

# ESSER

by Honeywell



**FlexES** control

## Installation Instruction

Fire alarm computer FlexES control

### Intended purpose

This product may only be used for the applications outlined in the catalogue and in the technical description, and only in conjunction with the recommended and approved external devices and components.

### Warning

In order to ensure correct and safe operation of the product, all guidelines concerning its transport, storage, installation, and mounting must be observed. This includes the necessary care in operating the product.

### Safety-related user information

This manual includes all information required for the proper use of the products described.

The term 'qualified personnel' in the context of the safety information included in this manual or on the product itself designates:

- project engineers who are familiar with the safety guidelines concerning fire alarm and extinguishing systems.
- trained service engineers who are familiar with the components of fire alarm and extinguishing systems and the information on their operation as included in this manual.
- trained installation or service personnel with the necessary qualification for carrying out repairs on fire alarm and extinguishing systems or who are authorised to operate, ground and label electrical circuits and/or safety equipment/systems.

### Safety warnings

The following information is given in the interest of your personal safety and to prevent damage to the product described in this manual and all equipment connected to it.

Safety information and warnings for the prevention of dangers putting at risk the life and health of user and maintenance personnel as well as causing damage to the equipment itself are marked by the following pictograms. Within the context of this manual, these pictograms have the following meanings:



Designates risks for man and/or machine. Non-compliance will create risks to man and/or machine. The level of risk is indicated by the word of warning.



Important information on a topic or a procedure and other important information!



Observe configuration and commissioning information in accordance to the national and local requirements.

### Dismantling



In accordance with Directive 2002/96/EG (WEEE), after being dismantled, electrical and electronic equipment is taken back by the manufacturer for proper disposal.

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# 1 Standards and guidelines

The general technical rules must be observed when installing fire alarm systems. Any deviation from those rules is only admissible if the same degree of safety can be ensured with different means. Installations within the European Community are primarily subject to all EU regulations defining the current standards for security systems.

In Germany, systems are considered to be in compliance with the general technical rules or the standards of the EU for security systems if they meet the technical guidelines of the VDE (Verband Deutscher Elektrotechniker, Association of German Electrical Engineers). They may also be considered to be in compliance with the standards of the EU for security systems if they meet the technical guidelines of another comparable institution within the European Community which have been accepted in accordance with directive on low-voltage systems (2006/95/EG). The same must be applied for all applications of additional, product relating guidelines, e.g. EMI-Guideline 2004/108/EG and the Construction Products Directive (CPD) 89/106/EG.

These are examples:

- Standards of the DIN EN 54 "Fire alarm systems", particularly DIN EN 54-2 "Fire alarm control panels" and DIN EN 54-4 "Power supply units".
- Standards of the DIN VDE 0100 issue, particularly DIN EN 0100-410 "Installation of high-voltage systems with rated voltage up to 1000 V", DIN VDE 100-718, Install low voltage systems – Requirements for sites, rooms and special systems and DIN VDE 0105-100 "Operation of electrical system: General commitments".
- Standards of the DIN EN 62305 or DIN VDE 0185-305 issue, particularly DIN VDE 0185-305-1 "Lightning protection: General standards", DIN VDE 0185-305-2 "Risk-Management", DIN VDE 0185-305-3 "Protection of buildings and persons" and DIN VDE 0185-305-4 "Electrical and electronic systems in buildings".
- DIN VDE 0701-1 "Maintenance, Modification and Test of electrical devices: General commitments".
- Standards of the DIN VDE 0800 issue, particularly DIN VDE 0800-1 "General commitments, Requirements and Tests for system security", DIN VDE 0800-1 "Communication systems, Earthing and potential compensation", DIN VDE 0800-174-2 "Information systems – design and installation of communication cabling in buildings".
- DIN VDE 0815 "Cables for communication and information systems".
- Standards of the DIN VDE 0833 issue Hazard alarm systems for Fire, Intruder and Hold-up, particularly DIN VDE 0833-1 "General commitments", DIN VDE 0833-2 "Commitments for fire alarm systems (FAS)", DIN VDE 0833-3 "Commitments for Intruder and Hold-up systems" and DIN VDE 0833-4 "Commitments for Voice alarm systems within fire protection".
- Standards of the DIN VDE 0845 issue, particularly DIN VDE 0845-1 "Protection of Communication systems against Lightning, electrostatic charge and overvoltage from high-voltage systems; Actions to avoid over-voltage".
- DIN 14675 Fire alarm systems – mounting and operation.

These technical guidelines must be observed within the European Community. The VDE guidelines must be observed within Germany. In other countries (e.g. U.S.A.: NFPA and UL requirements), the relevant national standards, guidelines and legislation must be observed.

In addition to the above, the guidelines of the German VdS Schadenverhütung GmbH (VdS) may apply for systems installed in Germany.

- VdS 2046 Safety rules for electrical power systems with voltages up to 1000 V
- VdS 2015 Electrical appliances and systems – rules for damage prevention
- VdS 2095 Design and installation of fire alarm systems
- VdS 2833 Overvoltage protection measures for Hazard Alarm Systems
- Always observe national and local building law requirements and regulations (building regulations).

## 2 General

This installation manual describes how to assemble the housing, install within a building and how to install a new fire alarm system FlexES control panel. All other relevant applicable documents must be taken into consideration when designing, operating and servicing a fire alarm system.

The information and technical specifications detailed in this manual are designed to enable a professional and experienced fire alarm system installer with the corresponding knowledge and skills generally associated with professional fire alarm system installers to quickly assemble and install the fire alarm system. The fire alarm system FlexES control panel has been designed for assembly and installation in a fire alarm system that conforms to the valid and applicable standards and guidelines.

The design and planning documents must be observed.

### Associated Documents

798980.GB0	Operating Instruction Fire alarm computer FlexES control
798982.GB0	Installation Instruction Fire alarm computer FlexES control (CD)
798646	Commissioning and acceptance report Fire alarm systems (PDF download)
798411	Technical information, 'Operation of fire alarm systems' (PDF download)
	Online help for the tools 8000 programming software

### FAS installer

Installers are a qualified electricians who, due to their professional training, are adequately qualified to install fire alarm systems and are also familiar with the requirements of hazard alarm systems and telecommunications.

The FAS installer installing this system understands and implements the planning and project specifications for this fire alarm system and assesses the implementation of the individual work steps and recognises potential hazards.

### System operator / trained person

A 'trained person' is an individual that has been trained in the performance of the operations required to operate a fire alarm system (FAS) or hazard alarm system (HAS). This training must have been provided by a specialist. The trained person must be able to independently operate the system's basic functions, able to ascertain that the system is working properly, and initiate remedial action in case of irregularities or defects.

### tools 8000 programming software

The commissioning and configuration of the fire alarm system requires the use of the tools 8000 programming software, version V1.16 or higher.



### Additional and updated Informations

The described features, specifications and product related informations in this manual correspond to the date of issue (refer to date on the front page) and may differ due to modifications and/or amended Standards and Regulations of the System design, Installation and Commissioning.

Updated informations and declaration of conformity are available for comparison on the [www.esser-systems.de](http://www.esser-systems.de) homepage.

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## 2.1 Transport damage inspection

Please check all of the packaging and components for damage before commencing the assembly and installation work. Do not assemble or install visibly damaged modules and components!

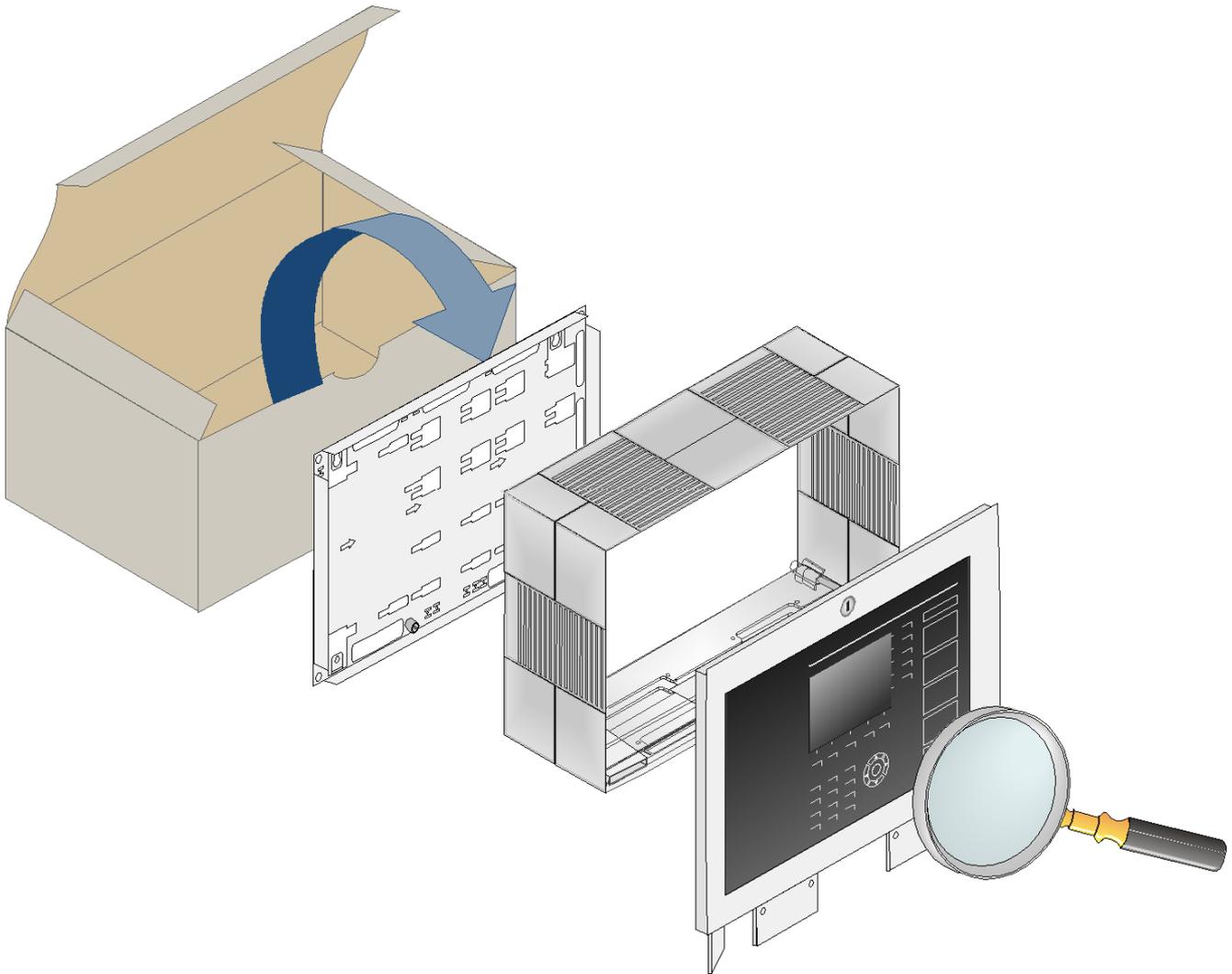


Fig. 1: Checking components for damage sustained during transport



### **Danger – Electrical shock!**

Remove all power from the panel before carrying out any installation work!

### **ESD protection**

While handling electronic assemblies, the necessary precautions against electrostatic discharge must be taken.

### **Protective and functional earth**

The PE conductor must be connected to the corresponding terminal at the mains supply. Connect the FE terminal of the panel's cabinet with the PE rail of the power distributor panel from which the fire alarm system will be powered.

### **Commissioning**

A complete system check must be carried out after commissioning and for each modification of the customer data programming!

