

15.2 Views



Network module (SAFEDLINK) FN2001-A1, front and rear views

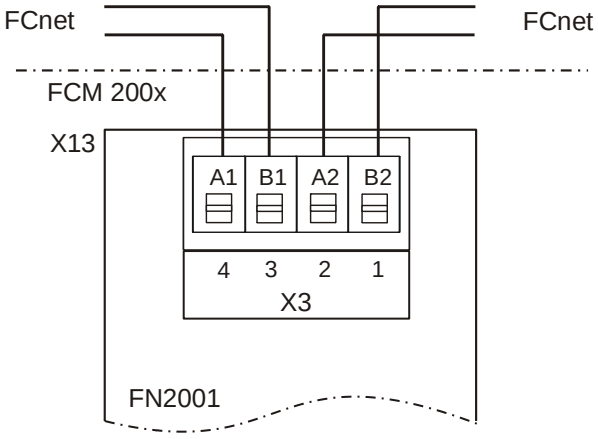
X1	Connector to the PMI & mainboard (connector on rear panel)
X2	Connector to the FCnet lines (connector on the rear panel); not used in FS20
X3	Connector to the FCnet lines
H1	LED green, status indicator for the network module
H2	LED yellow, status indicator for line 2
H3	LED yellow, status indicator for line 1

15.3 Pin assignments

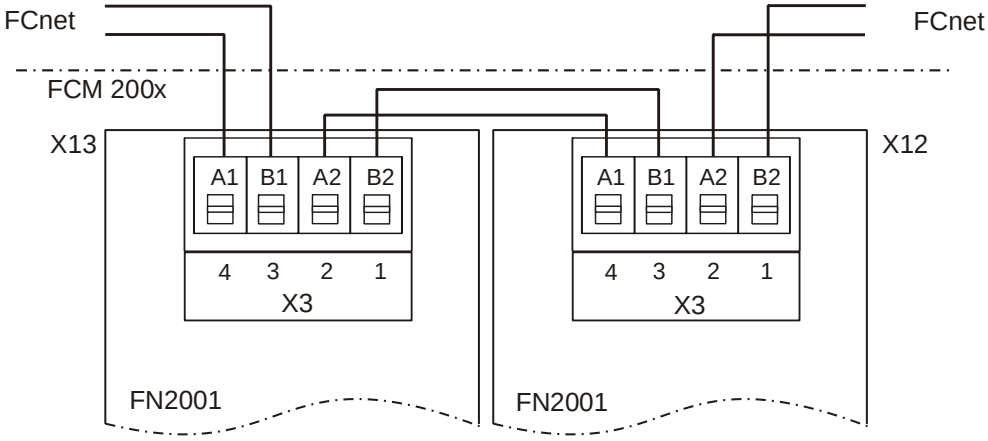
15.3.1 Connector X3

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



Wiring of 1 network module



Wiring of 2 network modules

The main module must always be plugged in slot X13 of the operating unit FCM20xx.

When two network modules are used, the degraded mode module must be plugged in slot X12 of the FCM20xx operating unit.

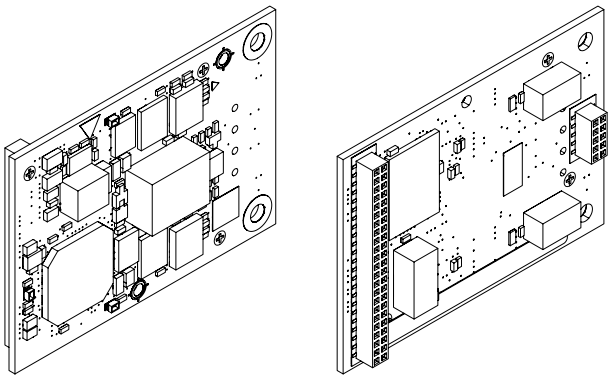
15.4 Indicators

LED	Color	Function	Condition	Meaning
H1	Green	Condition of the network module (SAFEDLINK)	Off	Network module (SAFEDLINK) is defective
			On	Normal condition (H2 and H3 are off)
			Flashes	Normal condition for degraded mode module (H2 and H3 are off)
H2	Yellow	Status of line 1 (A1, B1)	Off	Normal condition (communication on line 1 is OK)
			On	Fault on line 1; (no communication on line 1)
H3	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)

15.5 Technical data

Supply input	Voltage	DC 21…30 V
	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 in operation mode:	
	● 'Standard'	312 kbit/s
	● 'Low'	96 kbit/s
	Distance between 2 network modules	Max. 1000 m
	Electrical isolation between the FCnet 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

16 Network module (SAFEDLINK, CC) FN2010-A1



16.1 Description

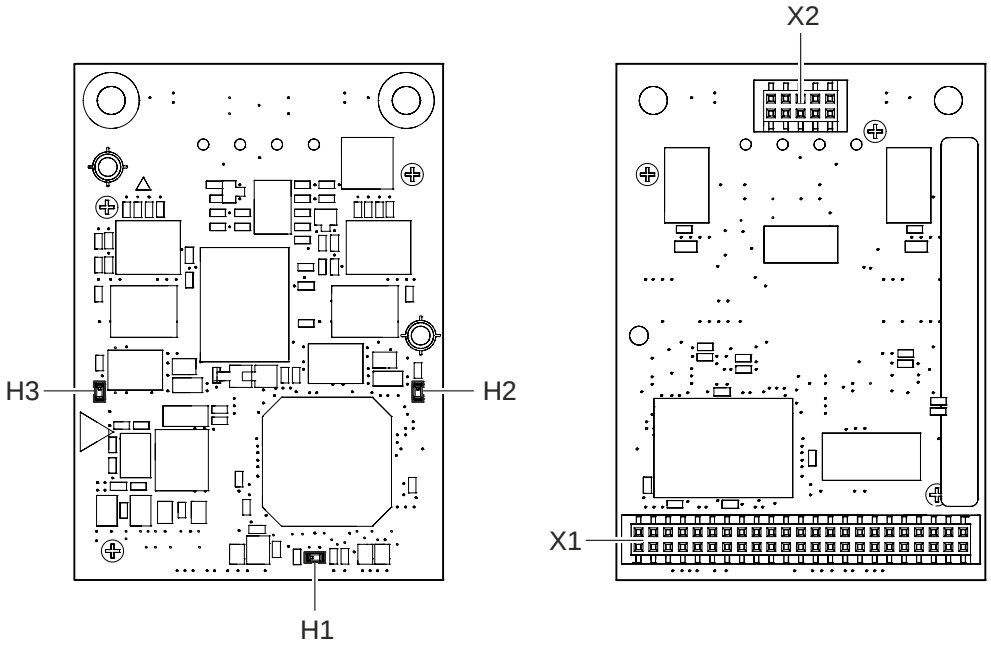
The network module (SAFEDLINK, CC) FN2010 is used for networking the FCnet/SAFEDLINK for fire control panel FC2080 and FG2020-D1. The network module (SAFEDLINK, CC) is installed on the following plug-in cards of the processor unit (19", FC2080):

- CPU card (FC2080) FCC2004-A1
- Communication card (FC2080) FCC2005-A1
- Communication card (FG2020-D1) FCC2008-D1

The network module (SAFEDLINK, CC) has the following features:

- Especially for use in the fire control panel FC2080 and FG2020-D1
- Relocation of the EMC protective elements and connector to card cage (CPU) FCC2003-A1
- Provides FCnet interfaces for connections on the processor unit (19“, FC2080) FCC2002-A1
- Integrated degraded mode function
- Electrical isolation
- Earth fault monitoring
- Use:
  - CPU card (FC2080) FCC2004-A1 Slot 1 as standard
  - On CPU card (FC2080) FCC2004-A1 Slot 2, with redundant CPU operation
  - On communication card (FC2080) FCC2005-A1 with Single CPU operation
  - On communication card (FG2020-D1) FCC2008-D1 with Single CPU operation

16.2 Views



Network module (SAFEDLINK) FN2001-A1, front and rear panels

Position	Designation	Description
H1	RUN	LED green, status indicator for the network module
H2		LED yellow, status indicator for line 2
H3		LED yellow, status indicator for line 1
X1		Connector to the plug-in card, feed and signal lines
X2		Connector to the plug-in card, FCnet connection

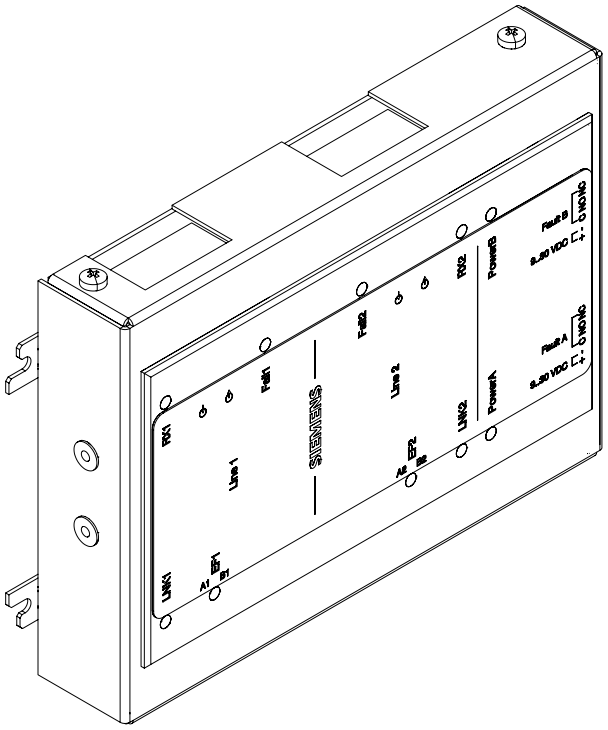
16.3 Indicators

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

16.4 Technical data

Supply input	Voltage	DC 21…30 V
	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)Y2 x 2 x 0.8 mm red
	Protocol	SAFEDNET (UDP/IP)
	Data rate in operation mode:	
	● 'Standard'	312 kbit/s
	● 'Low'	96 kbit/s
	Distance between 2 network modules	Max. 1000 m
	Electrical isolation between the FCnet and the station	1 kV, limited to 45 V with respect to ground
	Monitored for:	● Short-circuit ● Open line ● Ground fault ● Communication error
Connections		2 plug connections
Mechanical data	Dimensions (W x H x D)	50 x 20 x 70 mm
	Weight	20 g

17 Fiber optic network module FN2006 / FN2007



17.1 Description

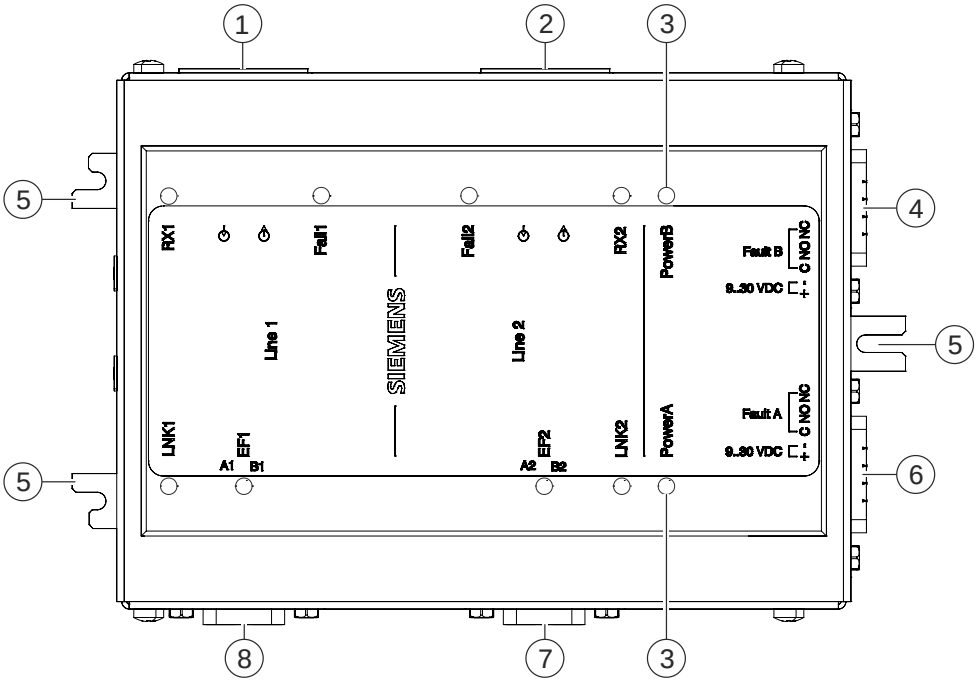
With the fiber optic cable network module Multi Mode (MM) and the fiber optic cable network module Single Mode (SM), FS20 stations can be networked over great distances by means of glass fiber optic cables using the system bus FCnet/SAFEDLINK

As a result of the redundant supply, a network in conformance with EN 54 is also possible with remote networking 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
- Earth fault monitoring
- Error signaling via LED and potential-free relay contact
- Installation in station or remote possible
- Horizontal or vertical installation on DIN rail possible

17.2 Views



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, FCnet Line 2
8 Plug-type connection A1/B1, FCnet Line 1

17.3 Pin assignments

17.3.1 Power A and Power B sockets

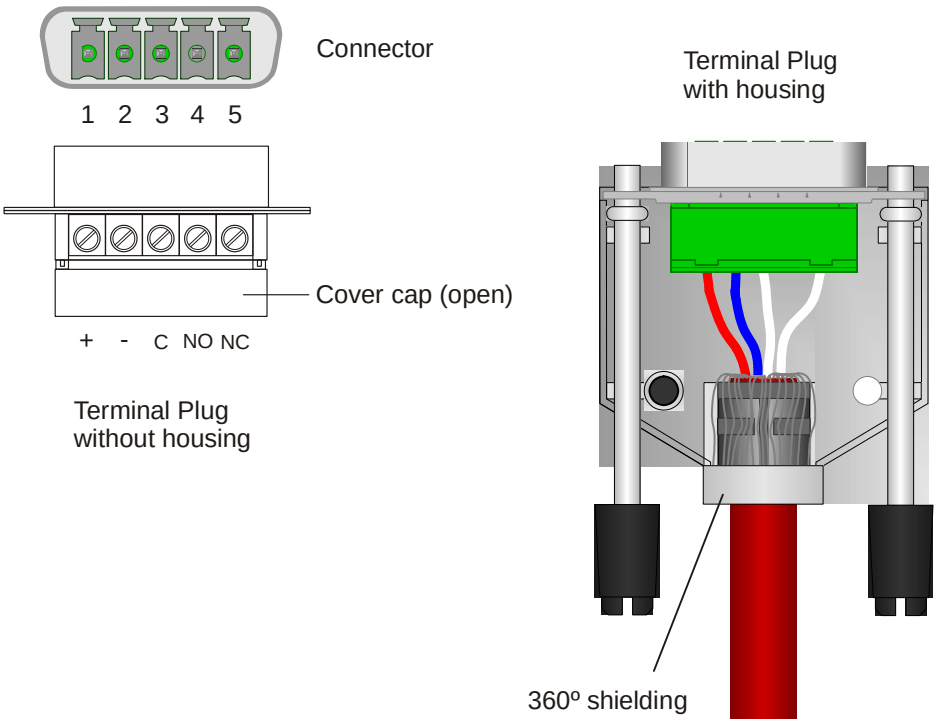
The 5-pin connector for the power supply is supplied with the fiber optic cable network module.

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

Admissible cable cross-section: 0.14…1.5 mm²

Power A (B)	
9..30VDC+	1
9..30VDC-	2
COM	3
NO	4
NC	5

- The power supply need not be monitored and made redundant when installing in the fire control panel.
- The supply line must be shielded with remote networking module.
- Relay contact opens in the event of an error. The display indicates the error (COM and NC are connected).



Connector for Power A and Power B sockets

17.3.2 EF1/EF2 sockets for SAFDLINK networking

The 3-pin connector for the FCnet/SAFEDLINK connection is supplied with the fiber optic cable network module.

The total cable lengths of the electric FCnet connections (copper cable) in the optical network may not be longer than 1000 m.

EF1 socket, FCnet A1/B1

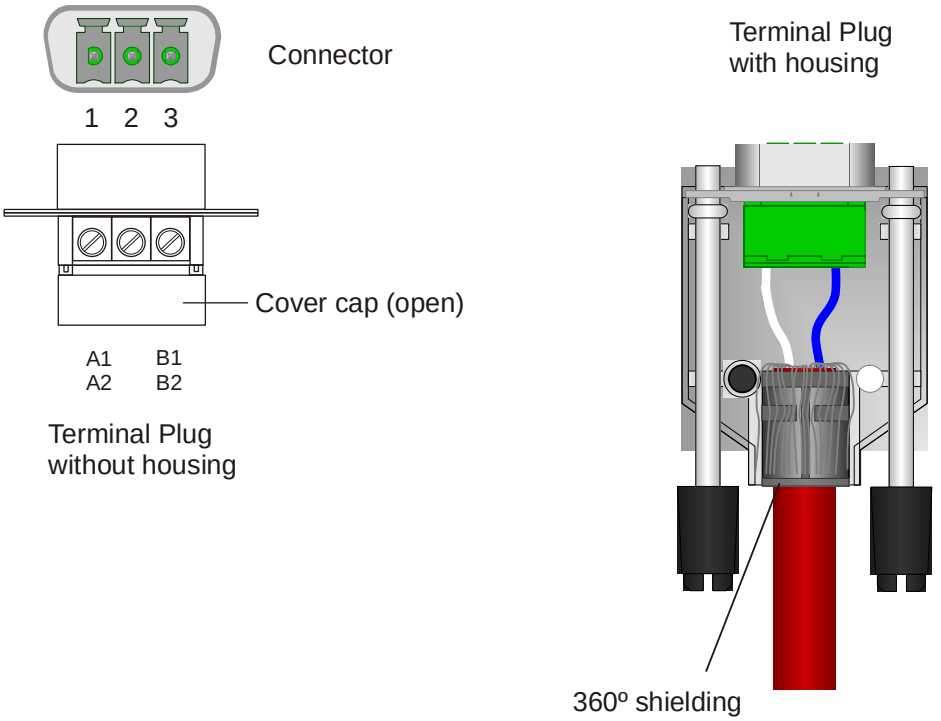
Pin	Designation	Description
3	B1	FCnet Line 1 (-)
2	–	–
1	A1	FCnet Line 1 (+)

Admissible cable cross-section: 0.14…1.5 mm²

EF2 socket, FCnet A2/B2

Pin	Designation	Description
3	B2	FCnet Line 2 (-)
2	–	–
1	A2	FCnet Line 2 (+)

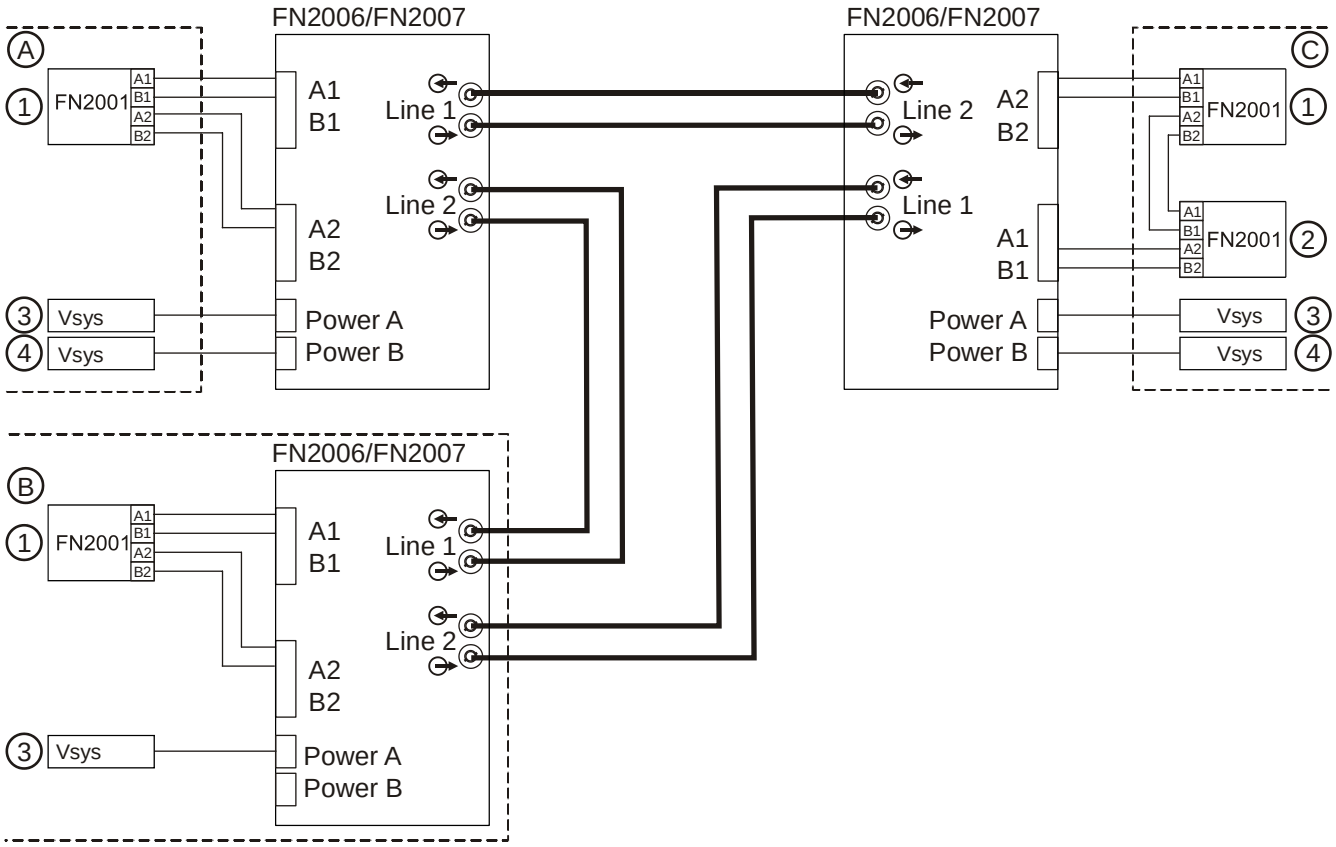
Admissible cable cross-section: 0.14…1.5 mm²



EF1/EF2 connector for SAFEDLINK networking

17.3.3 Fiber optic cable connection

- If the fiber optic cable network module is mounted in the station, then only one supply must be connected.
- In the case of remote installation, the supply must be shielded and made redundant in accordance with EN 54.



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', supply input B to fiber optic cable network module (redundant supply) [1]
A1/B1	FCnet connections for line '1'
A2/B2	FCnet connections 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).

17.4 Indicators

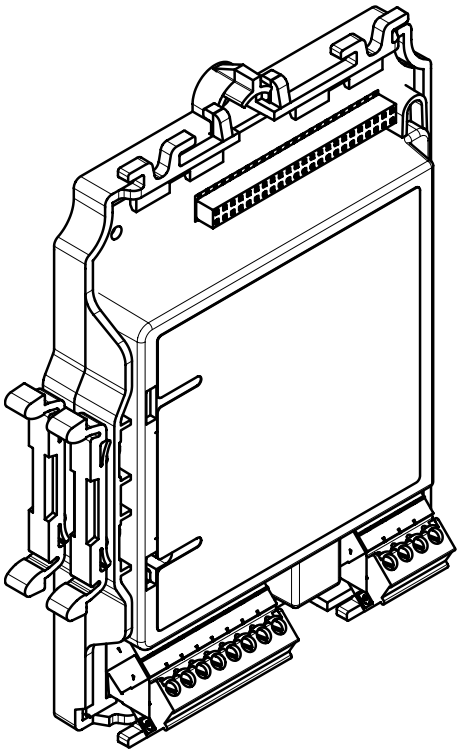
LED	Color	Function	Condition	Meaning
RX1	Green	Data reception of fiber optic cable line '1'	Lit up	Data is being received from line '1'
Fail1	Yellow	Fault on fiber optic cable line '1'	Lit up	Weak data reception from line '1'
Fail2	Yellow	Fault on the fiber optic cable line '2'	Lit up	Weak data receipt from line '2'
RX2	Green	Data reception of the 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 FCnet line '1'	Flashes	Data transmitted via A1/B1
EF1	Yellow	Ground fault monitoring at FCnet line '1'	Lit up	Ground fault at A1/B1
EF2	Yellow	Generation of ground fault on FCnet line '2'	Flashes	Ground fault at A1/B1 mirrored on A2/B2
LNK2	Green	Data transmission of FCnet line '2'	Flashes	Data transmitted via A2/B2

17.5 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
	Wavelength	1310 nm
	Multi-mode	
	Range:	
	Fiber type 62.5/125 µm	4 000 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	40,000 m
	Optical budget:	
	Fiber type 9/125 µm	29 dBm
	Minimum optical attenuation (corresponds to a minimum fiber length of 4000 m)	3 dBm
FCnet	Length of line	Max. 1,000 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	570 gr.
Ambient conditions	Operating temperature	-10…+55 °C
	Storage temperature	-30…+75 °C
	Rel. humidity during operation	95 %, non-condensing
Standards		EN 54-18

18 Repeater (SAFEDLINK) FN2002-A1



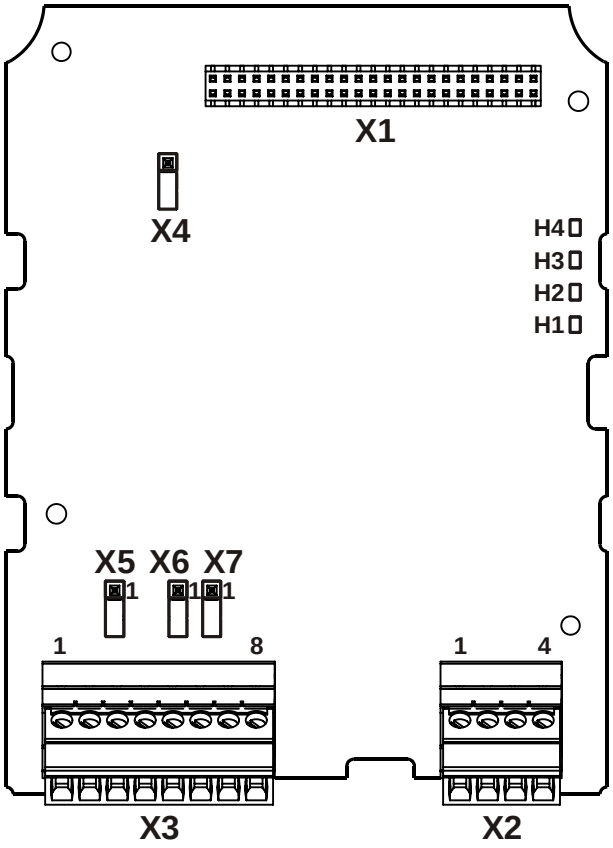
18.1 Description

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

The repeater (SAFEDLINK) 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 FCnet 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

18.2 Views



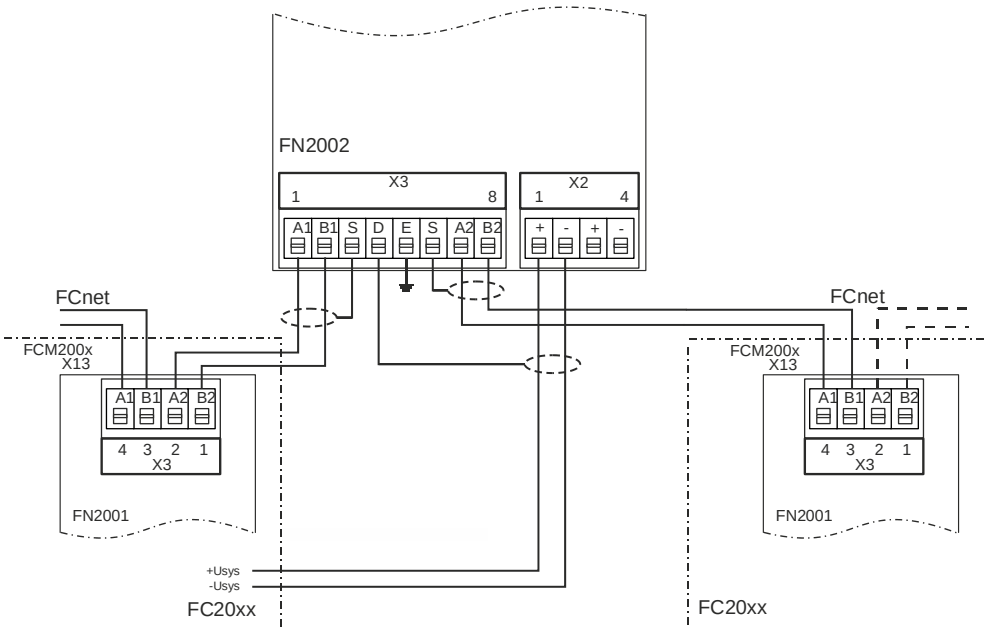
Printed circuit board view of repeater FN2002

X1	Not used for operation Connector with full population for programming with firmware
X2	Connector for external power supply and the transmission to additional repeaters
X3	Connector for FDnet and earth connection
X4	Jumper for the switching over of the data rate (switchover only in current-free state)
X5	Jumper for grounding X3/pin 3
X6	Jumper for grounding X3/pin 5
X7	Jumper for grounding X3/pin 6
H1	LED green, status indicator of the repeater
H2	LED yellow, status indicator for line 2
H3	LED yellow, status indicator for line 1
H4	LED red, ground fault indication for line 2

18.3 Pin assignments

18.3.1 Connector X3

Pin	Designation	Description
1	A1	Line 1 (+)
2	B1	Line 1 (-)
3	S	Shielding
4	D	Shielding
5	E	Ground connection
6	S	Shielding
7	A2	Line 2 (+)
8	B2	Line 2 (-)



Repeater FN2002, cabling

In the FCnet, line 1 must always be wired to line 2 or line 2 must be wired to line 1, respectively.

18.3.2 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

"Input" and "Output" are connected in parallel on the printed circuit board and can be switched.

18.4 Indicators

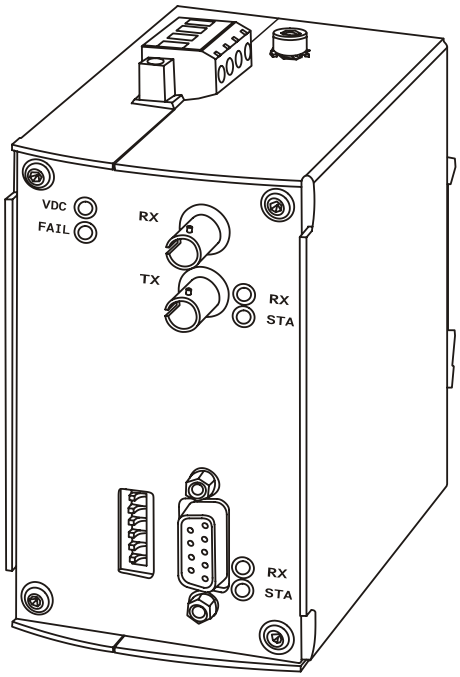
LED	Color	Function	Condition	Meaning
H1	Green	Condition of the repeater (SAFEDLINK)	Flashes	Normal condition
			Off	Repeater (SAFEDLINK) is defective
H2	Yellow	Condition of the line 2 (A2, B2)	On	Fault on connection line 2; Repeater (SAFEDLINK) is OK
			Off	Normal condition
H3	Yellow	Condition of the line 1 (A1, B1)	On	Fault on connection line 1; Repeater (SAFEDLINK) is OK
			Off	Normal condition
H4	Red	Ground fault	On	Ground fault on connection line 2; Repeater (SAFEDLINK) is OK
			Off	Normal condition

18.5 Technical data

Supply input	Voltage	DC 9…30 V [1]
	Operating current	Max. 45 mA
System bus	Voltage	DC 5 V
	Current	Max. 100 mA
	Impedance	120 Ω
	Protocol	SAFEDLINK (UDP/IP)
	Data rate in operation mode:	
	• Speed	312 kbit/s
	• Distance	96 kbit/s
	Distance between repeater and network module	Max. 1000 m
	Electrical isolation between the FCnet and the station	1 kV
	Monitored for:	• Short-circuit • Open line • Ground fault • Communication error
Connections	System bus:	
	Design	Screw terminals type Phoenix MC1,5/x-ST-3,81 0.8 … 1.5 mm² (0.8 mm² recommended)
	Operating unit	Plug-type connection
Mechanical data	Dimensions (W x H x D)	90 x 25 x 132 mm
	Weight	105 g
Standards	VdS	G211003

[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 terminal voltage must be at min. 9 V.

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



19.1 Description

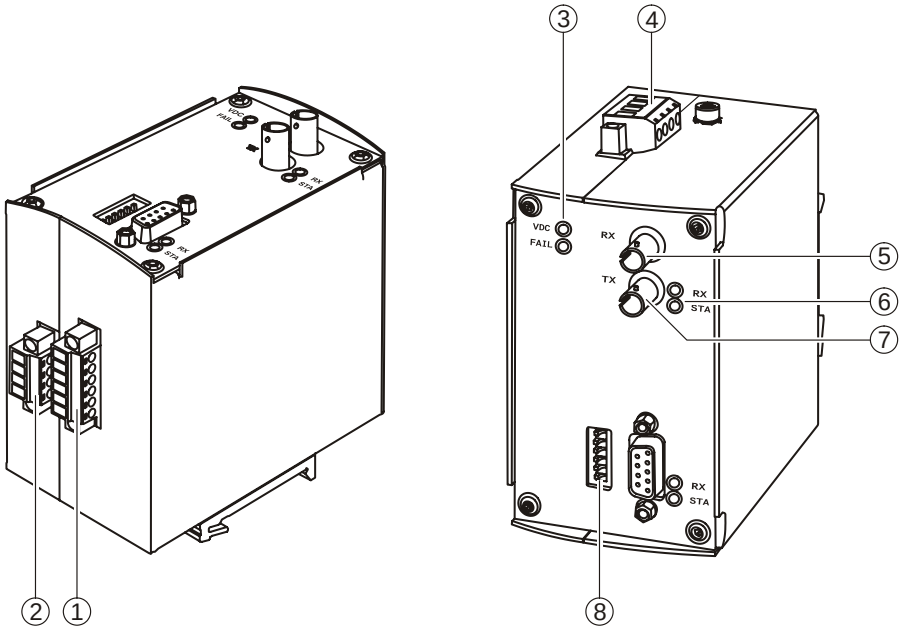
The interface modules DL485/13-xx-ST-SBT serve to actively couple the FCnet with fibre optic cables. The purpose of this is to extend the line and isolate it electrically (EMC-resistant).

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: 15 000 m
  - Multi-mode: 2000 m
- Available for fibre optic cable fibres 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
- Installation on DIN rail possible
- Error signalling via LED

19.2 Views



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

19.3 Pin assignments

19.3.1 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)

Speisung		
GND	-	1
EARTH		2
VDC2	+	3
VDC1	+	4

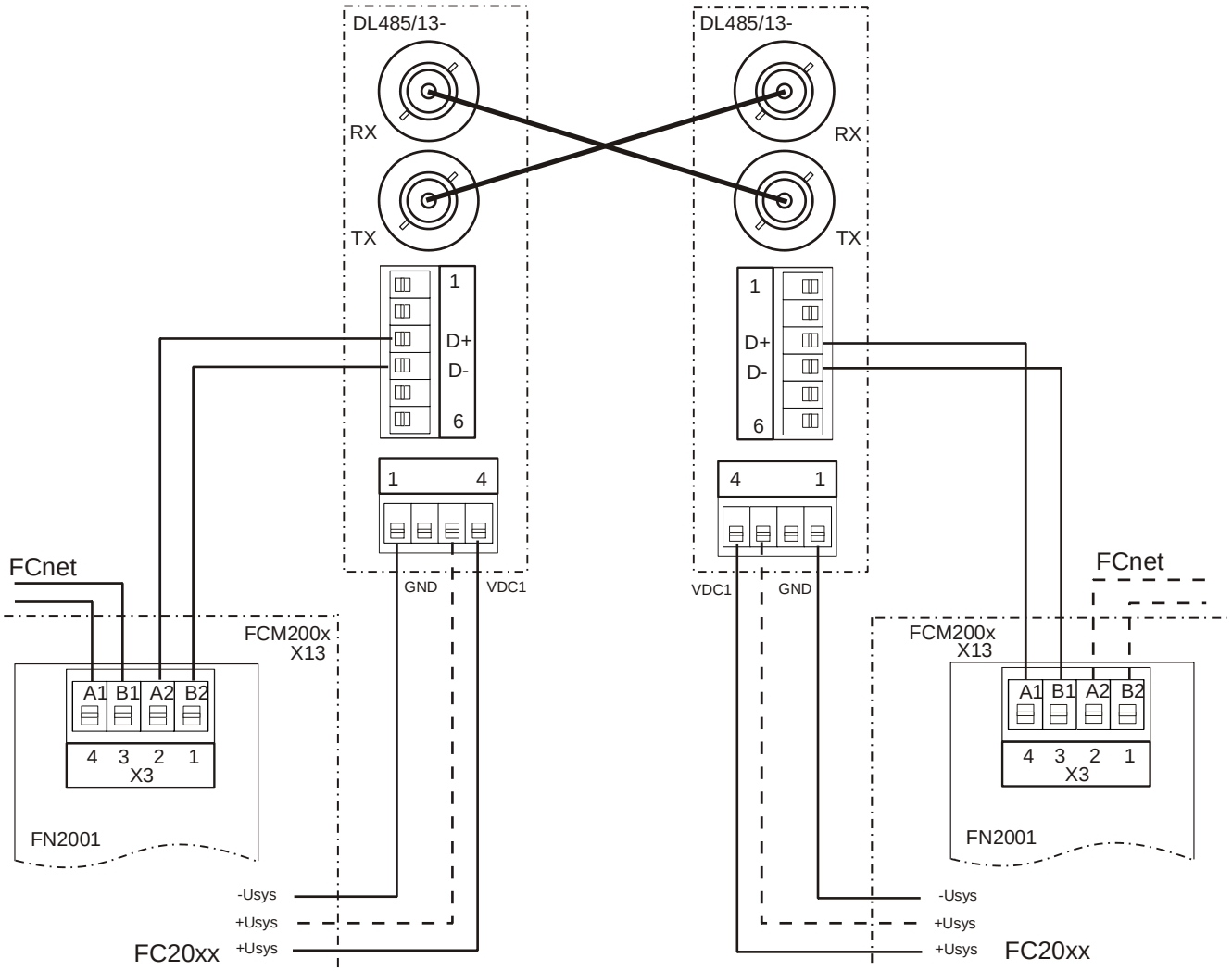
19.3.2 Terminal strip data line

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	

Daten-Anschluss		
GND	-	1
+5V	+	2
D+	+	3
D-	-	4
GND	-	5
EARTH		6

19.3.3 Fiber optic cable connection

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



Wiring the interface module DL485/13-MM-ST-SBT in the FCnet

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 with the optical receiver (RX) of the other device.
- The bending radius of the fiber optic cable must not be less than 20 mm.

19.4 Indicators

LED	Color	Function	Condition	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

19.5 Adjustment elements

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

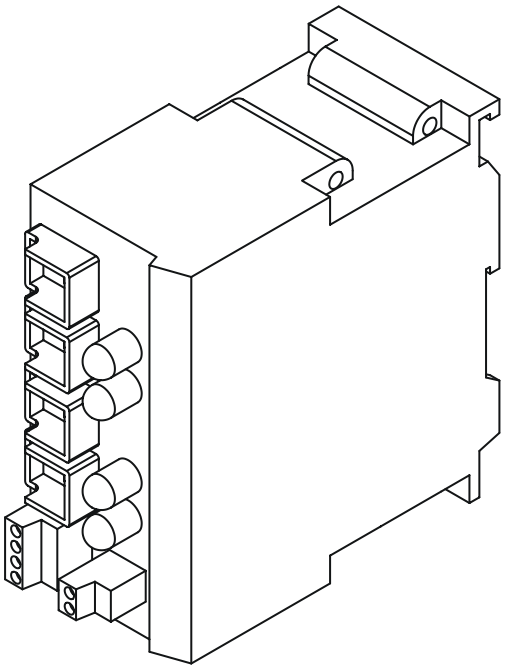
- R_W = wave resistance
- R_{PU} = pull-up resistance
- R_{PD} = pull-down resistance

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

19.6 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. 15,000 m (2 db/km)
FCnet	Connection length	Data rate 'Standard': Max. 400 m Data rate '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

20 Ethernet switch (MM) FN2008-A1



20.1 Description

The Ethernet switch (MM) FN2008-A1 is a switch for using in industrial networks. When used in the FS20 fire detection system, the FN2008-A1 permits expansion to other sub-networks in redundant operation. This allows heterogeneous networks with several sub-nets to be operated.

The FN2008-A1 is supplied via 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.

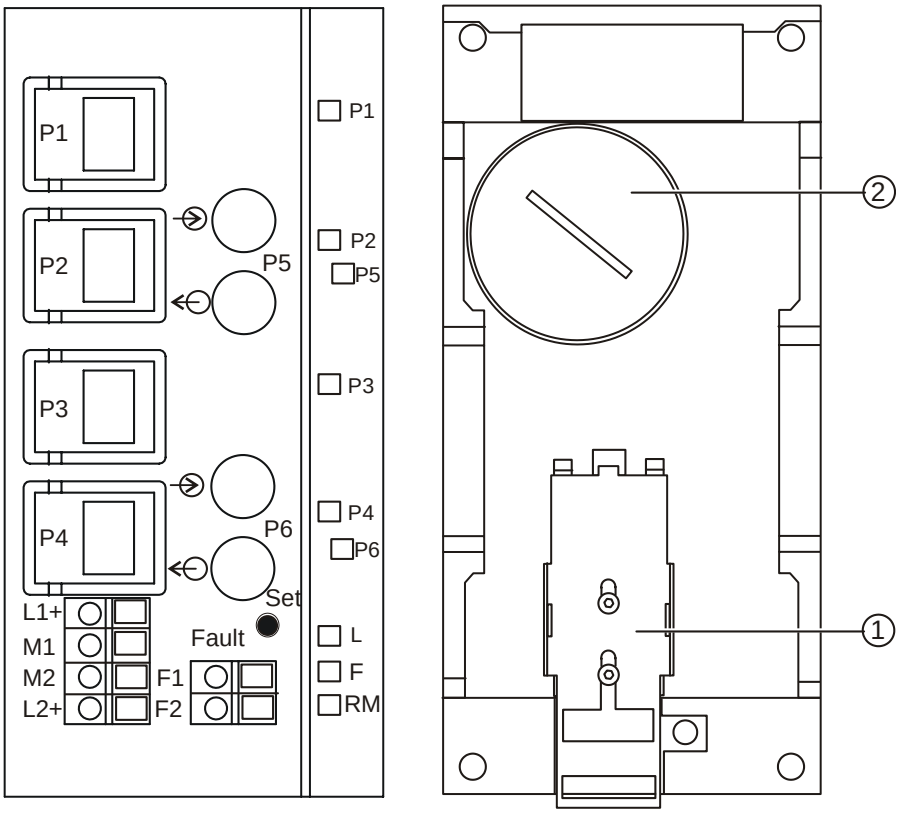
Properties

- 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
- Installation 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 information about the FN2008-A1 on the data sheet and the description supplied by the manufacturer.

You will find the configuration procedure in document 009052.

20.2 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)

20.3 Pin assignments

20.3.1 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.

20.3.2 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.