### 3 Housing and components

#### 3.1 Housing designs



Compact housing



Compact housing with side expansion housing unit



Compact housing with bottom expansion housing unit



Compact housing with 3 expansion housing units



Compact housing with 2 expansion housing units

*Fig. 2: Housing designs*

### 3.2 Overview - Control panel components

Part No.	Description	Number of units per panel <sup>1)</sup>	Info
FX808310	Rear housing panel 1	---	for installing the modules horizontally
FX808311	Rear housing panel 2	---	for installing the modules vertically
FX808312	Housing frame	---	---
FX808313	Expansion housing unit for max. 2 x 12 V / 24 Ah batteries	---	incl. plain front panel
FX808314	Expansion housing unit for max. 4 x 12 V / 12 Ah batteries	---	incl. plain front panel
FX808315	Battery holder for 2 x 12 V / 12 Ah	---	incl. holder / expansion rivet for the PS connection module (PSM)
FX808321	Basic Module Carrier (BM)	1	---
FX808322	Expansion Module Carrier 1 (EM1)	0-4	see section 6.3 and 6.4
FX808323	Expansion Module Carrier 2 (EM2)		
FX808324	Display and operating unit (D/O unit)	1	with front frame and hinge and 145 mm (5.7 inch) display
FX808402	Lettering set (GB)	1	---
FX808325	Plain front panel	---	with front frame and hinge
FX808326	Power supply module (PSM) 24 V DC / 150 W	1-3	depending on the relevant design and the required emergency power supply
FX808327	PS connection module (PSC)	1	for connecting the 230 V AC mains voltage
FX808328	Control module (CM)	1	---
FX808330	3-way connector	1	for connecting up to 3 power supply modules
FX808331	esserbus <sup>®</sup> module (ebM)	1-4	each FACP can be fitted with up to 18 esserbus <sup>®</sup> modules: 1 to 4 → ebM (FX808331) 5 to 18 → ebMEI (FX808332) The esserbus <sup>®</sup> and esserbus <sup>®</sup> -PLus operating modes can be selected individually.
FX808332	esserbus <sup>®</sup> module GI(ebMEI)	1-18	
FX808333	Mounting plate for transponder PSM	---	1 Mounting plate per PSM
FX808337	C-rail profile mounting kit	---	up to 3 per back panel 1 (Part no. FX808310)
FX808340	essernet <sup>®</sup> module 62.5 kBd (enM)	1	the control panel may only be fitted with one kind of essernet <sup>®</sup> module (62.5 kBd or 500 kBd) .
FX808341	essernet <sup>®</sup> module 500 kBd (enM)		
FX808363	Power supply extension unit (24 V / 12 Ah)	3	incl. plain front panel
FX808364	Power supply extension unit (24 V / 24 Ah)	3	incl. plain front panel

<sup>1)</sup> Number of units depends on alarm system design

## 4 Expansion options

The FlexEs control panel can be used with any of the three pre-configured, factory-made expansion units (FX2, FX10, FX18) for operating up to 2, 10 or 18 modules. The FlexEs control panel's expansion can, however, also be adapted to individual requirements by using separately provided components. Depending on the system's design, it might be necessary to use an expansion housing unit for the batteries and an additional power supply unit.

### Basic structure of a fire alarm system control panel

The basic structure of a control panel always comprises the following components in addition to the mechanical components such as rear housing panels 1 or 2 and the housing frame etc:

- Display and operating unit (D/O unit) or plain front panel
- Power supply module (PSM)
- PS connection module (PSC)
- Basic module carrier (BM)
- Control module (CM)

### Power supply

A control panel can be fitted with up to three power supply modules (Part No. FX808326). Due to the heat they generate, each power supply unit must be provided with a separate housing (see section 4.4).

### Battery capacity

One power supply module can power a maximum of 4 x 12 V / 24 Ah ( $\cong$  24 V / 48 Ah) batteries. Depending on the battery capacity or installation size, the batteries might have to be accommodated in an expansion housing unit.

### Control module

In accordance with DIN EN 54-2, one control module can operate up to 18 esserbus<sup>®</sup> modules. Please observe all relevant national standards and regulations (e.g. DIN 14675, DIN VDE 0833-2 etc.) and local regulations!

### esserbus<sup>®</sup> / esserbus<sup>®</sup>-PLus loop

Depending on the system's structure, a FlexES control panel can be fitted with between 1 to 18 esserbus<sup>®</sup> modules for connecting to one loop each. Each one of these esserbus<sup>®</sup> modules can be individually programmed to operate in esserbus<sup>®</sup> or esserbus<sup>®</sup>-PLus. These individual modules can only be enabled and used if purchased with a corresponding software license.

### essernet<sup>®</sup> network

essernet<sup>®</sup> modules are suitable for installation into fire alarm system control panels. The module is then used to connect the individual essernet<sup>®</sup> network devices, such as other fire detection and fire alarm system control panels. All of the essernet<sup>®</sup> modules used within a single network must have the same transmission speed (see section 7.2. for detailed specifications).

### tools 8000 programming software

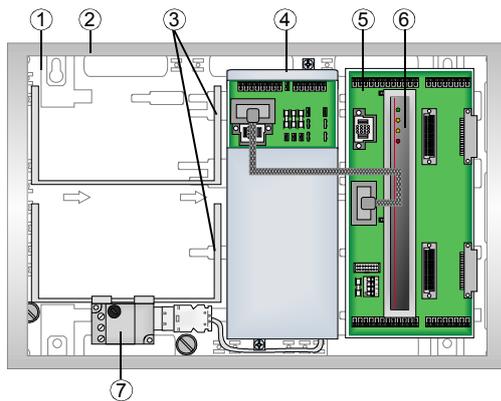
The fire alarm system control panel can only be configured and the customer data programmed with the aid of the tools 8000 programming software. This programming software also contains an extensive range of diagnostic and servicing tools for use with the system.

## 4.1 FlexES control FX2 (Part No. FX808360)

This control panel is designed for operating two modules and the installation of 2 x 12 V / 12 A batteries inside a compact housing.



These batteries are switched in series for the operation of the FACP, thus providing it with 24 V / 12 Ah.



Other components required for this model  
(front panel)

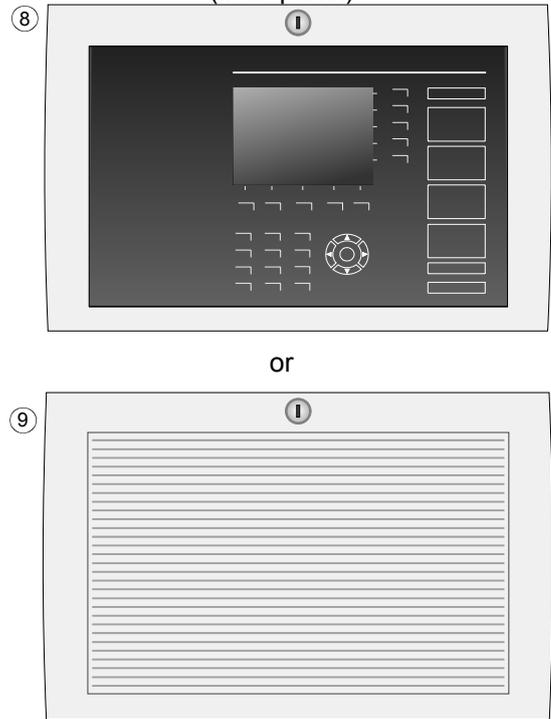


Fig. 3: FlexES control FX2 (model without optionally available components and front panel)

The FlexES control panel FX2 comprises:		Part No. FX808360
①	Rear housing panel 1, for horizontal installation	Part No. FX808310
②	Housing frame	Part No. FX808312
③	Battery holder for 2 x 12 V / 12 Ah (incl. PSC holder)	Part No. FX808315
④	Power supply module 24 V DC / 150 W	Part No. FX808326
⑤	Basic module carrier (with 2 module slots)	Part No. FX808321
⑥	Control module (CM)	Part No. FX808328
⑦	PS connection module (PSC)	Part No. FX808327
<b>Other components required for this model (front panel)</b>		
⑧	Display and operating unit (D/O unit)	Part No. FX808324
	Lettering set (GB)	Part No. FX808402
or	Plain front panel (front housing panel without display and operating unit)	Part No. FX808325
⑨		

Includes ancillary materials (battery connection cable, housing contact, fuses, etc.).

**Example: FlexES control FX2 expansion options**

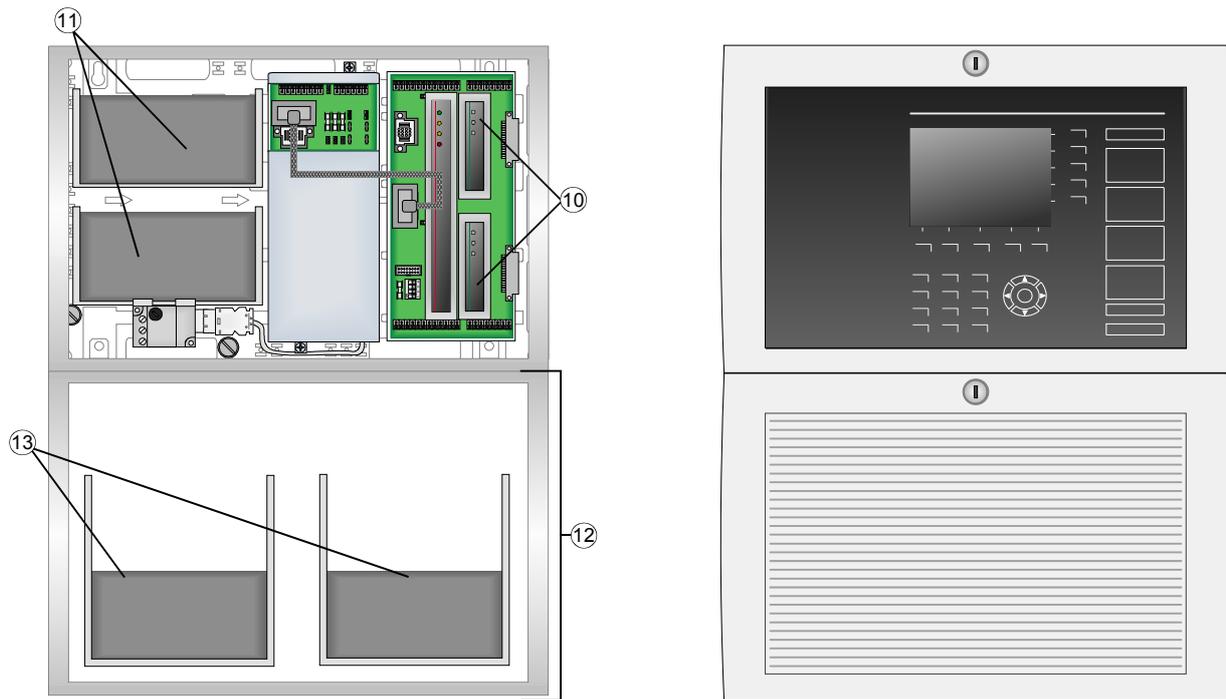


Fig. 4: FlexES control FX2 (expansion option using optionally available components)

**Optionally available components**

⑩	esserbus <sup>®</sup> module	Part No. FX808331
	esserbus <sup>®</sup> module GI	Part No. FX808332
	essernet <sup>®</sup> module 62.5 kBd <sup>2)</sup>	Part No. FX808340
	essernet <sup>®</sup> module 500 kBd <sup>2)</sup>	Part No. FX808341
⑪	2 x 12 V / 12 Ah batteries (≅ 24 V / 12 Ah)	Part No. 018011
<sup>2)</sup> A FACP can only be operated with max. 62.5 kBd <u>or</u> 500 kBd essernet <sup>®</sup> module.		
⑫	Expansion housing unit for max. 2 x 12 V / 24 Ah batteries incl. plain front panel	Part No. FX808313
⑬	2 x 12 V / 12 Ah batteries (≅ 24 V / 12 Ah) <sup>3)</sup>	Part No. 018011



<sup>3)</sup> **Additional power supply modules / batteries**

See section 6.1 for further information on connecting batteries and battery capacity

### 4.1.1 Specification

Rated voltage	: 230 V AC
Rated current	: 0,8 A
Rated frequency	: 50 to 60 Hz
Output voltage	: 24 V DC
Quiescent current	: 192 mA (basic application without operating unit) 348 mA (basic application with operating unit)
Total output current	: max. 6 A
Current for ext. devices	: 3 x 24 V DC / 3 A
Battery capacity	: 2 x 24 V DC / 24 Ah
Ambient temperature	: -5 °C to +45 °C
Storage temperature	: -10 °C to +50 °C
Protection class	: IP 30
Housing	: ABS plastic, 10% glass fibre reinforced, V-0
Colour	: grey, similar to Pantone 538
Weight	: approx. 7,8 kg (incl. operating unit) approx. 6,9 kg (basic configuration incl. Plain front panel without batteries)
Dimension (w x h x d)	: 450 x 320 x 185 mm

## 4.2 FlexES control FX10 (Part No. FX808361)

This model is designed to operate up to 10 modules. The power supply and emergency power supply are housed in separate housings. This model requires expansion module carriers 1 and 2 for holding modules 3 - 10.