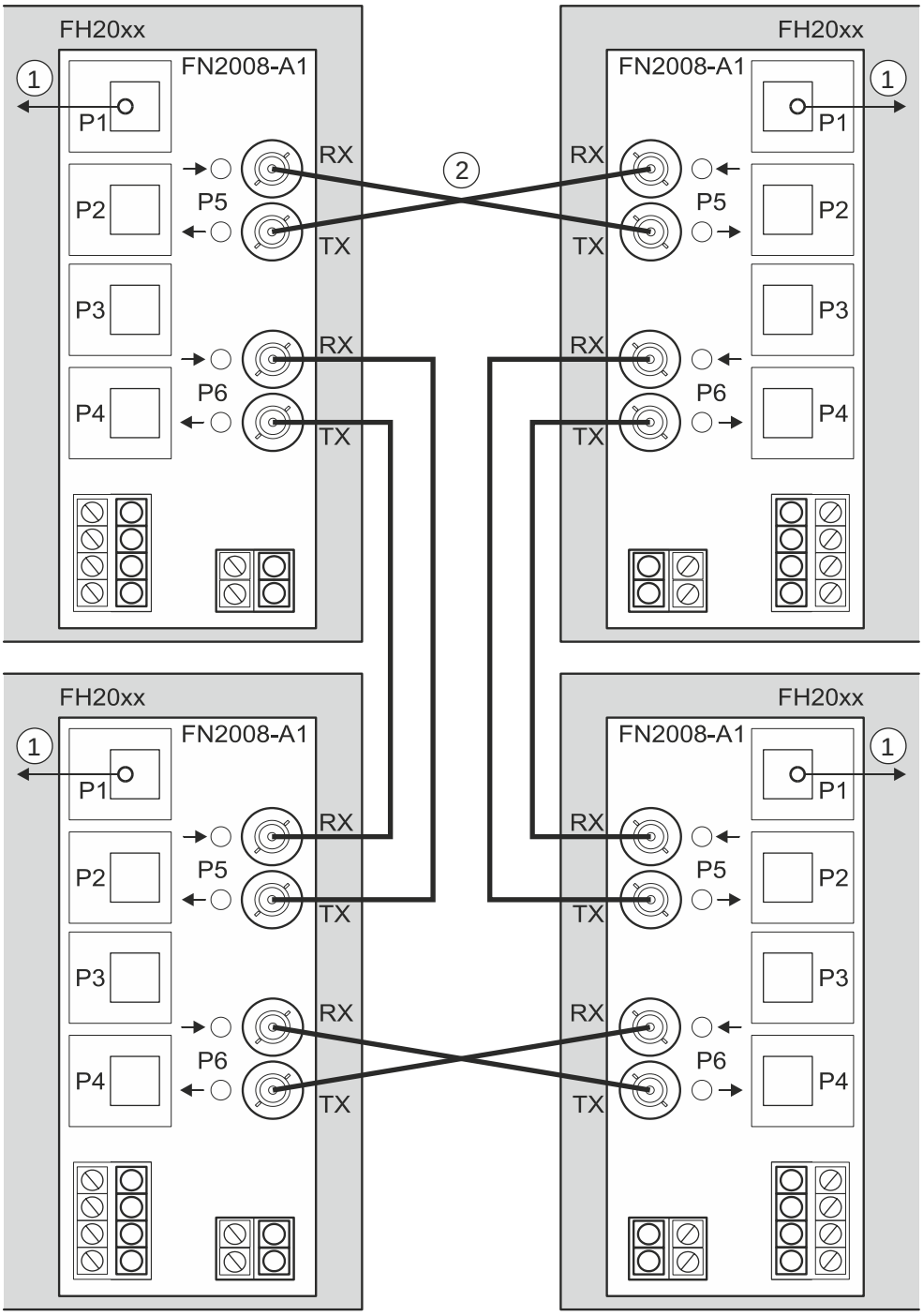
The detector contact is always activated (opened) by switching off the FN2008-A1.

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

20.3.3 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.



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.

20.4 Indicators

Standard LED indicators

LED	Color	Function	Condition	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.

20.5 Adjustment elements

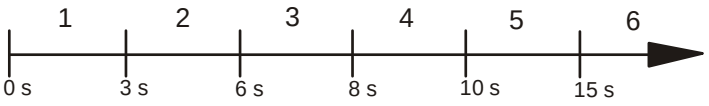
20.5.1 Set button

Set button

The 'Set' button can be used to change various FN2008-A1 settings. 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:



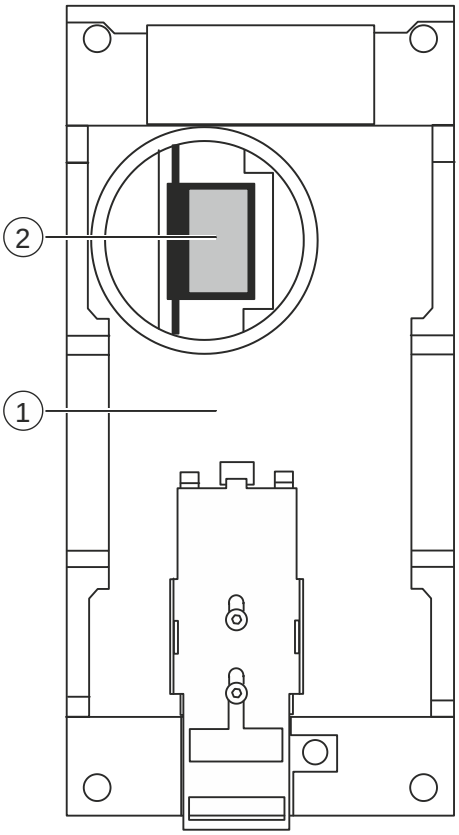
Set button phases

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' operating 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.

20.5.2 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 008843.



View from rear with C-plug cover open

1 Rear of housing

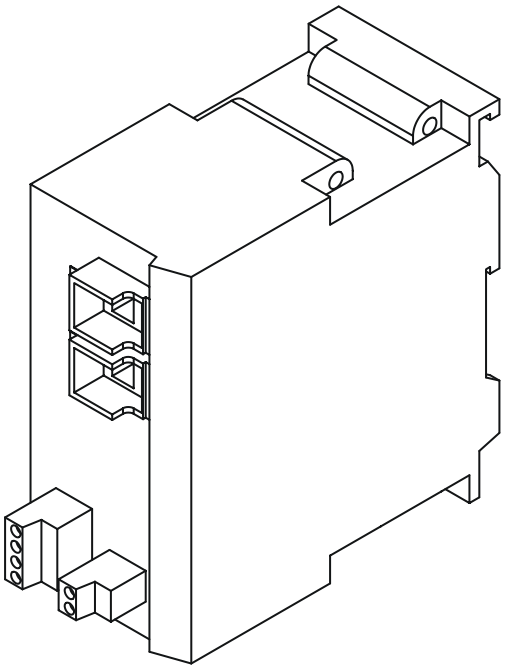
2 C-plug (option)

20.6 Technical data

Supply input	Voltage inputs	DC 18…32 V each, decoupled
	Operating current	Max. 215 mA
Ethernet interface	Bushes	4 x RJ45, 10/100 Mbit/s
	Length of line	Max. 100 m via FC TP standard cable
Optical interfaces	Bushes	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	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
	Weight	780 g
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 008851, Installation.

21 Safety module (firewall) FN2009-A1



21.1 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. The 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. The FN2009-A1 is supplied via 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.

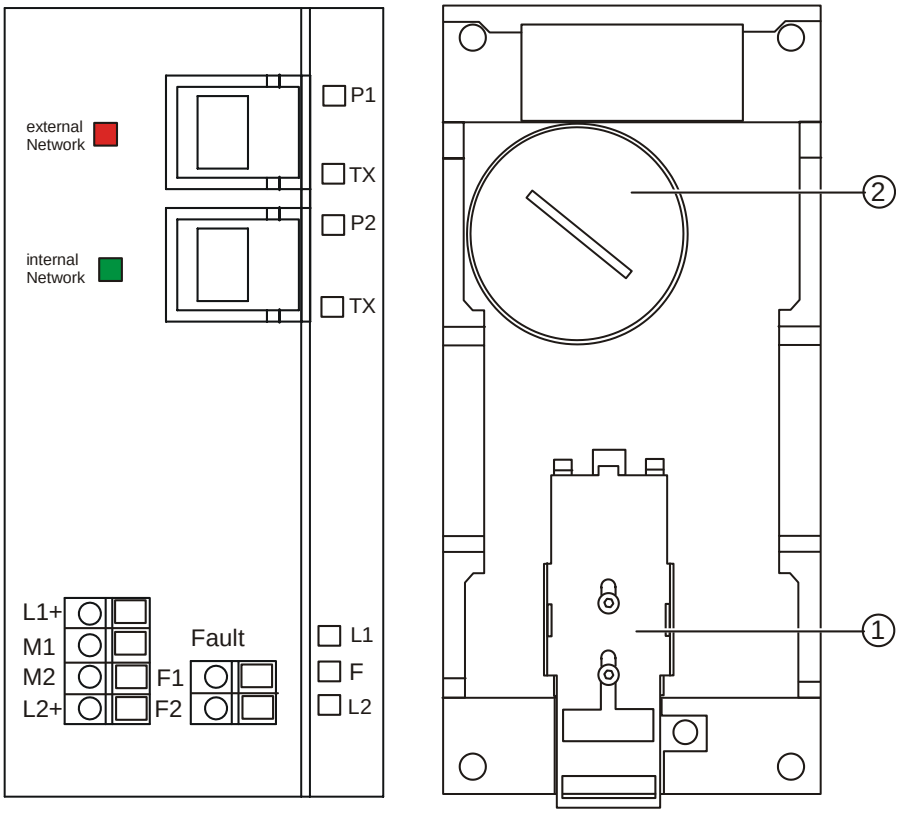
Properties

- 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
- Installation 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 information about the FN2009-A1 on the data sheet and the description supplied by the manufacturer.

You will find the configuration procedure in document 009052.

21.2 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

21.3 Pin assignments

21.3.1 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.

21.3.2 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

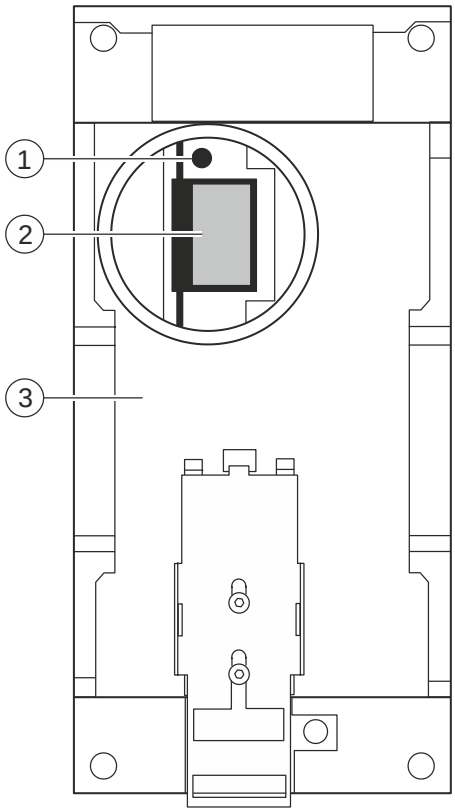
21.4 Indicators

LED indicators

LED	Color	Function	Condition	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)

LED	Color	Function	Condition	Meaning
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

21.5 Adjustment elements



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)

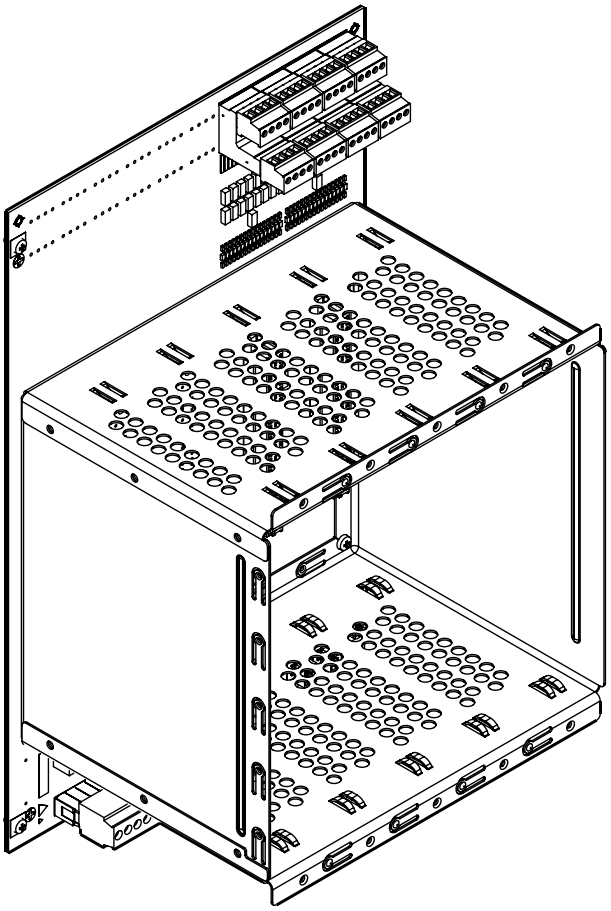
The C-plug is an optional removable medium for storing the FN2009-A1's configuration data. When replacing the device, the configuration data can be easily transferred by removing the C-plug. The C-plug must be ordered separately. You will find details on this in document 008843.

21.6 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	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 in 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 008851, Installation.

22 Card cage (2 slots) FCA2007-A1



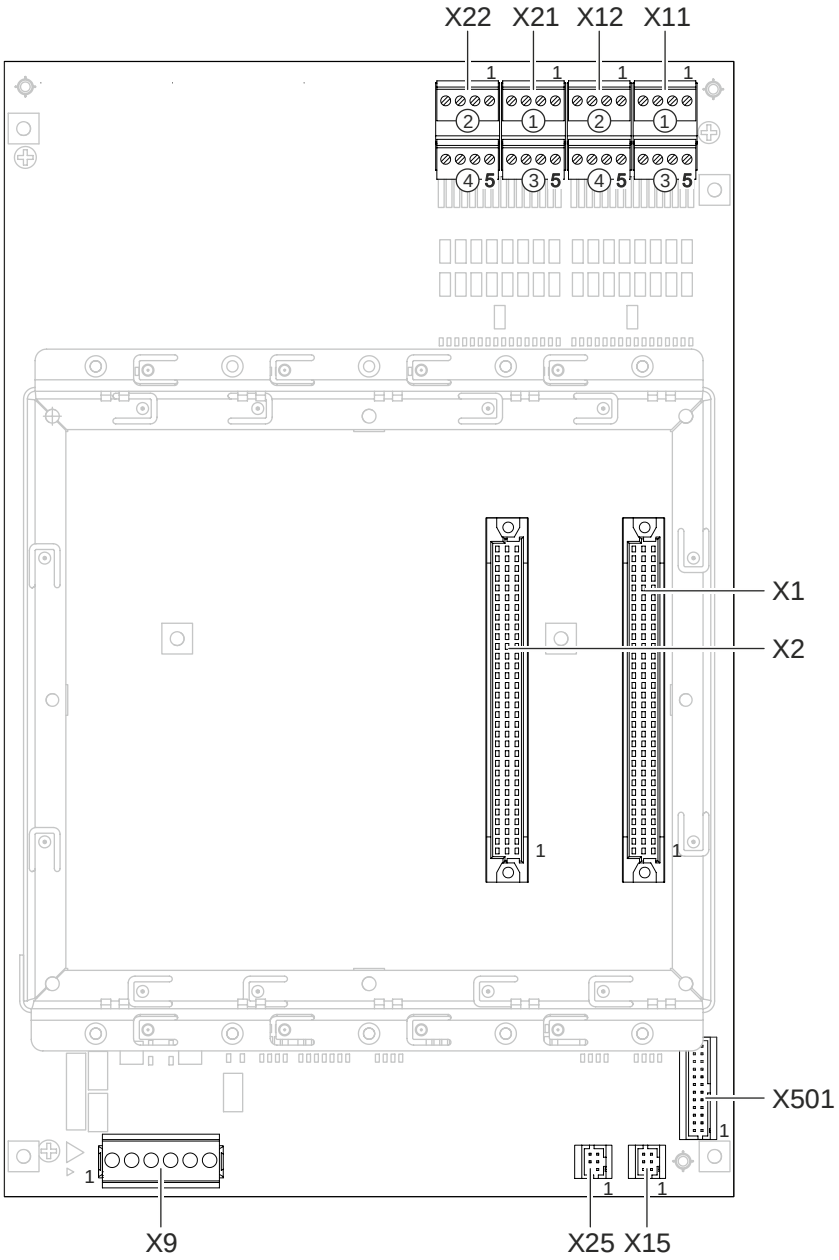
22.1 Description

The card cage (2 slots) FCA2007-A1 is installed in the fire control panel FC2030 as standard. The card cage (2 slots) makes it possible to expand the fire control panel FC2030 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 the connection module (card cage) FCA2006-A1 on the PMI & mainboard
- Control and line part is electrically isolated
- Easy installation 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

22.2 Views of card cage (2 slots)



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

Element	Des.	Function
Slots	X1	Connector for module bus card 1
	X2	Connector for module bus card 2
Connection terminals Modernization cards	X9	System supply connection
	X11	Connection terminals 1 and 3 of module bus card 1
	X12	Connection terminals 2 and 4 of module bus card 1
	X21	Connection terminals 1 and 3 of module bus card 2
	X22	Connection terminals 2 and 4 of module bus card 2

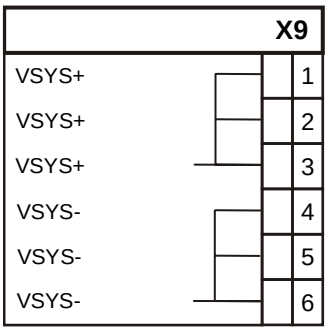
Element	Des.	Function
Connector Degraded mode	X15	Connector for degraded mode indicator [AT] of module bus card 1
	X25	Connector for degraded mode indicator [AT] of module bus card 2
Internal bus	X501	Connection strip for module bus input

22.3 Pin assignments

22.3.1 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



22.3.2 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.

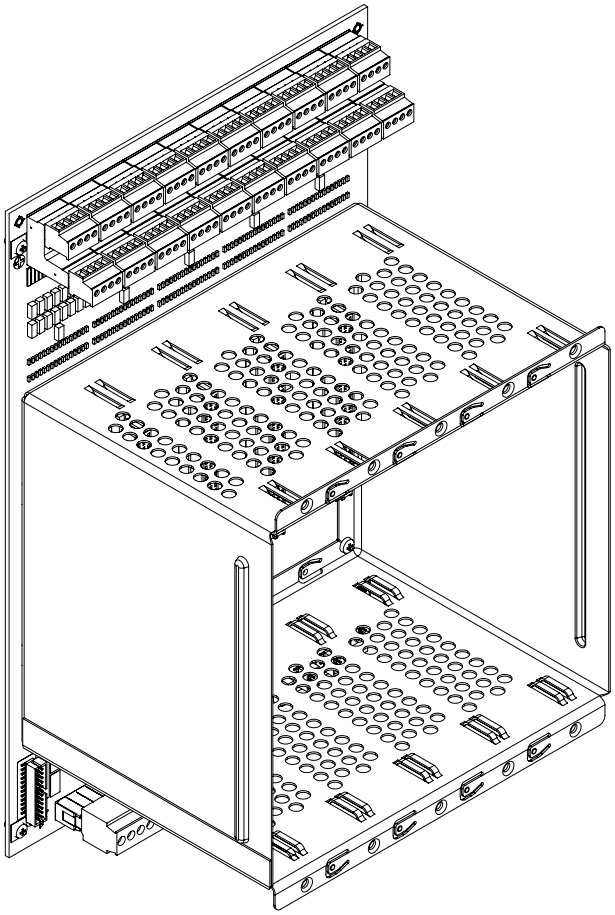
The assignment of the connector is:

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

22.4 Technical data

Plug-in units	Slots	Max. 2 modernization cards
Supply	Operating voltage	Vsys 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 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VDS	
	QA Standards	
	CE conformity mark	
	LPCP	

23 Card cage (5 slots) FCA2008-A1



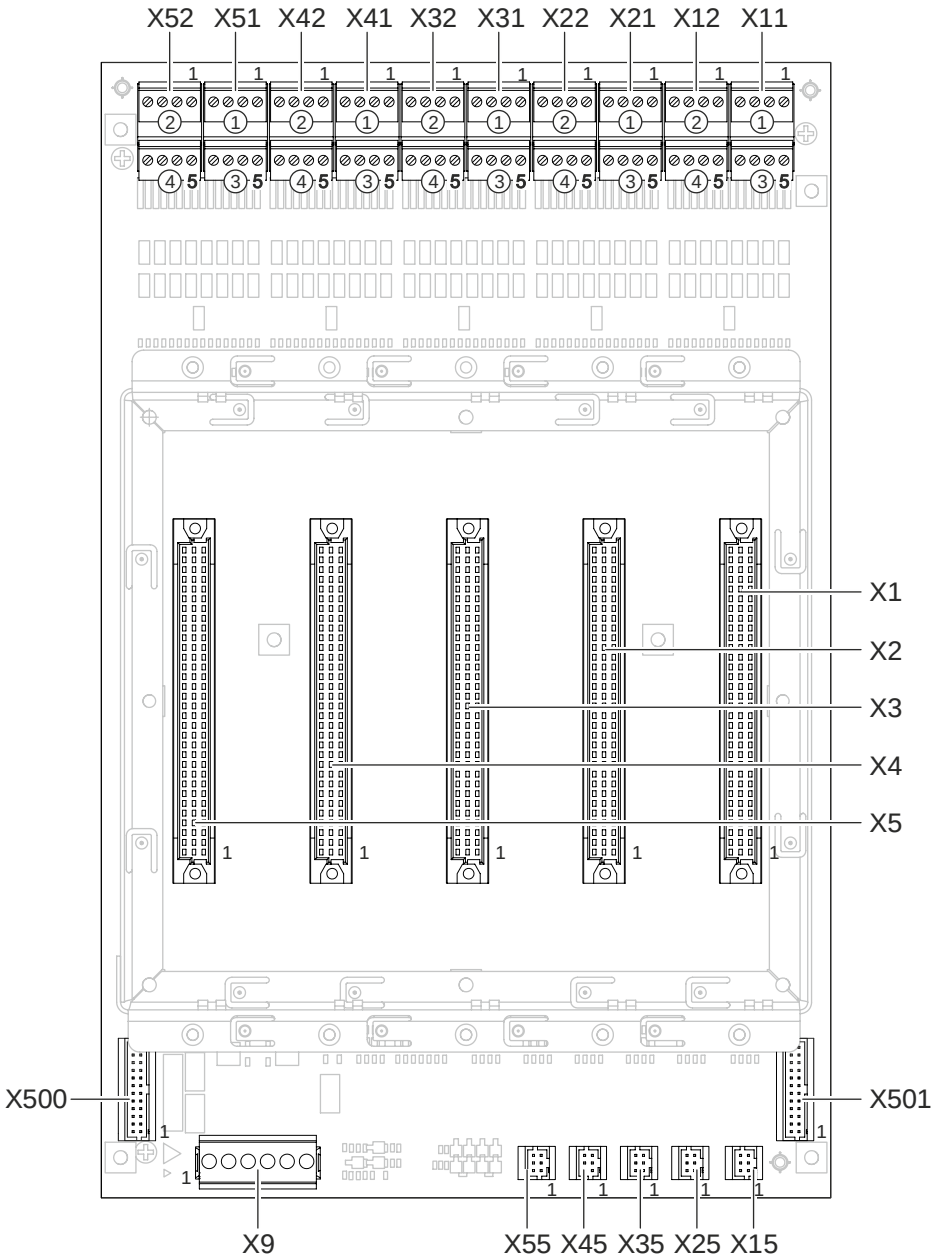
23.1 Description

The card cage (5 slots) FCA2008-A1 is installed in the fire control panel FC2060 and is used in the FC2080 for expansion purposes. The card cage expands the fire control panel by adding module bus cards.

The card cage has the following features:

- Five slots for module bus cards (FDnet, collective, MS9i and I/O card)
- Terminal strips for external connections of the module bus cards
- Internal module bus connection to the connection module (card cage) FCA2006-A1 on the PMI & mainboard for FC2060 and/or with the card holder (CPU) for FC2080.
- Control and line part is electrically isolated
- Easy installation 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

23.2 Views of card cage (5 slots)



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

Element	Des.	Function
Slots	X1	Connector for module bus card 1
	X2	Connector for module bus card 2
	X3	Connector for module bus card 3
	X4	Connector for module bus card 4
	X5	Connector for module bus card 5

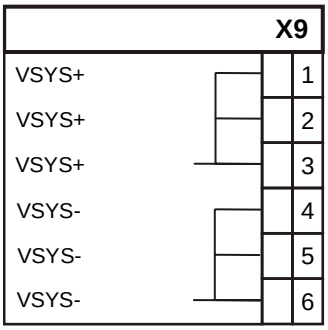
Element	Des.	Function
Connection terminals Module bus cards	X9	System supply connection
	X11	Connection terminals 1 and 3 of module bus card 1
	X12	Connection terminals 2 and 4 of module bus card 1
	X21	Connection terminals 1 and 3 of module bus card 2
	X22	Connection terminals 2 and 4 of module bus card 2
	X31	Connection terminals 1 and 3 of module bus card 3
	X32	Connection terminals 2 and 4 of module bus card 3
	X41	Connection terminals 1 and 3 of module bus card 4
	X42	Connection terminals 2 and 4 of module bus card 4
	X51	Connection terminals 1 and 3 of module bus card 5
	X52	Connection terminals 2 and 4 of 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	Connection strip for module bus output to other card cages
	X501	Connection strip for module bus input

23.3 Pin assignments

23.3.1 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



23.3.2 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.

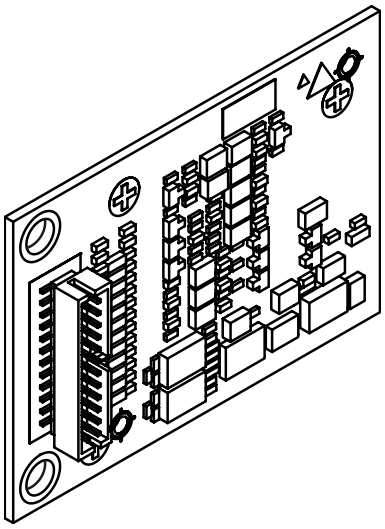
The assignment of the connector is:

- 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

23.4 Technical data

Plug-in units	Slots	Max. 5 module bus cards
Supply	Operating voltage	Vsys 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 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VDS	
	QA Standards	
	CE conformity mark	
	LPCP	

24 Connection module (card cage) FCA2006-A1

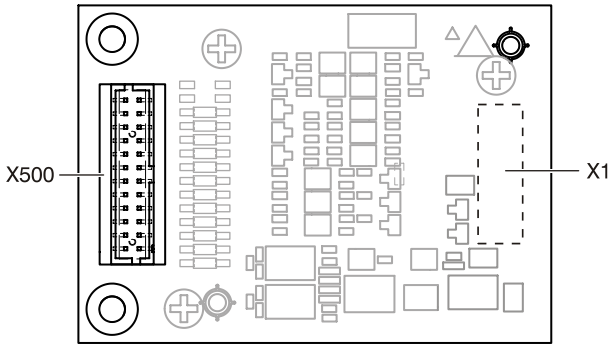


24.1 Description

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 the fire control panels FC2030 and FC2060 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
- Earth fault monitoring

24.2 Views



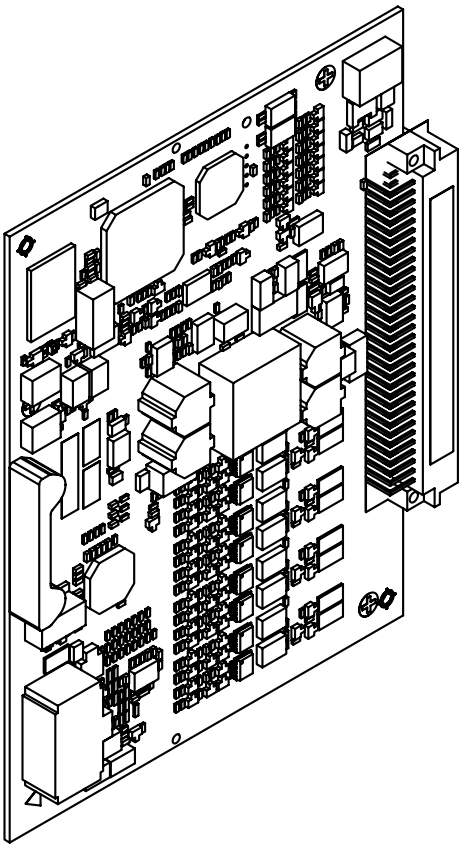
PCB view of FCA2006-A1 connection module

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

24.3 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

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



25.1 Description

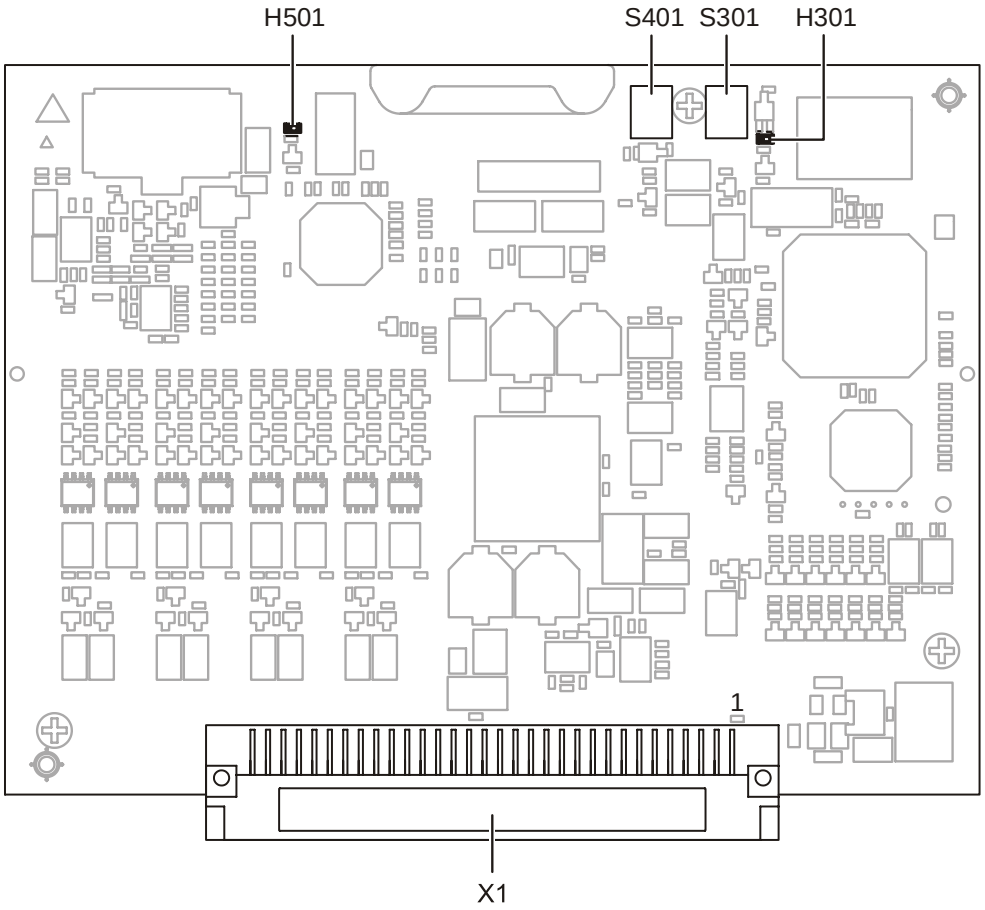
The line card (FDnet/C-NET) FCL2001-A1 is a line card in addition to the integrated line cards of the FS20 fire control panels. It is inserted in the fire control panels with the card cage (5 slots) FCA2008-A1. The line card (FDnet/C-NET) has an integrated line driver that can be used for connecting up to four loops and 252 FDnet devices. The maximum possible number of addresses per loop is 126.

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 FC2020with a loop extension (FDnet).

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

- Connection of four FDnet 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 FDnet lines

25.2 Views



PCB view of line card (FDnet/C-NET) FCL2001-A1

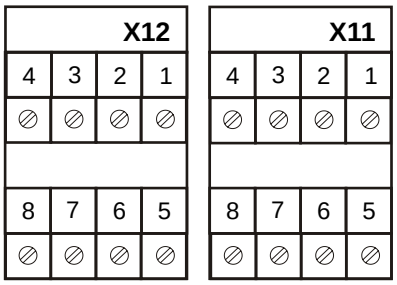
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication element	H301	Status of module bus driver
Indication element	H501	Status of line driver
Button	S301	Reset for module bus driver
Button	S401	Reset for line driver

25.3 Pin assignments

25.3.1 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 connectors in the card cage.

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12



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

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

25.4 Indicators

LED	Color	Function	Condition	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 FDnet module 2 (clock)

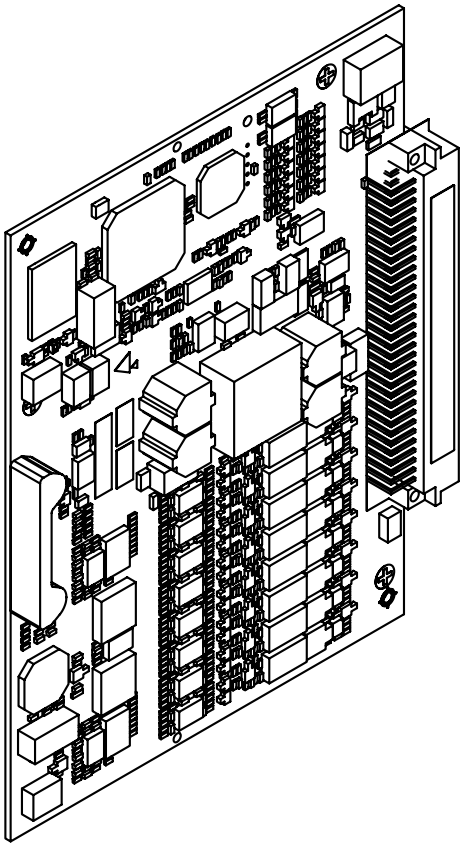
25.5 Adjustment elements

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

25.6 Technical data

Supply input	Voltage	DC 20…30 V (Vsys)
	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	FDnet
	Cable types	All types (recommended: twisted); for detailed specifications see document 008843
	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 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VDS QA Standards CE conformity mark LPCP	

26 Line card (collective) FCL2002-A1



26.1 Description

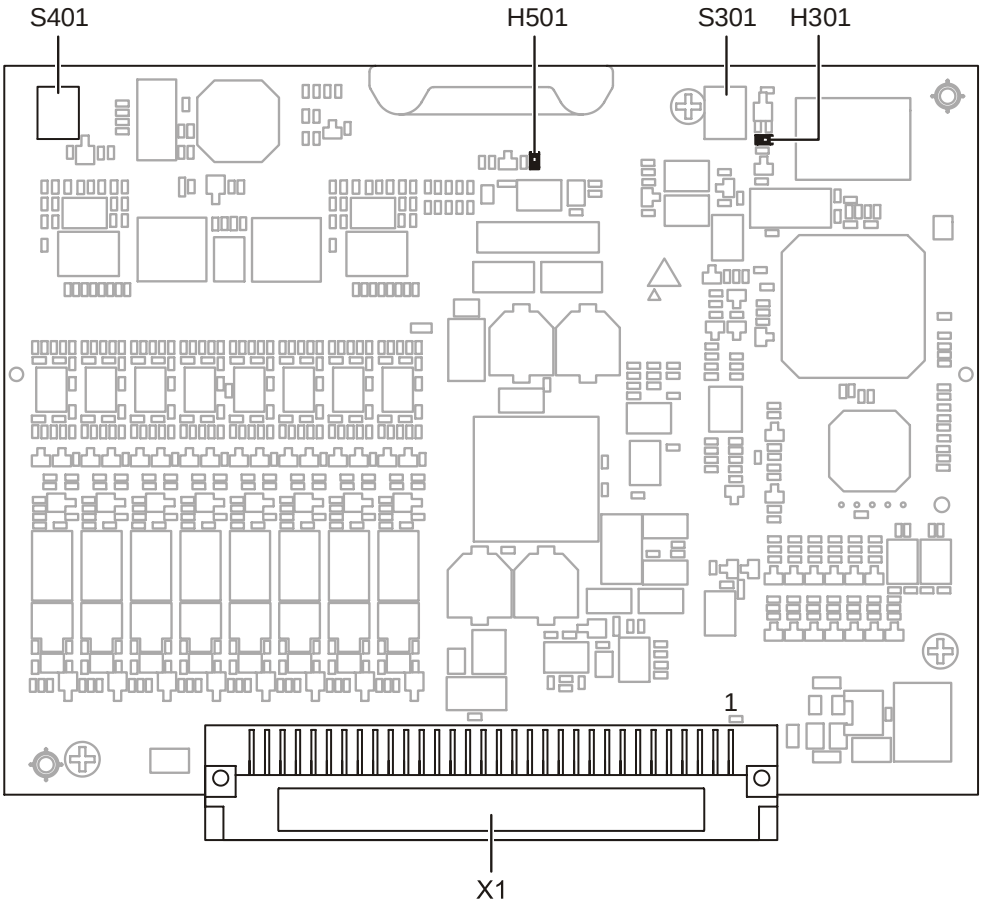
The line card (collective) FCL2002-A1 is a modernization card which can be used in the card cages in the FC2030 and FC2060 fire control panels. The line card (collective) has an integrated line driver that can be used for connecting up to eight stubs.

The line card consists of a control part and a line driver part that is electrically isolated from it.

The line card (collective) has the following features:

- Integrated line card for connecting eight stubs
- Electrical isolation of collective stubs
- Supported dialects -MS7, MS9, MS24, Sinteso multiprotocol, DS11 / SynoLINE600 / SIGMACON

26.2 Views



PCB view of line card (collective) FCL2002-A1

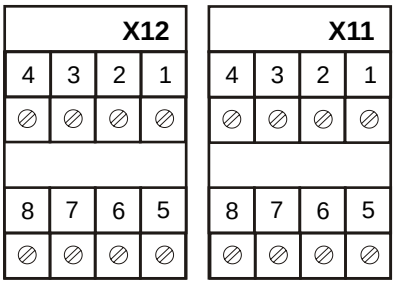
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication element	H301	Status of module bus driver
Indication element	H501	Status of line driver
Button	S301	Reset for module bus driver
Button	S401	Reset for line driver

26.3 Pin assignments

26.3.1 Connection terminals of line card (collective) in card cage

The line card (collective) FCL2002-A1 determines the PIN assignment of the four connectors in the card cage.

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12



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

Connector	Pin	Signal	Connection	Stub
X11	1	IO_1	Stub_1+	Stub 1
	2	IO_2	Stub _1-	
	3	IO_3	Stub _2+	Stub 2
	4	IO_4	Stub _2-	
X12	1	IO_5	Stub _3+	Stub 3
	2	IO_6	Stub _3-	
	3	IO_7	Stub _4+	Stub 4
	4	IO_8	Stub _4-	
X11	5	IO_9	Stub _5+	Stub 5
	6	IO_10	Stub _5-	
	7	IO_11	Stub _6+	Stub 6
	8	IO_12	Stub _6-	
X12	5	IO_13	Stub _7+	Stub 7
	6	IO_14	Stub _7-	
	7	IO_15	Stub _8+	Stub 8
	8	IO_16	Stub _8-	

Admissible cable cross-section: 0.2…1.5 mm²

26.4 Indicators

LED	Color	Function	Condition	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
H501	Yellow	Signal of line driver	Off	Normal condition
			1 x flashing (every 2 s)	Degraded mode

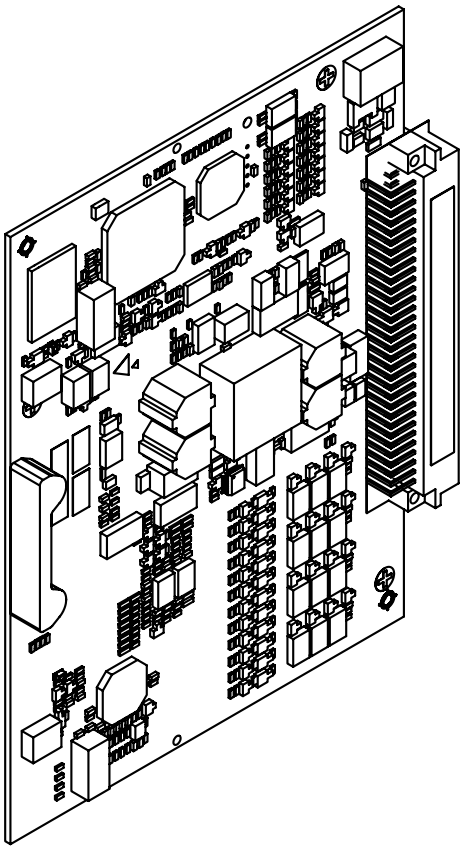
26.5 Adjustment elements

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

26.6 Technical data

Supply input	Voltage	DC 20…30 V (Vsys)
	Current	Max. 0.6 A
Detector line	Output voltage	Max. DC 30 V
	Number of integrated line cards	1
	Output current	Max. 0.6 A
	Plug-type connection for card cage	
	Connectable lines	8 stubs
	Protocol	Collective
	Cable types	All types (recommended: twisted); for detailed specifications see document 008843
	Monitored for	● Ground fault ● Short-circuit ● Open line
	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. +50 °C
	Storage temperature	Min. -20 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VDS QA Standards CE conformity mark LPCP	

27 Line card (MS9i) FCL2003-A1



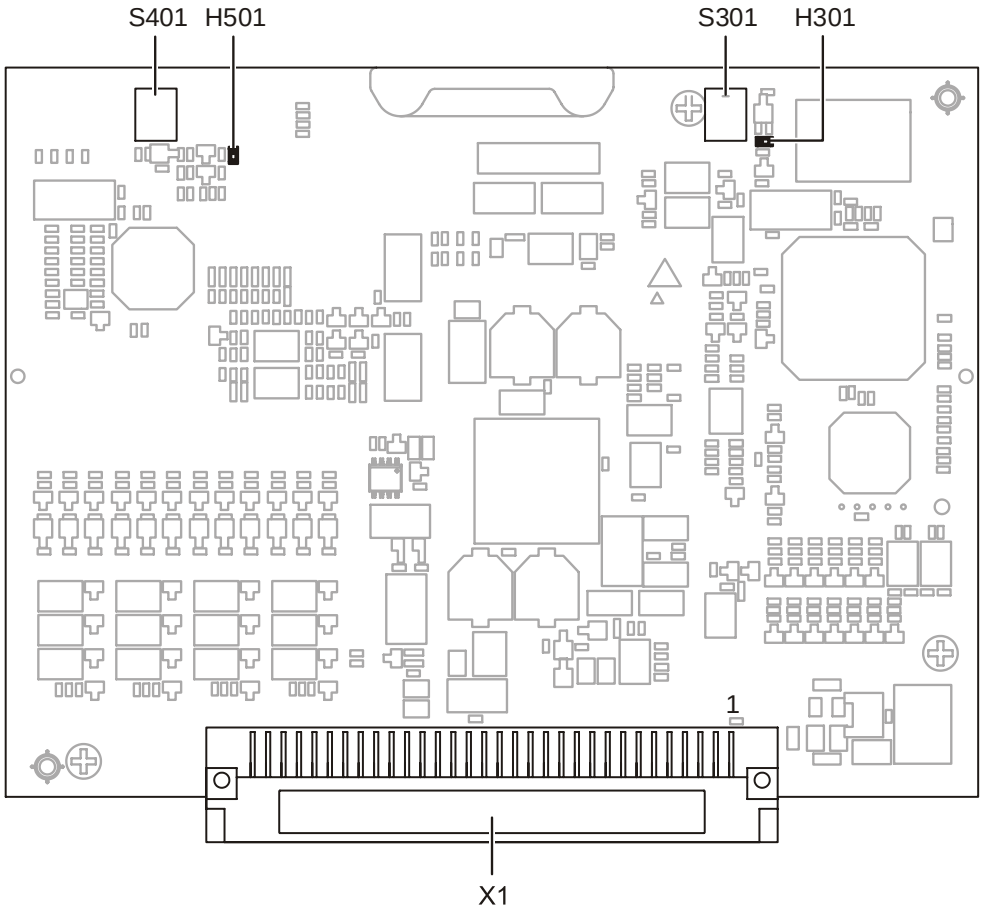
27.1 Description

The line card (MS9i) FCL2003-A1 is a modernization card which can be used in the card cages in the FC2030 and FC2060 fire control panels. The line card (MS9i) has an integrated line driver that can be used for connecting up to two loops and max. 100 devices. The line card consists of a control part and a line driver that is electrically isolated from the control part.