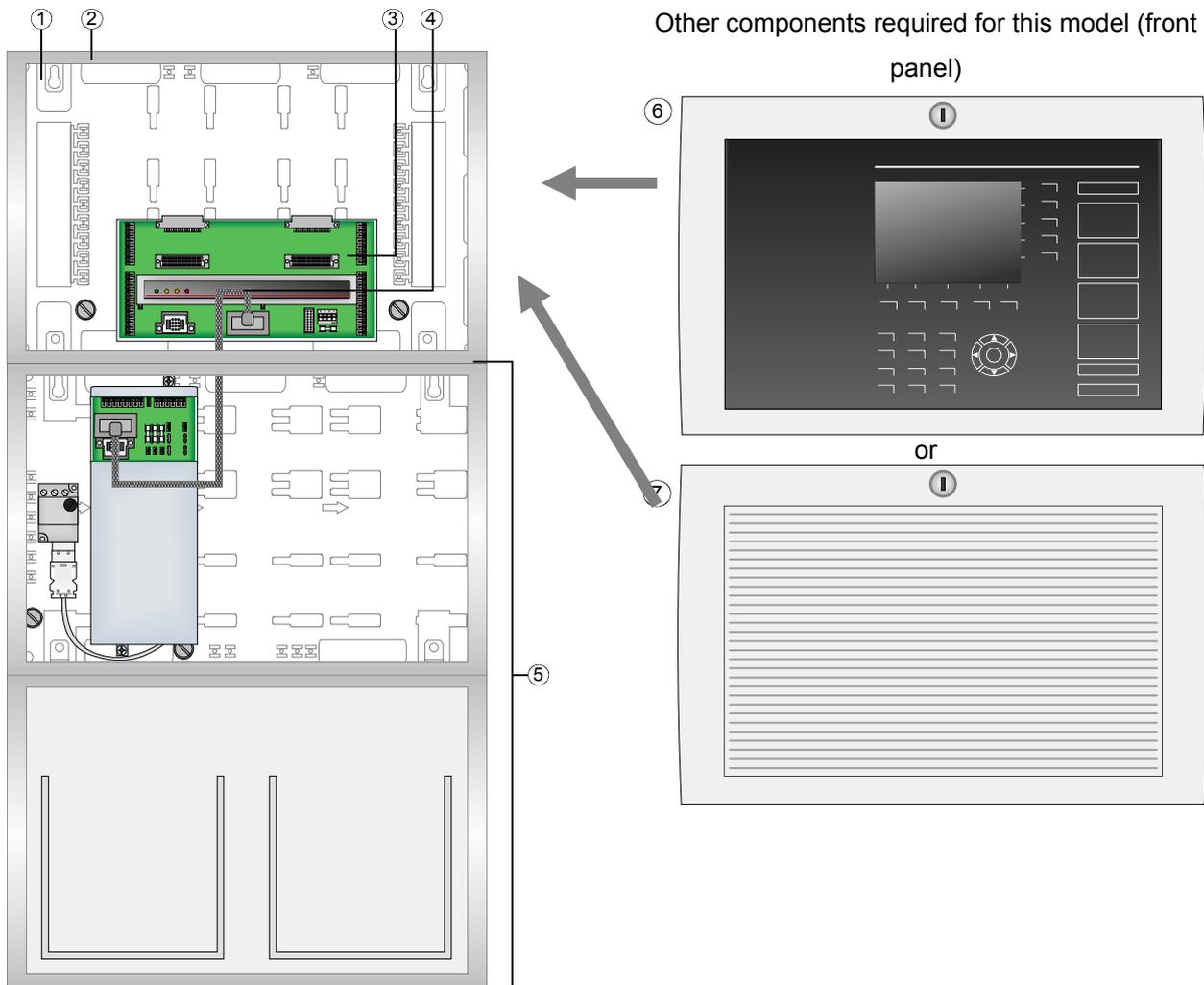


Fig. 5: FlexES control FX10 (model without optionally available components and front panel)

### The FlexES control panel FX10 comprises:

		Part No. FX808361
①	Rear housing panel 2, for vertical installation	Part No. FX808311
②	Housing frame	Part No. FX808312
③	Basic module carrier (with 2 module slots)	Part No. FX808321
④	Control module	Part No. FX808328
⑤	Power supply extension unit (24 V / 24 Ah) incl. plain front panels	Part No. FX808364

### Other components required for this model (front panel)

⑥	Display and operating unit (D/O unit)	Part No. FX808324
	Lettering set (GB)	Part No. FX808402
or ⑦	Plain front panel (front housing panel without display and operating unit)	Part No. FX808325

Includes ancillary materials (battery connection cable, housing contact, fuses, etc.).

**Example: FlexES control FX10 expansion options**

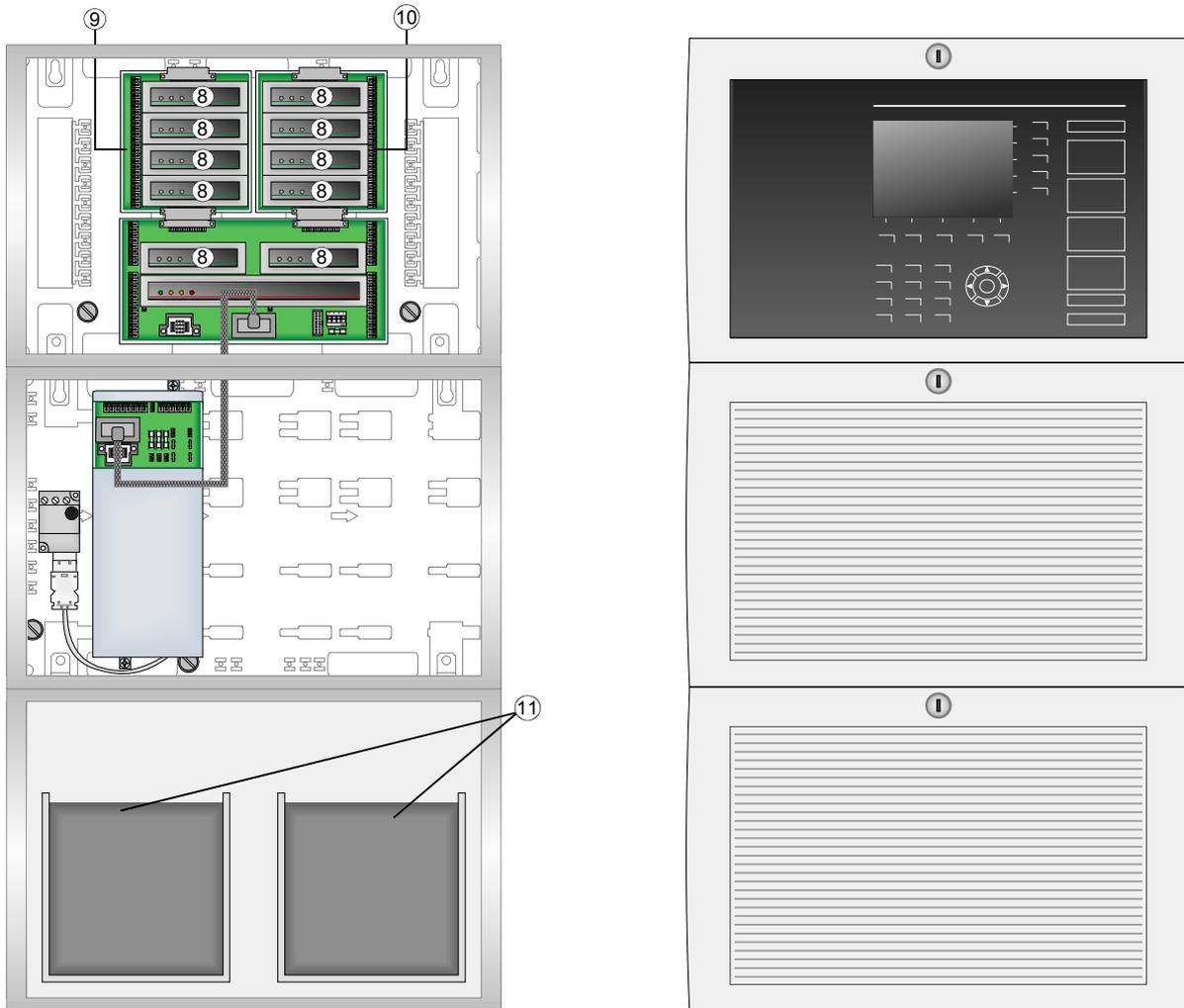


Fig. 6: FlexES control FX10 (expansion option using optionally available components)

**Optionally available components**

⑧	esserbus <sup>®</sup> module	Part No. FX808331
	esserbus <sup>®</sup> module GI	Part No. FX808332
	essernet <sup>®</sup> module 62.5 kBd <sup>2)</sup>	Part No. FX808340
	essernet <sup>®</sup> module 500 kBd <sup>2)</sup>	Part No. FX808341
⑨	Basic module carrier 1 (with 4 module slots)	Part No. FX808322
⑩	Basic module carrier 2 (with 4 module slots)	Part No. FX808323
⑪	Max. 2 x 12 V / 24 Ah batteries (≅ 24 V / 24 Ah) <sup>3)</sup>	Part No. 018006

<sup>2)</sup> A FACP can only be operated with max. 62.5 kBd or 500 kBd essernet<sup>®</sup> module.

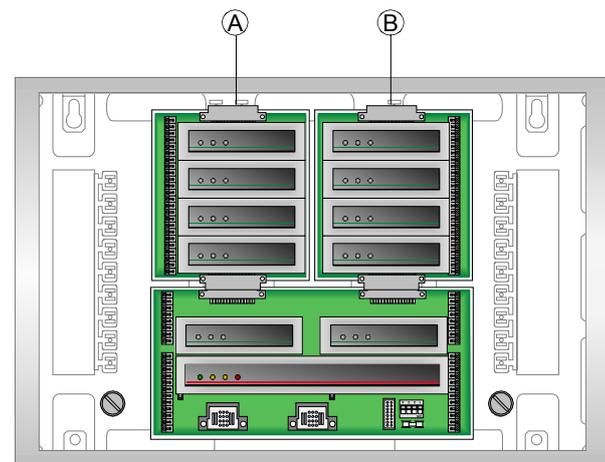
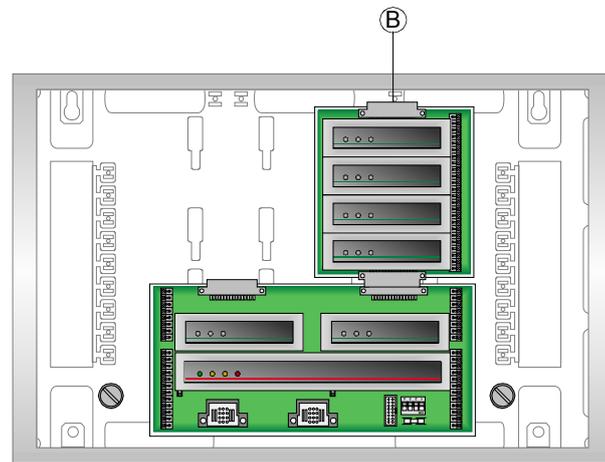
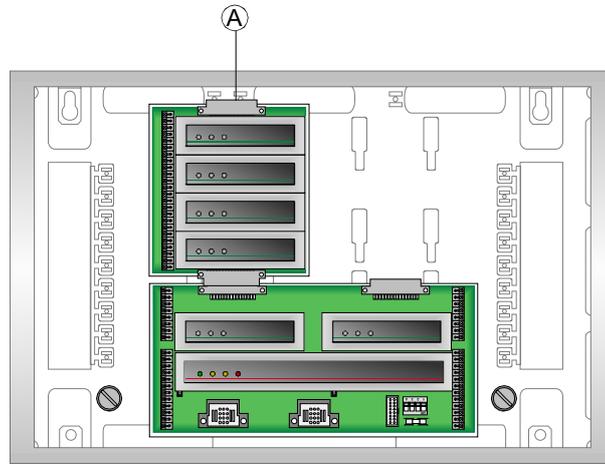


<sup>3)</sup> **Additional power supply modules / batteries**

See section 6.1 for further information on connecting batteries and battery capacity

**Installation options for expansion module carriers 1 and 2**

When installing only one expansion module carrier, you can choose carrier type 1 and/or 2 depending on where the cables are laid and the most suitable position for the terminals.



- Ⓐ Expansion module carrier 1
- Ⓑ Expansion module carrier 2

Fig. 7: Different installation options for the expansion module carriers (vertical installation with rear panel, Part No. FX808311)

### 4.2.1 Specification

Rated voltage	:	230 V AC
Rated current	:	0,8 A
Rated frequency	:	50 to 60 Hz
Output voltage	:	24 V DC
Quiescent current	:	192 mA (basic application without operating unit) 348 mA (basic application with operating unit)
Total output current	:	max. 6 A
Current for ext. devices	:	3 x 24 V DC / 3 A
Battery capacity	:	2 x 24 V DC / 24 Ah
Ambient temperature	:	-5 °C to +45 °C
Storage temperature	:	-10 °C to +50 °C
Protection class	:	IP 30
Housing	:	ABS plastic, 10% glass fibre reinforced, V-0
Colour	:	grey, similar to Pantone 538
Weight	:	approx. 16 kg (incl. operating unit) approx. 15,1 kg (basic configuration incl. Plain front panel without batteries)
Dimension (w x h x d)	:	450 x 960 x 185 mm

### 4.3 FlexES control FX18 (Part No. FX808362)

This model is designed to operate between 1 to 18 modules. The power supply and emergency power supply are housed in separate housings. This model requires expansion module carriers 1 and 2 for holding modules 3 - 18.

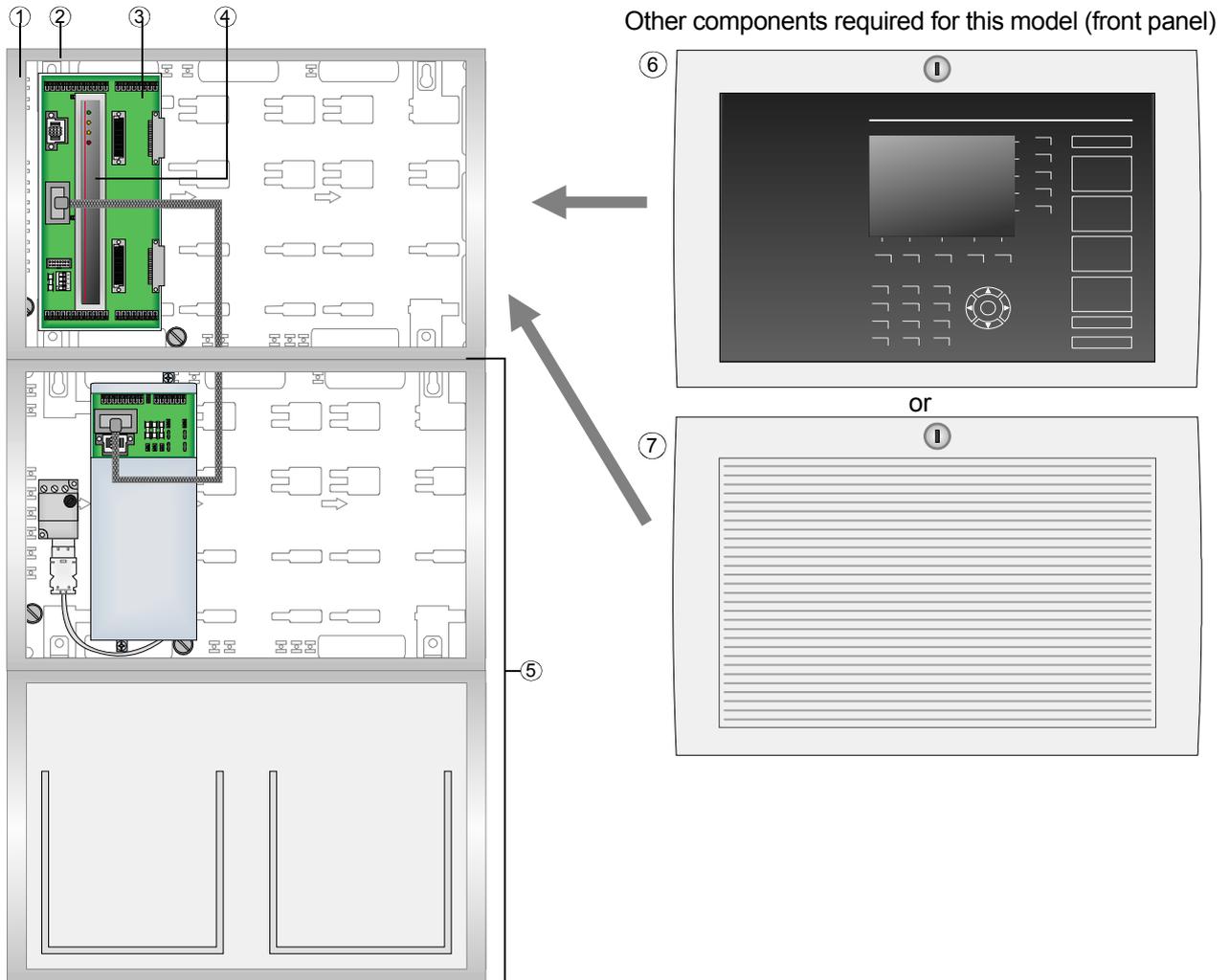


Fig. 8: FlexES control FX18 (expansion option using optionally available components)

The FlexES control panel FX18 comprises:		Part No. FX808362
①	Rear housing panel 2, for horizontal installation	Part No. FX808310
②	Housing frame	Part No. FX808312
③	Basic module carrier (with 2 module slots)	Part No. FX808321
④	Control module	Part No. FX808328
⑤	Power supply extension unit (24 V / 24 Ah) incl. plain front panels	Part No. FX808364
<b>Other components required for this model (front panel)</b>		
⑥	Display and operating unit (D/O unit)	Part No. FX808324
	Lettering set (GB)	Part No. FX808402
or ⑦	Plain front panel (front housing panel without display and operating unit)	Part No. FX808325

Includes ancillary materials (battery connection cable, housing contact, fuses, etc.).

**Example: FlexES control FX18 expansion options**

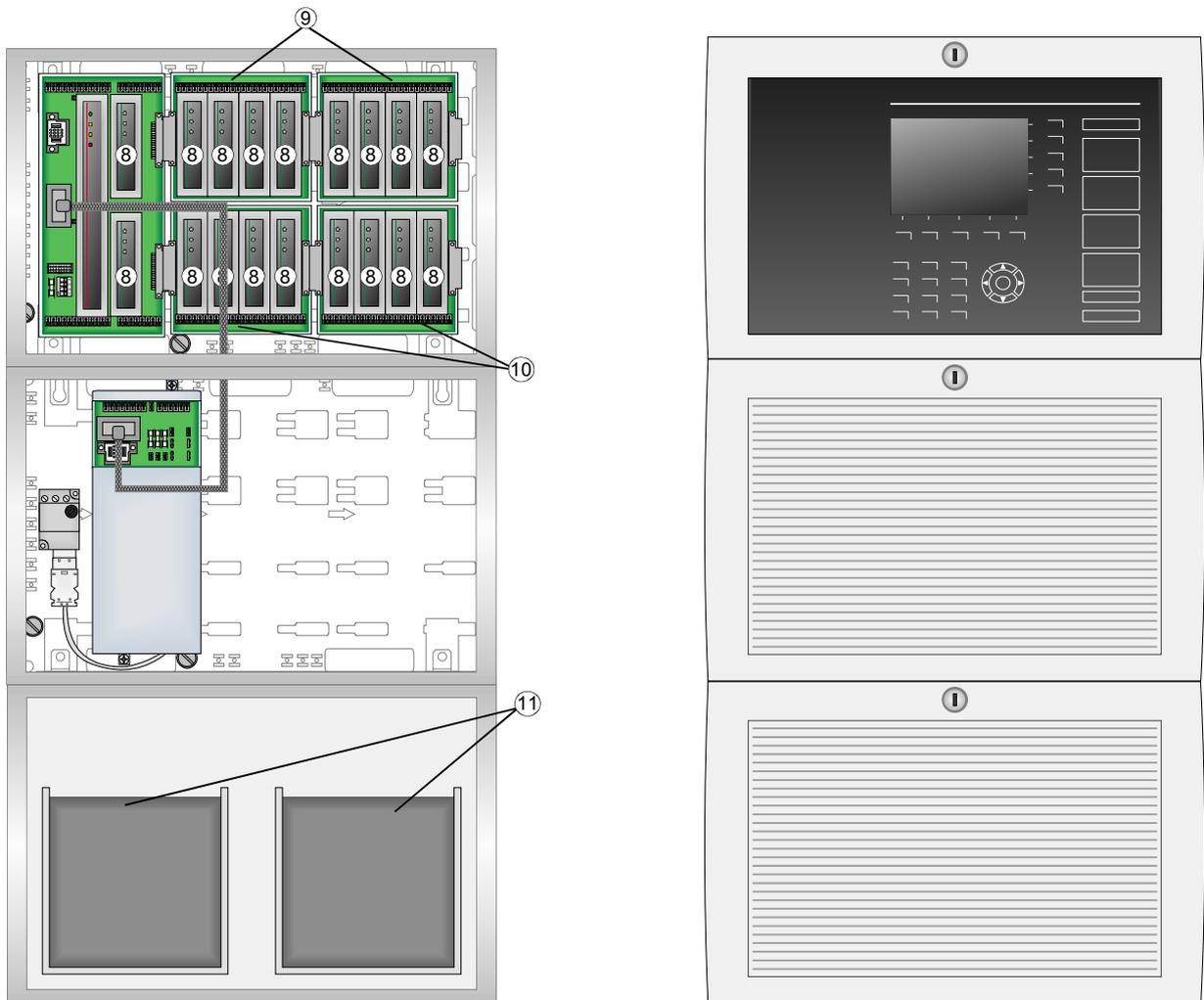


Fig. 9: FlexES control FX18 (expansion option using optionally available components)

**Optionally available components**

⑧	esserbus® module	Part No. FX808331
	esserbus® module GI	Part No. FX808332
	essernet® module 62.5 kBd <sup>2)</sup>	Part No. FX808340
	essernet® module 500 kBd <sup>2)</sup>	Part No. FX808341
⑨	Basic module carrier 1 (with 4 module slots)	Part No. FX808322
⑩	Basic module carrier 2 (with 4 module slots)	Part No. FX808323
⑪	Max. 2 x 12 V / 24 Ah batteries (≅ 24 V / 24 Ah) <sup>3)</sup>	Part No. 018006

<sup>2)</sup> A FACP can only be operated with max. 62.5 kBd or 500 kBd essernet® module.