The line card (MS9i) has the following features:

- Integrated line card for the connection of two MS9i loops or two stubs (mixed variants are possible)
- Maximum 100 device addresses
- Electrical isolation of the MS9i detector lines

27.2 Views



PCB view of line card MS9i FCL2003-A1

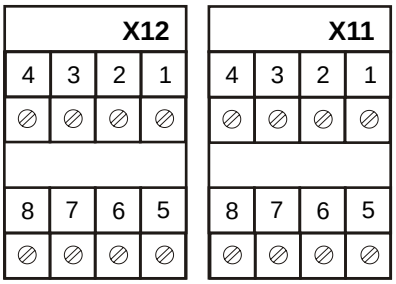
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication element	H301	Status of module bus driver
Indication element	H501	Status of line driver
Button	S301	Reset for module bus driver
Button	S401	Reset for line driver

27.3 Pin assignments

27.3.1 Connection terminals of line card (MS9i) in card cage

The line card (MS9i) FCL2003-A1 determines the PIN assignment of the four connectors in the card cage.

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12



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

Connector	Pin	Signal	Connection	Loop / signal	Stub / connection
X11	1	IO_1	+ 27.5 V		Connection for MS9i devices
	2	IO_2	GND		
	3	IO_3			Not used
	4	IO_4			
X12	1	IO_5			Not used
	2	IO_6			
	3	IO_7			Not used
	4	IO_8			
X11	5	IO_9	Loop1_1+	Loop 1	Stub 1
	6	IO_10	Loop1_1-		
	7	IO_11	Loop1_2+		Not used
	8	IO_12	Loop1_2-		
X12	5	IO_13	Loop2_1+	Loop 2	Stub 2
	6	IO_14	Loop2_1-		
	7	IO_15	Loop2_2+		Not used
	8	IO_16	Loop2_2-		

Admissible cable cross-section: 0.2…1.5 mm²

27.4 Indicators

LED	Color	Function	Condition	Meaning
H301	Yellow	Signal from HCS12	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
H501	Yellow	Signal from MSP430	Off	Normal condition
			1 x flashing (every 2 s)	Degraded mode

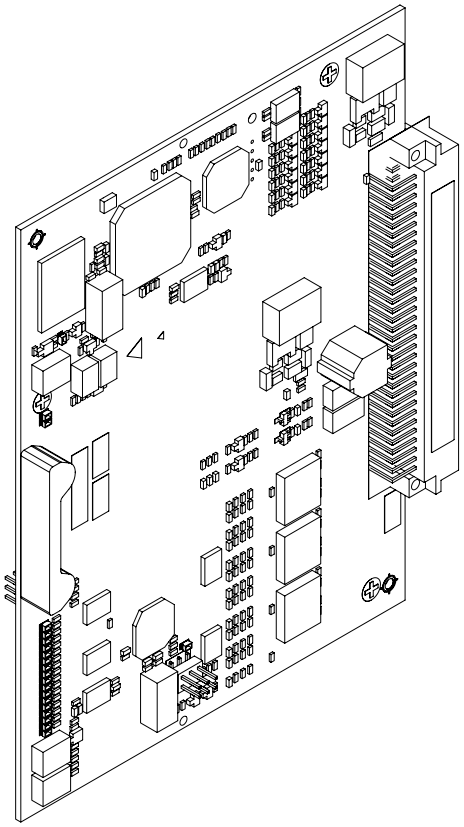
27.5 Adjustment elements

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

27.6 Technical data

Supply input	Voltage	DC 20…30 V (Vsys)
	Current	Max. 0.75 A
Detector line	Output voltage	Max. DC 24.9 V
	Number of integrated line cards	1
	Output current (all outputs together)	Max. 0.5 A
	Plug-type connection for card cage	
	Number of devices with 2 loops	Max. 100
	Number of devices with 1 loop and 1 stub	Max. 82
	Number of devices with 2 stubs	Max. 64
	Connectable lines	2 loops or 2 stubs or 1 loop and 1 stub
	Protocol	MS9i
	Cable types	All types (recommended: twisted); for detailed specifications see document 008843
	Monitored for	• Ground fault • Short-circuit • Open line
	Design	• Short-circuit-proof • Overvoltage protection (on card cage)
	Supply output for MS9i devices	200 mA
Mechanical data	Dimensions (L x W x H)	160 x 120 x 15 mm
	Weight	117 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 6006-2)
Standards and approvals	VDS	
	QA Standards	
	CE conformity mark	
	LPCP	

28 I/O card (programmable) FCI2008-A1



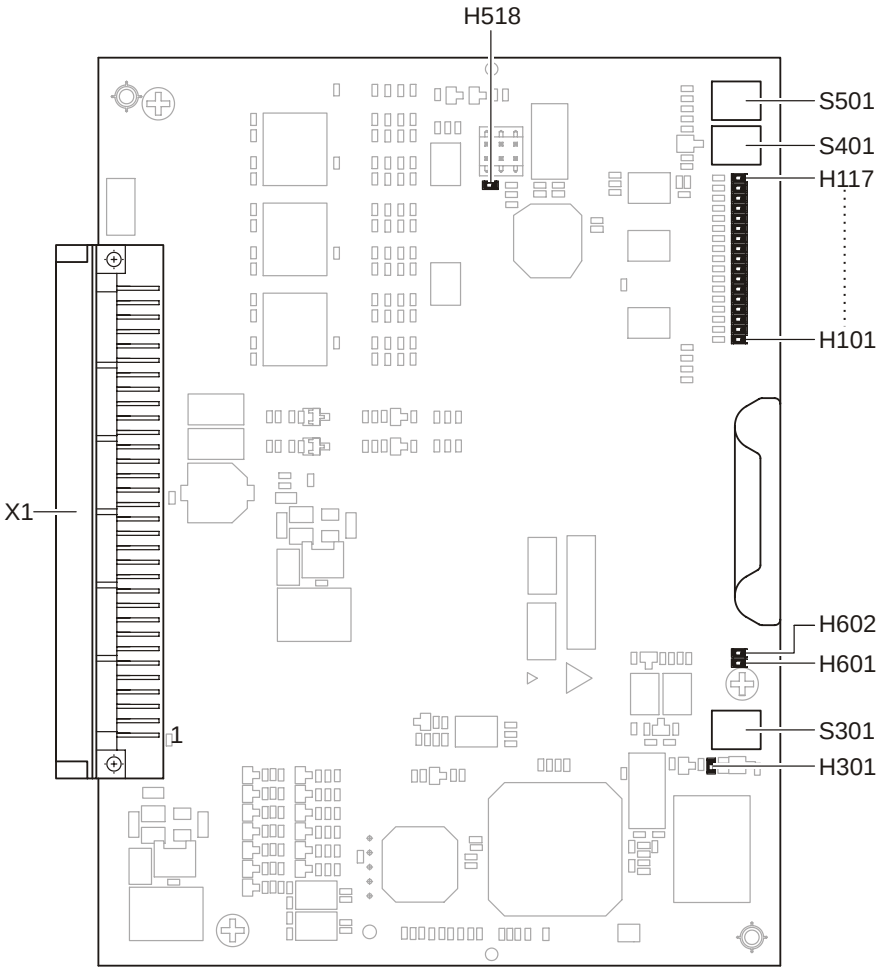
28.1 Description

The I/O card (programmable) FCI2008-A1 has programmable inputs/outputs for extending the inputs/outputs integrated on the periphery board with the FC2030 and FC2060. In addition, the I/O card is used in the FC2080 and in the FG2020-D1 for inputs/outputs.

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

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

28.2 Views



Printed circuit board view I/O card FCI2008-A1

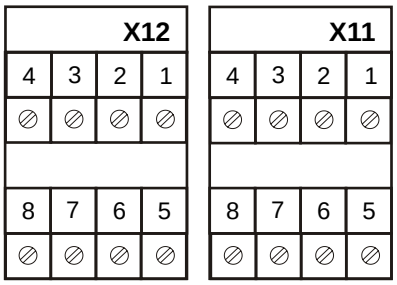
Element	Des.	Function
Connector	X1	Connection to the card cage
Indication elements	H101…H112	Indication I/O 1…12
Indication elements	H113…H116	Status display
Indication element	H117	Degraded mode indicator
Indication element	H301	Status of module bus driver
Indication element	H518	Signal block
Indication 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

28.3 Pin assignments

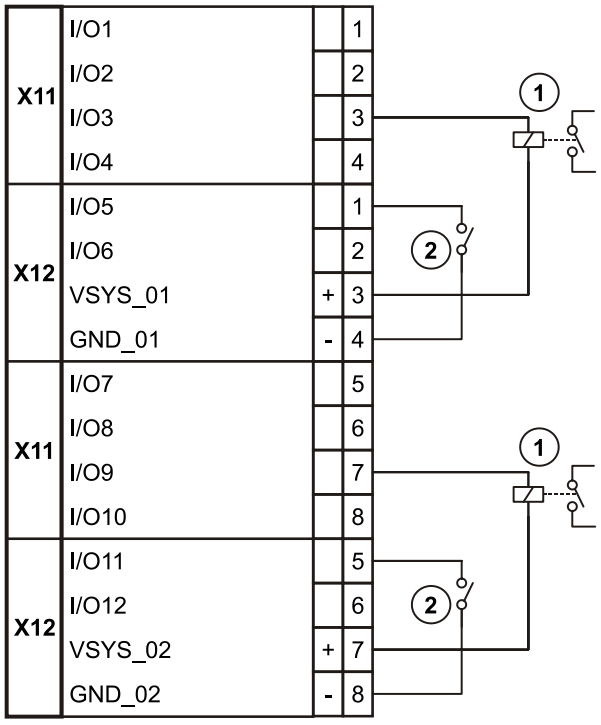
28.3.1 Connection terminals for the I/O card (programmable) in the card cage

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

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12



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



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

Connector	Pin	Designation	Description
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

28.4 Indicators

Inputs/outputs

LED	Color	Function	Condition	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

LED	Color	Function	Condition	Description	Direction
H112	Green	IO_12	Off	High input (default)	INPUT (default)
			On	Low input	OUTPUT

Status and error displays

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

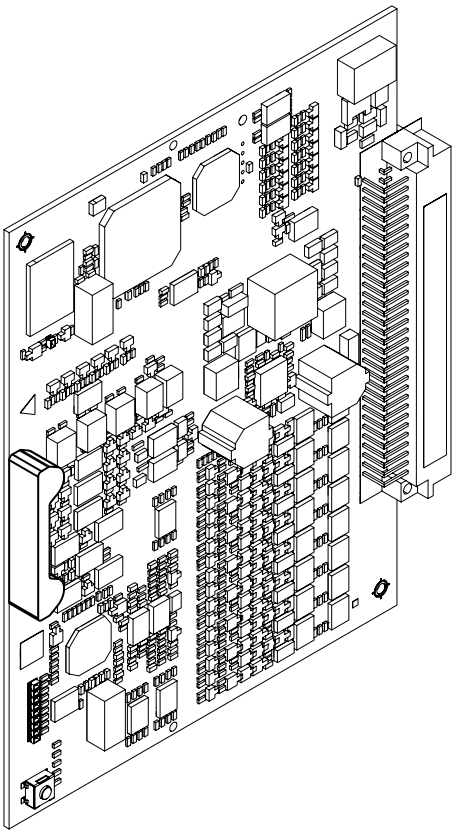
28.5 Adjustment elements

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

28.6 Technical data

General	Number of freely programmable I/Os	12
	Ground fault detection	Via PMI & mainboard
Supply	Operating voltage	Vsys 20…30 V
	Operating current	Max. 2 A
Supply outputs 1 and 2	Designation	'VSYS_01', 'VSYS_02'; 'GND'
	Voltage	DC 21…28.6 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 21…28.6 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)
Standards and approvals	VDS QA Standards CE conformity mark LPCP	

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



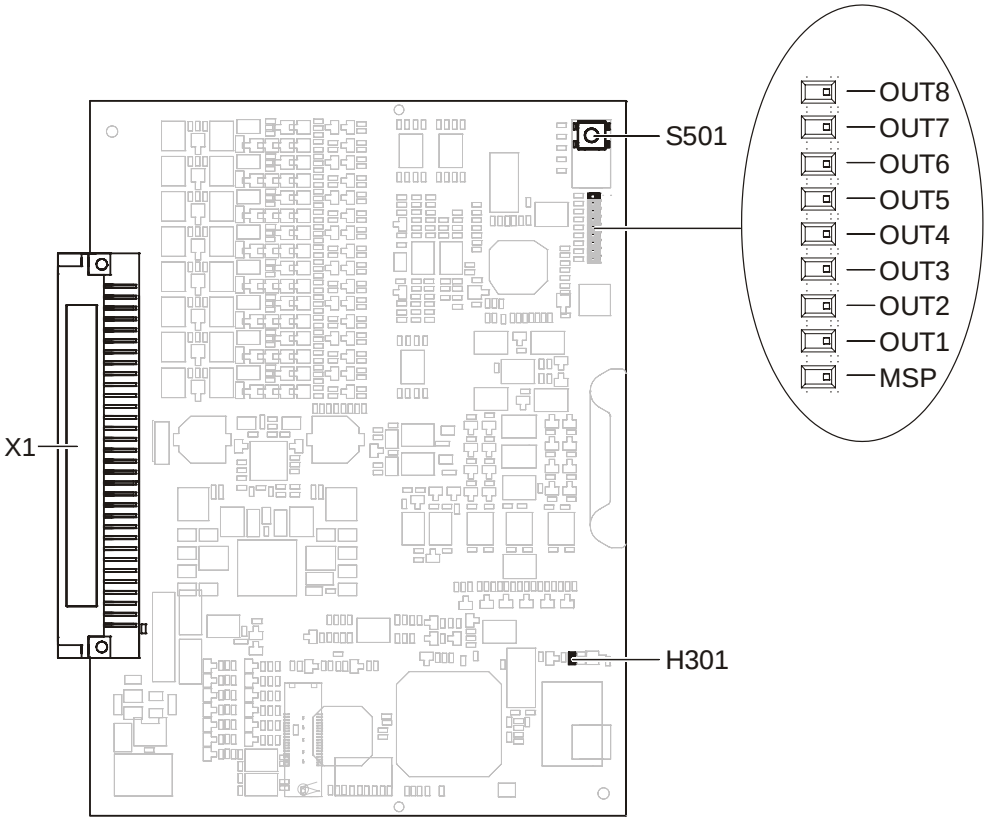
29.1 Description

The I/O card (horn/monitored) FCI2009-A1 provides the monitored outputs for alarm and fault transmission for the fire control panel. The I/O card (horn/monitored) is a module bus card for installation in card cages of the FC2030, FC2060, FC2080, and FG2020-D1.

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

29.2 Views



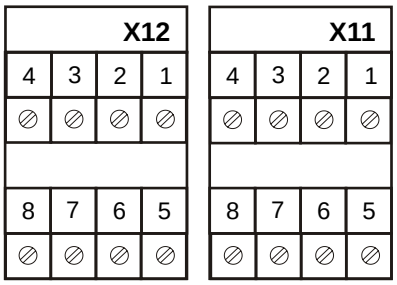
Element	Designation	Function
Connector	X1	Connector for card cage
Button	S501	Calibration
LED	OUT8	Display of monitored output 8 (FireOutput8)
	OUT7	Display of monitored output 7 (FireOutput7)
	OUT6	Display of monitored output 6 (FireOutput6)
	OUT5	Display of monitored output 5 (FireOutput5)
	OUT4	Display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

29.3 Pin assignments

29.3.1 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 connector for the module bus cards in the card cage.

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12



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

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-	

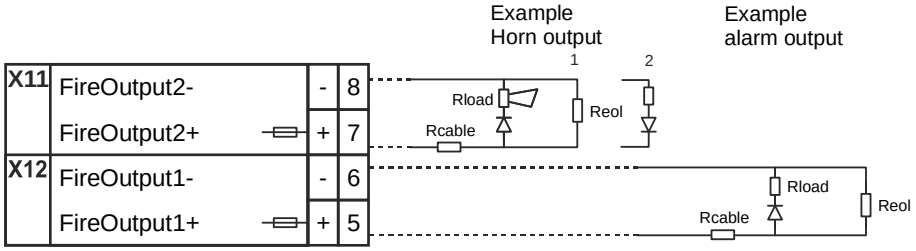
Admissible cable cross-section: 0.14…1.5 mm^2

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.

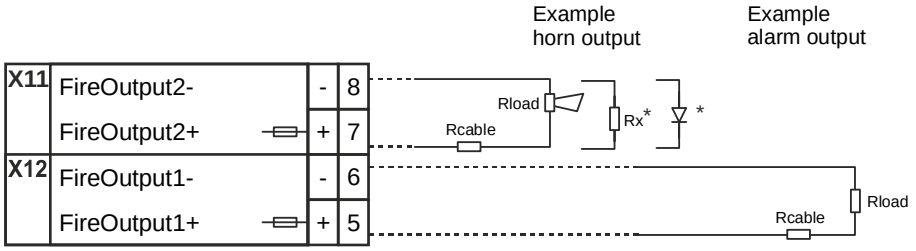
Switching variants for monitored alarm and horn outputs with decoupled load (EN 54)



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)



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 008843.

29.4 Indicators

Standard LED indicators

LED	Color	Function	Condition	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	

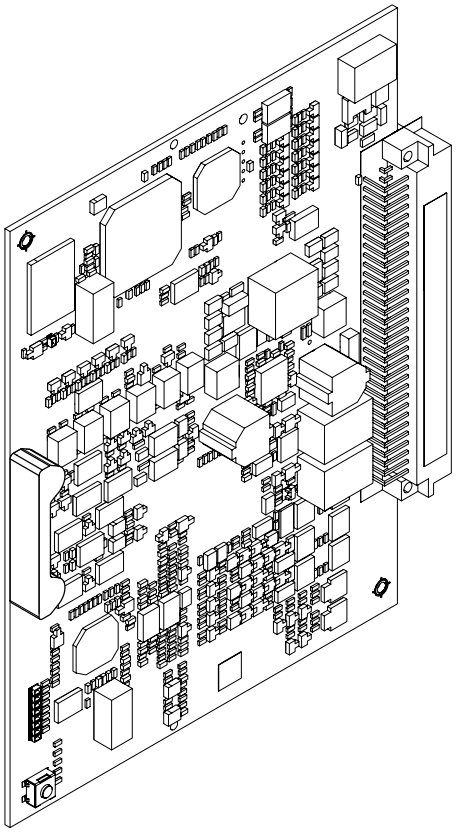
29.5 Adjustment elements

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

29.6 Technical data

General	Ground fault detection	- For FC2060 via PMI & mainboard FCM2027 - For FC2080 via communication card FCC2005-A1
Supply	Operating voltage	Vsys 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 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VdS QA Standards CE conformity mark LPCP	

30 I/O card (RT) FCI2007-A1



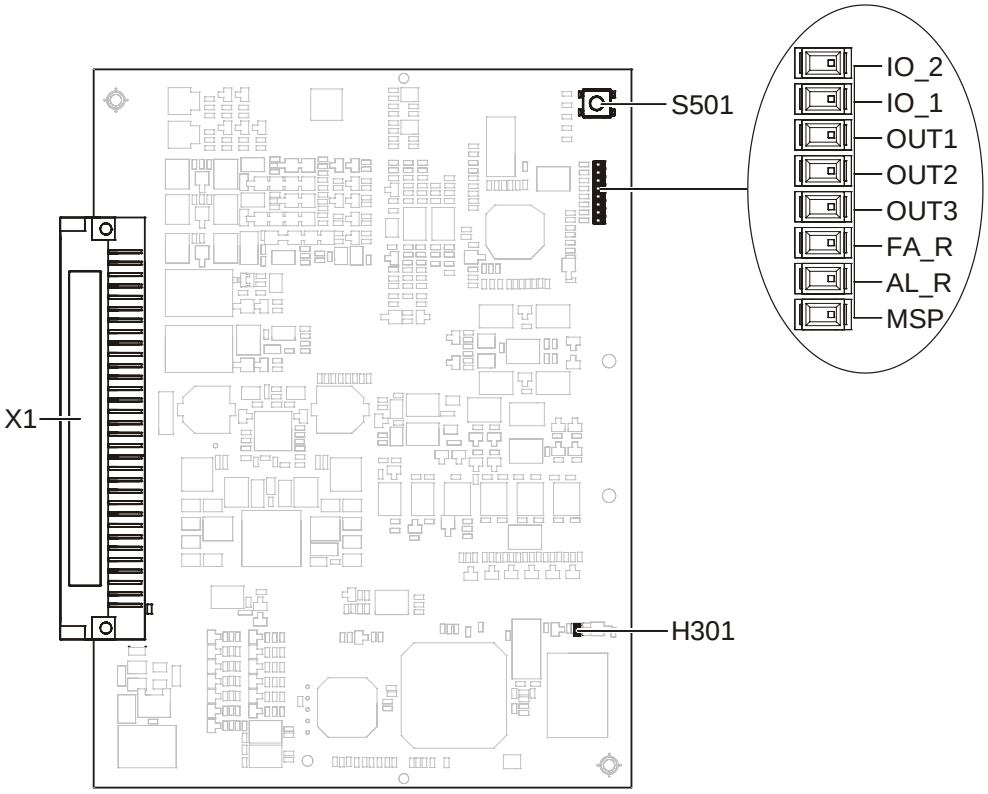
30.1 Description

The I/O card (FUE) FCI2007-A1 provides the remote transmission connections and the horn outputs. The I/O card (remote transmission) can be used in fire control panels with card cages FC2030, FC2060, FC2080 and in the FG2020.

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

30.2 Views



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

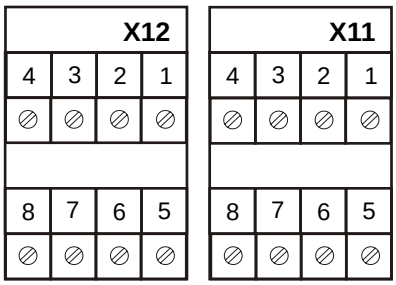
Element	Designation	Function
Connector	X1	Connector for card cage
Button	S501	Calibration
LEDs	IO_2	Display of programmable I/O 2
	IO_1	Display of programmable I/O 1
	OUT1	Display of monitored output 1 (FireOutput 1)
	OUT2	Display of monitored output 2 (FireOutput 2)
	OUT3	Display monitored output 3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

30.3 Pin assignments

30.3.1 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 connectors in the card cage.

External connections on the card cage as an example the module bus card 1 on connectors X11 and X12

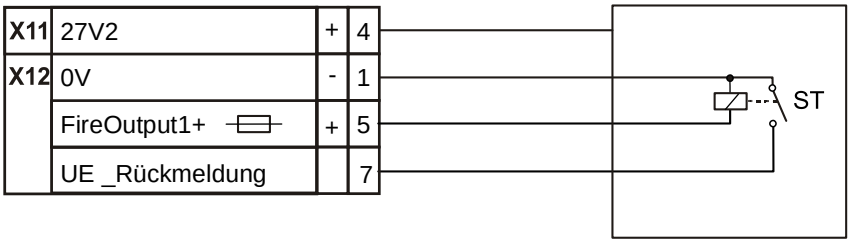


- The external connections of module bus card 2 are on plugs X21 and X22
- The external connections of module bus card 3 are on plugs X31 and X32
- The external connections of module bus card 4 are on plugs X41 and X42
- The external connections of module bus card 5 are on plugs X51 and X52

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 (normally closed)
	4	27V2	Supply output (+Vsys)
X12	1	0V	Supply output (–Vsys)
	2	FAU_NO	Fault relay normally open contact (normally open)
	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	Input/output programmable/RE response in accordance with VdS
	8	GPIO2	Input/output programmable

Admissible cable cross-section: 0.14...1.5 mm²

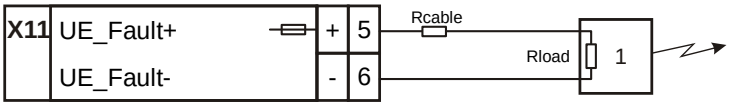
Switching for RE response in accordance with VdS



Switching for RE response in accordance with VdS

ST	Fault contact of the transmission device

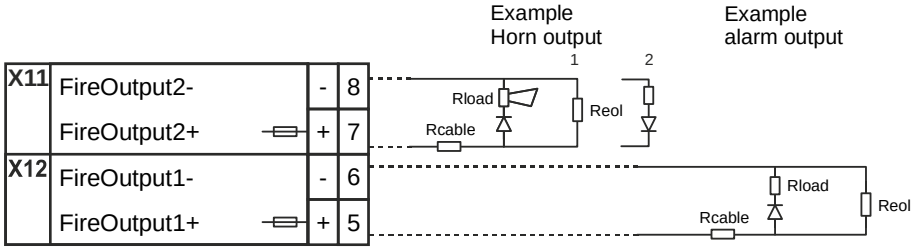
Switching for monitored remote transmission



Switching for monitored remote transmission

Rload	Load resistance
Rcable	Line resistance
1	Remote transmission

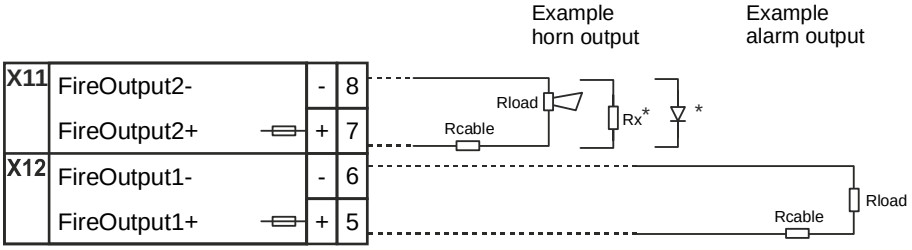
Switching variants for monitored alarm and horn outputs with decoupled load (EN 54)



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)



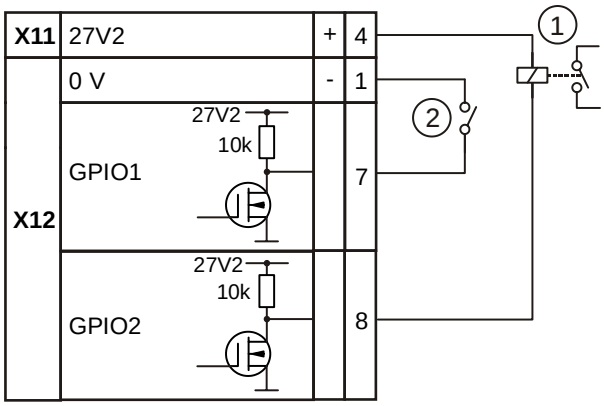
Switching examples for monitored alarm and horn outputs with load resistance monitoring (VdS)

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 008843.

Switching for configurable inputs/outputs

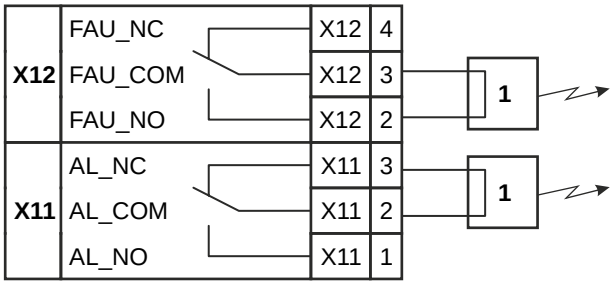


Switching for relays

1 Configured as output

2 Configured as input

Switching for relays RT Alarm and RT Fault



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 alarm) = contact 2/3 closed

30.4 Indicators

Standard LED indicators

LED	Color	Function	Condition	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

LED	Color	Function	Condition	Meaning
OUT1	Yellow	Status 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	---

30.5 Adjustment elements

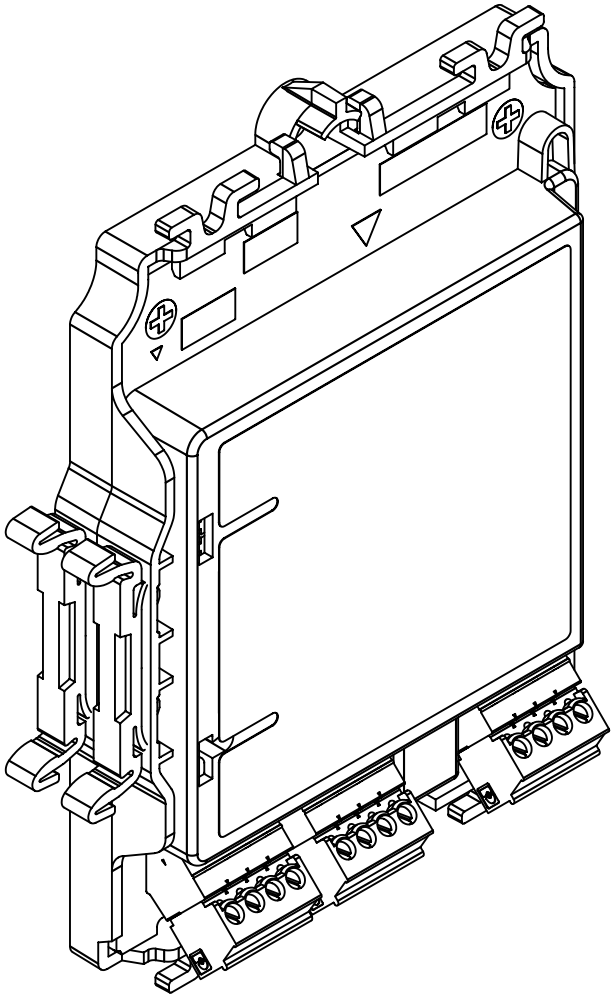
Button	Meaning	Function
CALIB, S501	Calibration	Starts the calibration of the monitored outputs

30.6 Technical data

General	Ground fault detection	● For FC2080 and FG2020 via communication card ● For FC2030 and FG2060 via PMI & mainboard
Supply	Operating voltage	Vsys 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 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VdS QA Standards CE conformity mark LPCP	

31 Sounder module FCA2005-A1



31.1 Description

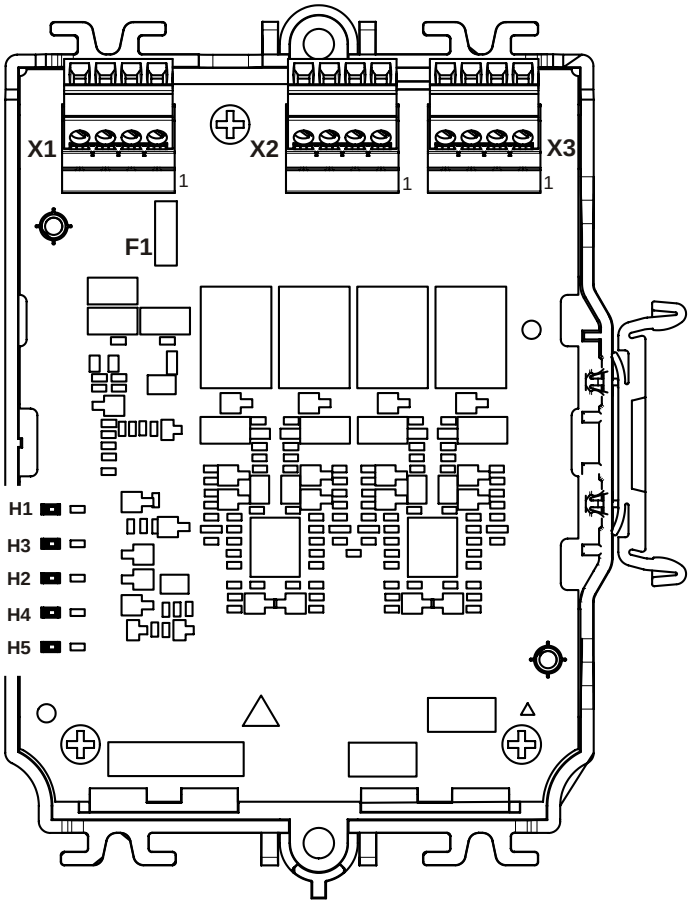
The sounder module FCA2005-A1 makes it possible to assign a monitored horn output of the periphery board FCI2002-A1 or FCI2004-A1 to up to four horn outputs. Each of these four lines has the same features as the sounder output of the periphery board and may control and monitor alarm devices. Supply is ensured via the supply output of the periphery board.

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

It can be fitted as follows:

- Engaged on a 35 mm DIN rail
- Screwed onto an even surface (mounting plate)
- Clamped into a FDCH291 / FDCH292 housing. This housing can also be screwed onto an even surface (mounting plate).

31.2 Views



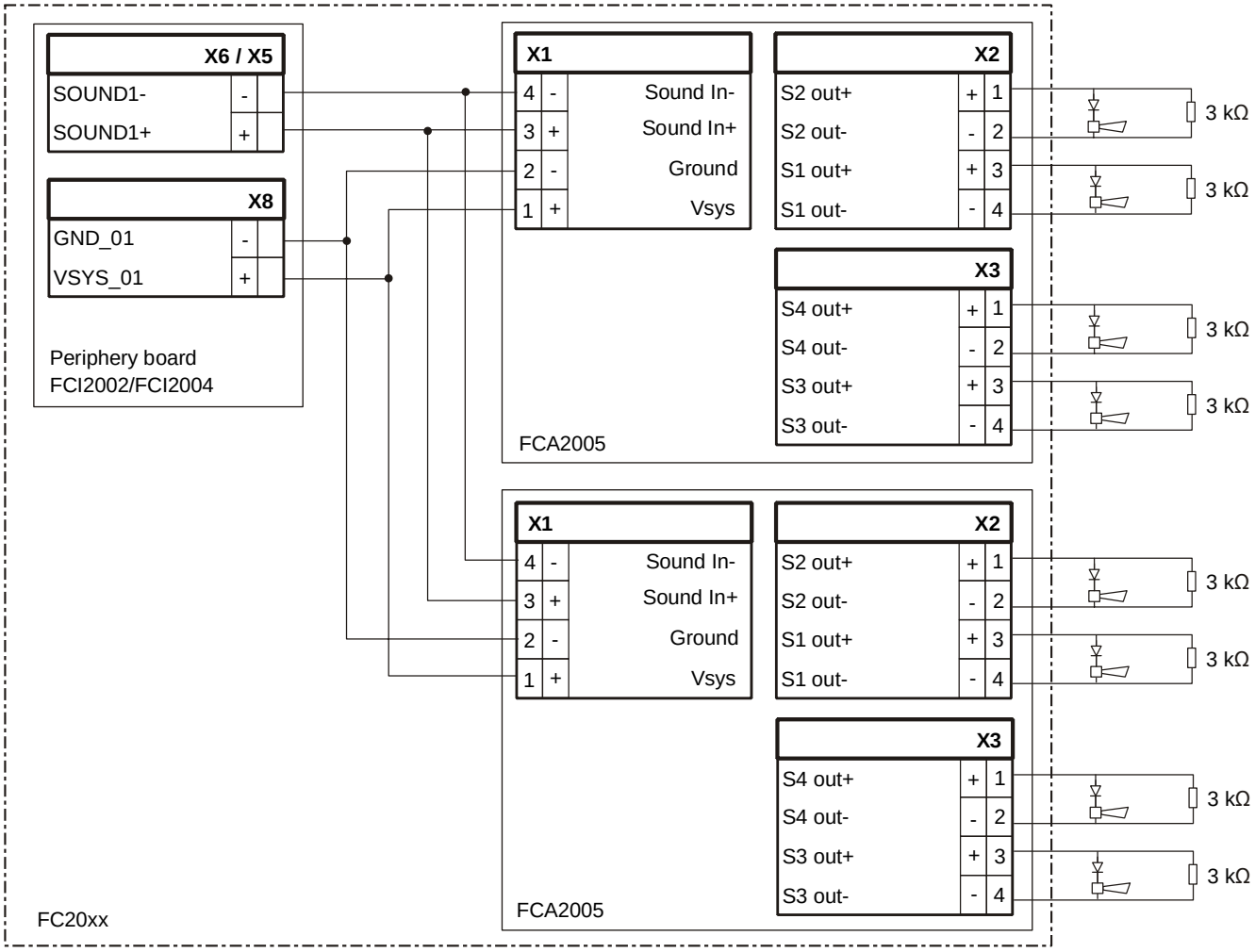
Printed circuit board view of sounder module FCA2005-A1

Element	Des.	Function
Plugs and terminals	X1	Supply input and input sounder from the periphery board
	X2	Sounder 1 and 2 outputs
	X3	Sounder 3 and 4 outputs
LEDs	H1	Supply control
	H2	Sounder 2 fault
	H3	Sounder 1 fault
	H4	Sounder 3 fault
	H5	Sounder 4 fault
Fuses	F1	Fuse supply input (2 A/T); Schurter OMT 125

31.3 Pin assignments

31.3.1 Cascading of two sounder modules

A maximum of two sounder modules may be cascaded.

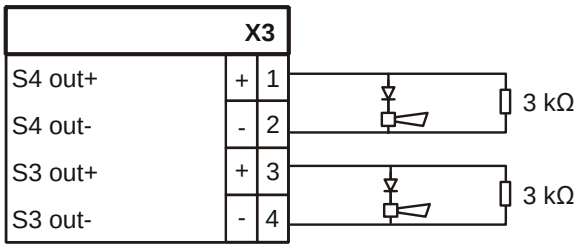


Cascading of two sounder modules FCA2005-A1

31.3.2 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 (-)

Admissible cable cross-section: 0.08…1.5 mm²

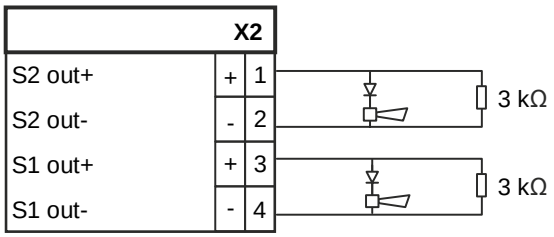


The terminating resistor of 3 kΩ also has to be connected even when the output is not in use.

31.3.3 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 (-)

Admissible cable cross-section: 0.08…1.5 mm²



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

31.3.4 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-

Admissible cable cross-section: 0.08…1.5 mm²

	X1	
Vsys		1
Ground		2
Sound In+	+	3
Sound In-	-	4

31.4 Indicators

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

31.5 Technical data

Supply input	Designation	'Vsys', 'Ground'
	Operating voltage	DC 21…28.6 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 21…28.6 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
Connection terminals	All connectors:	
	Design	Screw terminals
	Admissible cable cross-section	0.8 … 1.5 mm²
Mechanical data	Dimensions (L x W x H)	132 x 90 x 24 mm
	Weight	120 g

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

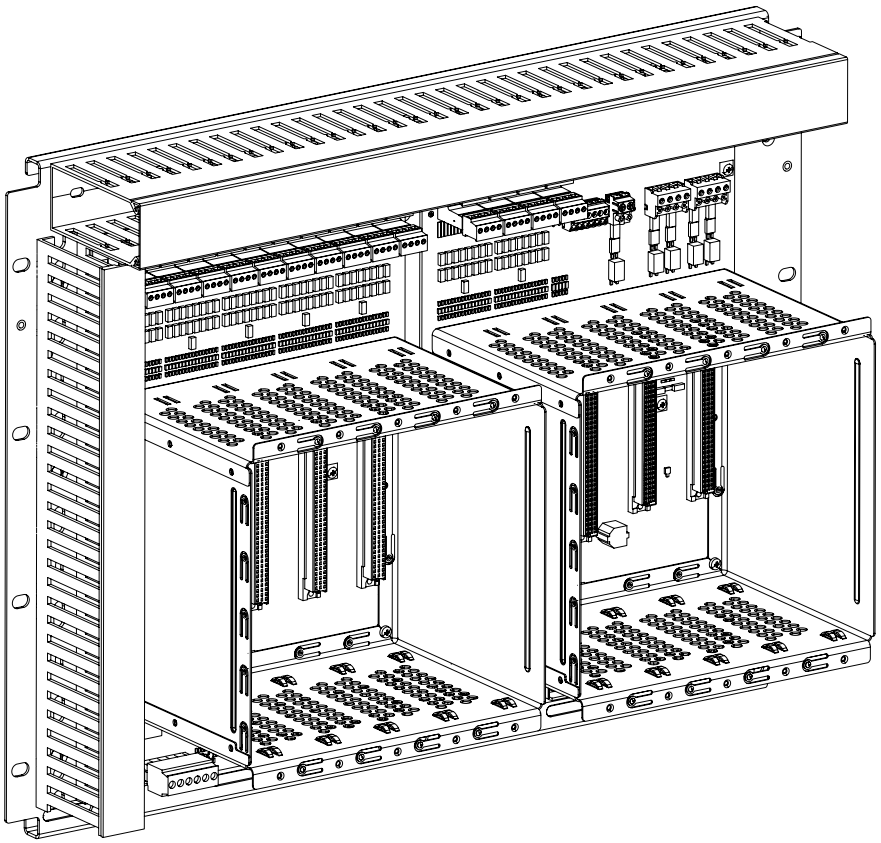
[2] The operating current is max. 2 A (fuse protection 2AT) although the max. output current per sounder is 1 A.

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

If the sounder module FCA2005 is fed via the peripheral board (output VSYS), the availability of a maximum current of 1 A (1 A fuse) on this output must be observed. The maximum operating current $I_{total\ max}$ is only 1 A in this case.

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.

32 Processor unit (19", FC2080) FCC2002-A1



32.1 Description

The processor unit (19", FC2080) FCC2002-A1 is a basic component of the fire control panel FC2080, with one mounted card cage (CPU) FCC2003-A1 and one mounted card cage (5 slots) FCA2008-A1. The plug-in cards that are necessary for the operation of the FC2080 are installed in the card cage (CPU) FCC2003-A1. In addition, 2 plug-in units for module bus cards are also available.

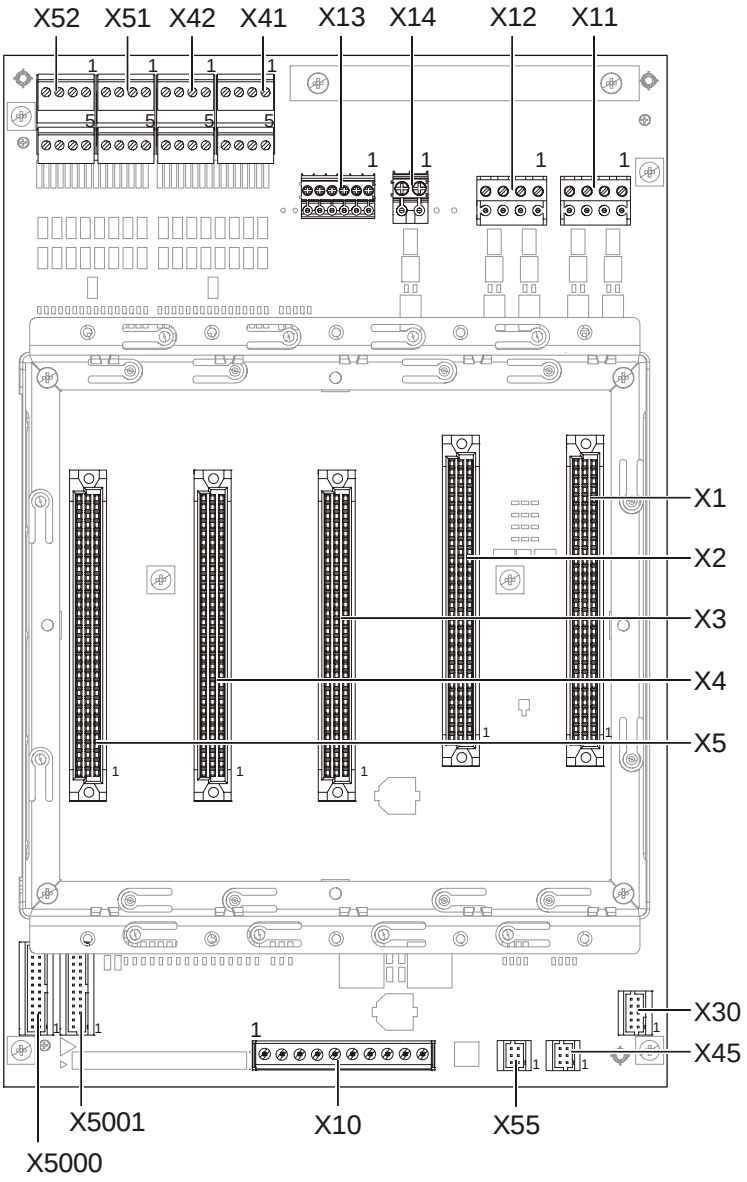
In the interests of overview clarity, only the card cage (CPU) FCC2003-A1 is described in the following.