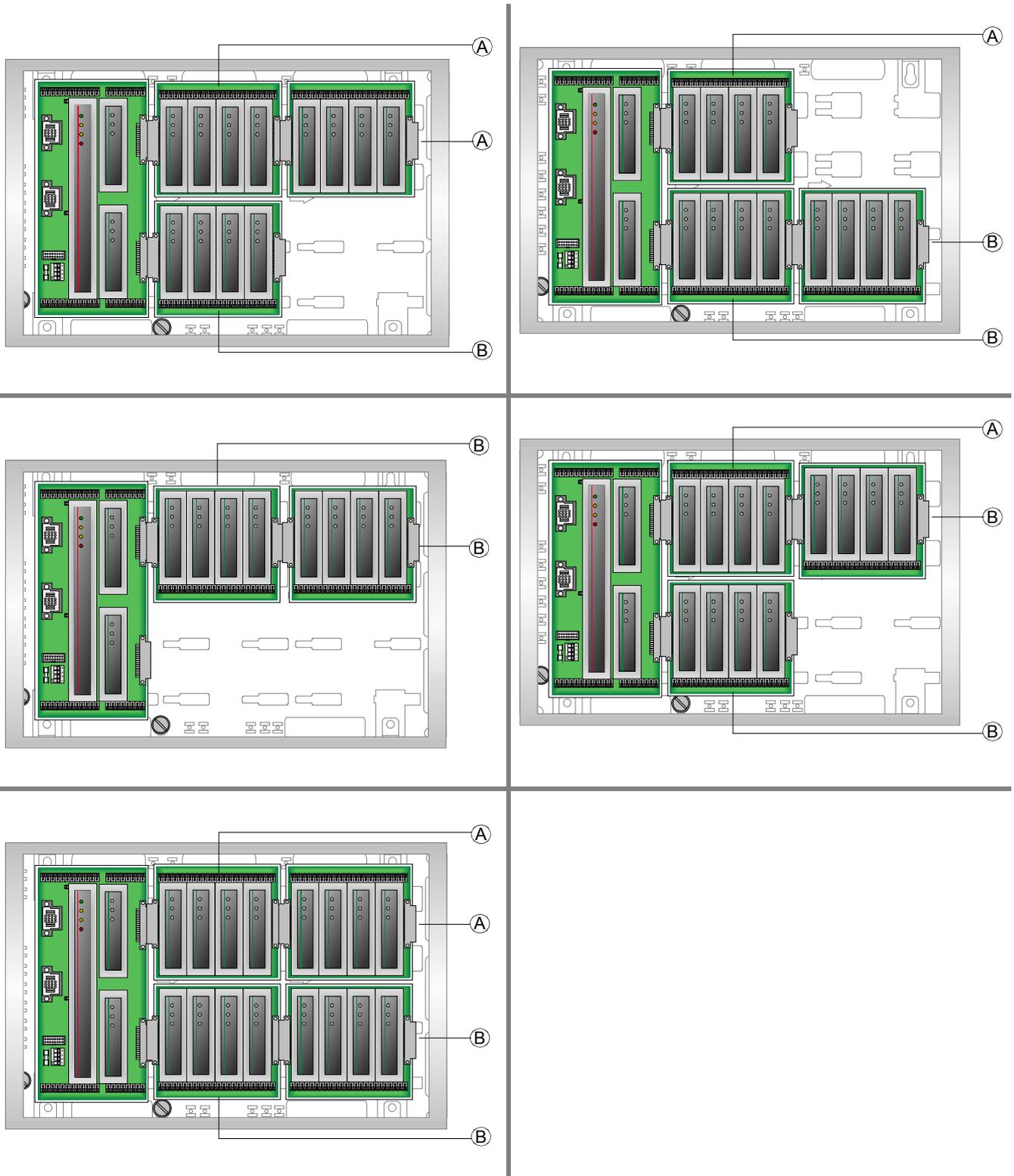


**<sup>3)</sup> Additional power supply modules / batteries**

See section 6.1 for further information on connecting batteries and battery capacity

**Installation options for expansion module carriers 1 and 2**

When installing only one expansion module carrier, you can choose from either carrier type 1 and/or 2 depending on where the cables are laid and the most suitable position for the terminals.



- Ⓐ Expansion module carrier 1 (Part No. FX808322)
- Ⓑ Expansion module carrier 2 (Part No. FX808323)

Fig. 10: Different installation options for the expansion module carriers (horizontal installation with rear panel, Part No. FX808310)

### 4.3.1 Specification

Rated voltage	: 230 V AC
Rated current	: 0,8 A
Rated frequency	: 50 to 60 Hz
Output voltage	: 24 V DC
Quiescent current	: 192 mA (basic application without operating unit) 348 mA (basic application with operating unit)
Total output current	: max. 6 A
Current for ext. devices	: 3 x 24 V DC / 3 A
Battery capacity	: 2 x 24 V DC / 24 Ah
Ambient temperature	: -5 °C to +45 °C
Storage temperature	: -10 °C to +50 °C
Protection class	: IP 30
Housing	: ABS plastic, 10% glass fibre reinforced, V-0
Colour	: grey, similar to Pantone 538
Weight	: approx. 16 kg (incl. operating unit) approx. 15,1 kg (basic configuration incl. Plain front panel without batteries)
Dimension (w x h x d)	: 450 x 960 x 185 mm

## 4.4 Control panel power supplies

Each FACP can be fitted with up to three cascading control panel power supply units for their power supply, for which two additional power supply unit extensions are available.

### 4.4.1 PSU extension 24 V / 12 Ah (Part No. FX808363)

This PSU extension allows 2 x 12 V / 12 Ah batteries to be installed and connected inside the compact housing and can be fitted with optionally available components (see fig. 12).

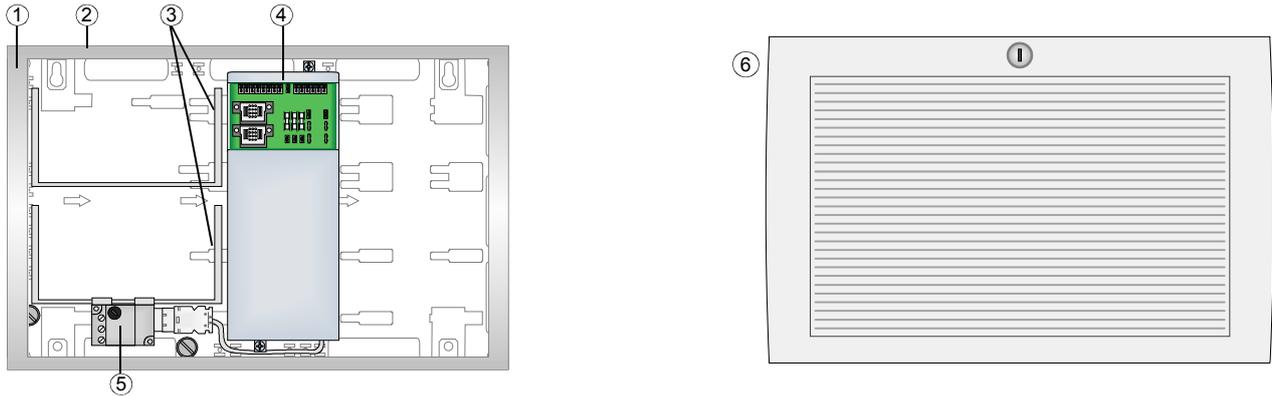


Fig. 11: PSU extension 24 V / 12 Ah (Part No. FX808363)

The PSU extension 24 V / 12 Ah comprises:		Part No. FX808363
①	1 x rear housing panel 1, for horizontal installation	Part No. FX808310
②	1 x housing frame	Part No. FX808312
③	1 x battery holder for 2 x 12 V / 12 Ah (incl. PSC holder)	Part No. FX808314
④	1 x power supply module 24 V DC / 150 W	Part No. FX808326
⑤	1 x PS connection module	Part No. FX808327
⑥	1 x plain front panel (front housing panel without display and operating unit)	Part No. FX808325

Includes ancillary materials (battery connection cable, housing contact, fuses, etc.) as well as hybrid cable and fastening materials.

**Example: Expansion options of the 24 V / 12 Ah PSU extension**

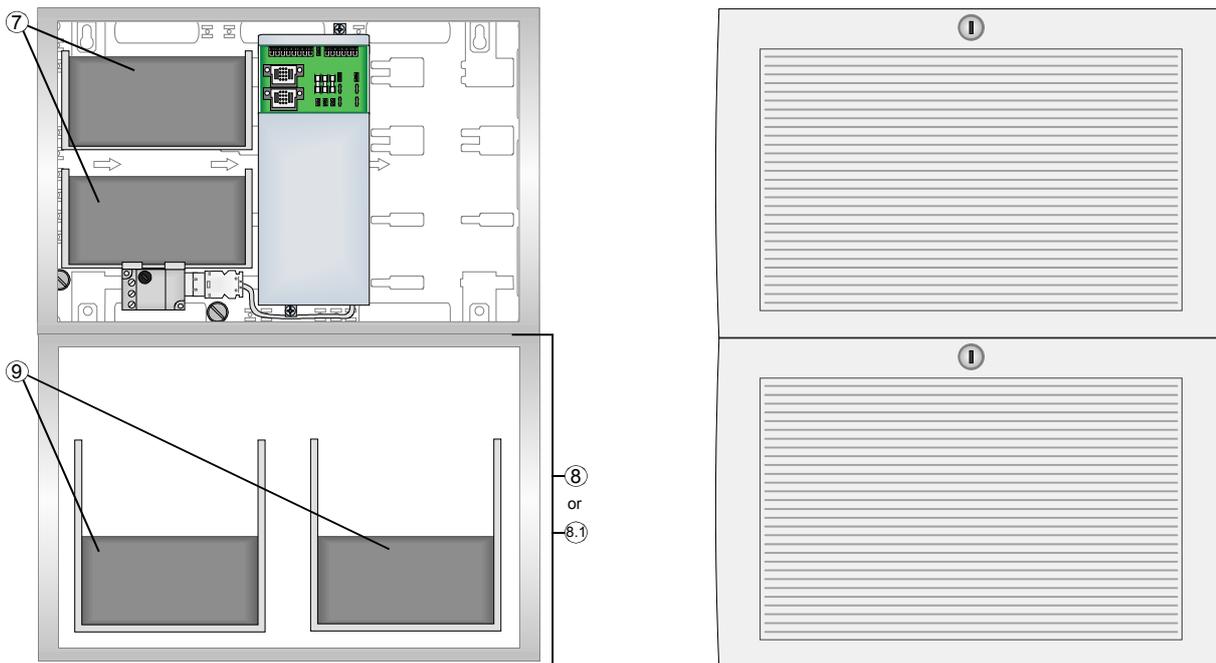


Fig. 12: PSU extension 24 V / 12 Ah (Part No. FX808363) incl. optionally available components

**Optionally available components**

⑦	Max. 2 x 12 V / 12 Ah batteries ( $\cong$ 24 V / 12 Ah) <sup>3)</sup>	Part No. 018011
⑧	1 x expansion housing unit for 2 batteries incl. plain front panel	Part No. FX808313
or		
⑧.1	1 x expansion housing unit for 2 batteries incl. plain front panel	Part No. FX808314
⑨	Max. 2 x 12 V / 12 Ah batteries ( $\cong$ 24 V / 12 Ah) <sup>3)</sup>	Part No. 018011



Only ever connect batteries of the same type to a power supply module (manufacturer, manufacturing date, capacity, charge).



<sup>3)</sup> **Additional power supply modules / batteries**

See section 6.1 for further information on connecting batteries and battery capacity

#### 4.4.2 Specification

Rated voltage	: 230 V AC
Rated current	: 0,8 A
Rated frequency	: 50 to 60 Hz
Output voltage	: 24 V DC
Total output current	: max. 6 A
Current for ext. devices	: 3 x 24 V DC / 3 A
Battery capacity	: 2 x 24 V DC / 24 Ah
Ambient temperature	: -5 °C to +45 °C
Storage temperature	: -10 °C to +50 °C
Protection class	: IP 30
Housing	: ABS plastic, 10% glass fibre reinforced, V-0
Colour	: grey, similar to Pantone 538
Weight	: 6,2 kg
Dimension (w x h x d)	: 450 x 320 x 185 mm

#### 4.4.3 PSU extension 24 V / 24 Ah (Part No. FX808364)

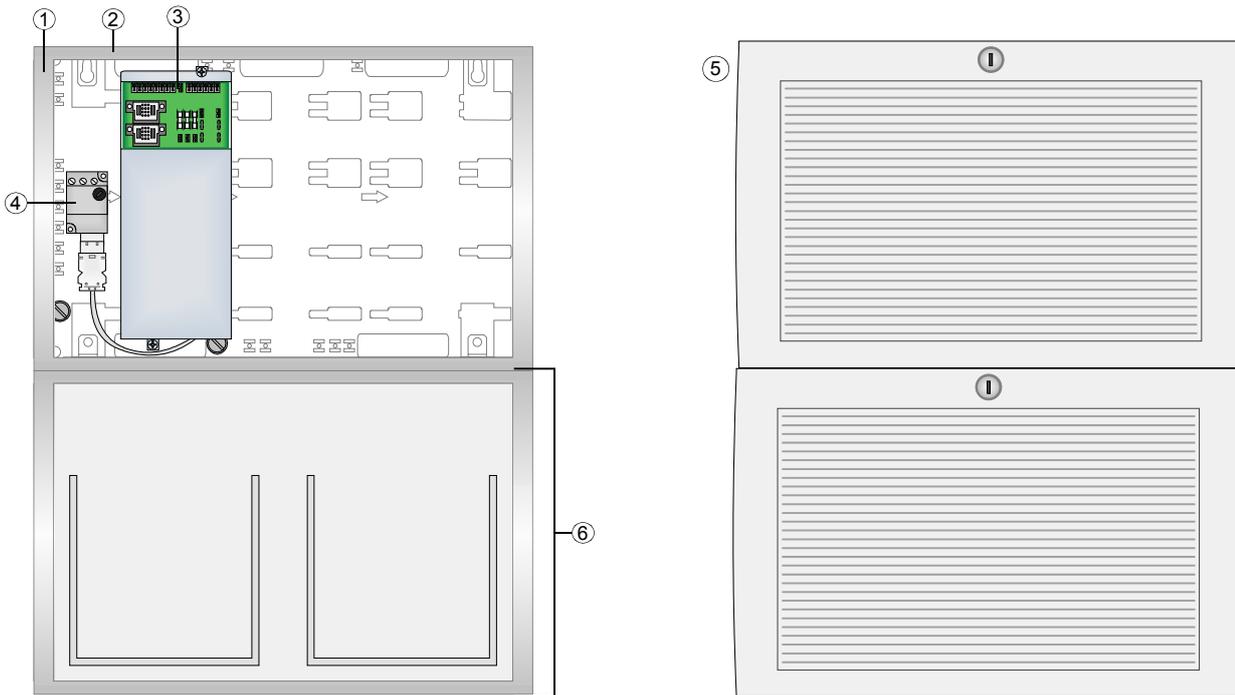


Fig. 13: PSU extension 24 V / 24 Ah (Part No. FX808364) incl. optionally available components

The PSU extension 24 V / 24 Ah comprises:		Part No. FX808364
①	1 x rear housing panel 1, for horizontal installation	Part No. FX808310
②	1 x housing frame	Part No. FX808312
③	1 x power supply module 24 V DC / 150 W	Part No. FX808326
④	1 x PS connection module	Part No. FX808327
⑤	1 x plain front panel (front housing panel without display and operating unit)	Part No. FX808325
⑥	1 x expansion housing unit for 2 batteries incl. plain front panel	Part No. FX808313

Includes ancillary materials (battery connection cable, housing contact, fuses, etc.) as well as hybrid cable and fastening materials.

**Example: Expansion options of the 24 V / 24 Ah PSU extension**



Fig. 14: PSU extension 24 V / 24 Ah (Part No. FX808364) incl. optionally available components

**Optionally available components**

⑦	Max. 2 x 12 V / 24 Ah batteries (≅ 24 V / 24 Ah) <sup>3)</sup>	Part No. 018006
⑧	1 x expansion housing unit for 2 batteries incl. plain front panel	Part No. FX808313
⑨	Max. 2 x 12 V / 24 Ah batteries (≅ 24 V / 24 Ah) <sup>3)</sup>	Part No. 018006



Only ever connect batteries of the same type to a power supply module (manufacturer, manufacturing date, capacity, charge).



**<sup>3)</sup> Additional power supply modules / batteries**

See section 6.1 for further information on connecting batteries and battery capacity

#### 4.4.4 Specification

Rated voltage	: 230 V AC
Rated current	: 0,8 A
Rated frequency	: 50 to 60 Hz
Output voltage	: 24 V DC
Total output current	: max. 6 A
Current for ext. devices	: 3 x 24 V DC / 3 A
Battery capacity	: 2 x 24 V DC / 24 Ah
Ambient temperature	: -5 °C to +45 °C
Storage temperature	: -10 °C to +50 °C
Protection class	: IP 30
Housing	: ABS plastic, 10% glass fibre reinforced, V-0
Colour	: grey, similar to Pantone 538
Weight	: 10,3 kg
Dimension (w x h x d)	: 450 x 640 x 185 mm

## 5 Installation

### 5.1 Assembly and installation information

The functionality of the FlexES fire alarm system control panel depends on the country-specific version of the operating system software used for the panel and the customer-specific configurations programmed in the customer data.

- The fire alarm system may only be installed in dry, clean, and adequately illuminated areas with restricted access. The ambient conditions must correspond to class 3k5 in accordance with DIN EN 60721-3-3.
- The control panel must be mounted to an even mounting surface using suitable mounting material (screws + anchors) and without creating any mechanical tension. The panel may be operated only when it has been properly mounted to a wall or mounting surface of sufficient load-bearing capacity.
- Strong electrical / electromagnetic and mechanical influences must be avoided. This applies particularly to the installation of the panel, components and installation cables in the direct vicinity of fluorescent lamps or energy cables and if mounted on vibrating, unstable surfaces such as thin partition walls.
- The system may not be installed in facilities and environments that have harmful effects. Parts of the fire alarm system may be fed through these facilities if the requirements of the DIN VDE 0800 series are fulfilled.
- For cabinet or wall installation, operating modules and visual displays should be installed between 800 mm and 1800 mm above the place where the operator stands.
- The fire alarm system is not suitable for connection to an IT power supply system.



The functionalities described in this manual might require the purchase of special software licenses. Depending on the software, licenses and system-specific customer data programming of your panel, its functions and display representations might differ from the ones described in this manual! The terminal connections and connections shown in this installation manual relate only to the characteristics of the panel operating system software specific to the Federal Republic of Germany [D].



#### **Danger – Electrical shock !**

Remove all power from the panel before carrying out any installation work!

#### **ESD protection**

While handling electronic assemblies, the necessary precautions against electrostatic discharge must be taken.

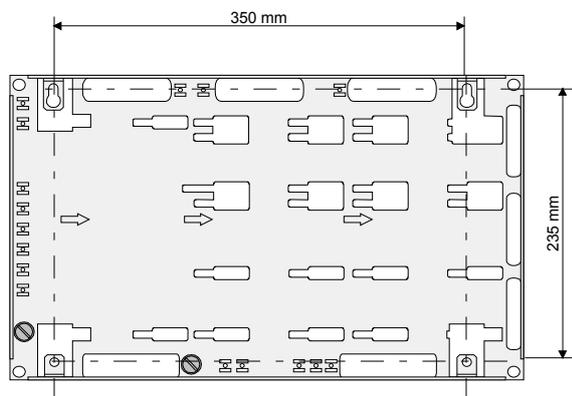
#### **Protective and functional earth**

The PE conductor must be connected to the corresponding terminal at the mains supply. Connect the FE terminal of the panel's cabinet with the PE rail of the power distributor panel from which the fire alarm system will be powered.

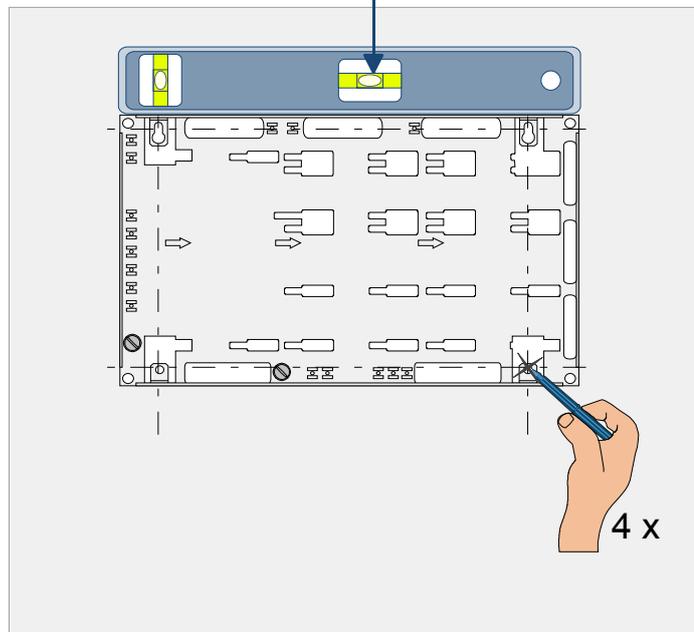
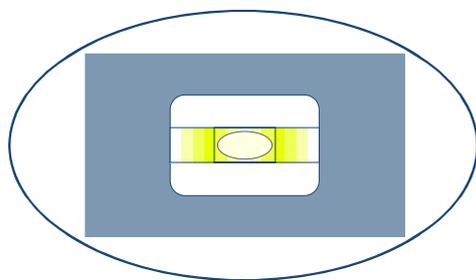
#### **Commissioning**

A complete system check must be carried out after commissioning and for each modification of the customer data programming!