The card cage (CPU) has the following features:

- Five slots for:
  - CPU card (FC2080) FCC2004-A1 (factory-supplied)
  - Second CPU card (FC2080) FCC2004-A1 for redundant CPU (optional)
  - Communication card (FC2080) FCC2005-A1 (factory-supplied)
  - Two slots for module bus cards
- Hotplug System (plug-in cards can be changed during operation)
- Automatic recognition and addressing of the inserted module bus cards
- Terminal strips for external connections of the module bus cards
- Terminal strips for:
  - 1 x serial RS232 interface
  - 1 x serial RS485 interface
  - 2 x FCnet/SAFEDLINK interfaces

- Two peripheral data bus connections
- Connections for power supply
- Control and line part electrically isolated
- Shielding cover for unused slots
- Extensive EMC protection through enclosed metal housing

32.2 View of card cage (CPU) FCC2003-A1



PCB view of card cage (CPU) FCC2003-A1

Element	Des.	Function
Slots	X1	Connector strip for plugging in the first CPU card
	X2	Connector strip for plugging in the second CPU card (redundant CPU card)
	X3	Connector strip for plugging in the communication card
	X4	Connector strip for plugging the module bus card into slot 4
	X5	Connector strip for plugging the module bus card into slot 5
Connection terminals	X10	Connector terminal for system supply
	X11	'SDL1', connection terminal for network module (SAFEDLINK, CC) of the first CPU card
	X12	'SDL2', connection terminal for network module (SAFEDLINK, CC): ● Degraded mode module on the communication card with Single CPU operation ● Network module for second CPU card with Dual CPU operation
Connector	X13	'SER_OPT2', connection terminal for RS232 interface
	X14	SER_OPT1, connection terminal for RS485 interface
Connector Degraded mode	X45	'DegradeAT', connector strip for degraded mode indicator [AT] of module bus card on slot 4
	X55	'DegradeAT', connector strip for degraded mode indicator [AT] of module bus card on slot 5
Connection terminals Module bus cards	X41	Connection terminals 1 for the module bus card on slot 4
	X42	Connection terminals 2 for the module bus card on slot 4
	X51	Connection terminals 1 for the module bus card on slot 5
	X52	Connection terminals 2 for the module bus card on slot 5
Internal bus	X5000	'Module bus1', connector strip for module bus 1
	X5001	'Module bus2', connector strip for module bus 2
	X30	'PMI',connection between supply and operating terminal

32.3 Pin assignments

32.3.1 X11/X12 connection terminals for SDL1/SDL2

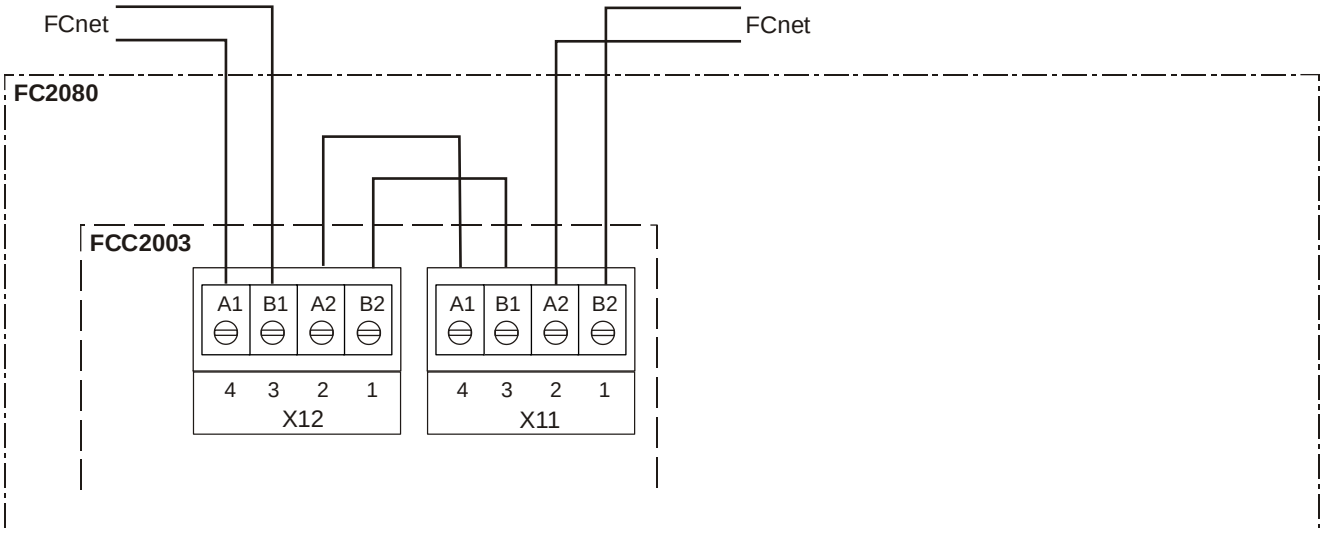
The FCnet is connected to the following connection terminals:

- X11 'SDL1'. FCnet connection for network module (SAFEDLINK, CC) of the CPU card (FC2080)
- X12 'SDL2' FCnet connection for network module (SAFEDLINK, CC) of the communication card (FC2080) or the redundant CPU card (FC2080)
- X3 FCnet connection for network module (SAFEDLINK) on connector X13 (main module) on the optional operating unit

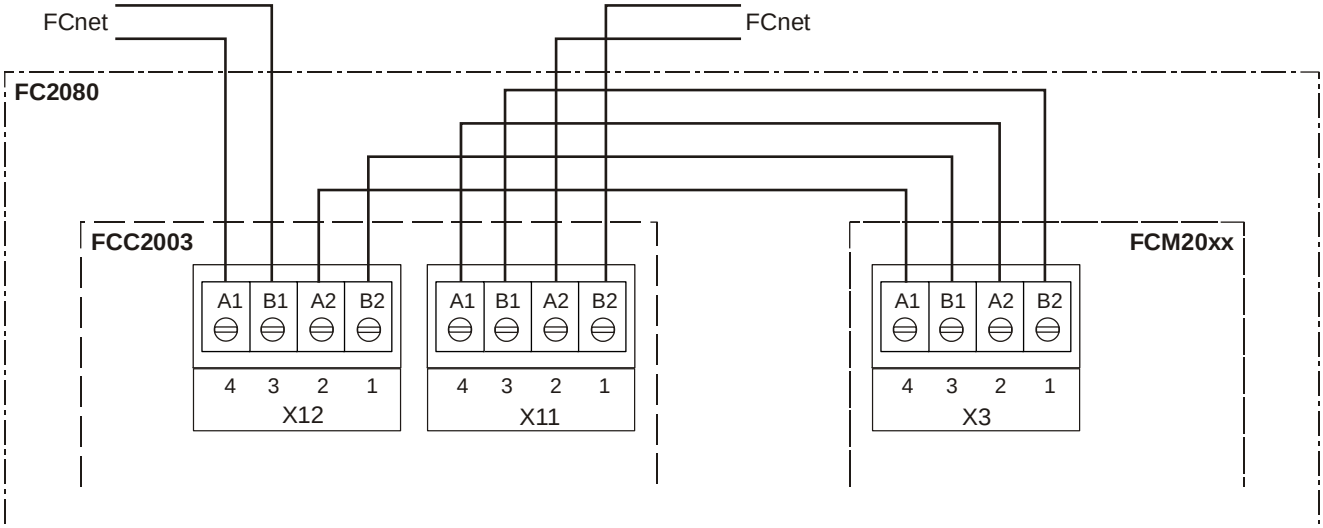
Pin	Designation	Description
4	A1	Line 1 (+)
3	B1	Line 1 (–)
2	A2	Line 2 (+)
1	B2	Line 2 (–)

Admissible cable cross-section: 0.2…2.5 mm²

The FCnet networking of the FC2080 or the FG2020 is always connected via two network modules irrespective of the number of CPU cards. The networking module on the communication card is used with a CPU card.



FCnet networking of FG2020 without operating unit



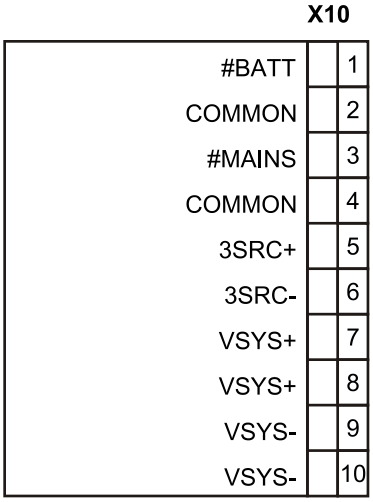
FCnet networking of FG2020 with optional operating unit

32.3.2 X10 connector terminal for supply

Pin	Designation	Description
1	#BATT	Battery signal monitoring (normally open)
2	COMMON	GND for # BATT (normally open)
3	#MAINS	Signal monitoring power supply system
4	COMMON	GND for # MAINS
5	3SRC+	3rd source (DC 7…30 V) [FR]
6	3SRC-	3rd source (0 V) [FR]
7	VSYS+	System supply (DC 24 V)
8	VSYS+	System supply (DC 24 V)
9	VSYS-	System supply (0 V)
10	VSYS-	System supply (0 V)

Admissible cable cross-section: 0.5…2.5 mm²

You will find details about signal monitoring and wiring diagrams in the product data of the power supply (150W).



32.3.3 X41 / X42 / X51 / X52 connection terminals for module bus cards

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

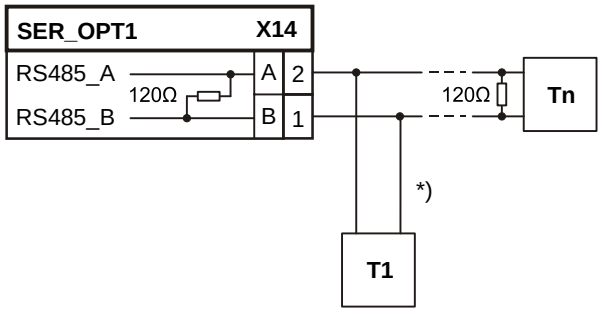
The assignment of the connector is:

- Connections of module bus card 4 are on connectors X41 and X42
- Connections of module bus card 5 are on connectors X51 and X52

32.3.4 X14 SER_OPT1, RS485 connection terminal

Pin	Designation	Description
2	A	RS485 line A
1	B	RS485 line B

Admissible cable cross-section: 0.2…1.5 mm²



T1 First participant

Tn Last participant

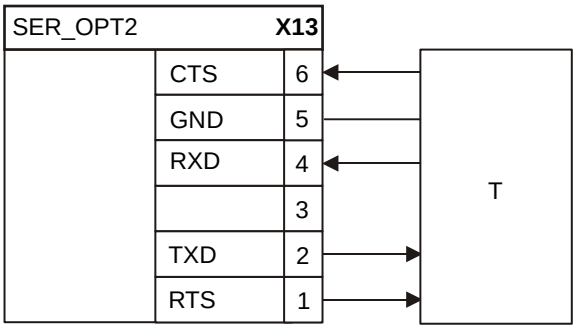
*) Stub lines must not exceed 20 m!

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

32.3.5 X13 SER_OPT2, RS232 connection terminal

Pin	Designation	Description
6	← CTS	Clear To Send
5	GND	Ground
4	← RXD	Received Data
3		
2	TXD →	Transmitted Data
1	RTS →	Ready To Send

Admissible cable cross-section: 0.2…1.5 mm²



T Participant with RS232 interface

32.4 Technical data

Plug-in units	Slots	Max. 5 cards ● 2 CPU cards ● 1 communication card ● 2 module bus cards I/O
Supply	Operating voltage	Vsys
	Operating current	Max. 8 A
	Permitted cable cross section (plug X10) screw terminals	0.5…2.5 mm²
Connections	Total current of all module bus cards	Max. 6.9 A
	I/O	Max. 2 A
	Permitted cable cross section (plug X41…X52) screw terminals	0.14…1.5 mm²
	Interfaces	2 x module bus cards, 1 x RS232, 1 x RS485, 2 x SAFEDLINK
Mechanical data	Dimensions (L x W x H)	296 x 190 x 140 mm
	Weight	960 g
	Shielding	Housing with cover: Steel sheet
Ambient conditions	Operating temperature	Min. -5 °C max. +40 °C
	Storage temperature	Min. -20 °C max. +60 °C
	Air humidity	Max. 93 % rel. air humidity (EN 60068-2)
Standards and approvals	VDS	
	QA Standards	
	CE conformity mark	
	LPCP	

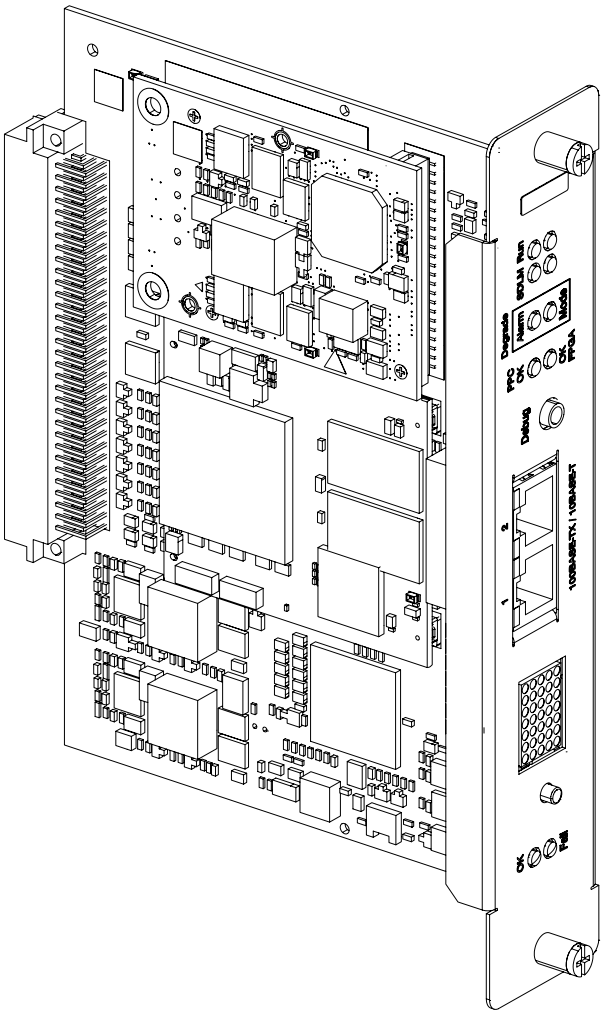
33 Card cage (CPU) FCC2003-A1

The FCC2003-A1 is an integral part of the processor unit (19", FC2080) FCC2002-A1, that can be ordered as a complete unit, and can not be ordered separately.

See also

View of card cage (CPU) FCC2003-A1 [→ 187]

34 CPU card (FC2080) FCC2004-A1



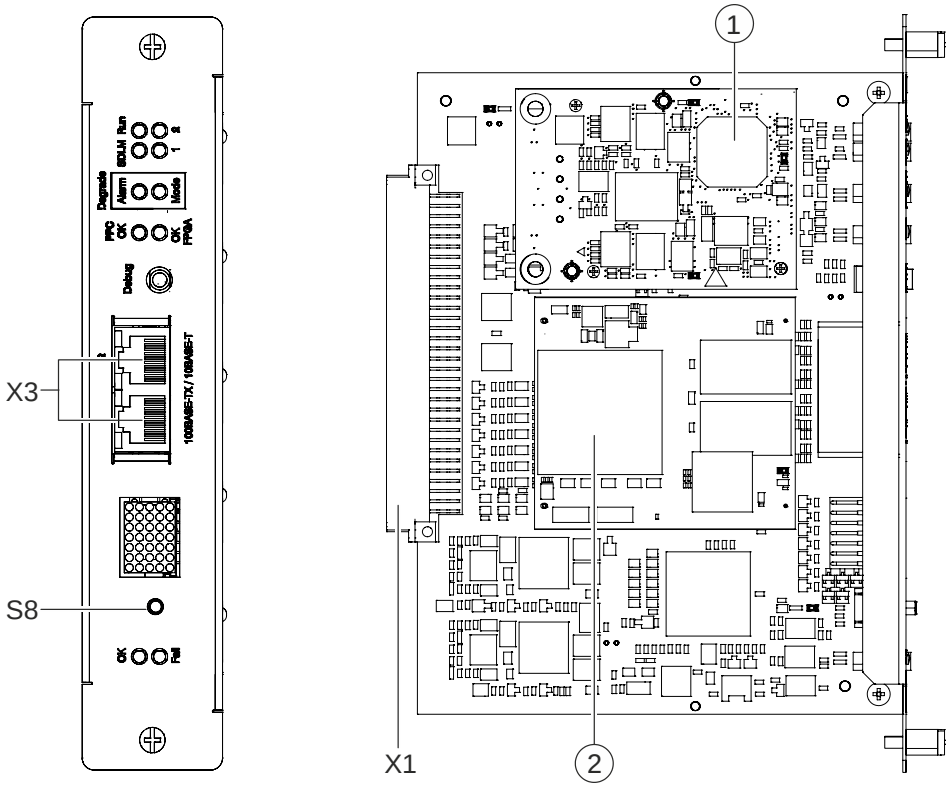
34.1 Description

The CPU card (FC2080) FCC2004-A1 is a component part of the card cage (CPU) FCC2003-A1 on the processor unit (19", FC2080). It is necessary for the operation of the fire control panel FC2080.

The CPU card has the following features:

- Plug-in into the card cage (CPU) with 96-pin plug
- Redundant operation with second CPU card (FC2080) FCC2004-A1 possible
- Status displays via LED and LED matrix display
- Power supply via card cage (CPU) FCC2003-A1
- Two Ethernet connections at the front side for:
  - SintesoWorks
  - Synchronization of the second CPU card (FC2080) FCC2004-A1 in redundant operation
- Slot for network module (SAFEDLINK, CC) FN2010-A1

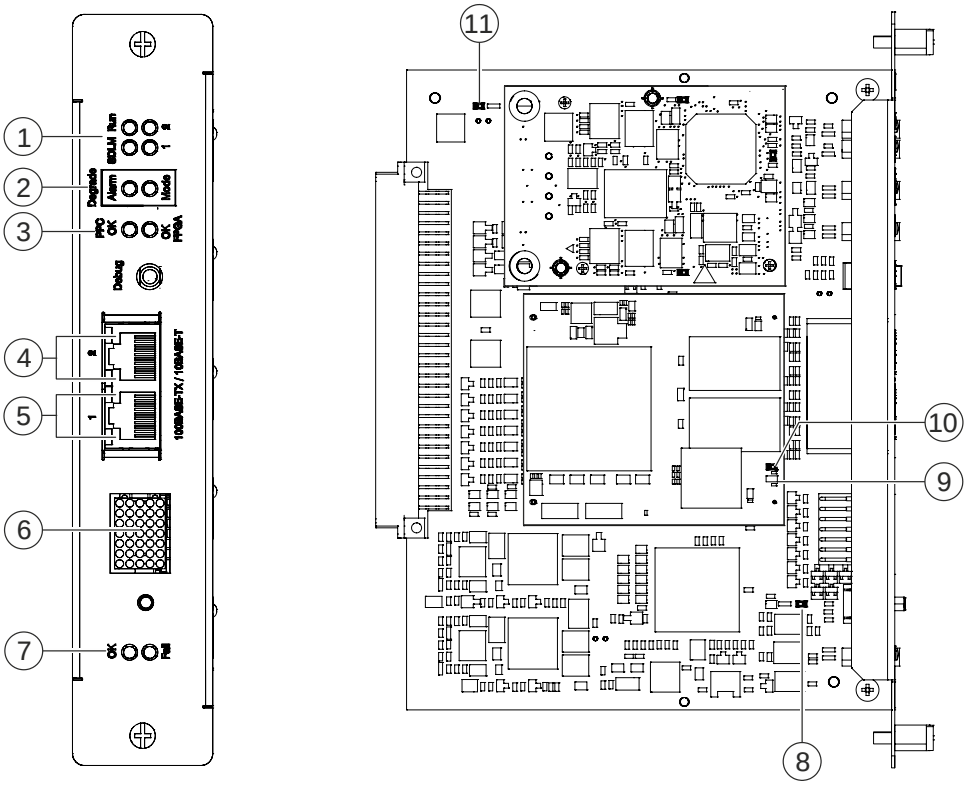
34.2 Views



Operating elements, plugs and modules of the CPU card (FC2080)

Des.	Labeling	Function
1		Network module (SAFEDLINK, CC) FN2010-A1 Not loaded on additional CPU card for redundancy operation
2		CPU module (MCP 8248) FCC2006-A1
S8		Selection button for functions with indicators on LED matrix display
X1		Connection for plugging into the card cage
X3	100BaseTX/10BaseT	No. 1: Ethernet connection to SintesoWorks No. 2: Ethernet connection for synchronization of the CPU
	Debug	Socket for developers/service personnel

34.3 Indicators



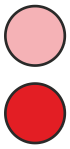
Displays on CPU card (FC2080) front side

Item	LED	Color	Function	Condition	Meaning
1	SDLM	Green	Network module	On	Network module FN2010-A1 is mounted
	RUN	Green	Condition of the network module (SAFEDLINK)	Off	Network module FN2010-A1 is defective
				On	Normal status (LED 1 and 2 are off)
				Flashes	Normal status for degraded mode module (LED 1 and 2 are off)
	1	Yellow	Condition of the line 1 (A1/B1)	Off	Normal condition (communication on line 1 is OK)
				On	Fault on line 1 (no communication on line 1)
	2	Yellow	Condition of the line 2 (A2/B2)	Off	Normal condition (communication on line 2 is OK)
				On	Fault on line 2 (no communication on line 2)
2	Degrade alarm	Red	Degraded alarm condition	On	Degraded fire alarm
	Degrade mode	Yellow	Degraded operating condition	On	Degraded mode
3	PPC OK	Green	Monitoring PPC	On	Software status correct
	OK FPGA	Green	Monitoring FPGA	On	Firmware correct
4	2	Yellow	Ethernet no. 2	On	100 Mbit link connection
		Green		On	Link connection active
				Flashes	Activity of the link connection
5	1	Yellow	Ethernet no. 1	On	100 Mbit link connection
		Green		On	Link connection active
				Flashes	Activity of the link connection

Item	LED	Color	Function	Condition	Meaning
6	LED matrix display	Symbol	Status display of the CPU	I	CPU is inactive
				A	CPU is active
				X	Degraded mode
					Update of the main CPU was not successful
					Update of the main CPU was successful, system restarts
7	OK	Green	Status of the operating system	On	Correct
	Fail	Yellow		On	Faults
8	FPGA RUN	Green	Firmware display	On	Firmware FPGA is loaded successfully
9		Red	Operating system	On	Operating system is written
10		Green		On	Operating system is read
11	BUS ON	Green	BUS display	On	BUS is active

34.4 LED matrix display

The status is indicated by the 7x5 LED matrix display:



Flashes

ON

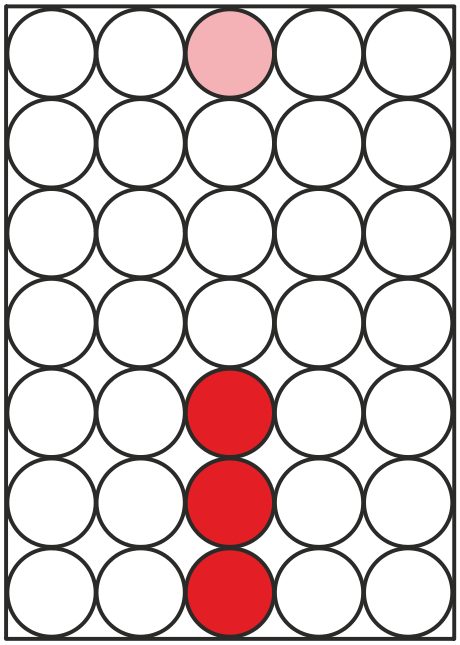
Boot mode 'u-Boot'

Display	Status/description
0	'Power-up' or 'Reset'
1	First reboot
2	Second reboot
X	Permanent 'Reset' – standard display during 'Degraded mode'

Boot mode 'Linux'

During booting, the process is displayed by a vertically rising LED line. The LED line shows the current status of the CPU card.

As long as the process is active, the LED on top flashes.

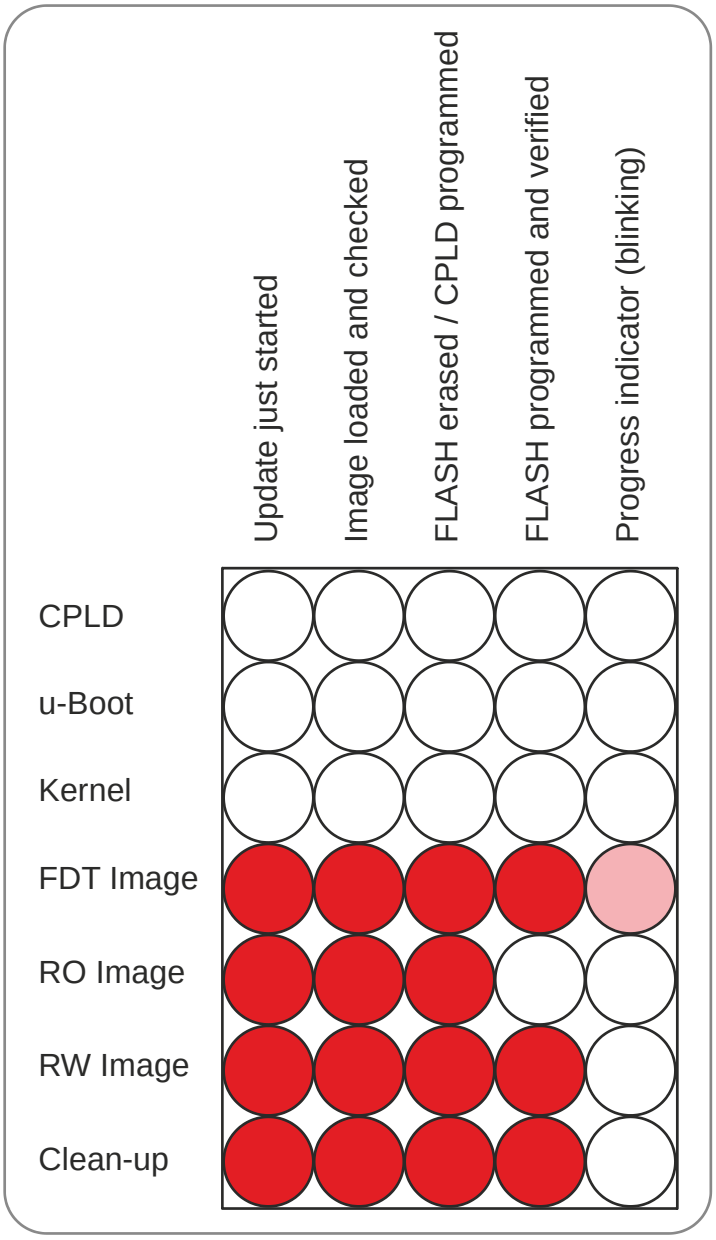


Normal operating mode

Display	Status/description
i	Not synchronized – displayed only on the inactive CPU
I	Synchronized with the active CPU – standard display on the inactive CPU
a	Java application starts, is ready for 'Initialize station' – displayed only on the active CPU
A	Java application starts 'EnableEvents received' – standard display on the active CPU

Firmware update of the main CPU

In the example given below, the CPLD and the u-boot have already been programmed successfully. The kernel image is in the "will be programmed" state.



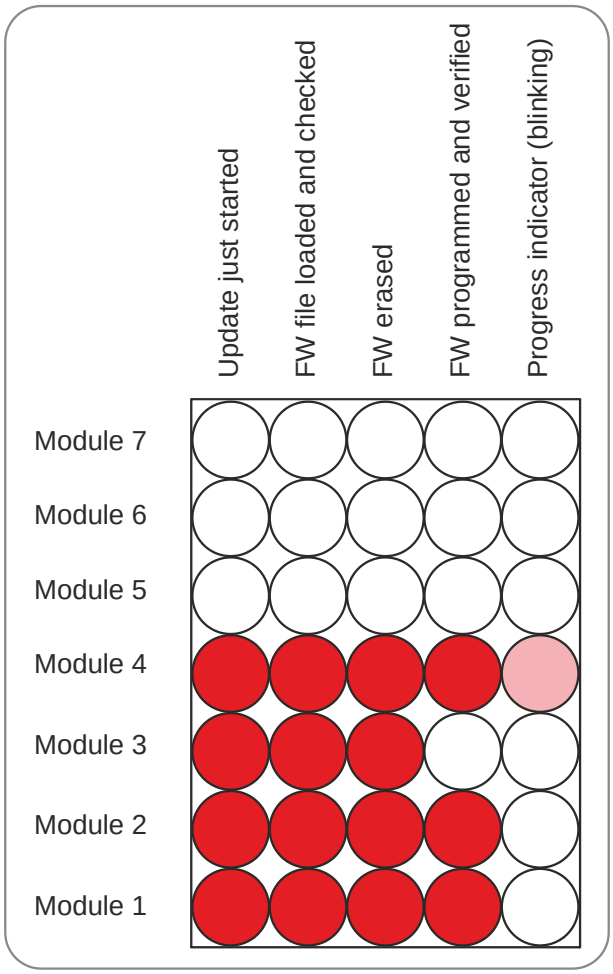
Firmware update of additional CPUs

In the example given below, an update was carried out for a total of four modules. The version test failed for module 3.

This status is indicated for 10 seconds before the reboot.

If updates are carried out for more than seven modules, the horizontal lines scroll down and only the last seven modules are displayed.

The successful update of the modules must be tested with 'SintesoWorks.'



34.5 Adjustment elements

The only setting element for the user is the S8 button next to the LED matrix display. The LED matrix display changes through the following list with a brief push of a button for <0.5 seconds.

Display	Function	Description
R	**R**eset	Initiate restart/booting
L [1]	Access **L**evel 3	System works at access level 3 after PIN has been entered
F [1]	**F**actory reset	Restore to factory setting and restart/boot
U	Firmware **U**pdate	Firmware of the main CPU is updated
S	**S**witch over'	Transfer of control to the second CPU card
D	**D**ebug mode	Test mode for developers

[1] These functions are displayed only on the active CPU.

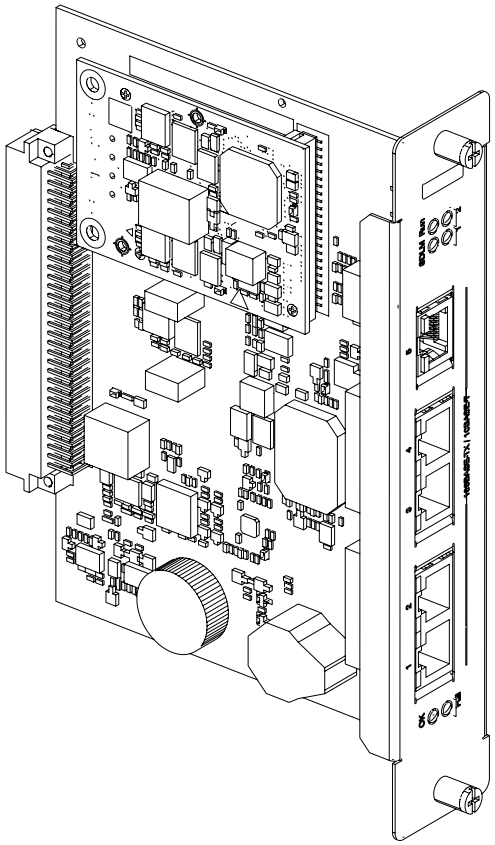
The displayed function is executed at the push of a button for >1.5 seconds.

If the button is not actuated for 5 seconds, then the LED matrix display in the standard display is switched on.

34.6 Technical data

Supply input	Voltage	DC 20…30 V
	Quiescent current at 24 V with SAFEDLINK module	140 mA
	Maximum current at 24 V with SAFEDLINK module	180 mA
	Dual operation possible with CPU card (FC2080)	FCC2004-A1
Display	LED matrix display 5 x 7 LED	17.8 x 12.7 mm
	LED diameter	2 mm
Interfaces	1 x plug for serial modules	Card cage (CPU)
	2 x Ethernet connection RJ45	10/100 Mbit/s
Mechanical data	Dimensions (W x H x D)	35.2 x 189 x 139.1 mm
	Weight (without FN2010-A1)	206 g
	Weight (with FN2010-A1)	226 g

35 Communication card (FC2080) FCC2005-A1



35.1 Description

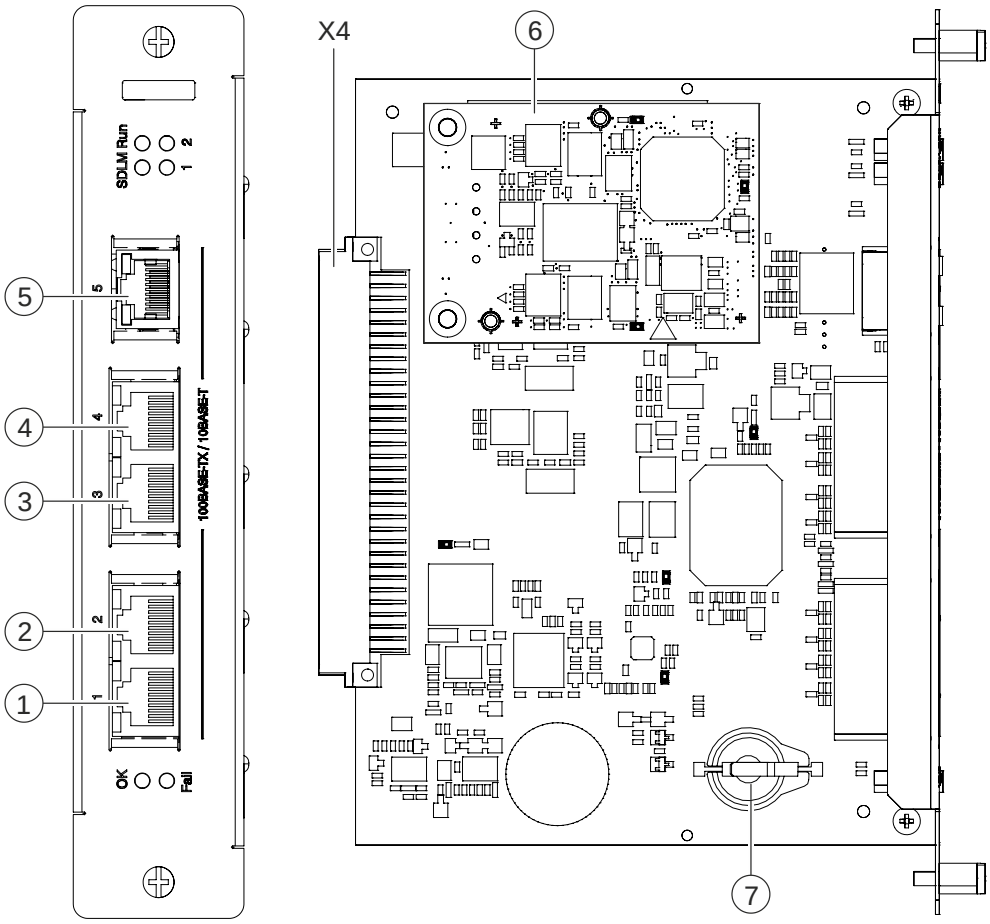
The communication card (FC2080) FCC2005-A1 is a component part of the processor unit (19“, FC2080) and necessary for the operation of the fire control panel FC2080.

The communication card (FC2080) has the following features:

- Five electrical Ethernet connections on the front side
- Makes the following interfaces available for connections on the card cage (CPU):
  - One RS232 interface insulated
  - One RS485 interface insulated with earth fault monitoring
  - Second FCnet interface
- Integrated network module (SAFEDLINK, CC) FN2010-A1
- Integrated real time clock, maintains the time function for at least 2 days in the event of power failure.
- Operating displays on the front side
- Holder for the license key
- Earth fault monitoring of system supply

!	***NOTICE***
	If an operating unit is integrated in the FC2080, then the earth fault monitoring of the system supply must be deactivated on the PMI & mainboard FCM2027 (S 38 to OFF).

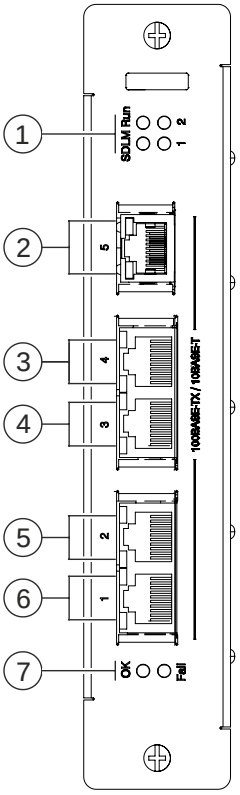
35.2 Views



Communication card (FC2080), front and PCB view

Element	Des.	Function
Connector	1	Port 1, Ethernet connection 10 BASE-T/100 BASE-T
	2	Port 2, Ethernet connection 10 BASE-T/100 BASE-T
	3	Port 3, Ethernet connection 10 BASE-T/100 BASE-T
	4	Port 4, Ethernet connection 10 BASE-T/100 BASE-T
	5	Port 5, Ethernet connection 10 BASE-T/100 BASE-T, with earth fault monitoring
	X4	Plug-type connection to the card cage
Module	6	Network module (SAFEDLINK, CC) FN2010-A1
	7	Holder for the license key

35.3 Indicators



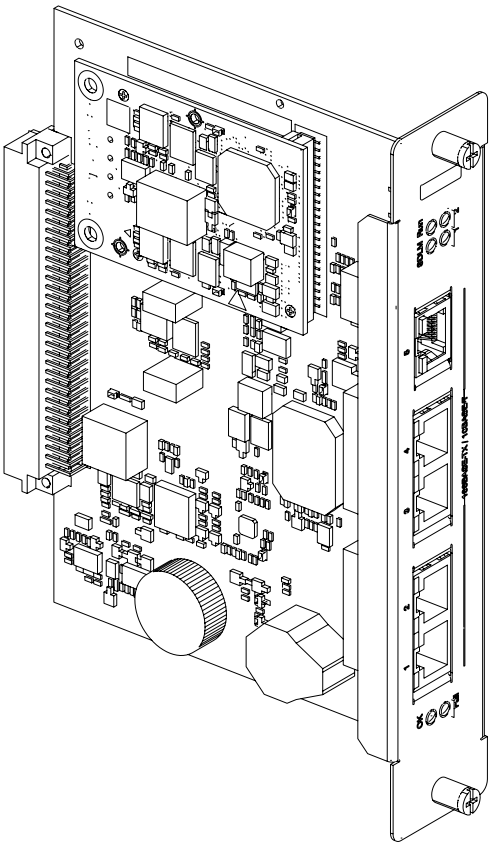
LED indicators of the communication card on the front side

LED	Color	Function	Condition	Meaning
1	Green	FCnet SDLM	On	Network module (SAFEDLINK, CC) FN2010-A1 is installed
	Green	FCnet Run	Off	Network module (SAFEDLINK, CC) FN2010-A1 is defective
			On	Normal condition (displays for status of lines 1 and 2 are off)
			Flashes	Normal condition for degraded mode module (displays for status of lines 1 and 2 are off)
	Yellow	FCnet Line 1	Off	Normal condition (communication on line 1 is OK)
			On	Fault on line 1 (no communication on line 1)
	Yellow	FCnet Line 2	Off	Normal condition (communication on line 2 is OK)
			On	Fault on line 2 (no communication on line 2)
2 ... 6	Yellow	Ethernet Port 5 to port 1	On	100 Mbit link connection
			Off	10 Mbit link connection
	Green		Lit up	Line connection active, no data transfer
			Flashes	Data transfer on link
7	Green	OK Fail	On	Normal operation
	Yellow		On	Malfunction

35.4 Technical data

Supply input	Voltage	VSYS 20…30 V
	Operating current	● Max. 60 mA, without FN2010-A1 ● Max. 100 mA, with FN2010-A1
Front-side connections	Ethernet port 1-4	● 10 BASE-T/100 BASE-T
	Ethernet port 5	● Electrical: 10 BASE-T/100 BASE-T ● Earth fault monitoring
Connections via card cage (CPU)	Serial interface	● RS232 insulated ● RS485 insulated with earth fault monitoring
	FCnet/SAFEDLINK	● If FN2010-A1 is loaded
	Interface to card cage (CPU)	● Plug 96–pin
Indicators	LED indicators	● Operating condition ● Transmission rate ● Fault/error message
Mechanical data	Dimensions (L x W x H)	35.2 x 189 x 139.1 mm
	Weight without FN2010-A1	201 g
	Weight with FN2010-A1	221 g

36 Communication card (FG2020-D1) FCC2008-D1



36.1 Description

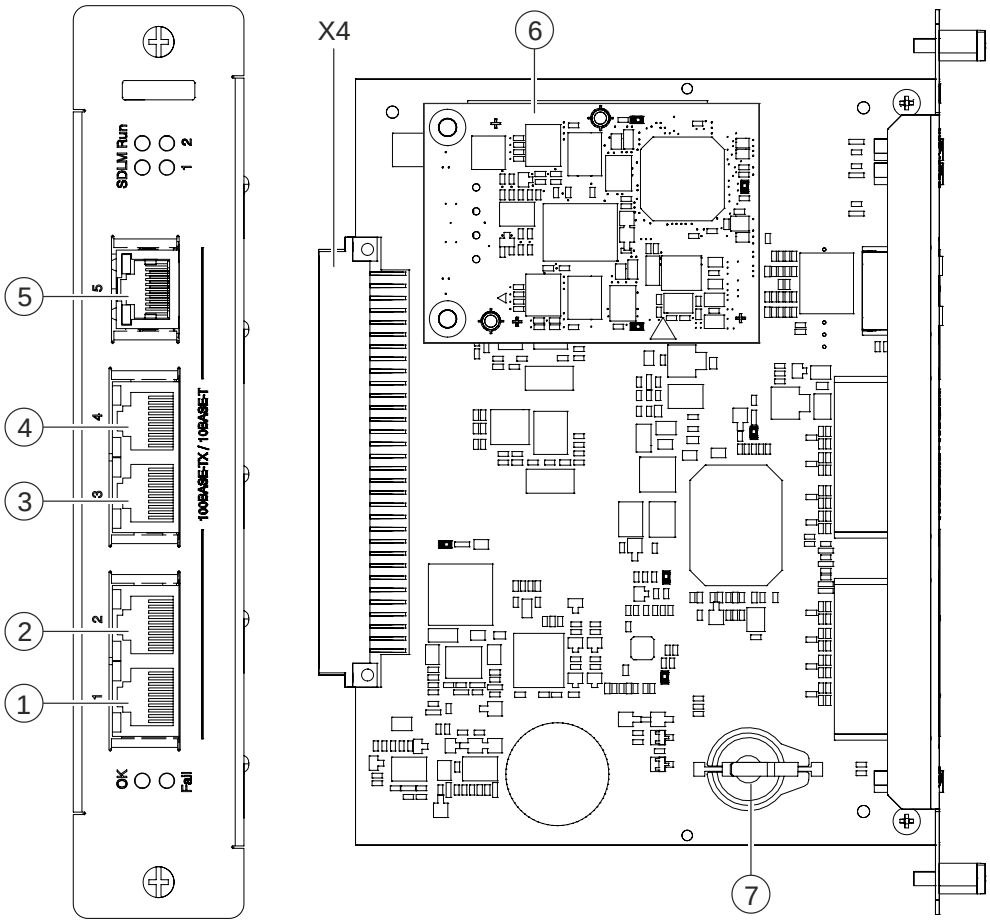
The communication card (FG2020-D1) FCC2008-D1 is a component part of the card cage (CPU) FCC2003-A1 and necessary for the operation of FG2020-D1.

The communication card (FG2020-D1) FCC2008-D1 has the following features:

- Five electrical Ethernet connections on the front side
- Makes the following interfaces available for connections on the card cage (CPU):
  - One RS232 interface insulated
  - One RS485 interface insulated with earth fault monitoring
  - Second FCnet interface
- Integrated network module (SAFEDLINK, CC) FN2010-A1
- Integrated real time clock, maintains the time function for at least 2 days in the event of power failure.
- Operating displays on the front side
- Holder for the license key
- Earth fault monitoring of system supply

!	***NOTICE***
	If an optional operating unit is integrated in the FG2020-D1, then the ground fault monitoring of the system supply must be deactivated on the PMI & mainboard FCM2027 (S 38 to OFF).

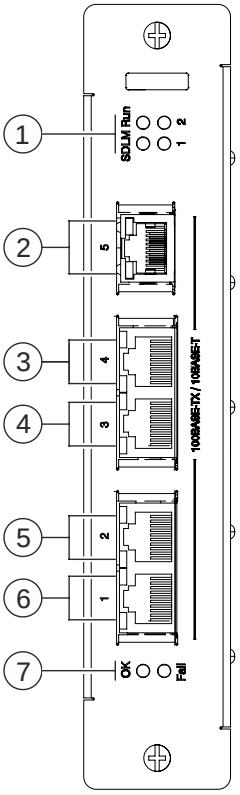
36.2 Views



Communication card (FG2020-D1), front and PCB view

Element	Des.	Function
Connector	1	Port 1, Ethernet connection 10 BASE-T/100 BASE-T
	2	Port 2, Ethernet connection 10 BASE-T/100 BASE-T
	3	Port 3, Ethernet connection 10 BASE-T/100 BASE-T
	4	Port 4, Ethernet connection 10 BASE-T/100 BASE-T
	5	Port 5, Ethernet connection 10 BASE-T/100 BASE-T, with earth fault monitoring
	X4	Plug-type connection to the card cage
Module	6	Network module (SAFEDLINK, CC) FN2010-A1
	7	Holder for the license key

36.3 Indicators



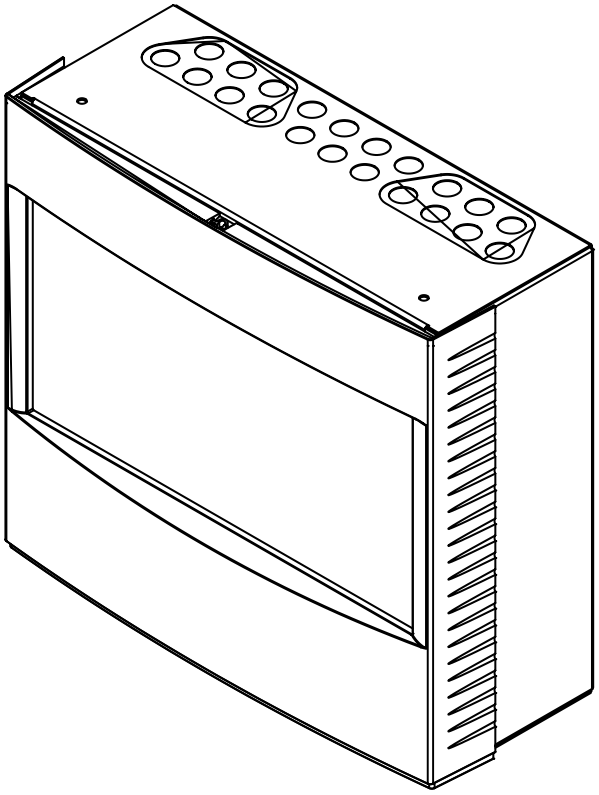
LED indicators of the communication card on the front side

LED	Color	Function	Condition	Meaning
1	Green	FCnet SDLM	On	Network module (SAFEDLINK, CC) FN2010-A1 is installed
	Green	FCnet Run	Off	Network module (SAFEDLINK, CC) FN2010-A1 is defective
			On	Normal condition (displays for status of lines 1 and 2 are off)
			Flashes	Normal condition for degraded mode module (displays for status of lines 1 and 2 are off)
	Yellow	FCnet Line 1	Off	Normal condition (communication on line 1 is OK)
			On	Fault on line 1 (no communication on line 1)
	Yellow	FCnet Line 2	Off	Normal condition (communication on line 2 is OK)
			On	Fault on line 2 (no communication on line 2)
2 ... 6	Yellow	Ethernet Port 5 to port 1	On	100 Mbit link connection
			Off	10 Mbit link connection
	Green		Lit up	Line connection active, no data transfer
			Flashes	Data transfer on link
7	Green	OK Fail	On	Normal operation
	Yellow		On	Malfunction

36.4 Technical data

Supply input	Voltage	VSYS 20…30 V
	Operating current	● Max. 60 mA, without FN2010-A1 ● Max. 100 mA, with FN2010-A1
Front-side connections	Ethernet port 1-4	● 10 BASE-T/100 BASE-T
	Ethernet port 5	● Electrical: 10 BASE-T/100 BASE-T ● Earth fault monitoring
Connections via card cage (CPU)	Serial interface	● RS232 insulated ● RS485 insulated with earth fault monitoring
	FCnet/SAFEDLINK	● If FN2010-A1 is loaded
	Interface to card cage (CPU)	● Plug 96–pin
Indicators	LED indicators	● Operating condition ● Transmission rate ● Fault/error message
Mechanical data	Dimensions (L x W x H)	35.2 x 189 x 139.1 mm
	Weight without FN2010-A1	201 g
	Weight with FN2010-A1	221 g

37 Housing for wall mounting



37.1 Description

The housing for wall mounting of the stations is used for the following stations:

- All compact control panels
- Fire terminal FT2040

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 008836 and in document 008843.

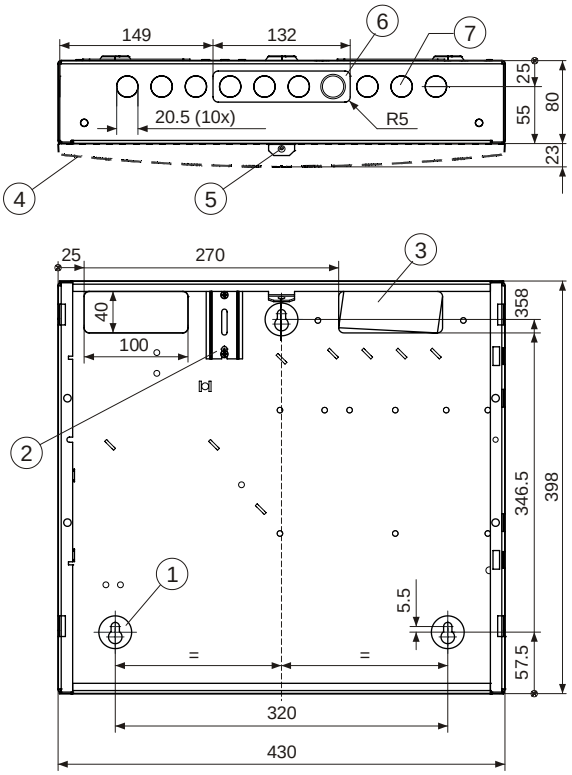
37.2 Views

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

37.2.1 Housing (Eco)

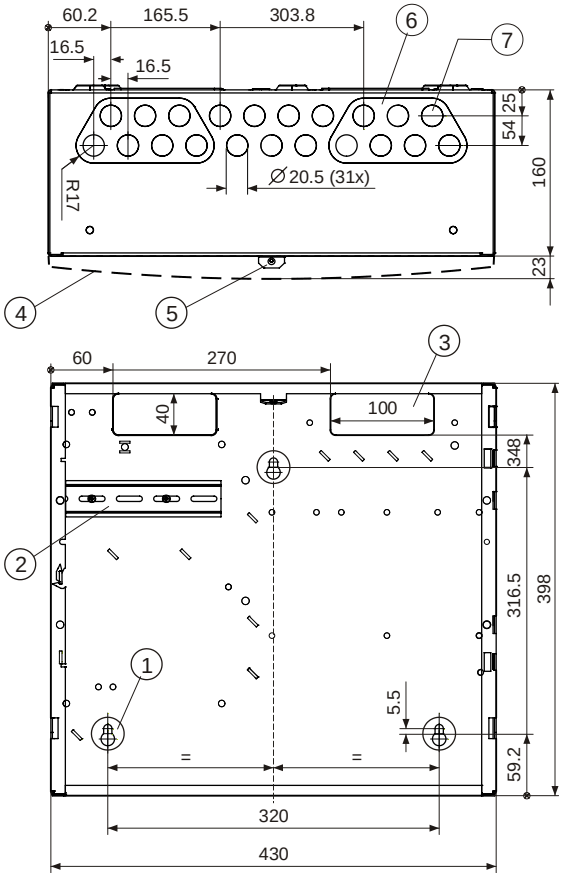
Housing dimensions (Eco) FH2001-A1



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.)

37.2.2 Housing (Standard)

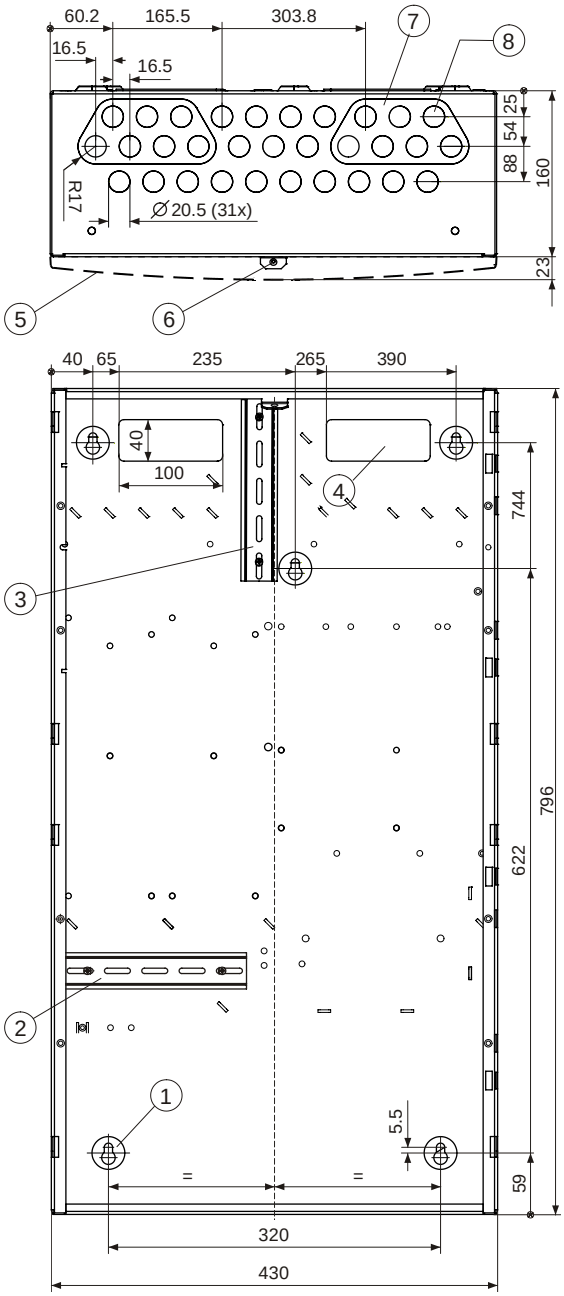
Dimensions of housing (Standard) FH2002-A1



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.)

37.2.3 Housing (Comfort)

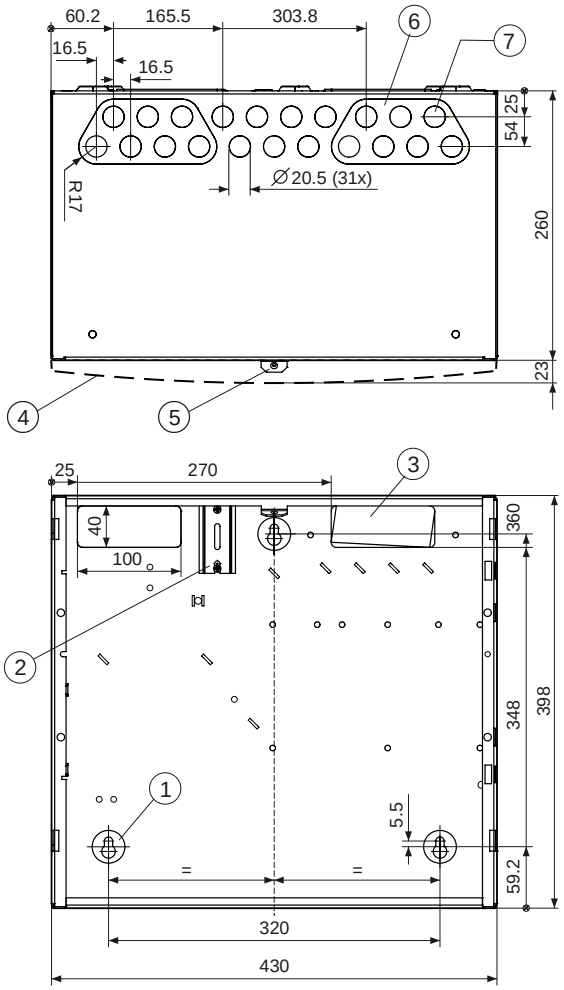
Dimensions of housing (Comfort) FH2003-A1



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.)

37.2.4 Housing (Large Extension)

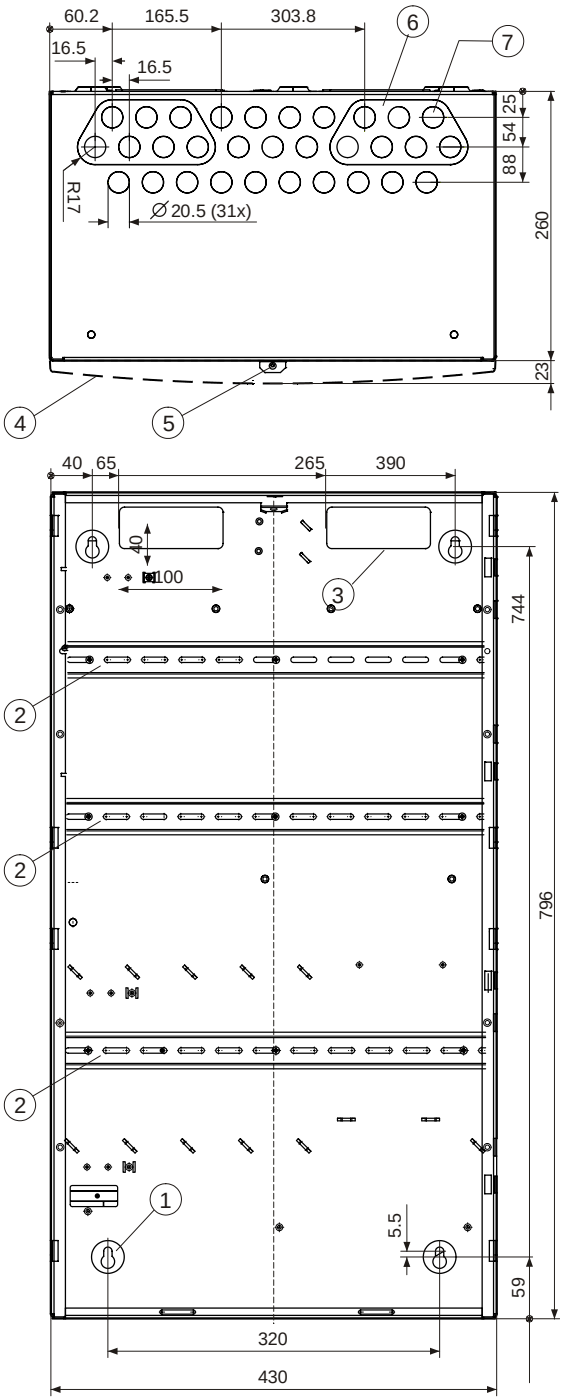
Housing dimensions (Large Extension) FH2004-A1



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.)

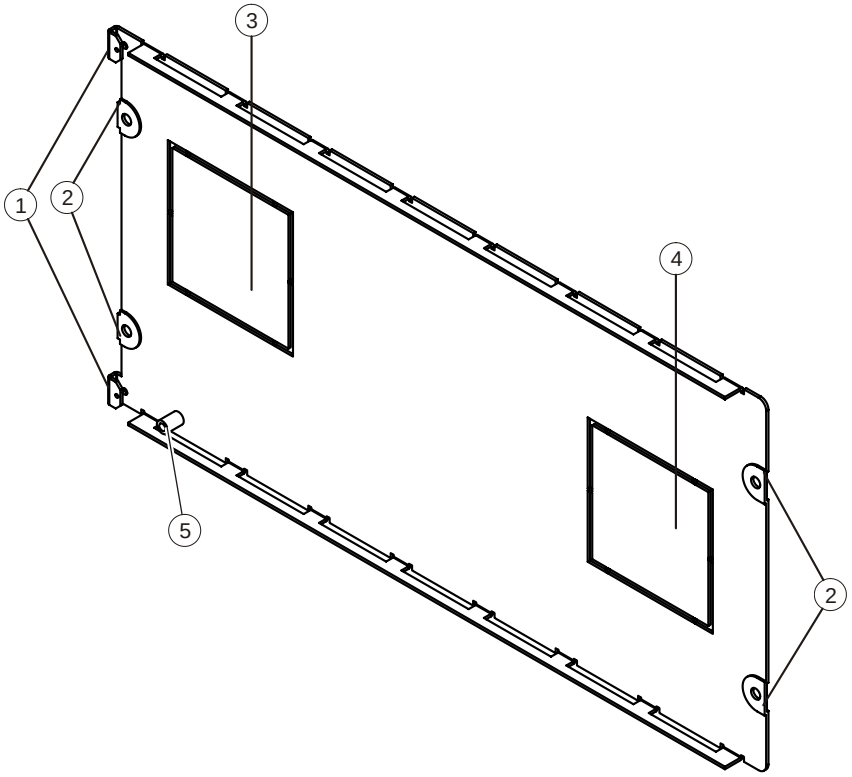
37.2.5 Housing (Large)

Dimensions of housing (Large) FH2005-A1



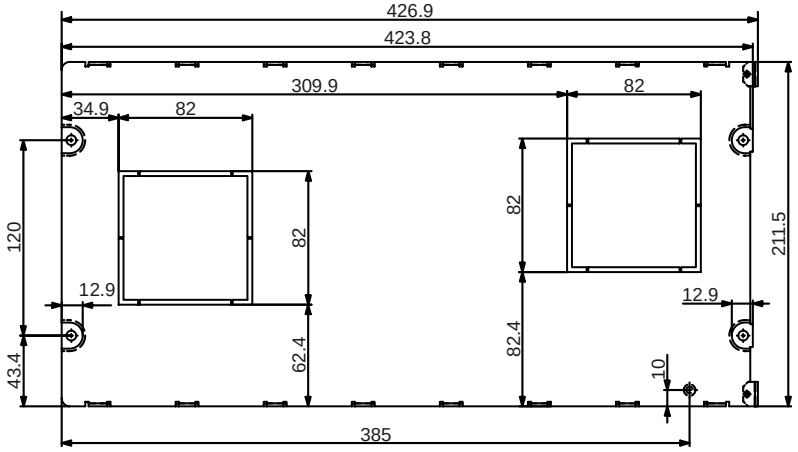
1 Fixation holes (4 pcs.)
2 DIN rail for mains separation terminals and socket, length 175 mm
3 DIN rail for relays and additional accessories, length 175 mm
4 Breakout openings for cable entries from the back (2 pcs.)
5 Cover caps (2 pcs.)
6 Flap with screw for the fixation of the top cover cap
7 Breakout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

37.2.6 Operating unit carrier



Carrier plate, interior view

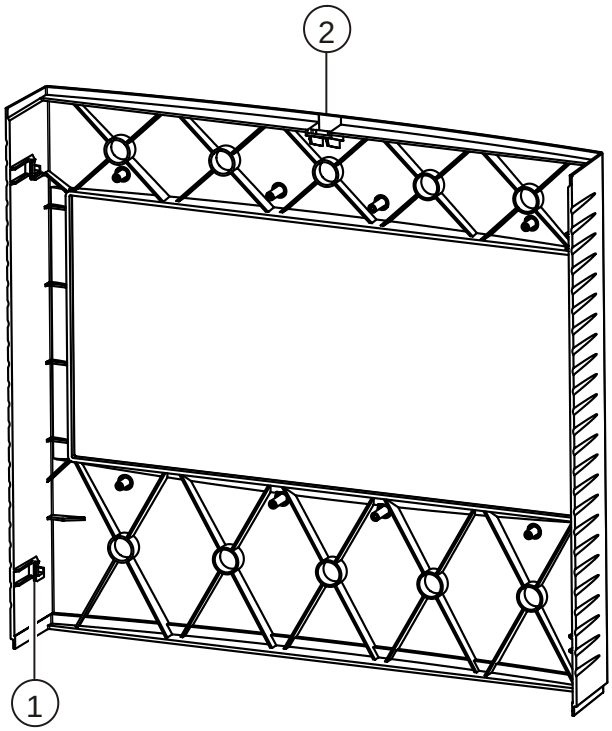
1 2 hinges for fixation on the housing
2 4 holes to fix the carrier plate on the housing
3 Breakout opening on right for event printer
4 Breakout opening on left for event printer
5 Welded-on screw bushing M4-12



Carrier plate dimensions

37.2.7 Cover cap

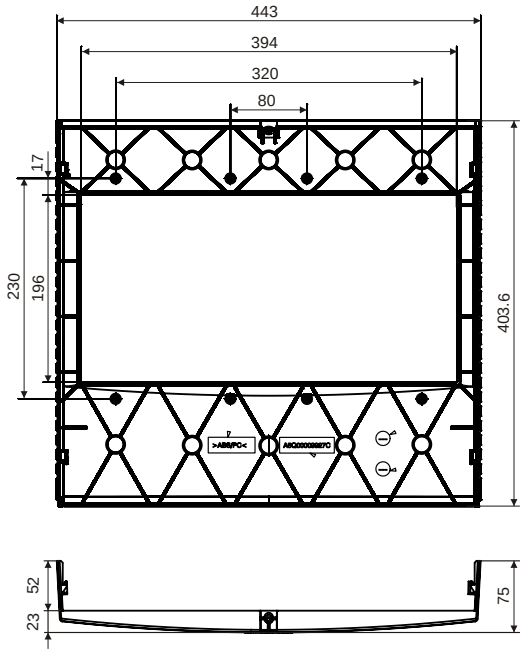
Cover cap SintesoFHA2011-A1



View of cover cap from rear

1 Support cams (4 pcs.)

2 Fixing screw



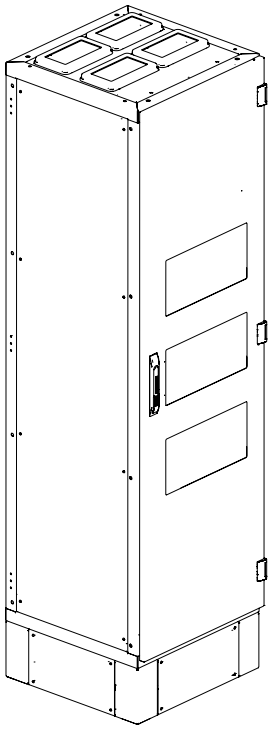
Dimensions of the cover cap

37.3 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	FH2001-A1 housing (Eco)	3.8 kg
	FH2002-A1 housing (Standard)	5.4 kg
	FH2003-A1 housing (Comfort)	9 kg
	FH2004-A1 housing (Large Extension)	9.5 kg
	FH2005-A1 housing (Large)	16 kg
	Cover cap	0.64 kg
Overall dimensions (W x H x D)	FH2001-A1 housing (Eco)	430 x 398 x 80 (103)[1] mm
	FH2002-A1 housing (Standard)	430 x 398 x 160 (183)[1] mm
	FH2003-A1 housing (Comfort)	430 x 796 x 160 (183)[1] mm
	FH2004-A1 housing (Large Extension)	430 x 398 x 260 (283)[1] mm
	FH2005-A1 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

38 Housing (19", pedestal cabinet) FH2080-AA



38.1 Description

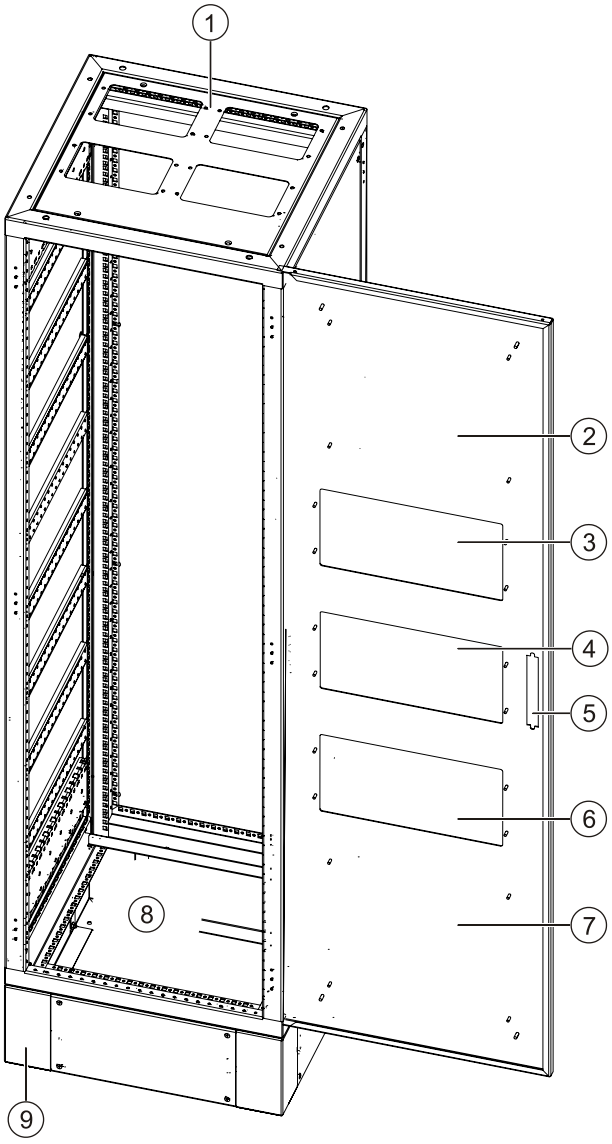
The housing is used to hold the components for the fire control panel FC2080 as well as for extensions and for the installation of options. It has the following features:

- Designed as 19" pedestal cabinet
- Delivered as a kit, including separate base for floor anchoring and mains disconnection switch
- Cable feed from below or above
- Doors with
  - Plan compartment A3 on the inner side
  - Closable handle
  - Pre-cut openings for operating terminal
  - Door stop on the right, handle on the left
- Integrated crossbars and grounding cross-pieces
- Variable floor plates for EMC and rodent protection
- Universal mounting points for installable components

You will find an overview of the components and batteries that can be fitted in document 008836 and in document 008843.

38.2 Views

38.2.1 Housing (19" pedestal cabinet)

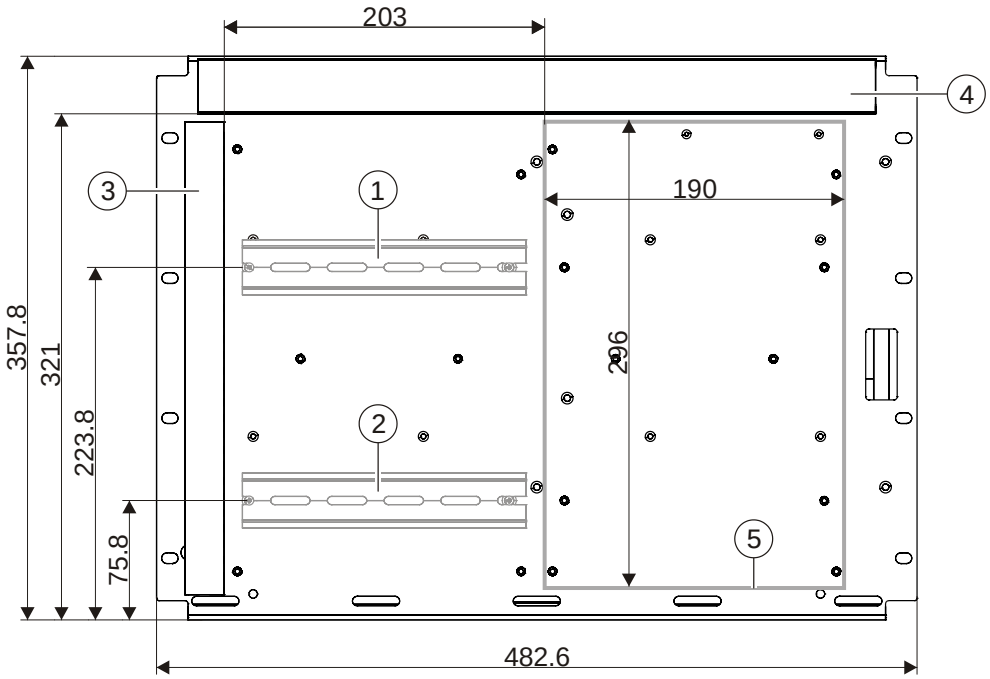


Housing (19" pedestal cabinet)

1 Roof plate with cable entry made of foam rubber
2 Door
3 Break-out opening for operating unit
4 Break-out opening for operating add-on
5 Door lock
6 Break-out opening for second operating add-on
7 Plan compartment A3
8 Floor plates
9 Base

38.2.2 Carrier (19", card cage)

The carrier (19", card cage) is not a component of the housing (19", pedestal cabinet). It is intended for mounting a maximum of 2 card cages (5 slots) or 1 card cage and additional modules on 2 DIN rails. The DIN rails are included in the packaging and must be installed if required.

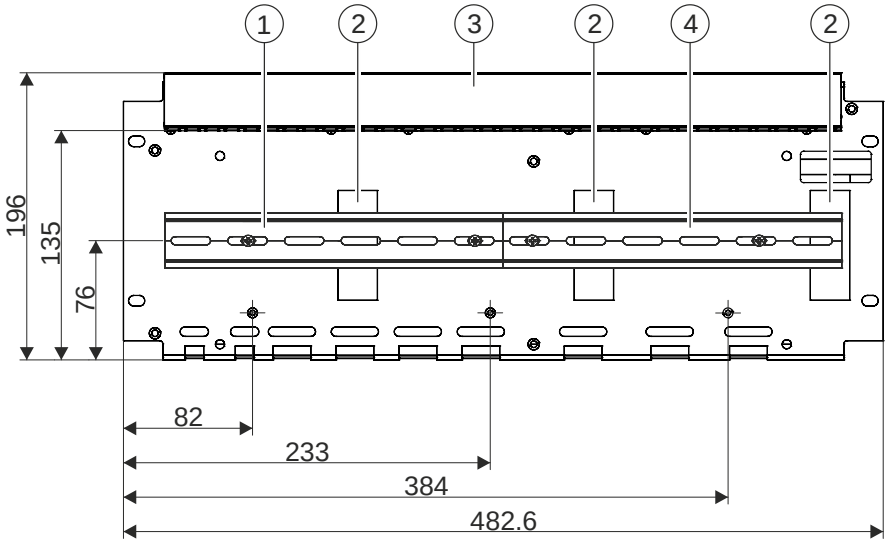


Dimensioned drawing of carrier (19", card cage) FHA2023-A1

1 Top DIN rail L = 180 mm (not pre-mounted)
2 Bottom DIN rail L = 180 mm (not pre-mounted)
3 Cable duct, left
4 Cable duct, top
5 Space for card cage (5 slots)

38.2.3 Carrier (19", option)

The carrier (19", optional) FHA2024-A1 is not a component of the housing (19", pedestal cabinet). It is intended for the installation of additional modules such as relays, terminal blocks, I/O components or the key safe adapter [DE]. The 4 DIN rails are pre-mounted and can be removed individually depending on whether they are used.



Dimensions of carrier (19", option) FHA2024-A1

1 Left DIN rail pair L = 215 mm (pre-mounted)
2 Rectangular cable bushings (for mounting a key safe adapter)
3 Cable duct
4 Right DIN rail pair L = 215 mm (pre-mounted)

The usable height of the bottom DIN rail when DIN rails are positioned above one another is max. 60 mm.

38.2.4 Battery bracket (19") FHA2021-A1

The battery bracket (19") FHA2021-A1 is not a component of the housing (19", pedestal cabinet). The battery bracket is used for the placement and secure fastening of a maximum of two batteries. It is delivered unassembled and consists of the following parts:

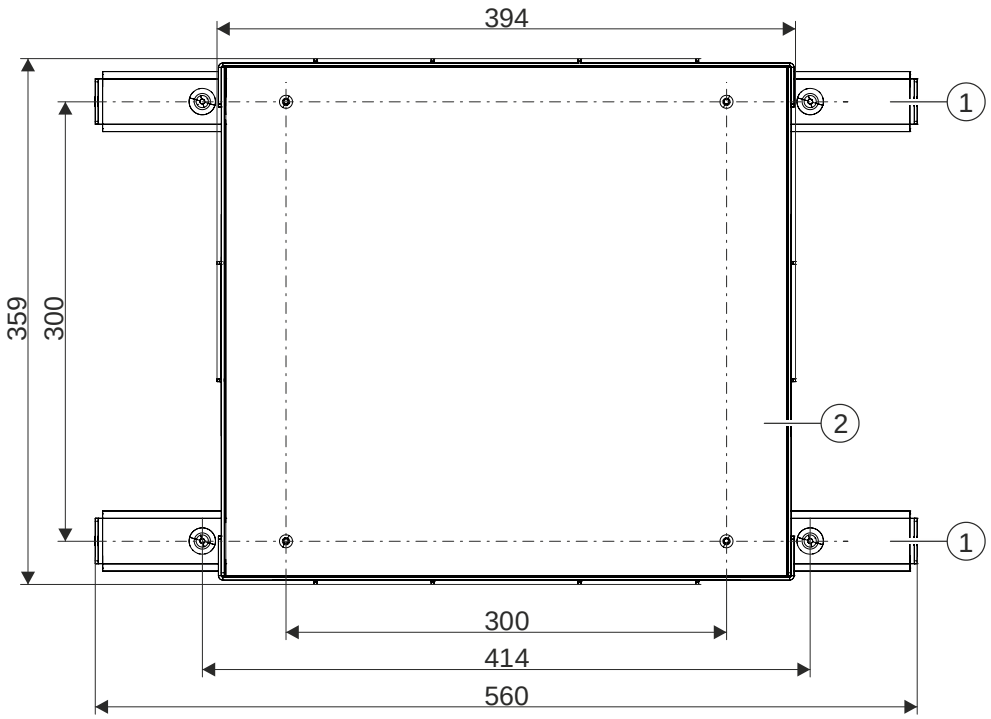
1 - battery pan

2 - carriers

4 - countersunk screws M4 x 10

8 - screws M6 x 12

2 - tension belts



Dimensions, complete battery bracket FHA2021-A1

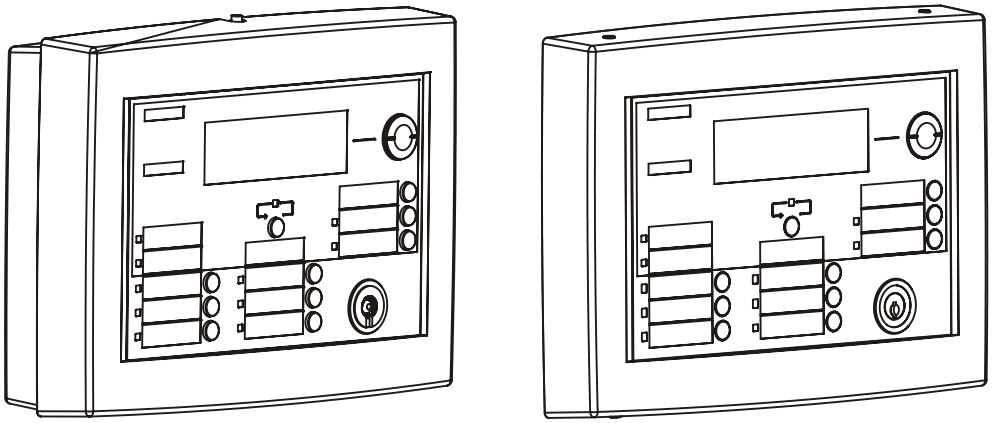
1 Carriers (2 pieces)

2 Battery pan

38.3 Technical data

Housing	Housing material	Steel sheet, electrolytically tin-plated
	Surface treatment	Powder-coated
	Color	RAL 7035 (light gray)
	Protection category	IP30
Lock for cable feed	from below	Steel sheet
	from above	Foam rubber
Weight	Housing including door and base	approx. 120 kg
Overall dimensions (W x H x D)	Housing including door and base	601 x 2204 x 615 mm
Miscellaneous	CE conformity mark	Yes

39 Floor repeater terminal FT2010



39.1 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 FDnet detector line.

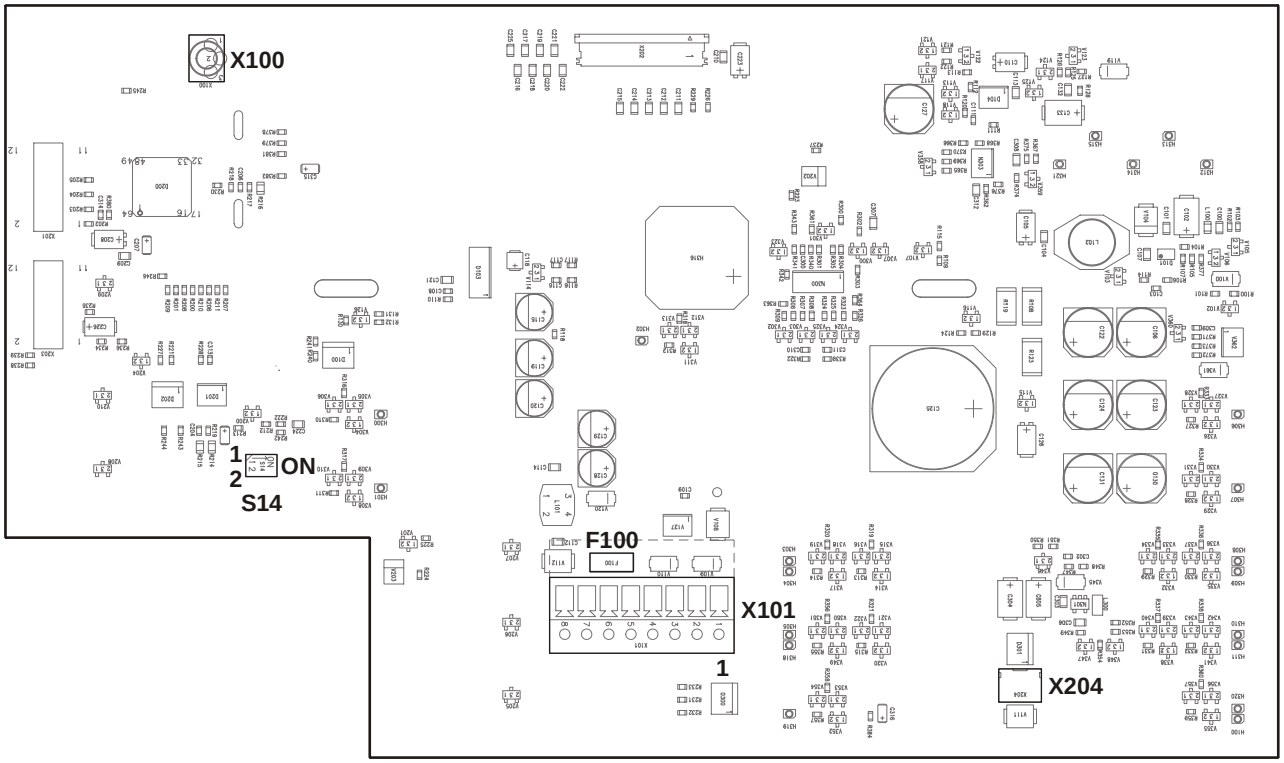
The floor repeater terminal comes in two versions:

- 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 FDnet detector line
- Power supply possible via the FDnet detector line
- External AC or DC supply possible
- 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 SintesoWorks)
- 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 009026.