## 5.2 Fitting the panel to the mounting surface



Rear housing panel 1 or 2 and distance between the four mounting holes (in mm)

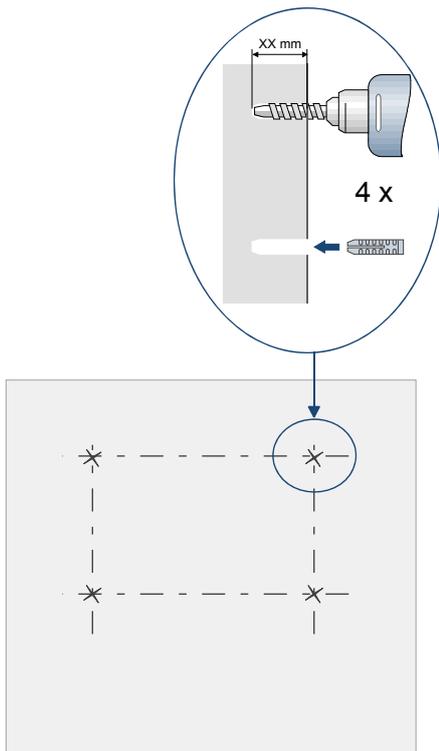


- Chose the place for mounting the panel as specified in the project documentation.
- Observe the installation environment specifications.
- Take note of the position of the cables and corresponding cable entry points (see section 5.3).
- Hold the rear housing panel horizontally (align using a spirit level) against the mounting surface and mark the four mounting holes.

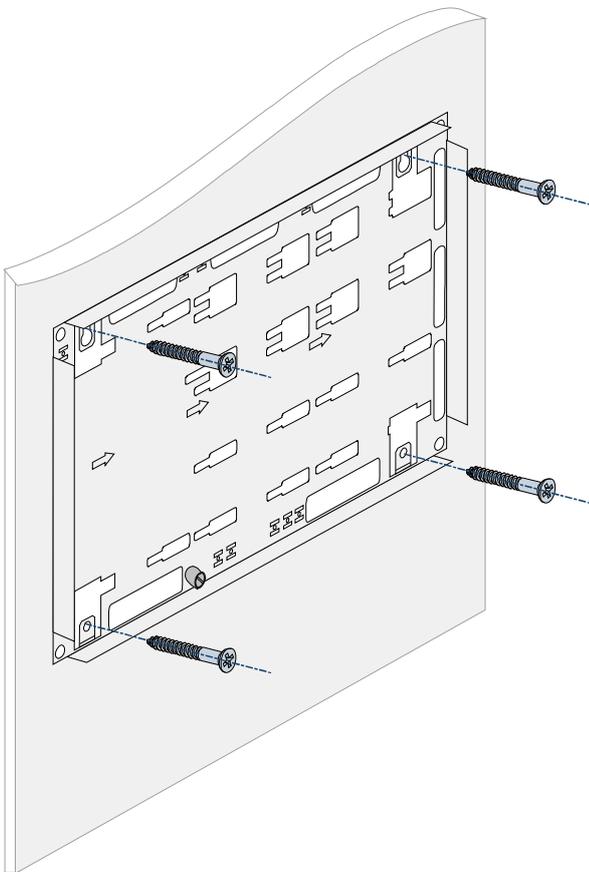
Fig. 15: Fitting the panel to the mounting surface (example of rear panel for horizontal installation)



Take note of any cables that are routed over the top of the surface/plaster (TS) or behind the surface/plaster (US) before attaching the rear housing panel!



- Drill through the marks for the mounting holes to create four holes and insert suitable anchors.
- The type of anchor best suited to this purposes depends on the mounting surface's material (cavity wall, concrete, wood etc.) and must be chosen accordingly.
- The surface/wall and mounting material's load bearing capacity must be adequate for bearing the entire weight of the selected expansion model (incl. batteries).



- Please take note of the cable entry points specified in section 5.3 before fitting the rear housing panel!
- Hold the rear housing panel against the mounting surface and align.
- Screw four screws into the screw anchors and hand tighten.

Fig. 16: Fitting the panel to the mounting surface

## 5.3 Cable entry points

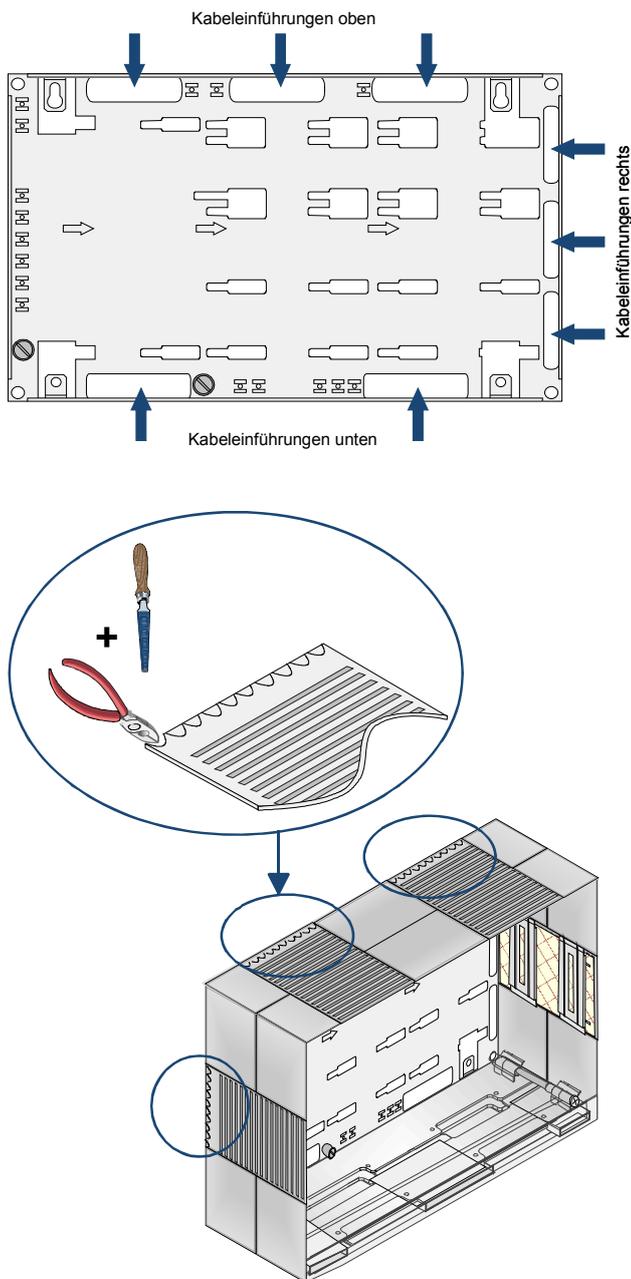


Fig. 17: Cable entry points



### Danger of damage

Do not constrict or damage the connecting cables between the two housings. The two housings must be separately fitted to the mounting surface. The two connecting pieces are not capable of bearing the weight of the lower housing on their own.

### Short circuits

All voltage and signal lines must be secured with suitable fastening material, e.g. plastic cable fasteners so that they cannot come loose or be moved. When doing so, ensure that the power supply line cannot touch the signal lines (SELV) when moved. Work may be carried out on the fire alarm system only when it is de-energised (mains and emergency power supply disconnected).

### Connecting cable insulation

It is vital to ensure that the sheathing on all of the connecting cables be left intact up to a point inside the panel housing and only be removed inside the housing.

- The power supply line and signalling cables must be provided with their own cable entry points.
- Feed the cables routed **"behind the surface/plaster" (US)** through the rear housing panel cable entry points and fasten with appropriate fasteners such as plastic cable ties (for strain relief).
- Make sure the length of cable fed through the entry point is long enough to connect to the respective terminal.
- When laying the cables, make sure to keep the rear housing panel free from cables to ensure that the housing frame can subsequently be attached.
- Feed the cables routed **"on top the surface/plaster" (TS)** through the rear housing panel cable entry points and fasten with appropriate fasteners such as plastic cable ties (for strain relief).
- Fit the housing frame without front panel as specified in section 5.5.
- Remove plates from housing.
- Remove perforated break-away sections from the cable entry points of the plates with an appropriate tool.
- Remove bur from cut and broken surface edge.
- The power supply line and signalling cables must be provided with their own cable entry points.
- Make sure the length of cable fed through the entry point is long enough to connect to the respective terminal.
- Insert housing plates without constricting or damaging cables.

## 5.4 Installing the components and modules

There are two different rear housing panels to choose from depending on the structure of the fire alarm system and the component and module alignment (horizontal or vertical).

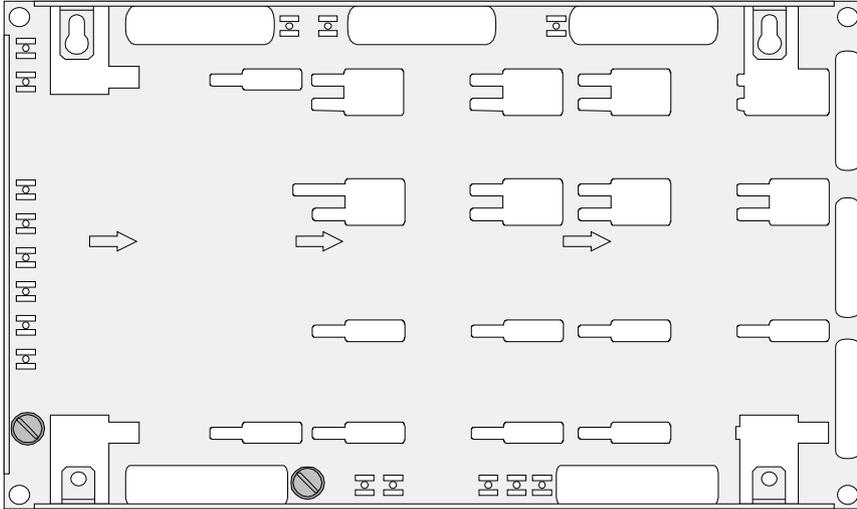


Fig. 18: Rear housing panel (Part No. FX808310) for installing the components horizontally

### Example

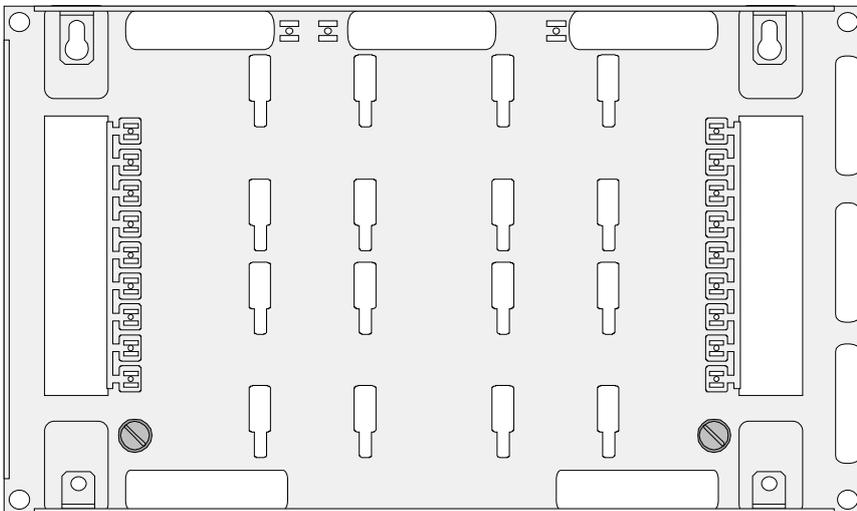
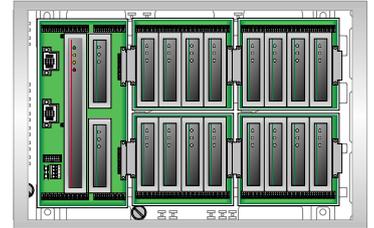
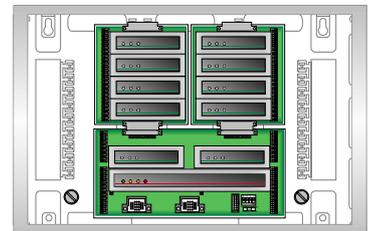


Fig. 19: Rear housing panel (Part No. FX808311) for installing the components vertically

### Example



See section 4 for expansion options

### Fitting the module carriers

The basic module carriers (Part No. FX808321) and expansion module carrier 1 (Part No. FX808322) and 2 (Part No. FX808323) are fitted as follows:

Each module carrier is equipped with four holders on their rear which directly slide into the cut-outs on the rear housing panel. Fasten each module carrier using the supplied fastening screw.