39.2 Views



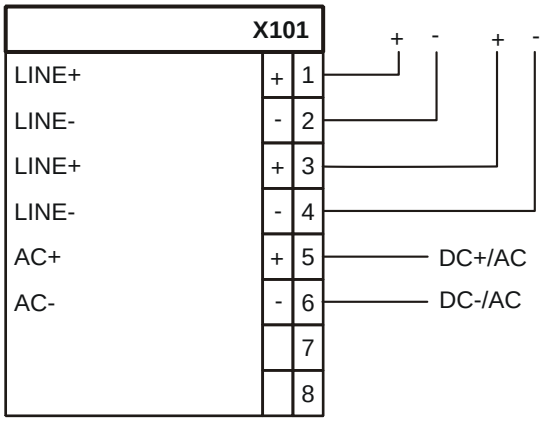
Printed circuit board view of the floor repeater terminal FT2010

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)

39.3 Pin assignments

39.3.1 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
6	AC-	External supply DC-/AC
7		Not connected
8		Not connected



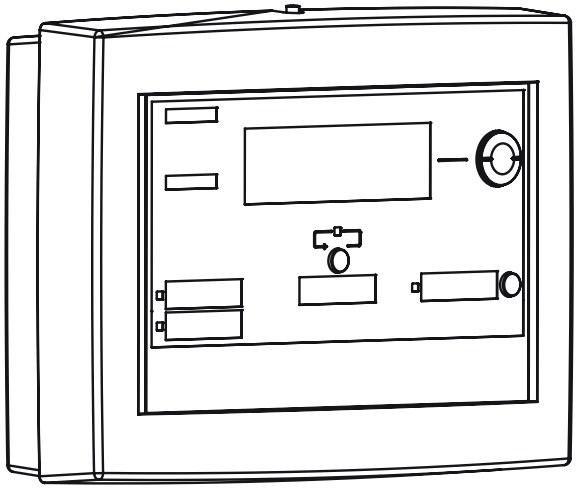
39.4 Adjustment elements

DIP switch S14	Des.	Function	Position	Meaning
1	3TE_OFF	Acoustic signaling in case of failure of the FDnet 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

39.5 Technical data

Supply	Optional	● Via external supply ● Via FDnet detector line
External supply	Designation	'AC+', 'AC–'
	Voltage	● AC 15…18 V ● DC 20…30 V
	Power consumption	10 … 50 mA
Detector line	Designation	'LINE+', 'LINE–'
	Voltage	DC 12…32 V
	Power consumption	
	● Without external supply	4…40 mA
	● With external supply	Max. 5 mA
	Maximum current connection factor	
	● Without external supply	160
	● With external supply	20
	Quiescent current connection factor	
	● Without external supply	20
	● With external supply	20
	Address connection factor	1
	Separator connector factor	1
	Protocol	FDnet
Functional data	Display	6 lines of 40 characters each
	Acoustic signaling	Tone interval can be configured with SintesoWorks
Connections	Detector line and external supply	
	Design	Screw terminals
	Cable cross-section	0.8 … 1.5 mm^2
Ambient conditions	Operating temperature	-8...+42 °C
	Storage temperature	-20…+60 °C
	Protection category	IP30
	Max. application height	4000 m above sea level
Mechanical data	Dimensions (W x H)	283 x 207 mm
	Depth of FT2010-A1	79 mm
	Depth of FT2010-C1	45 mm
	Weight of FT2010-A1	800 g
	Weight of FT2010-C1	1100 g
Standards	Safety	EN 60950
	QA Standards	● Siemens Standard SN 36350 ● ISO 9001 ● ISO 14001
	CE conformity mark	Yes

40 Floor repeater display FT2011



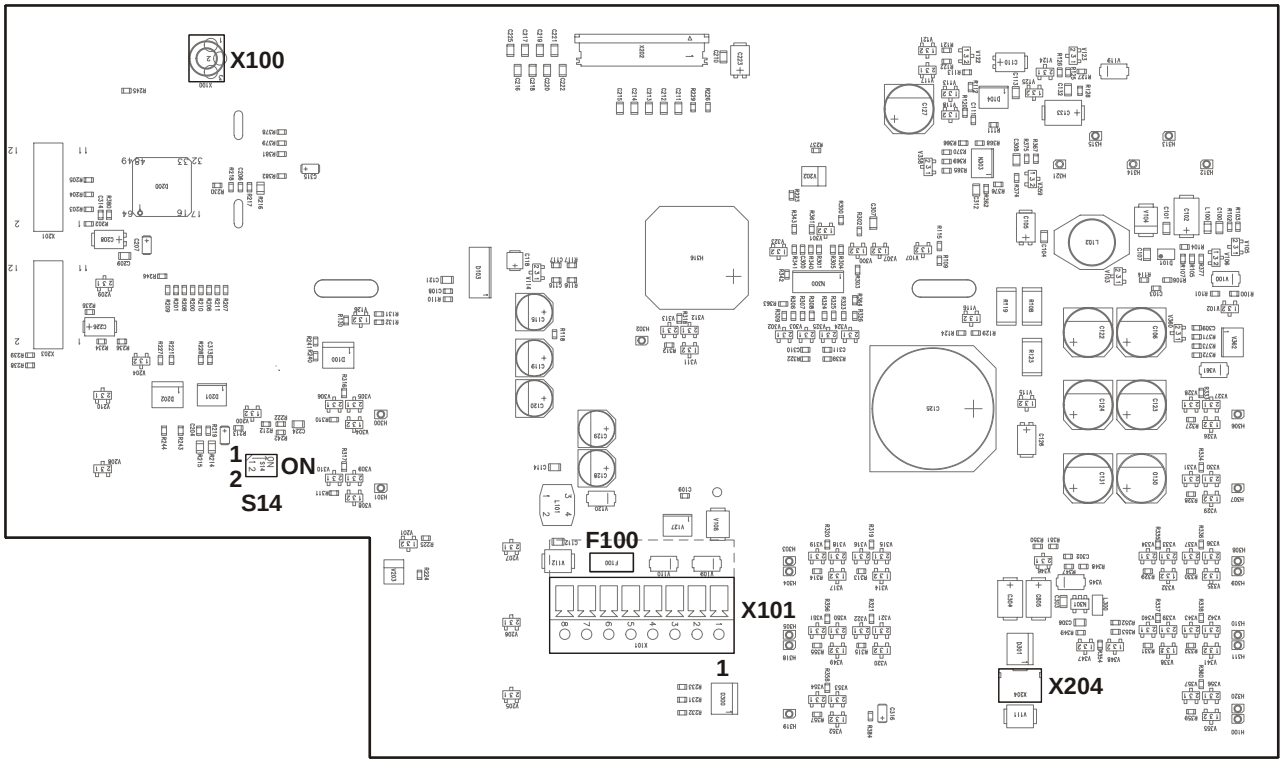
40.1 Description

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 FDnet detector line.

The floor repeater display has the following features:

- Connection to the FDnet detector line
- Power supply possible via the FDnet detector line
- External AC or DC supply possible
- 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 009026.

40.2 Views



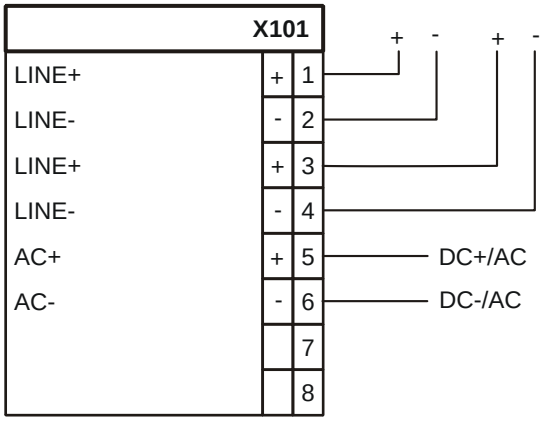
Printed circuit board view of the floor repeater display FT2011

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)

40.3 Pin assignments

40.3.1 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
6	AC-	External supply DC-/AC
7		Not connected
8		Not connected



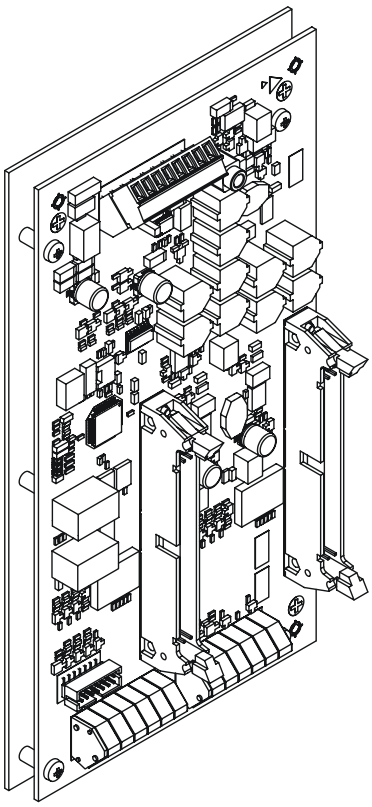
40.4 Adjustment elements

DIP switch S14	Des.	Function	Position	Meaning
1	3TE_OFF	Acoustic signaling in case of failure of the FDnet 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

40.5 Technical data

Supply	Optional	• External supply • Detector line
External supply	Designation	'AC+', 'AC–'
	Voltage	• AC 15…18 V • DC 20…30 V
	Power consumption	10 … 50 mA
Detector line	Designation	'LINE+', 'LINE–'
	Voltage	DC 12…32 V
	Power consumption	
	• Without external supply	4…40 mA
	• With external supply	Max. 5 mA
	Maximum current connection factor	
	• Without external supply	160
	• With external supply	20
	Quiescent current connection factor	
	• Without external supply	20
	• With external supply	20
	Address connection factor	1
	Separator connector factor	1
	Protocol	FDnet
Functional data	Display	6 lines of 40 characters each
	Acoustic signaling	Tone interval can be configured with SintesoWorks
Connections	Detector line and external supply	
	Design	Screw terminals
	Cable cross-section	0.8 … 1.5 mm^2
Ambient conditions	Operating temperature	-8 … + 42 °C
	Storage temperature	-20 … + 60 °C
	Protection category	IP30
	Max. application height	4000 m above sea level
Mechanical data	Dimensions (W x H x D)	283 x 207 x 79 mm
	Weight	800 g
Standards	Safety	EN 60950
	QA Standards	• Siemens Standard SN 36350 • ISO 9001 • ISO 14001
	CE conformity mark	Yes

41 Mimic display driver FT2001-A1



41.1 Description

The mimic display driver FT2001-A1 is operated on the FDnet 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.

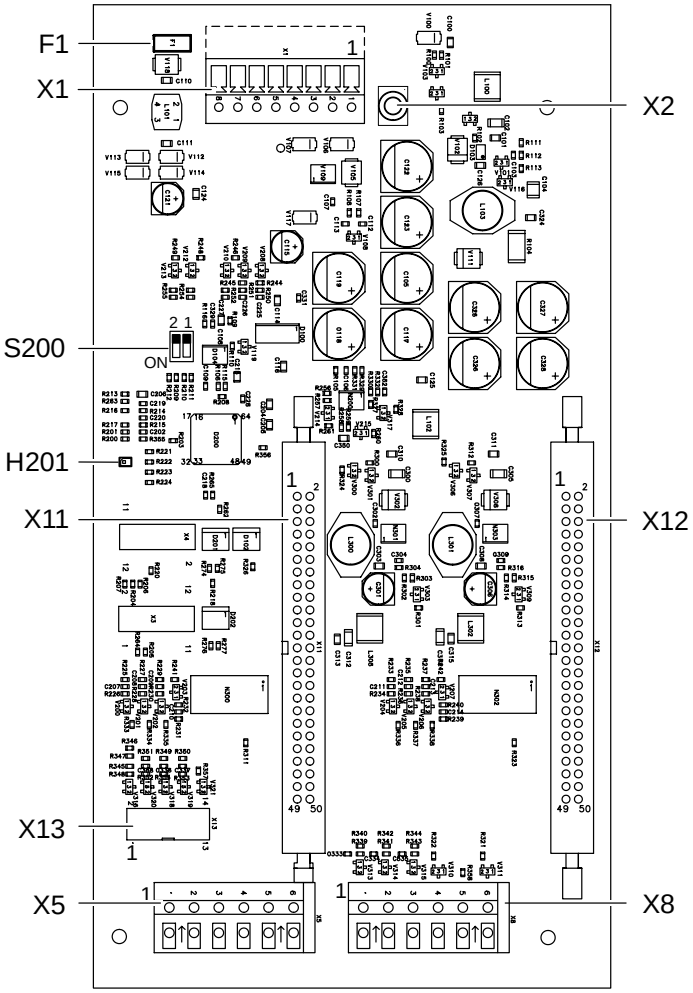
The mimic display driver is powered via the FDnet or via an external power supply.

Properties

- 48 freely programmable driver outputs
- Configuration of the driver outputs with SintesoWorks
- Communication via FDnet
- Power supply via FDnet or an external 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

41.2 Views

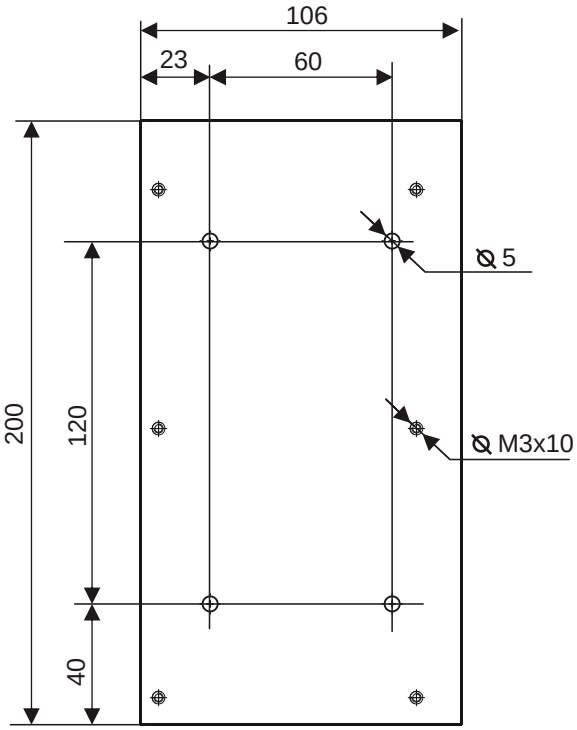
41.2.1 PCB



Printed circuit board view FT2001-A1

Element	Designation	Function
Plugs and terminals	X1	Connection terminal line (FDnet) 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	Connector driver output 1 … 24
	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)

41.2.2 Carrier



Dimensions of carrier plate for FT2001

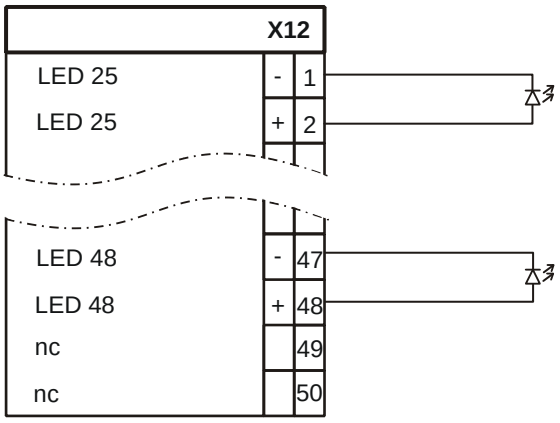
41.3 Pin assignments

41.3.1 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

Pin	Designation	Description
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.

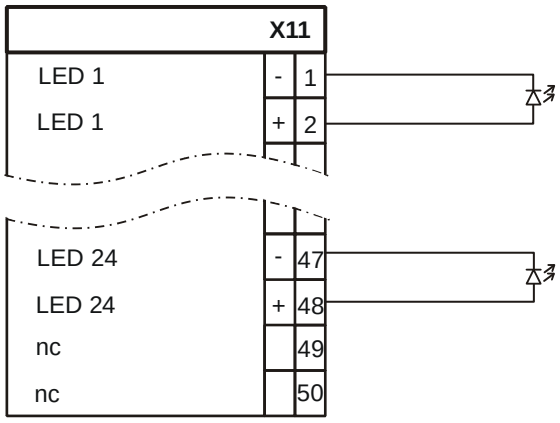


41.3.2 X11 driver outputs 1…24

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

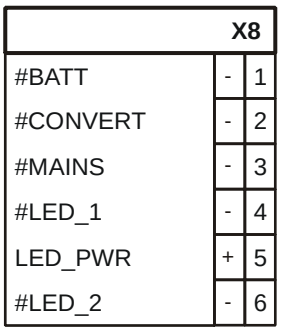
Pin	Designation	Description
35(-), 36(+)	LED 18	External LED power source or logic output
37(-), 38(+)	LED 19	External LED power source or logic output
39(-), 40(+)	LED 20	External LED power source or logic output
41(-), 42(+)	LED 21	External LED power source or logic output
43(-), 44(+)	LED 22	External 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.



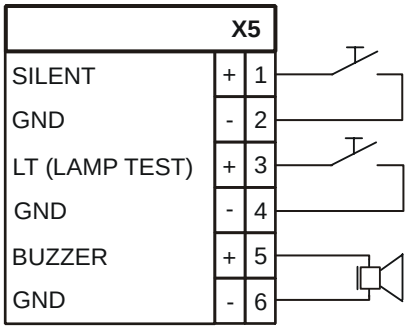
41.3.3 X8 monitoring external supply and operating LED

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)



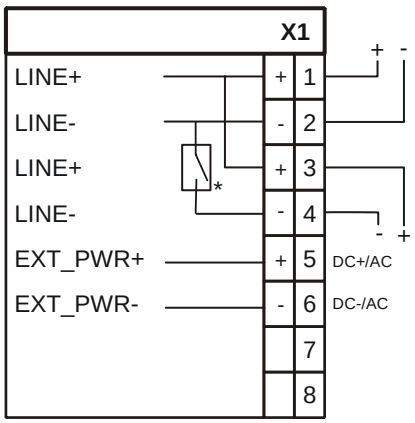
41.3.4 X5 expanded periphery

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



41.3.5 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
6	EXT_PWR-	Input for external supply DC- / AC
7		Not used
8		Not used



* Integrated line separator

41.4 Indicators

LED	Color	Function	Condition	Meaning
LED_1 (X8)	(Green)	Operating LED	Lit up	Normal condition
			Fast flashing (0.5 s)	Communication error FDnet 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

41.5 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		

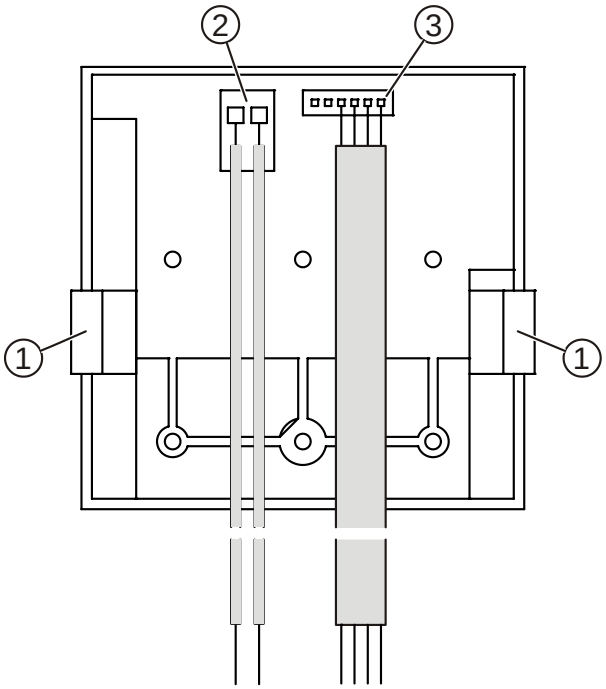
41.6 Technical data

FDnet	Operating voltage	DC 12.5…32 V
	Operating current	Max. 45 mA
	Quiescent current	Max. 5 mA
	Capacitive load to ground	Max. C = 500 nF
	Capacitive load to ground with external supply	Max. C = 100 nF
Supply input	External supply input	DC 14…32 V, electrically isolated
		AC 11…22 V, electrically isolated
Key figures	Address connection factor	AK = 1
	Quiescent current connection factor	RK = 16
	Maximum current connection factor	
	● Without external supply	
	– With 24 LEDs	MK = 52…80
	– With 36 LEDs	MK = 68…130
	– With 48 LEDs	MK = 80…165
	● With external supply	MK = max. 16
Outputs	Operating LED (X8)	'LED_1'
	Max. output current	2.5 mA constant at Usys (12 … 32 V)
	Driver outputs (X11/X12)	
	With LED operation	Max. 2.5 mA and DC 2.5 V
	Buzzer (X5)	Max. 5 mA and DC 12 V
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable
	Connection terminals	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
	Weight	232 g
	Housing (by customer)	Min. protection category IP30
Standards and approvals	VdS	Pending
	LPCB	Pending
	Standards	● SN36350 (Siemens standard) ● EN 54-17 ● EN 54-18

42 Event printer FTO2001-A1

42.1 Pin assignments

42.1.1 Connection on printer side



Wiring on event printer (view of rear side)

1 Fastening clamps
2 Supply connection
3 Connecting the data cable

42.1.2 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 -)

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)

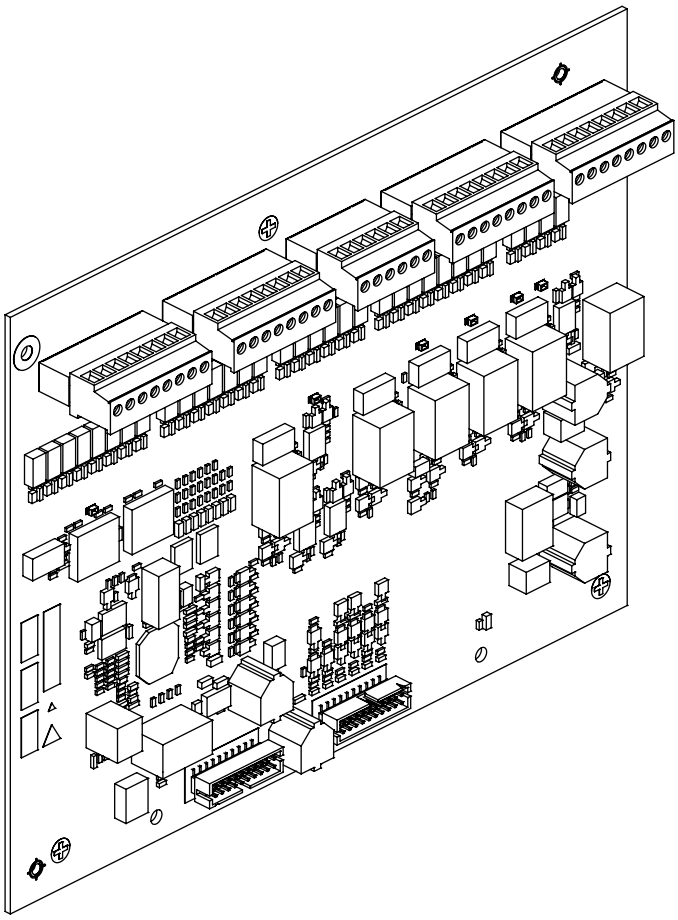
Pin assignment for power supply (150 W)

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)

Pin assignment for RS232 module

43 Fire brigade periphery module FCI2001-D1 [DE]



43.1 Description

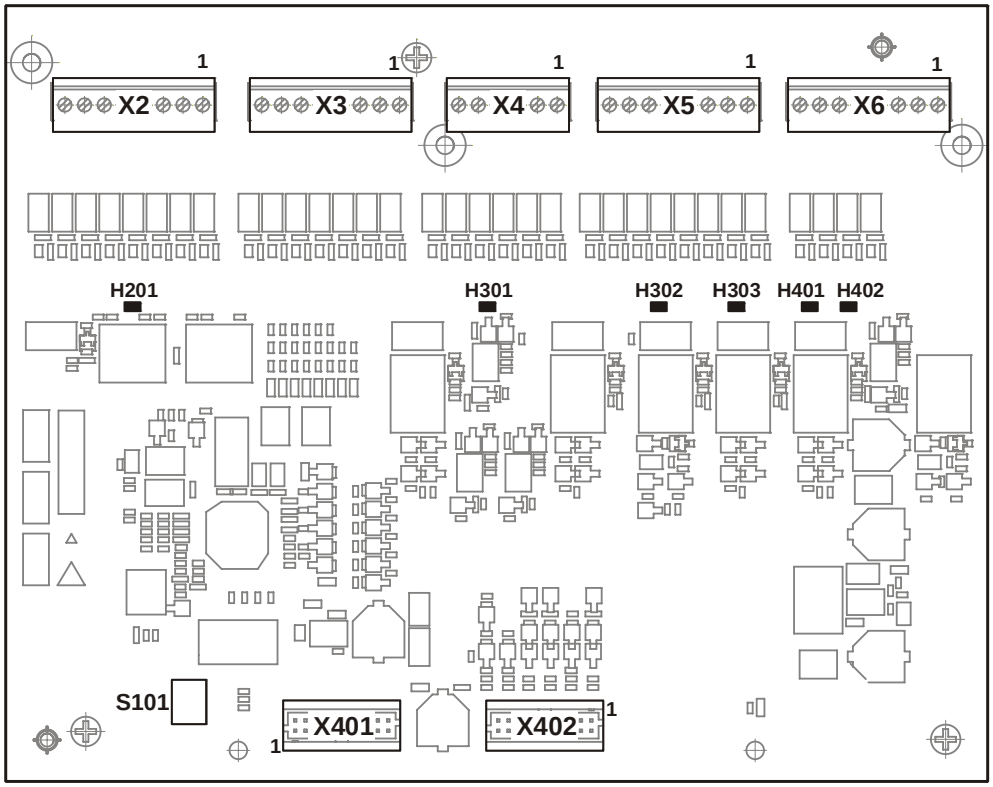
The fire department periphery module makes the connection of the following peripherals possible, in compliance with the VdS:

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

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

- All inputs and outputs to the peripherals 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.

43.2 Views



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

Element	Des.	Function
Plugs and terminals	X2	Fire department operating panel Outputs
	X3	Fire department operating panel Inputs
	X4	Remote equipment or remote device and release element
	X5	fire department 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 department operating panel
	H301	Remote transmission
	H302	Fire department key depot: Unlocking
	H303	Fire department key depot: Heater
	H401	Identification lamp
	H402	Local alarm
Button	S101	Reading in the measuring values of all monitored inputs and outputs

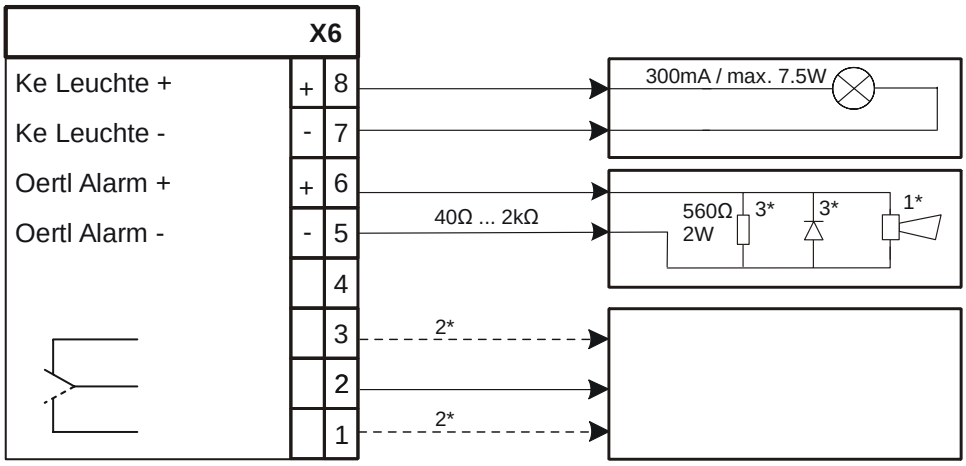
43.3 Pin assignments

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

43.3.1 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)

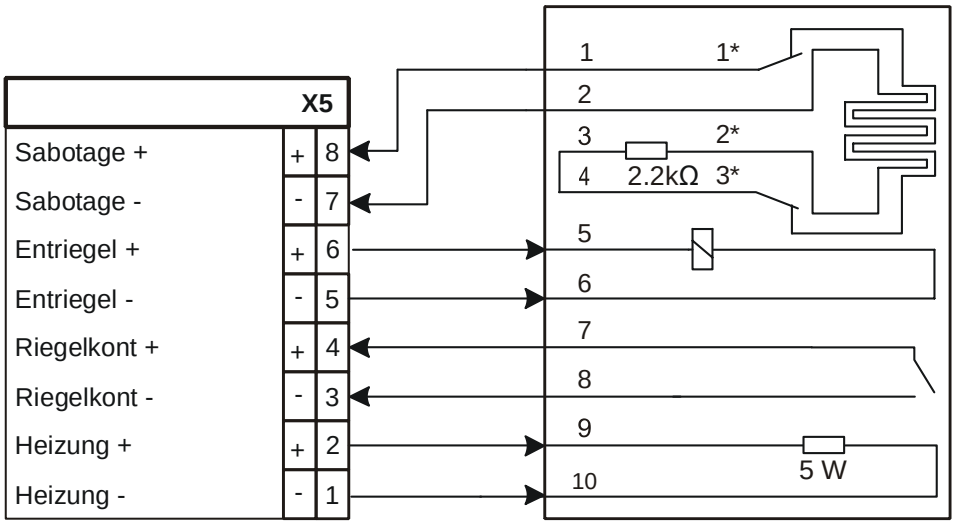
3* If necessary

43.3.2 X5 fire department key depot

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

Pin	Designation	Description
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

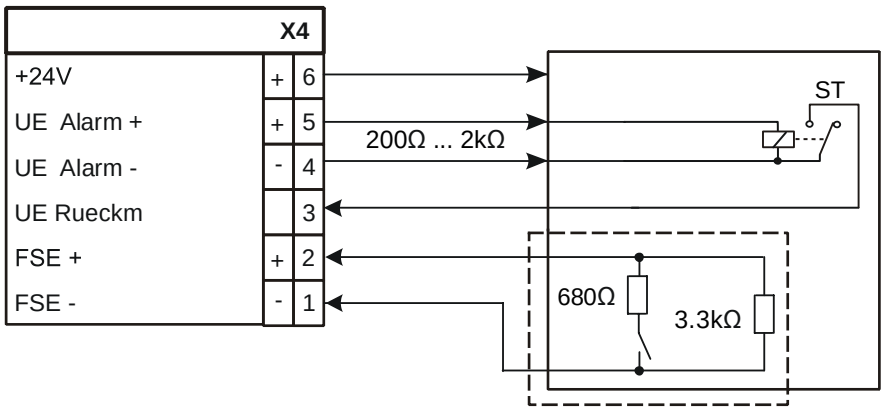
3* Key contact

When an alarm is pending, the key depot for the heating is disconnected from the power supply for reasons of product safety. Only when the alarm is reset, is it again connected to the power supply.

43.3.3 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

43.3.4 X2 fire department operating panel / X3 fire department operating panel

X2 fire department operating panel

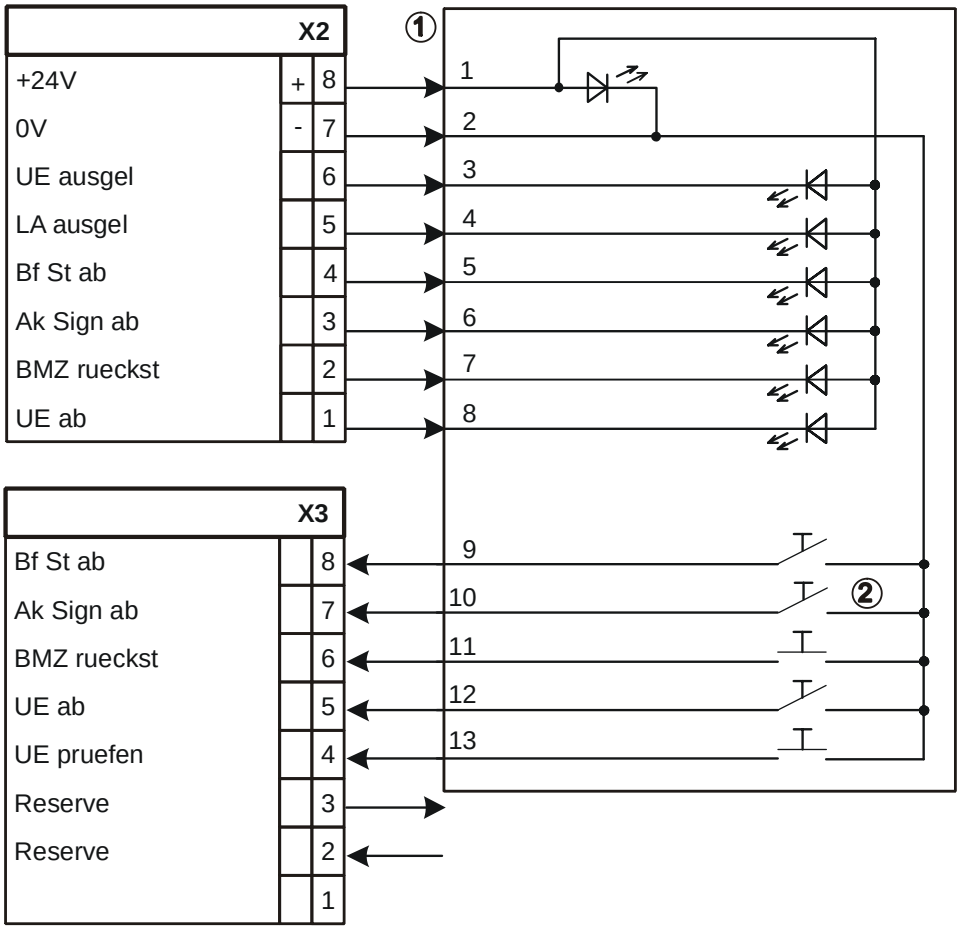
Pin	Designation	Description
8	+24V	Operating voltage (+24 V)
7	0 V	Operating voltage (-)
6	UE ausgel	Transmission transmission triggered
5	LA ausgel	Extinguishing system triggered
4	Bf St ab	Fire controls off
3	Ak Sign ab	Acoustic signals off
2	BMZ rueckst	Reset fire control panel
1	UE ab	Remote transmission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

Admissible cable cross-section: 0.2…1.5 mm²

X3 fire department 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

43.4 Indicators

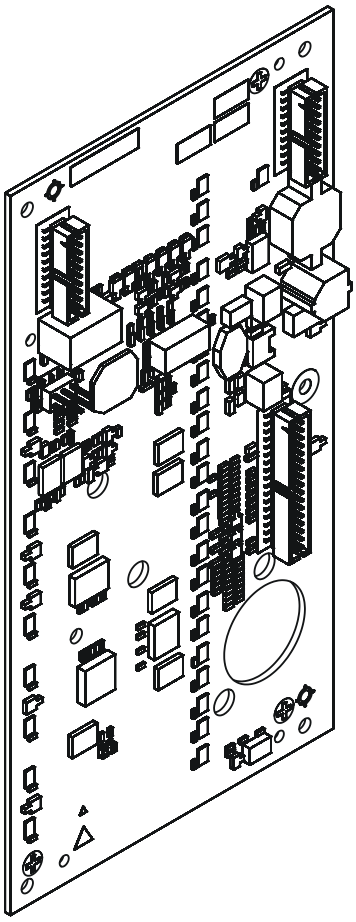
LED	Color	Function	Condition	Meaning
H201	Yellow	fire department operating panel	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H301	Yellow	Remote transmission and transmission device	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H302	Yellow	Fire department key depot: Unlocking	Off	Normal operation
			On	Fault: Overload protection active (short-circuit)
H303	Yellow	Fire department 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)

43.5 Technical data

Fire department control panel (FBF)	Supply voltage	24 V
	Supply current	Type <50 mA, max. 1A (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	24 V
	Supply current	Typ. <30 mA, max. 1A (current limited)
	Output (RT/RD alarm):	
	Voltage/current (if active)	24 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 department key depot	Tamper input:	
	Design	Short-circuit-proof
	Termination resistor for quiescent condition	2.2 Ω
	Monitored for	Deviation >40 % of 2.2 Ω
	Line resistance per wire	Max. 10 Ω
	Deblocking output:	
	Voltage/current (if active)	24 V / type 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)	24 V, type 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)	24 V / type 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)	24 V / type. 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 peripherals	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

44 EVAC-NL operating unit FTO2007-N1



44.1 Description

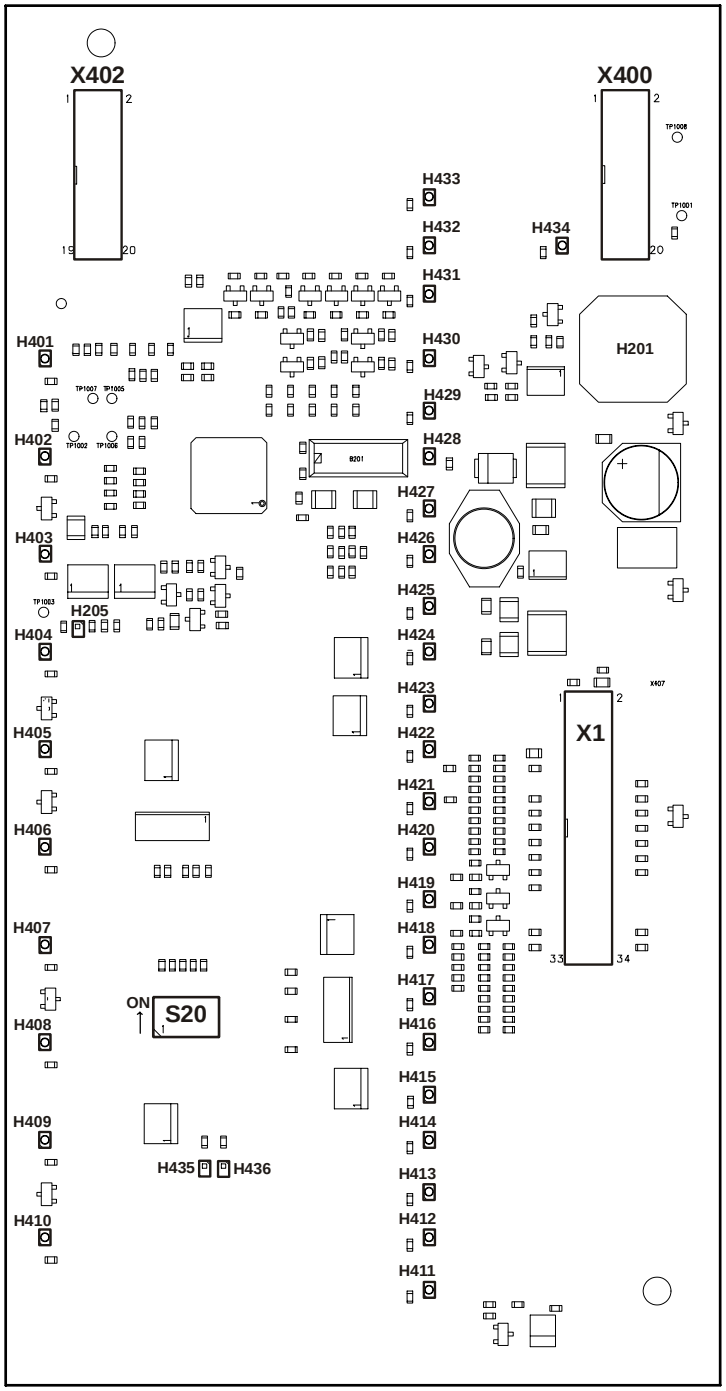
The EVAC-NL operating unit FTO2007-N1 is an evacuation control unit for the Dutch market. It is built in the operating unit or the operating add-on and facilitates the operation of at max. ten evacuation zones. In addition, the EVAC-NL operating unit has indicator and control elements.

As an operating add-on FCM2008-N1, 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 periphery bus and has the following features:

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

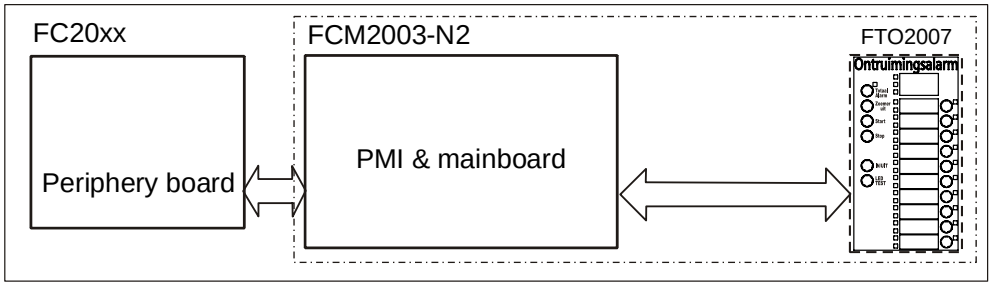
44.2 Views



Printed circuit board view 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)	Switch for configuration
X1	Connection for EVAC-NL connector board FTI2002-A1 (only with remote EVAC)

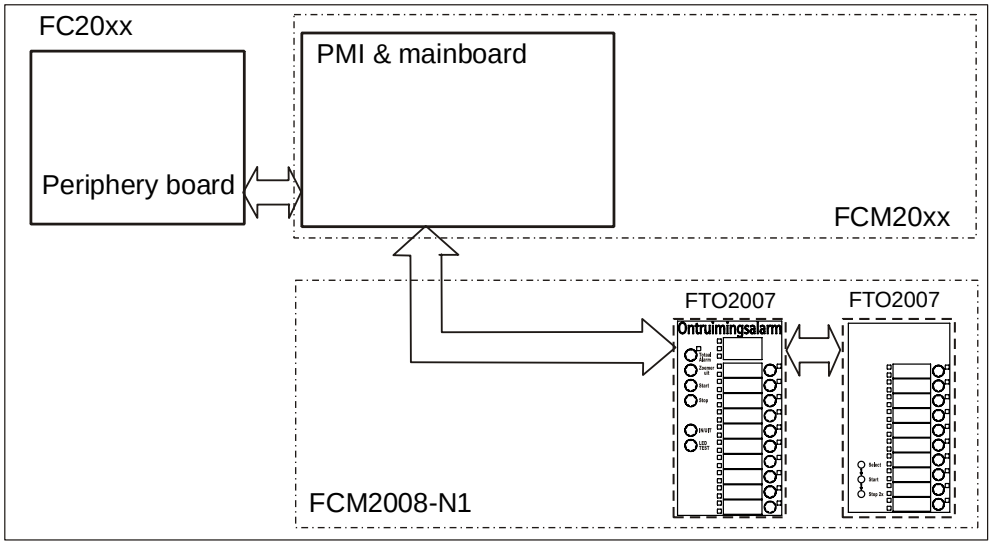
44.3 Pin assignments



Wiring of integrated EVAC 10-zone display

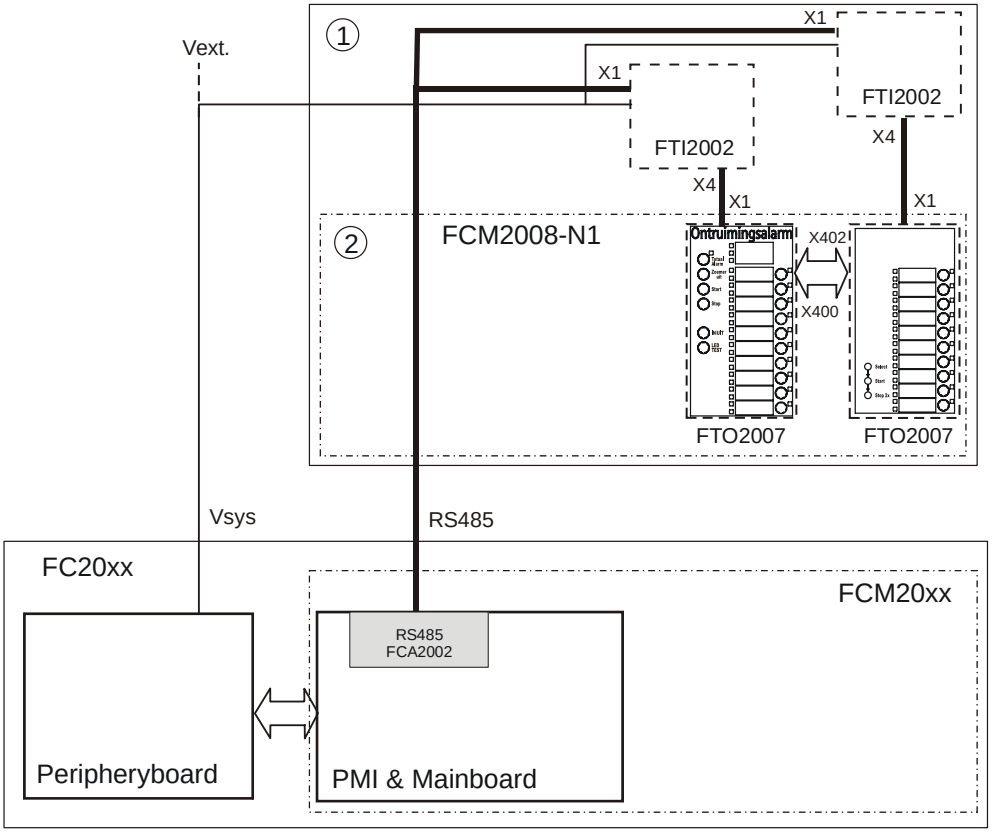
The EVAC-NL operating unit FTO2007-N1 as 10-zone indicator is used as standard in the operating unit of the following fire control panels:

- FC2020-NA
- FC2040-AE



Wiring of integrated EVAC 20-zone display

The operating add-on FCM2008-N1 (option) is installed in the bottom part of the fire control panel and is connected via the peripheral data bus.



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

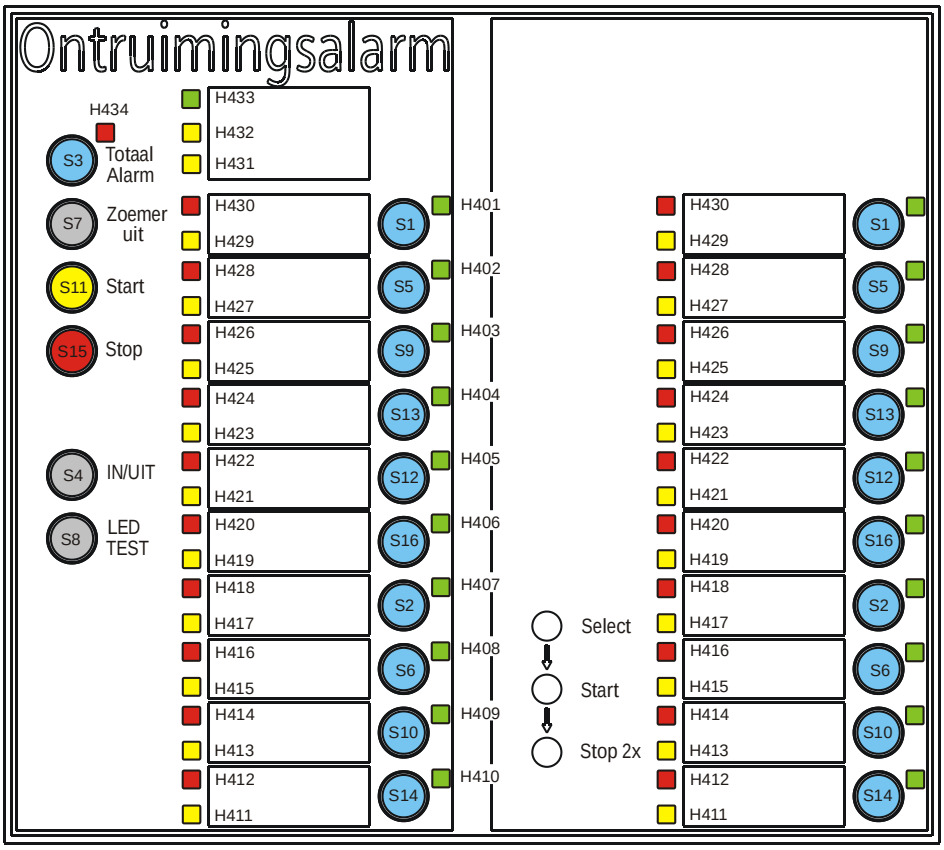
1 Any housing (e.g. ECO housing)

2 Operating add-on FCM2008-N1 with 2 x 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.

44.4 Indicators

Display and operating elements on the front panel



EVAC master unit (left), EVAC slave unit (right)

Indicators on the print plate

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

44.5 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 has no impact

[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 has no impact

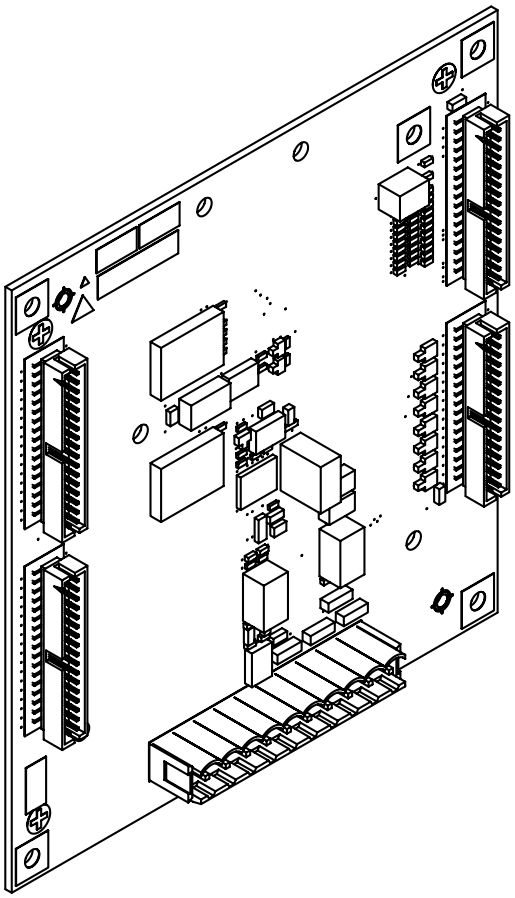
[1] 2 EVAC-NL indicators must not be operated on the same address (per station). On the second or any subsequent indicator, the address must always be set 1 higher (slave). If used in the EVAC-NL mimic display driver, the S20/5 (Syn) switch must also be **ON**.

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

44.6 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 SintesoWorks
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

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



45.1 Description

The EVAC-NL connector board FTI2002-N1 is used as an interface to the EVAC-NL operating unit FTO2007-N1. The EVAC-NL connector board is needed as a connection module from the RS485 interface of the fire control panel to the operating add-on FCM2008-N1 or the mimic display (EVAC) FT2003-N1. The EVAC-NL connector board is installed in the same housing as the EVAC-NL operating unit.

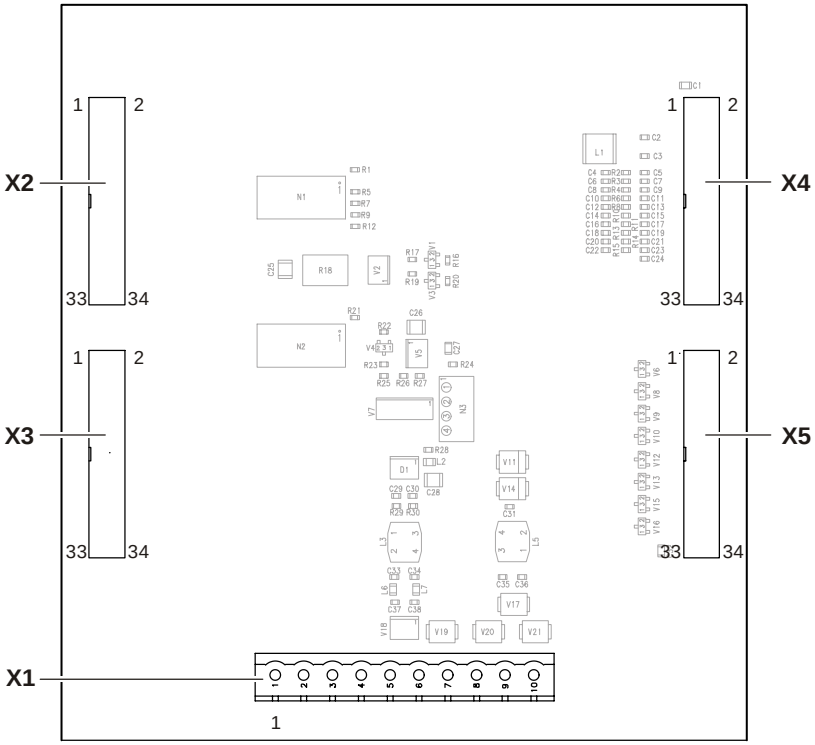
The EVAC-NL connector board FTI2002-N1 is used in the following applications:

- As an interface in a remote operating add-on FCM2008-N1
- As an interface in the mimic display driver (EVAC) FT2003-N1 (without operating unit) for EVAC-NL operation and the external operation and indication elements.

The EVAC-NL connector board has the following features:

- Communication interface via RS485 to FS20 fire control panel
- Supply inputs for an external 24 V supply
- Monitoring signals for external supply
- Connection for external operating and display elements (mimic display)

45.2 Views

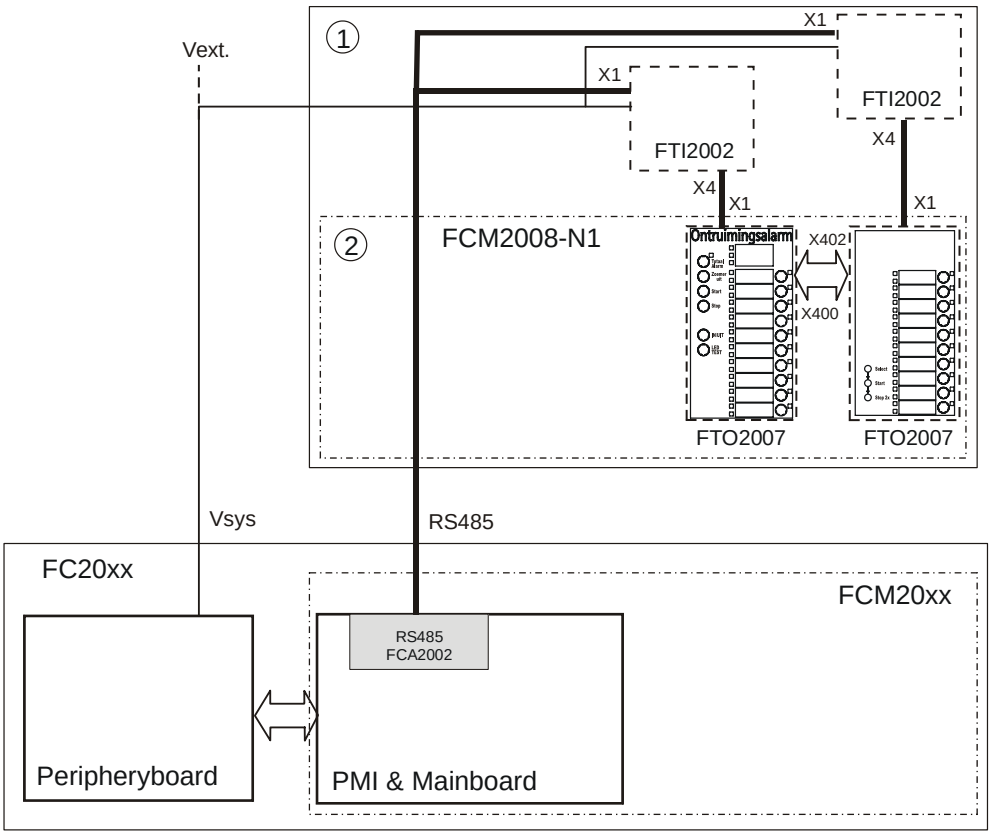


Printed circuit board view FTI2002-EVAC

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

45.3 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.

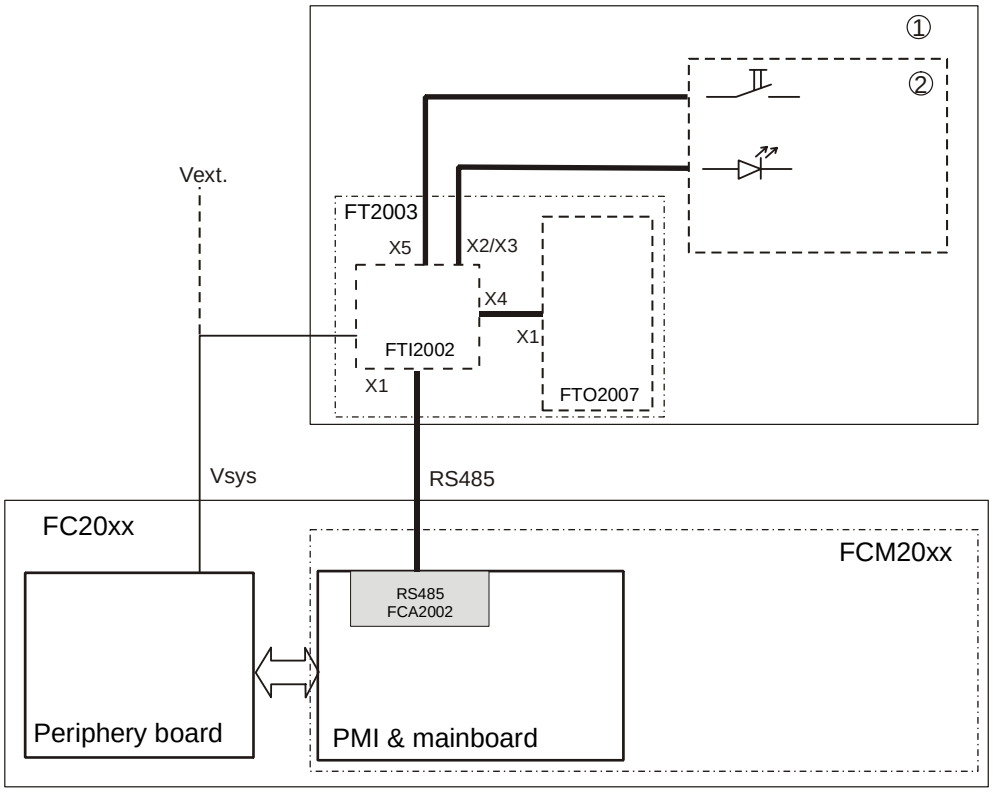


Wiring of the EVAC-NL connector board FTI2002-N1 in a remote EVAC 20-zone indicator

1	Any housing (e.g. ECO housing)
2	Operating add-on FCM2008-N1
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.



Wiring for EVAC-NL mimic display FT2003-N1

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

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.

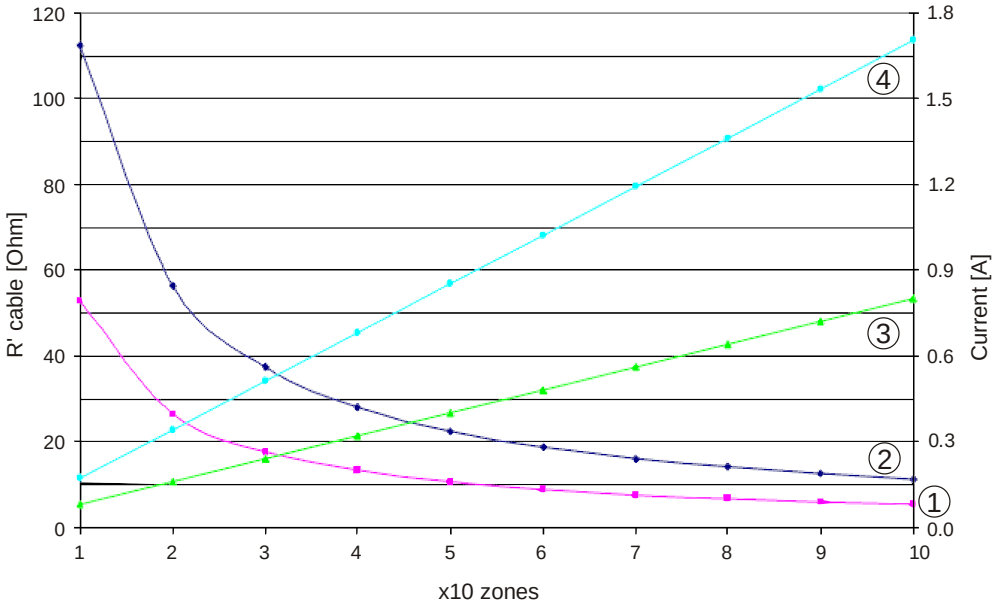


Diagram for calculating the max. cable resistance

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

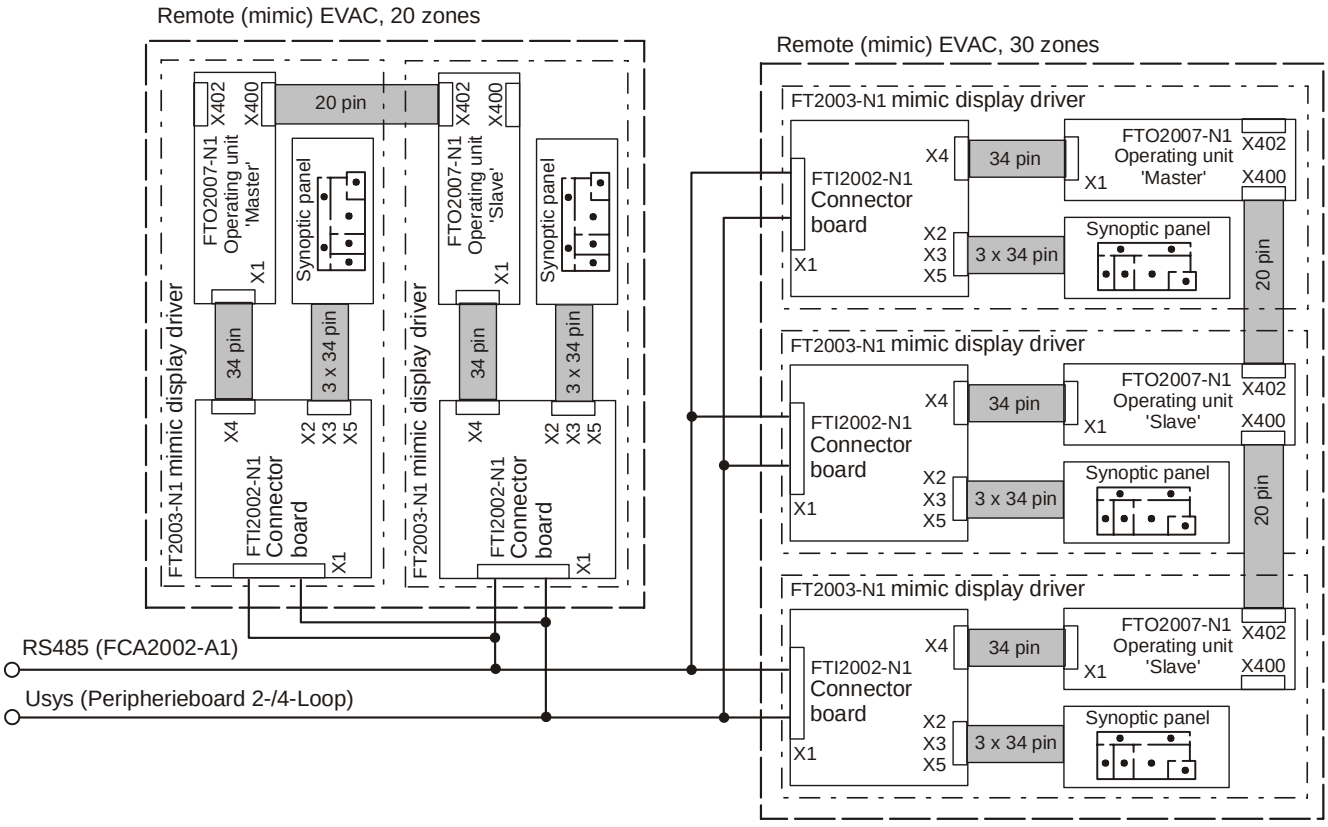
2 Max. cable resistance R' for remote EVAC-NL indicator

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.



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)

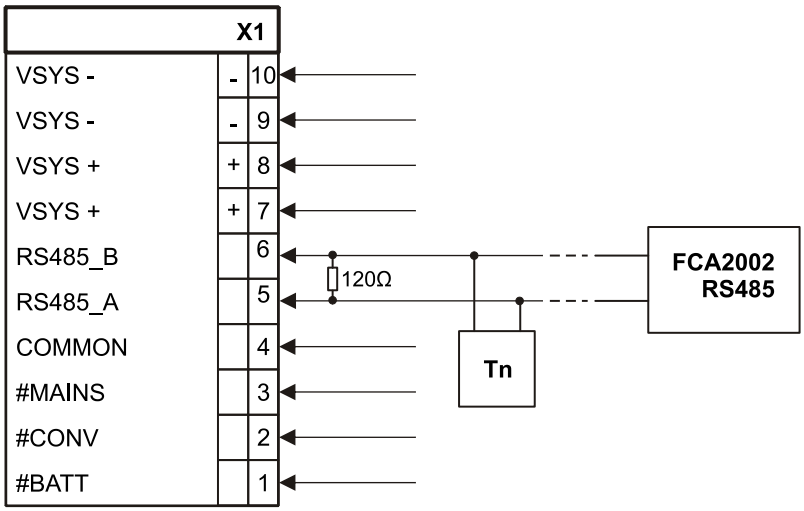
In the same way, this would result in the following for a remote EVAC-NL indicator:

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

45.3.2 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

Pin	Designation	Description
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



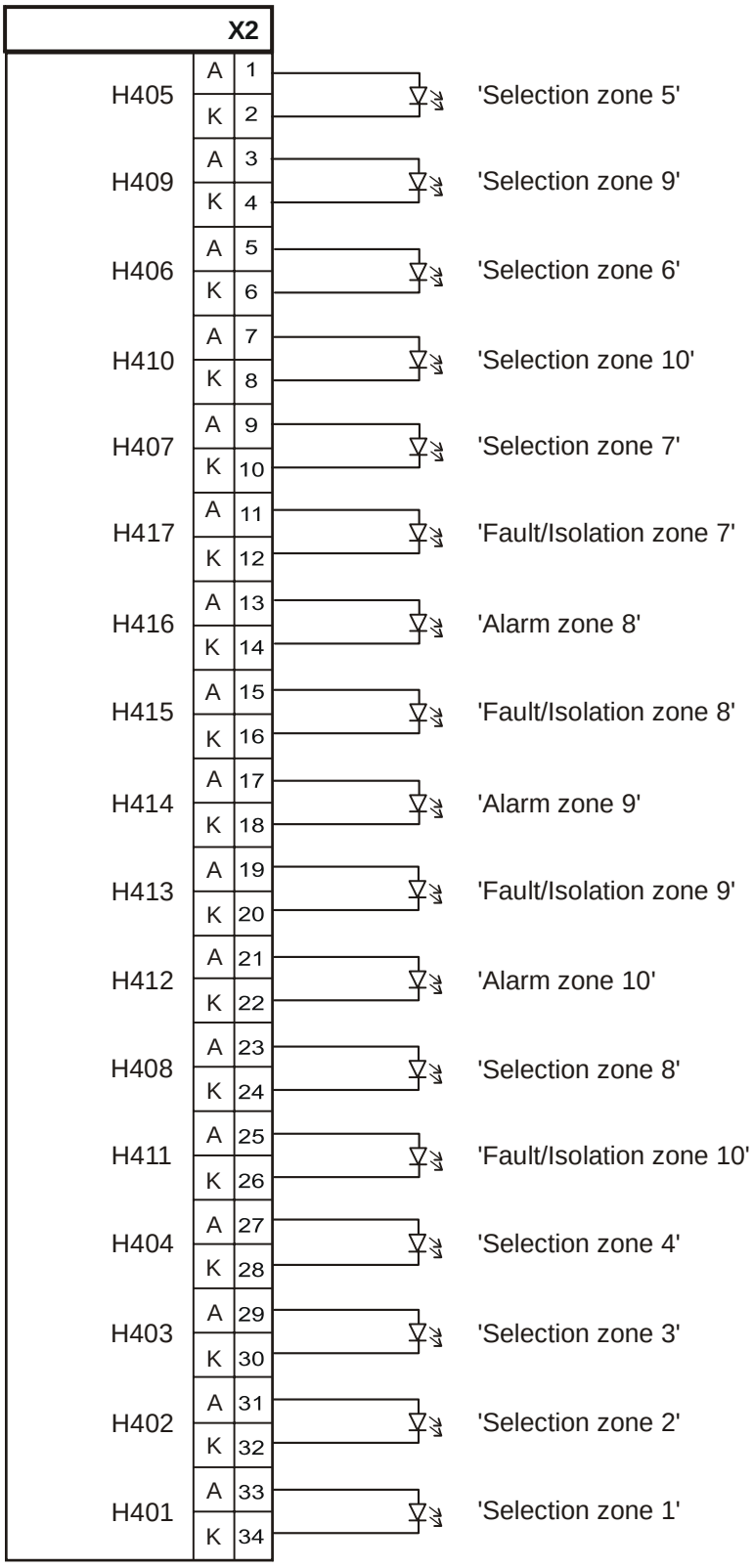
Tn = Last participant

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

45.3.3 X2 LED mimic display

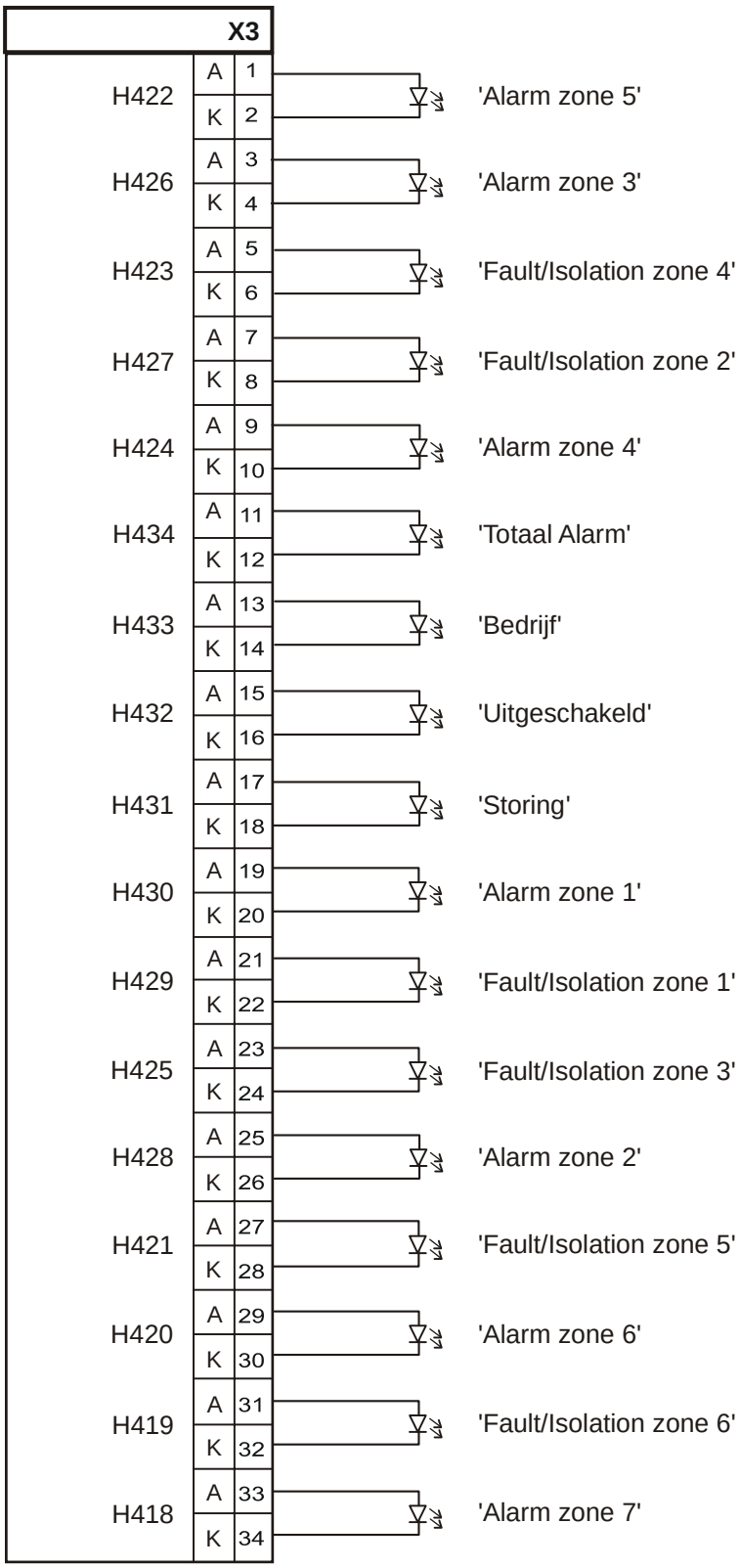
Pin	Connection for LED	Master description	Slave description
1, 2	H405 (green)	Selection zone 5	Selection zone 5
3, 4	H409 (green)	Selection zone 9	Selection zone 9
5, 6	H406 (green)	Selection zone 6	Selection zone 6
7, 8	H410 (green)	Selection zone 10	Selection zone 10
9, 10	H407 (green)	Selection zone 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

Pin	Connection for LED	Master description	Slave description
31, 32	H402 (green)	Selection zone 2	Selection zone 2
33, 34	H401 (green)	Selection zone 1	Selection zone 1



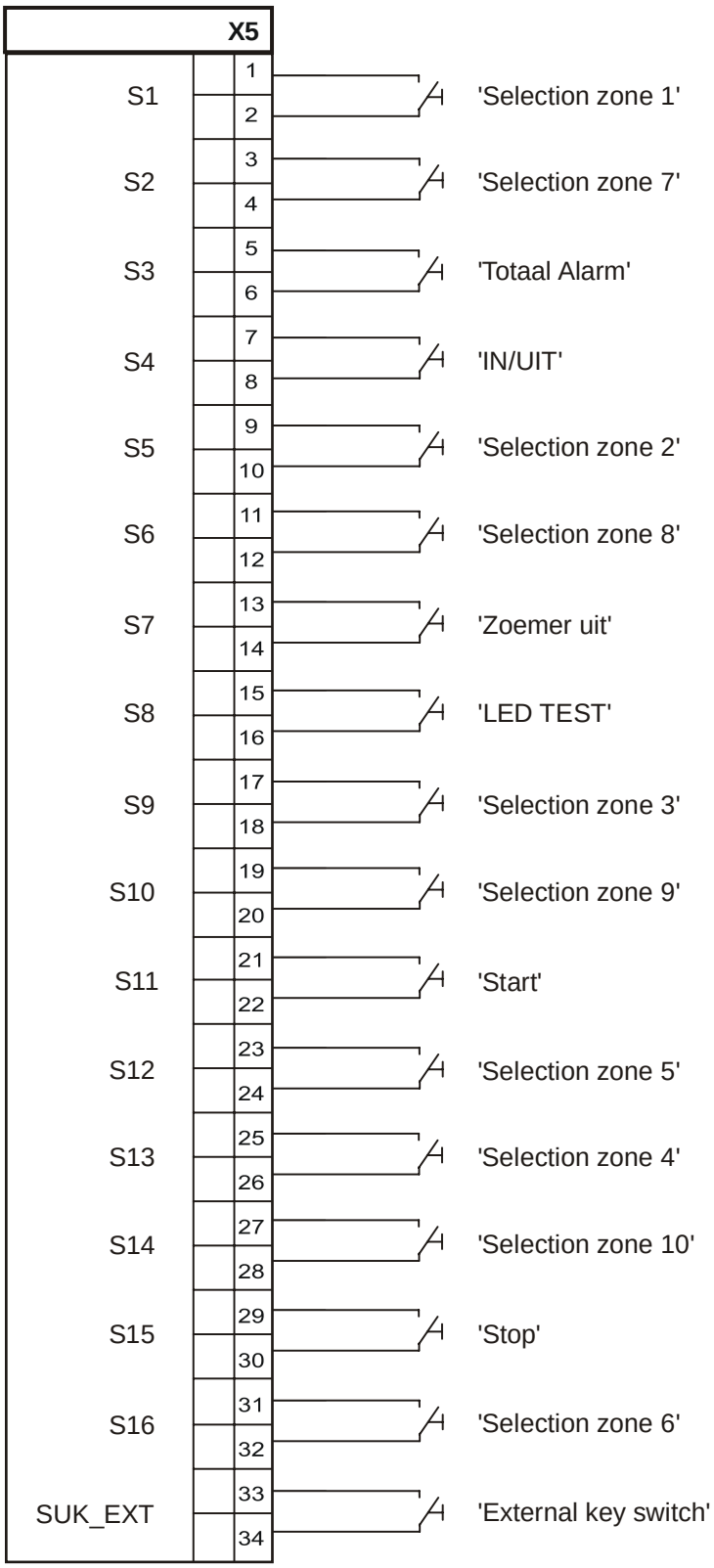
45.3.4 X3 LED mimic display

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'

45.3.5 X5 mimic display operation

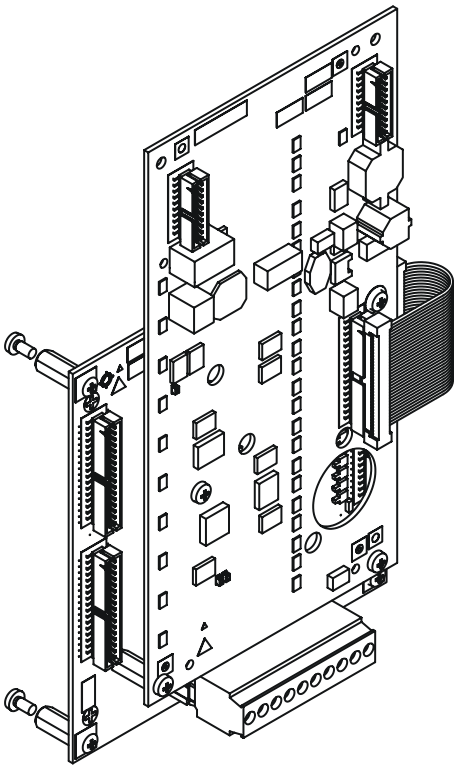
Pin	LED connection	Master description	Slave description
1, 2	S1	Selection zone 1	Selection zone 1
3, 4	S2	Selection zone 7	Selection zone 7
5, 6	S3	Totaal alarm	--
7, 8	S4	IN/UIT	--
9, 10	S5	Selection zone 2	Selection zone 2
11, 12	S6	Selection zone 8	Selection zone 8
13, 14	S7	Zoemer uit	--
15, 16	S8	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'

45.4 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

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



46.1 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.

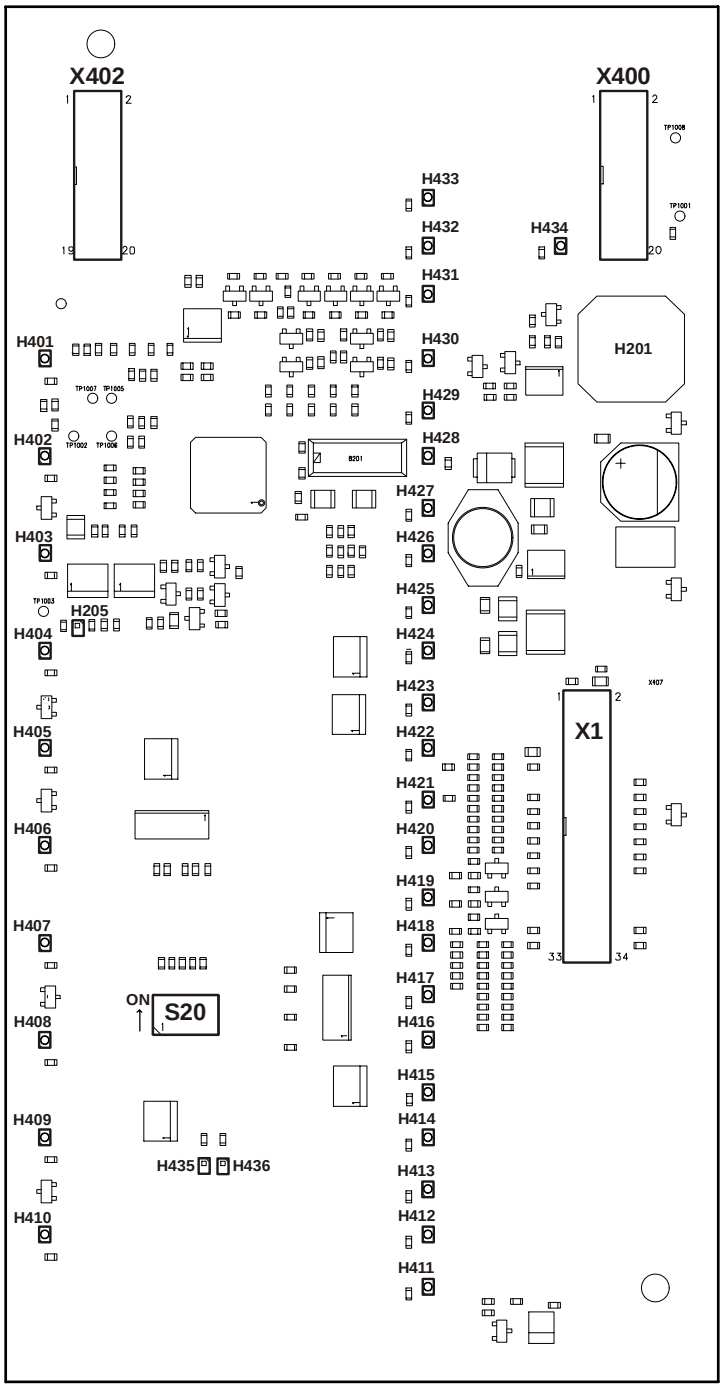
The EVAC-NL mimic display driver is supplied by a separate power supply or by the system supply of the associated station.

Properties

- Communication interface via RS485 to FS20 fire control panel
- Supply inputs for an external 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

46.2 Views

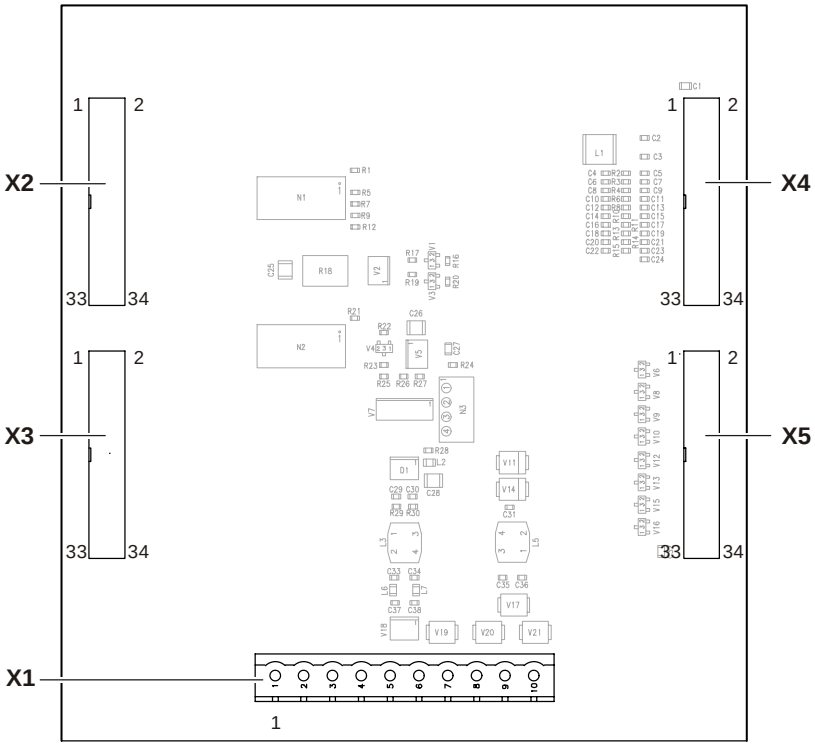
46.2.1 FTO2007-N1 view



Printed circuit board view 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)	Switch for configuration
X1	Connection for EVAC-NL connector board FTI2002-A1 (only with remote EVAC)

46.2.2 FTI2002-N1 view



Printed circuit board view FTI2002-EVAC

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

46.3 Pin assignments

46.3.1 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.

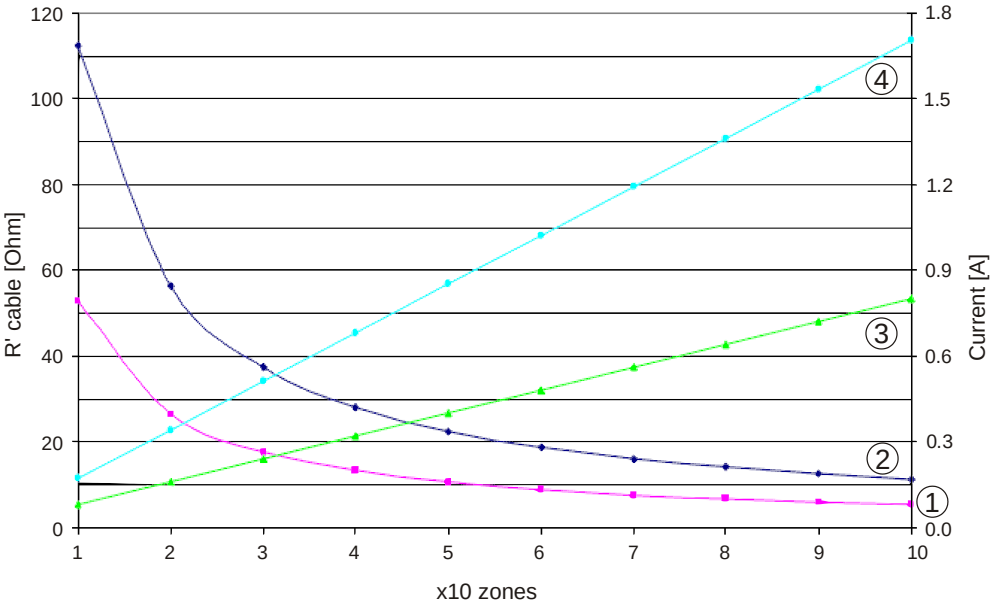


Diagram for calculating the max. cable resistance

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

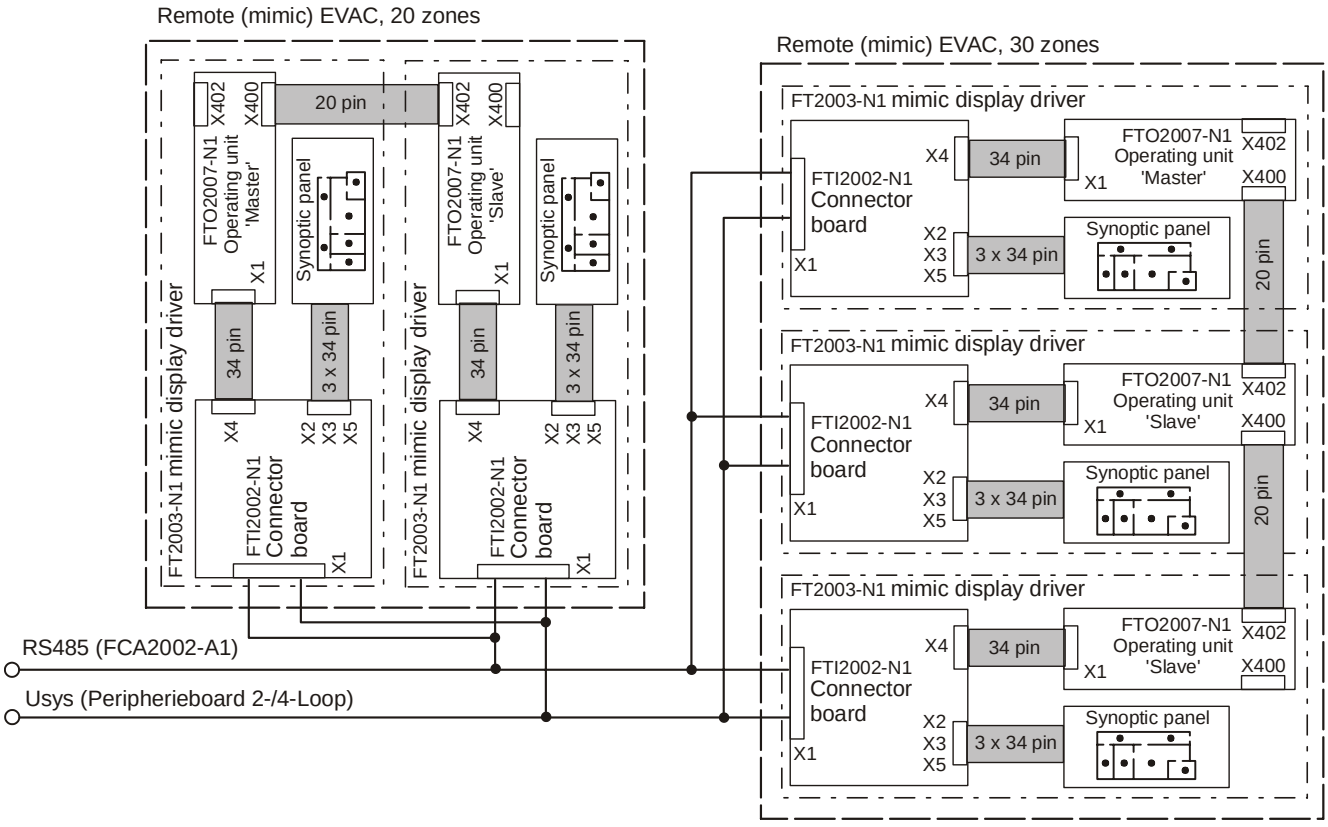
2 Max. cable resistance R' for remote EVAC-NL indicator

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.



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)

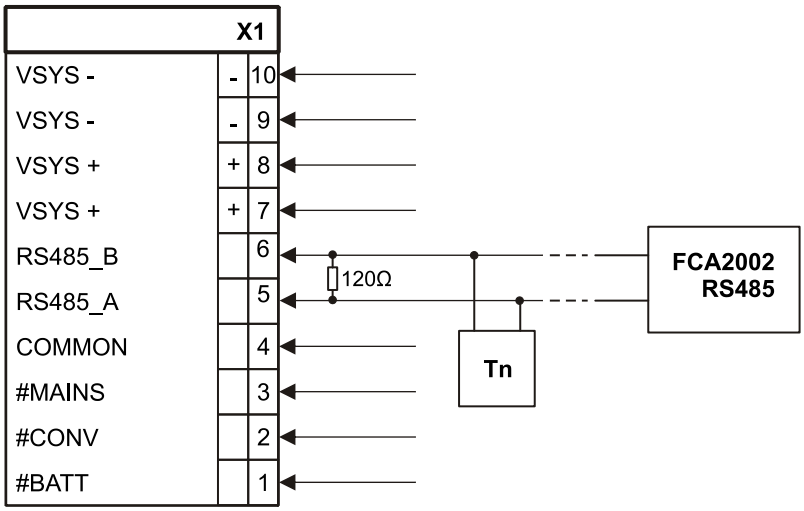
In the same way, this would result in the following for a remote EVAC-NL indicator:

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

46.3.2 EVAC-NL connector board FTI2002-N1

46.3.2.1 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

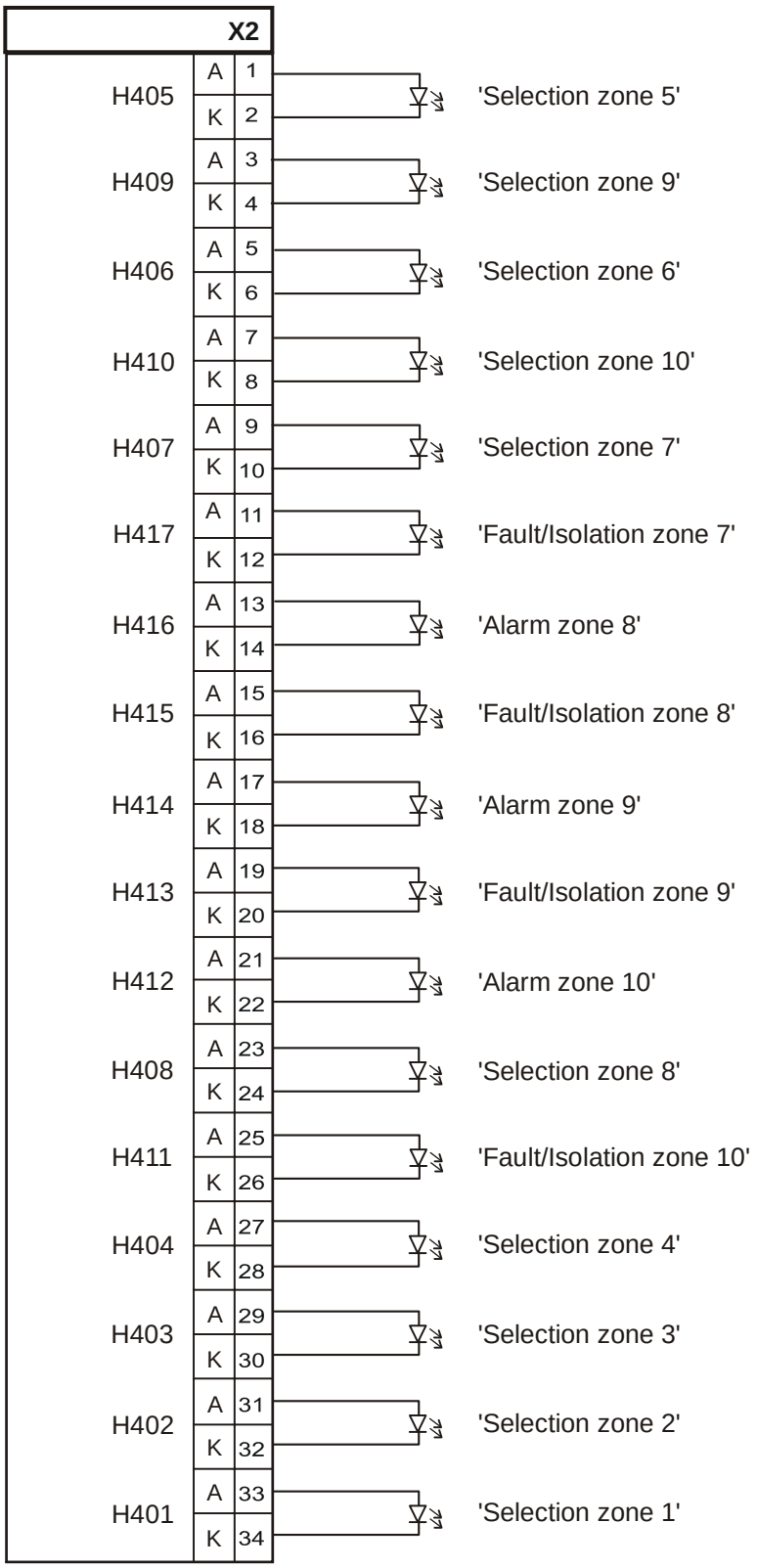


Tn = Last participant

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

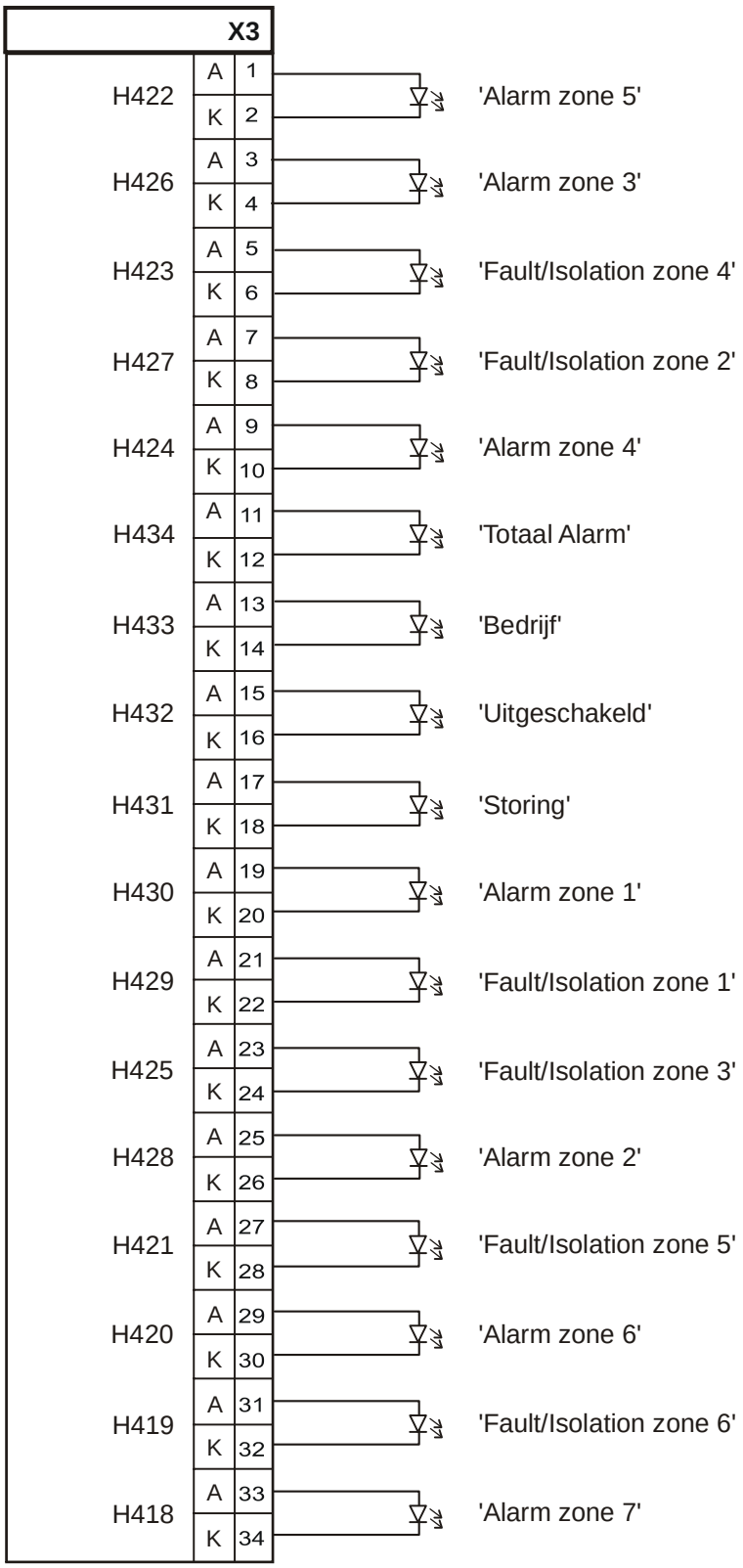
46.3.2.2 X2 LED mimic display

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'

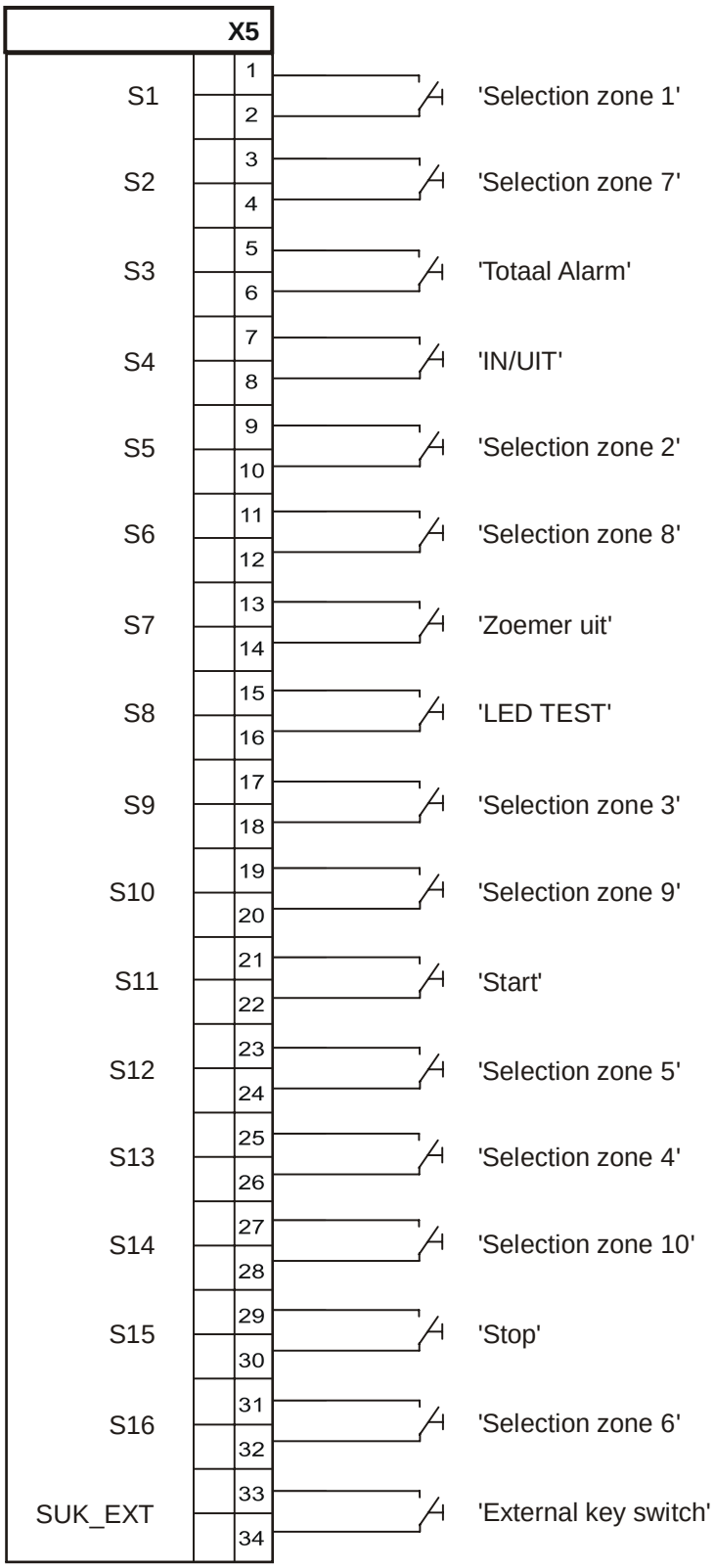
46.3.2.3 X3 LED mimic display

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'

46.3.2.4 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)

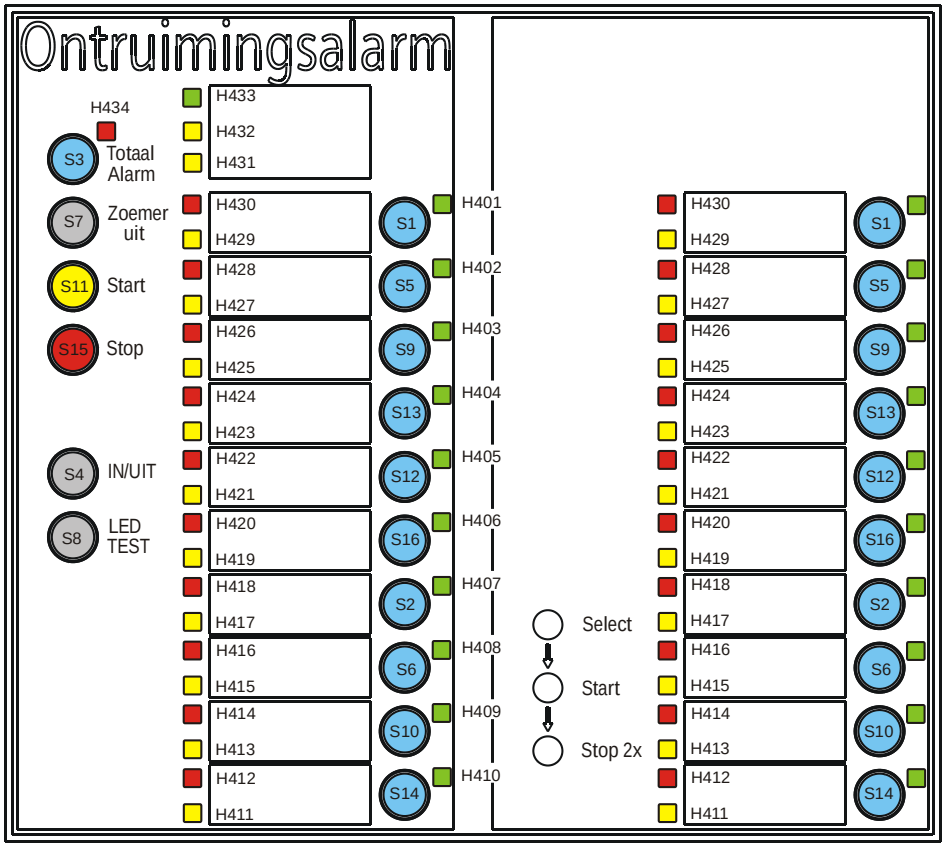

X5
S1
1
2
'Selection zone 1'
S2
3
4
'Selection zone 7'
S3
5
6
'Totaal Alarm'
S4
7
8
'IN/UIT'
S5
9
10
'Selection zone 2'
S6
11
12
'Selection zone 8'
S7
13
14
'Zoemer uit'
S8
15
16
'LED TEST'
S9
17
18
'Selection zone 3'
S10
19
20
'Selection zone 9'
S11
21
22
'Start'
S12
23
24
'Selection zone 5'
S13
25
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'

46.4 Indicators

Display 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 flat cables.

Display and operating elements on the front panel



EVAC master unit (left), EVAC slave unit (right)

Indicators on the print plate

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

46.5 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 has no impact

[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 has no impact

[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.

46.6 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

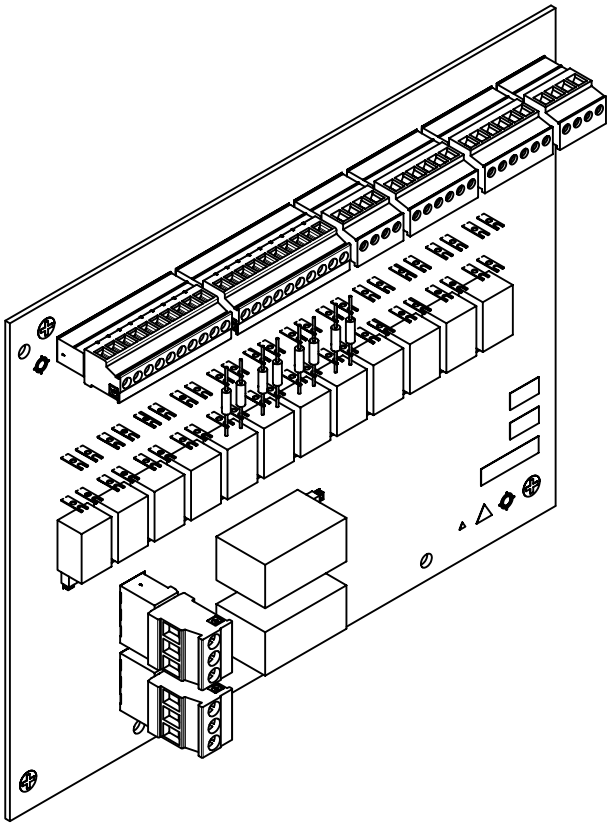
FTI2002-N1 EVAC-NL connector board

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 SintesoWorks
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

47 RT interface FCI2005-N1 [NL]

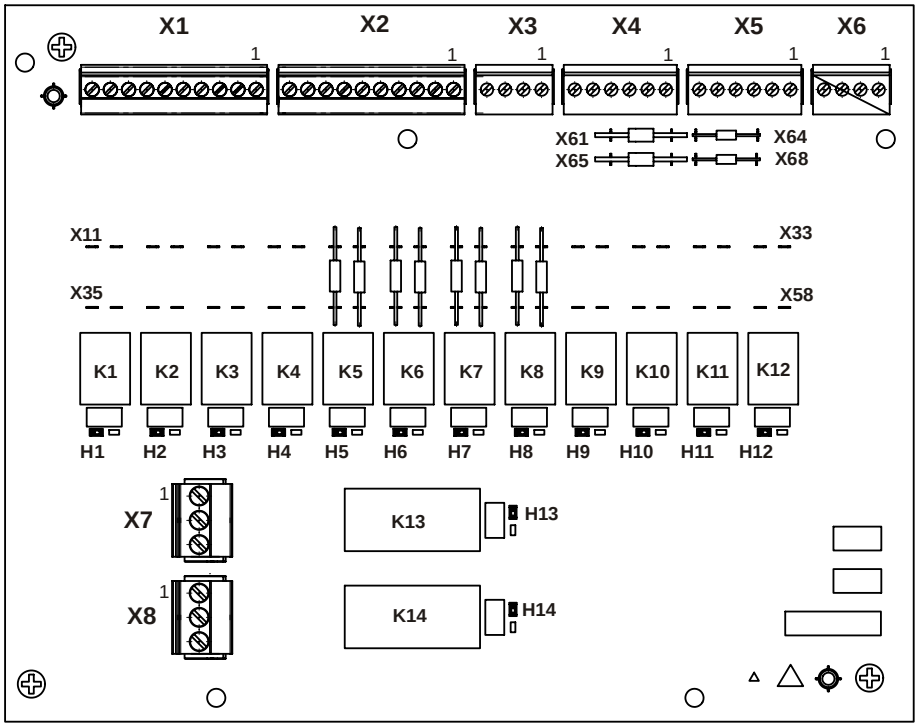


47.1 Description

The RT interface FCI2005-N1 allows a large number of different functions to be controlled in electrical isolation. 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.

47.2 Views



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
	H11	Relay 11 display
	H12	Relay 12 display
	H13	Relay 13 display
	H14	Relay 14 display

47.3 Pin assignments

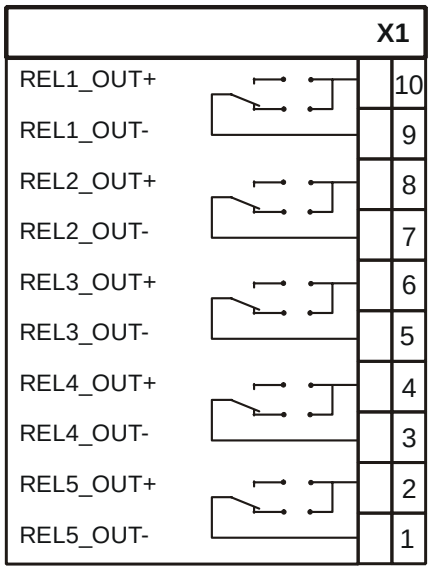
47.3.1 X1 switching contacts relays 1 … 5

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



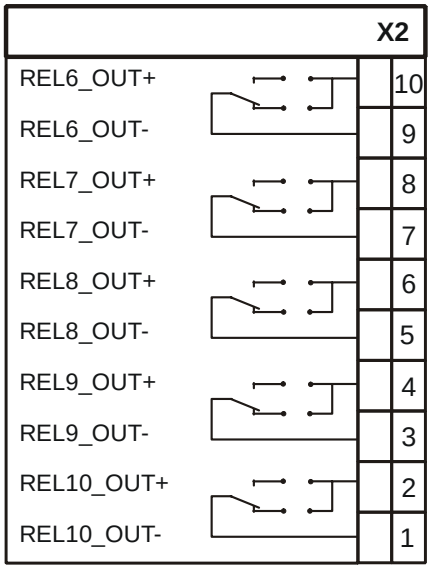
47.3.2 X2 switching contacts relays 6 … 10

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



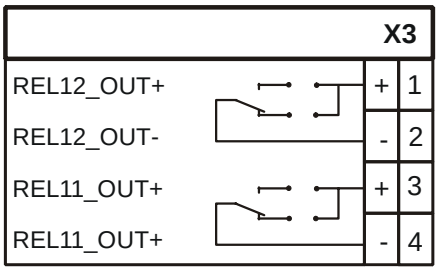
47.3.3 X3 relay 11 + 12 switching contacts

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



47.3.4 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

47.3.5 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

47.3.6 X6 relay coils 11 … 14

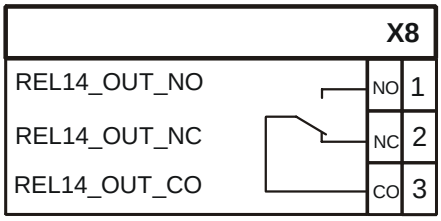
Pin	Designation	Description
4	REL11_IN-	Relay coil 11, active low
3	REL12_IN-	Relay coil 12, active low
2	REL13_IN-	Relay coil 13, active low
1	REL14_IN-	Relay coil 14, active low

Admissible cable cross-section: 0.14…1.5 mm²

47.3.7 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

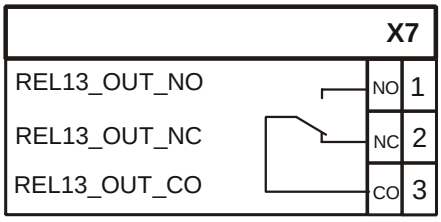
Admissible cable cross-section: 0.2…2.5 mm²



47.3.8 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



47.3.9 Connection of cable tree to periphery board

RT interface		Cable tree		Periphery board 4 loops		Periphery board 2-loop	
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

RT interface		Cable tree		Periphery board 4 loops		Periphery board 2-loop	
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	--	--

47.4 Indicators

LED	Color	Function	Condition	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

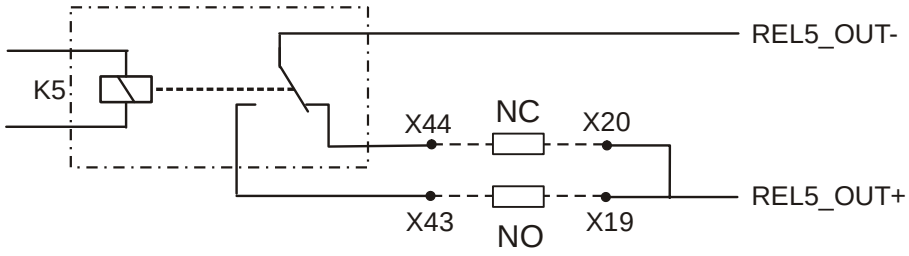
NO = normally open

NC = normally closed

47.5 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.



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

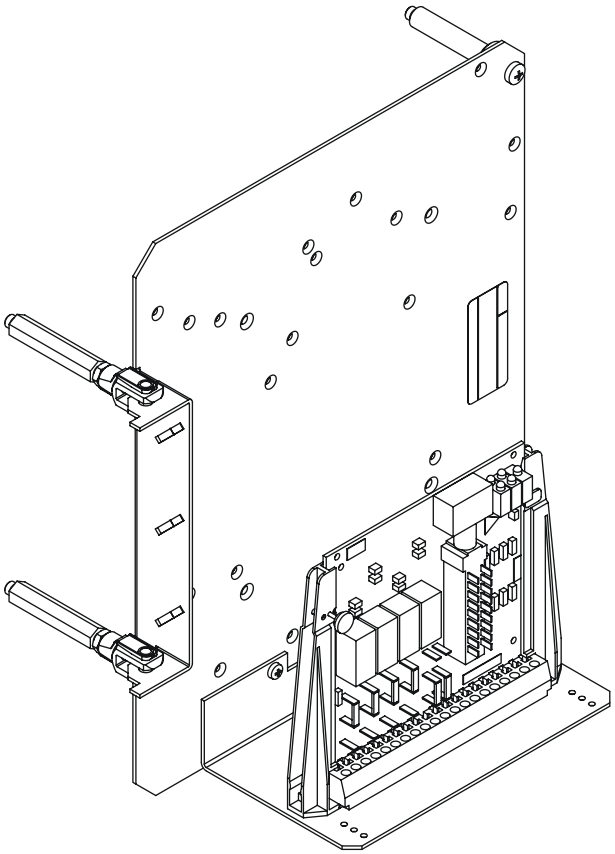
Settings for Holland (default)

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

47.6 Technical data

Supply input	Designation	'20 V-30 V VSYS+'
	Voltage	Min. DC 17 V…max. DC 30 V
	Quiescent current	Typically 0 mA
	Quiescent current (all relays switched)	Max. 240 mA
Relays 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

48 RT interface FCI2006-C1 [CH]



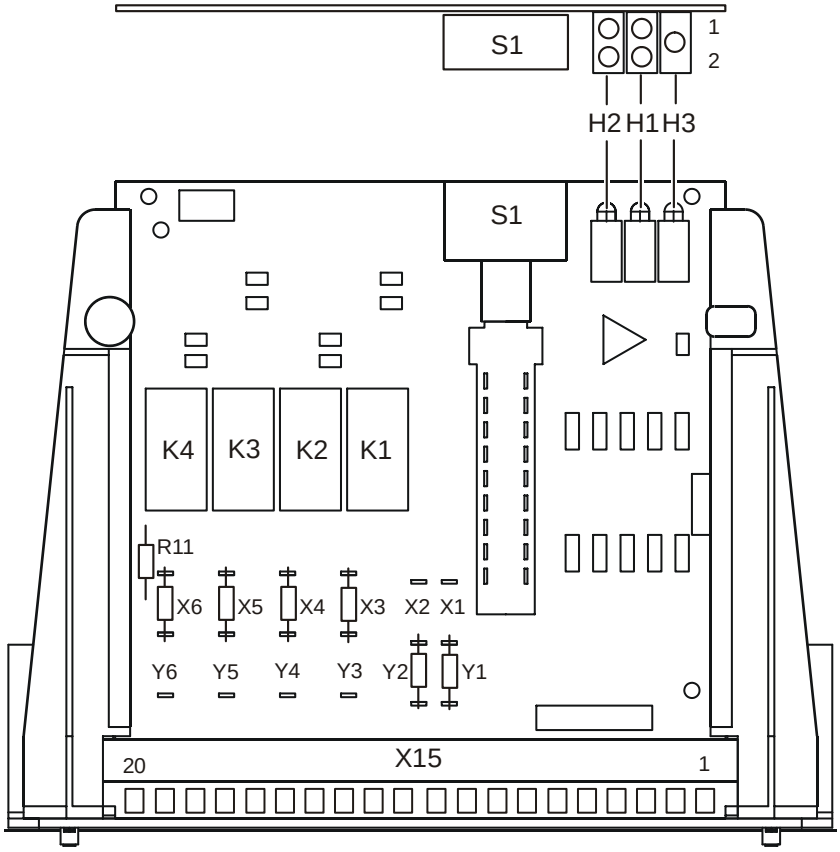
48.1 Description

The RT interface FCI2006-C1 has been designed for the Swiss market and serves as an interface for remote transmission devices with several alarm criteria. The RT interface has been designed as a set and comprises the E3G091 card, a mounting plate and the corresponding cable set.

Properties

- For blocking the fire and fault criteria that can operate in degraded mode as well as four additional RT criteria
- Activation via break or make contact
- Activation of the four additional criteria is signaled by additional LEDs
- Another E3G091 card can be installed
- Cable for connection to the periphery board and the corresponding RT device already connected and fully assembled

48.2 Views



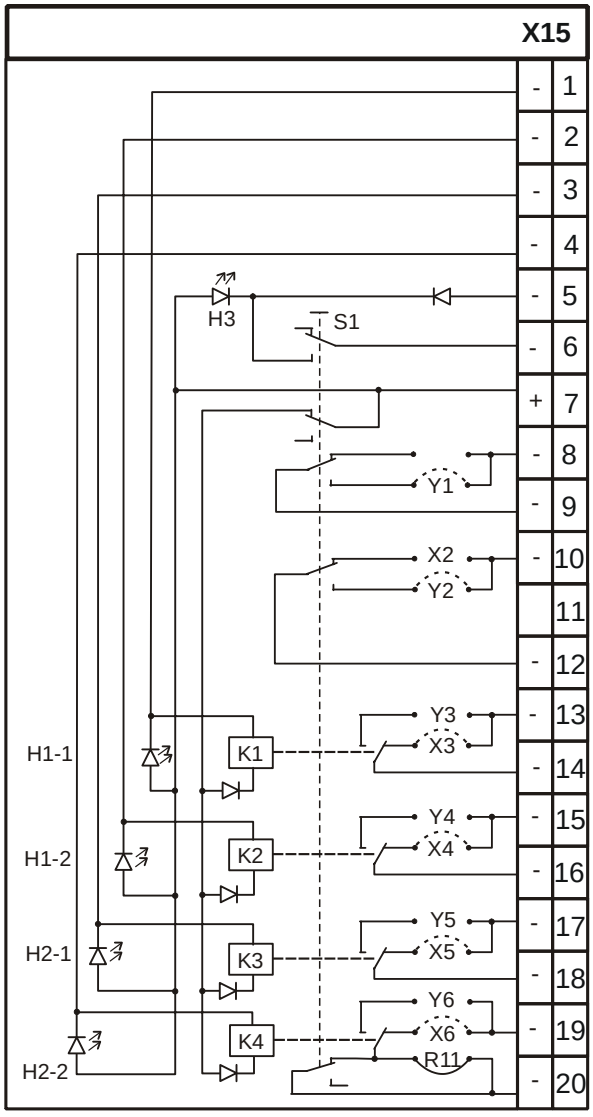
Printed circuit board view of E3G091 (FCI2006-C1 set), view installed and from above

Element	Des.	Function
Connectors and terminals	X15	Connection of periphery and supply
Soldered jumpers	X1 … X6	Make contact jumpers
	Y1…Y6	Break contact jumpers
	R11	0 Ω resistance
LEDs	H1	Relay 1 and 2 display
	H2	Relay 3 and 4 display
	H3	Test display
Switches and keys	S1	Test key

48.3 Pin assignments

48.3.1 X15 terminal strip

Pin	Description
1	Relay 1, input -
2	Relay 2, input -
3	Relay 3, input -
4	Relay 4, input -
5	Test output
6	0 V supply
7	Relay 4 switching contact (configurable as NO or NC)
8	Relay 4 switching contact
9	Alarm test switching contact
10	Fault test switching contact (configurable as NO or NC)
11	Not used
12	Fault test switching contact
13	Relay 1 switching contact (configurable as NO or NC)
14	Relay 1 switching contact
15	Relay 2 switching contact (configurable as NO or NC)
16	Relay 2 switching contact
17	Relay 3 switching contact (configurable as NO or NC)
18	Relay 3 switching contact
19	Relay 4 switching contact (configurable as NO or NC)
20	Relay 4 switching contact



48.3.2 Connection of cable tree to periphery board

RT interface		Cable tree		4 loop periphery board		2 loops periphery board	
Pin	Designation	Cable color	Cable no.	Pin	Designation	Pin	Designation
1	Relay 1	Black	1	X8-1	I/O1	X8-1	I/O1
2	Relay 2	Brown	1	X8-2	I/O2	X8-2	I/O2
3	Relay 3	Green	1	X8-3	I/O3	X8-3	I/O3
4	Relay 4	--	--	--	--	--	--
5	Test	Gray/pink	1	X8-6	I/O6	X8-4	I/O4
6	0 V supply	Blue	1 (+ 2)	X8-8	GND_01	X8-6	GND_01
7	+ 24 V supply	Red	1 (+ 2)	X8-7	VSYS_01	X8-5	VSYS_01
8	Alarm	Gray	1 (+ 2)	X7-3	AL_NC	X7-3	AL_NC
9	Alarm	Pink	1 (+ 2)	X7-2	AL_COM	X7-2	AL_COM
10	Fault	Violet	1 (+ 2)	X7-4	FAU_NO	X7-4	FAU_NO
11	--	Yellow	1 (+ 2)	X8-5	I/O5	X9-4	I/O8

RT interface		Cable tree		4 loop periphery board		2 loops periphery board	
12	Fault	White	1 (+ 2)	X7-5	FAU_COM	X7-5	FAU_COM
13	K1	Black	2	--	--	--	--
14	K1	Brown	2 + 3	--	--	--	--
15	K2	Green	2	--	--	--	--
16	K2	--	3	--	--	--	--
17	K3	Gray/pink	2	--	--	--	--
18	K3	--	3	--	--	--	--
19	K4	--	--	--	--	--	--
20	K4	--	3	--	--	--	--

Cable no.:

- Cable 1 to periphery board, control cable VDE LI-CY 0.34 mm², 14-pin, length 560 mm, included in cable set
- Cable 2 to RT device, control cable 14-pin VDE LI-CY 0.34 mm², length 700 mm, included in cable set
- Cable 3 = loop made from wire jumpers 3 x 0.22 mm² x 40 mm

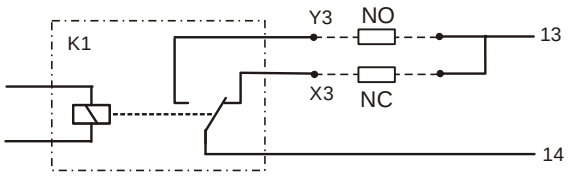
48.4 Indicators

LED	Color	Function	Condition	Meaning
H1-1	Red	Relay 1	Off	Quiescent condition, relay inactive
			On	Relay activated
H1-2	Red	Relay 2	Off	Quiescent condition, relay inactive
			On	Relay activated
H2-1	Red	Relay 3	Off	Quiescent condition, relay inactive
			On	Relay activated
H2-2	Red	Relay 4	Off	Quiescent condition, relay inactive
			On	Relay activated
H3	Yellow	Test	Off	Quiescent condition
			On	Test mode active (key S1 pressed)

48.5 Adjustment elements

The switching contacts of the relays K1…K4 and the 'Alarm' and 'Fault' test contacts must be configured as 'normally open' (NO) or 'normally closed' (NC). The application-specific configuration is made by inserting a wire jumper (0 Ω resistance) between the corresponding solder pins.

The following figure shows a configuration example using relay K1.



Settings

NO = wire jumper or resistor across solder pins Y3
NC = wire jumper or resistor across solder pins X3

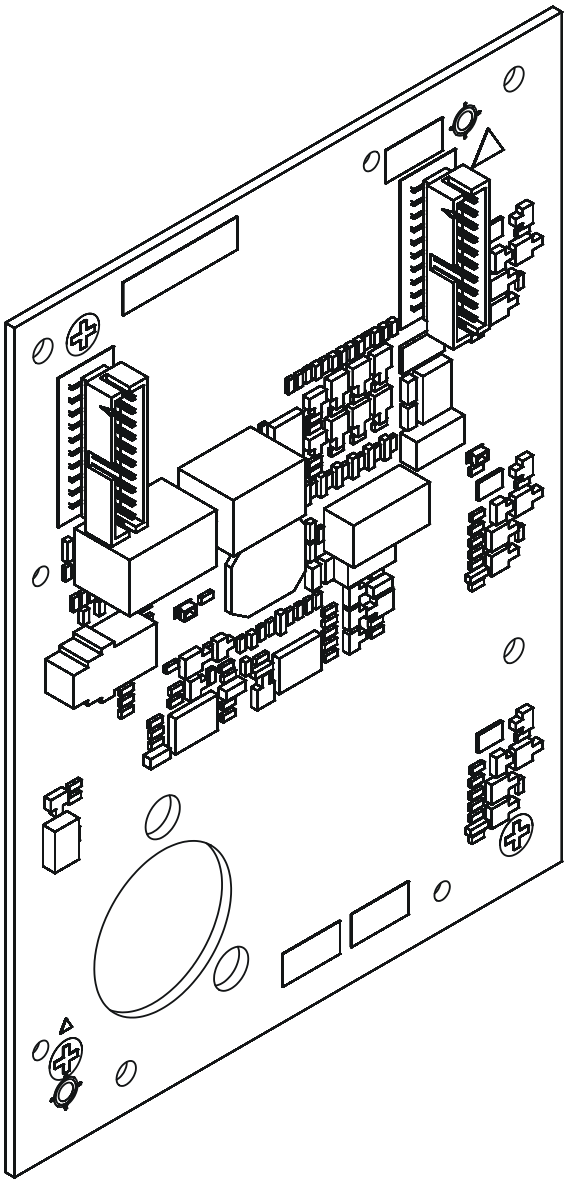
Settings for Switzerland (default)

Relay	Pin no.	Solder pins	NO/NC	Resistance
K1	13	Y3	NO	Open
		X3	NC	Bridged
K2	15	Y4	NO	Open
		X4	NC	Bridged
K3	17	Y5	NO	Open
		X5	NC	Bridged
K4	19	Y6	NO	Open
		X6	NC	Bridged
Alarm	8	Y1	NO	Bridged
		X1	NC	Open
Fault	10	Y2	NO	Bridged
		X2	NC	Open

48.6 Technical data

Supply input	Supply voltage	DC 20…32 V
	Quiescent current	0 mA at DC 24 V
	Maximum current	100 mA
Relay 1…4	Designation	'K1'…'K4'
	Design	4 x pole reversal
	Operating current/relay	Max. 12 mA
	DC switching voltage	Max. DC 30 V
	DC switching current	Max. 5 A
LEDs	Status display relay and test	Lights up when relay is switched
Connection terminal X15	Design	Printed circuit board plug connector and terminal strip on card cage Wieland 20-pin type 99.264.9700.2
	Admissible cable cross-section	0.14…2.5 mm^2
Mechanical data		
● **Card E3G091**	Card dimensions (W x H x D)	100 x 100 x 15 mm
	Card weight	58 g
● **FCI2006-C1 set**	Set dimensions (W x H x D)	222 x 243 x 80 mm
	Set weight	1.41 kg

49 FBA terminal FTO2004-C1 [CH]



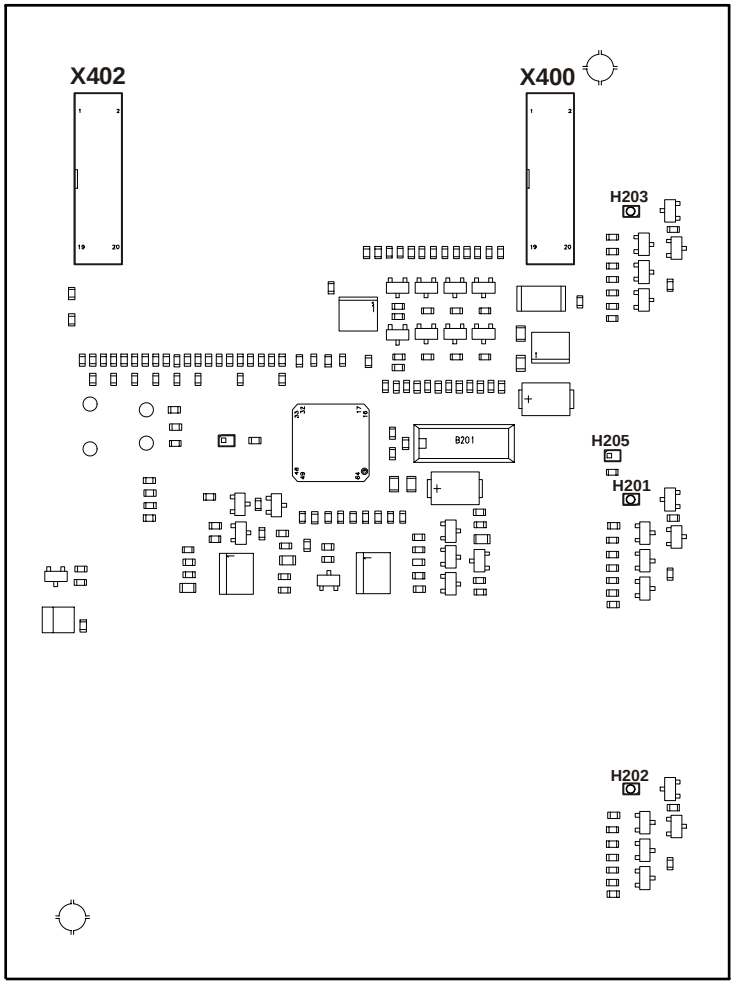
49.1 Description

The FBA terminal FTO2004-C1 is a standardized fire department control and display panel according to SN 054 002 and is tailored to the Swiss market. It is fitted in the operating unit and allows events to be displayed with ease and makes simple operation possible.

The fire department operation and indication panel is connected to the peripheral data bus and has the following features:

- Indication of fire alarms
- Indication of faults
- Activation display for remote transmission
- Key for deactivating acoustic alarming
- Key for resetting the fire control panel
- Key switch (Kaba) to release operation

49.2 Views



Printed circuit board view FTO2004

X400	Connection peripheral data bus, input
X402	Connection of the peripheral data bus, output (connection for additional peripherals)
H201…205	LED indicators

49.3 Indicators

LED	Color	Function	Condition	Meaning
H201	Yellow	Operating indication	On	Fault
H202	Red	Operating indication	On	Remote alarm
H203	Red	Operating indication	On	Fire alarm
H205	Yellow	Watchdog	Off	Normal condition
			On	Function failure of the processor

49.4 Technical data

Supply input	Voltage	DC 20…32 V
	Current	Max. 50 mA (24 V)
Supply output	Voltage	DC 20…32 V
	Current	Looped through, max. 1 A
LEDs	Number	3 operating indicators and 1 error indicator (watchdog)
Connections	Peripheral data bus (input and output)	Plug-type connection with flat-ribbon cable
Mechanical data	Dimensions (W x H x D)	96 x 129 x 12 mm
	Weight	Approx. 50 g

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