#### Note the installation sequence:

1. Insert the basic module ① carrier and fasten it with the three screws.
2. Insert EM module carrier ②, check connection to basic module carrier ① and fasten it with the screws.
3. Insert EM module carrier ②.1, check connection to basic module carrier ① and fasten it with the screws.

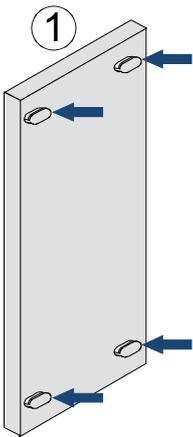


Fig. 20: Rear of basic module carrier with four holders (Part No. FX808321)

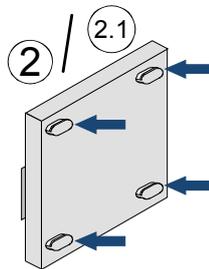


Fig. 21: Rear of expansion module carrier with four holders (Part No. FX808323)

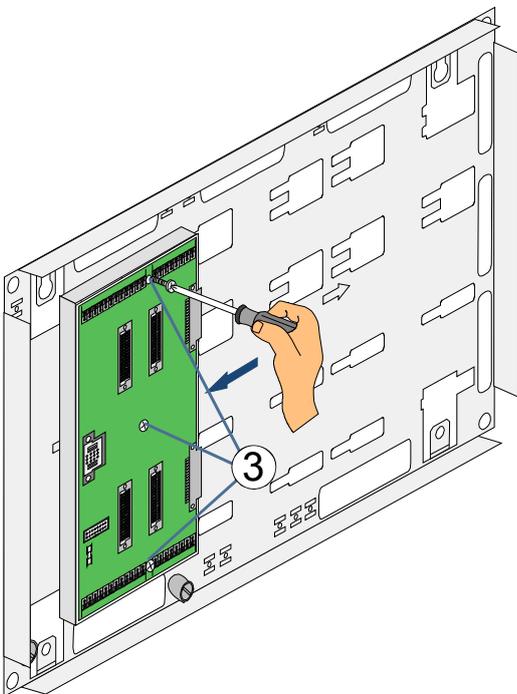


Fig. 22: Installation example

Insert the module carrier into the required position, align and slide into the cut-outs in the rear housing panel.

Insert the three module carrier's fastening screw ③ and tighten. Hereby the FE-connection of the module carrier is done



The fastening screws must be used in order to obtain the correct FE screw connection (module carrier ↔ rear housing wall).



The different installation options and different options for fitting the modules to the rear housing panel are detailed in section 4.

## 5.5 Top hat rail mounting kit (Part No. FX808337)

Up to three C-rail profile may be mounted inside the housing of the FACP FlexEs control.

### Variant 1

This C-rail is suitable to mount optional modul housings (Art.-Nr. 788603.10. The module housings accept circuit boards with the dimensions 72 x 65 mm or 82 x 72 mm (B x H), e.g. esserbus<sup>®</sup>-transponder etc.

### Variant 2

In addition to a single module housing it is possible to mount e.g. a FOC converter (Part no. 784763/64 incl. C-rail mounting clip) onto the C-rail profile.

The C-rail profile is fastened with three on the rear panel of the housing (Part no. FX808310).

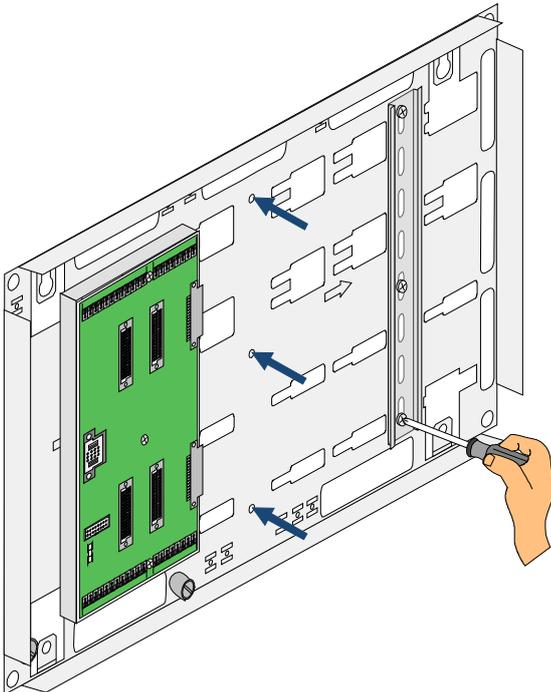


Fig. 23: Positioning of the top hat rail mounting



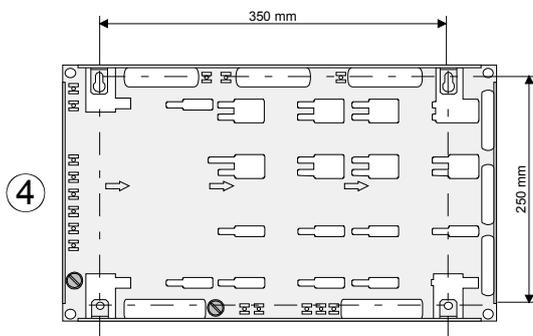
- Always check that the connection cables are long enough!  
Ensure that no cables are pinched or damaged when installing or removing the assembly.
- Not listed components as given above must not be mounted!

## 5.6 Assembling the wall box

The fire alarm system FlexES control panel is supplied in individual components or as version FX2, FX10 or FX18 (see section 4) for customised installation. Alternatively, control panels can also be supplied ready-assembled (subject to surcharge). The wall box should be assembled and the components and modules fitted in the order described below.

1. Fit rear housing panel ④ or ⑤.
2. Fit battery holder
3. Install power supply module
4. Insert and fasten module carriers
5. Connect signal lines and connecting cables as required
6. Insert modules
7. Fit housing frame ⑥.1 / ⑥.2 and tamper contactes ⑦ inkl. housing plates ⑧.1 and dust filters ⑧.2
8. Insert front panel incl. D/O unit and fasten

Rear housing panel 1



Rear housing panel 2

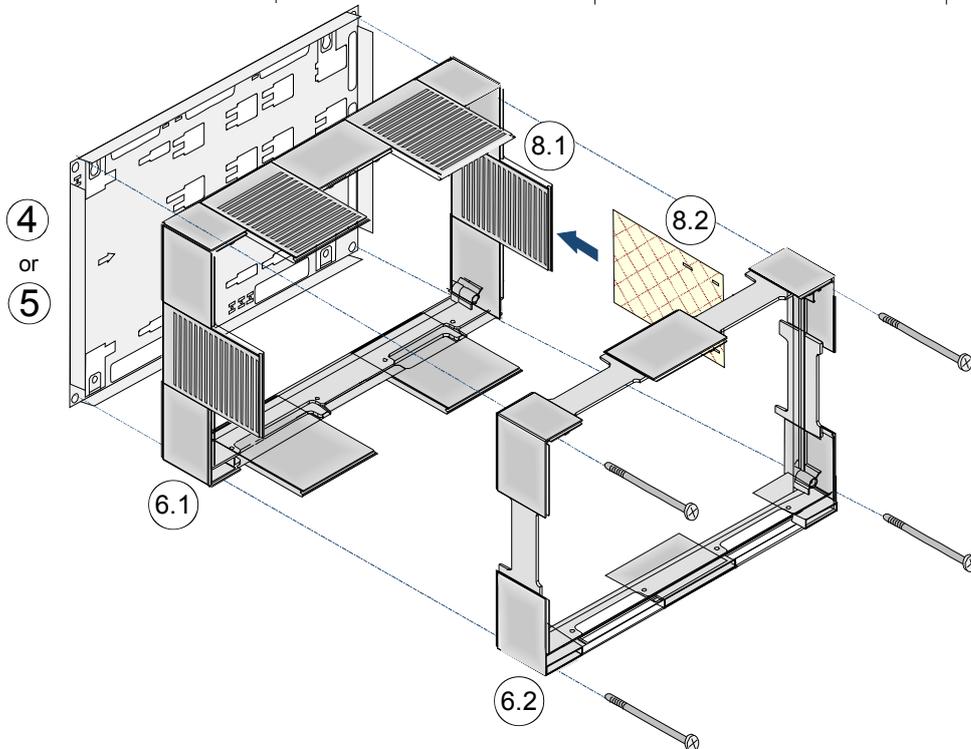
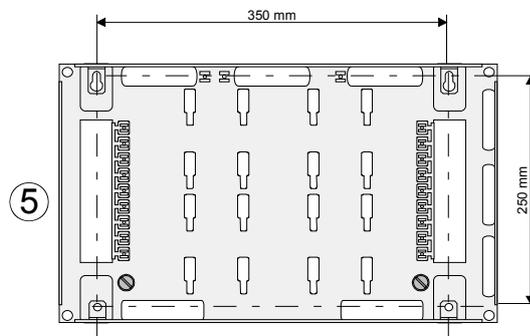


Fig. 24: Assembling the wall box

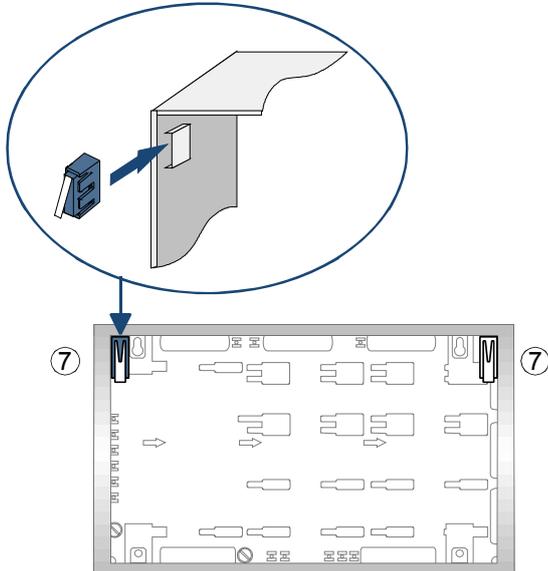


### Danger of damage!

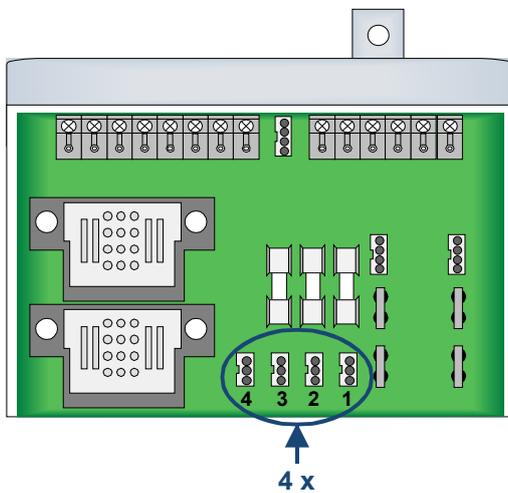
The mounting surface and mounting material must be strong enough to hold the relevant battery type used.

## 5.7 Tamper contact

The tamper contact (supplied together with the housing frame) is used to monitor whether the control panel's housing has been opened and can also be used for other control functions such as automatically deactivating components when the housing is opened for servicing.



- The panel can be fitted with up to 4 tamper contactes for each power supply module
- 1 tamper contact per housing (recommended)
- The tamper contact functions, such as deactivating the master box (MB) and recognising the service PC when the housing is open, etc. can be configured in the customer data programming.
- The tamper contact ⑦ is slotted into the holder in one of the housing's top corners together with the plastic insert (with the contact tab pointing down).

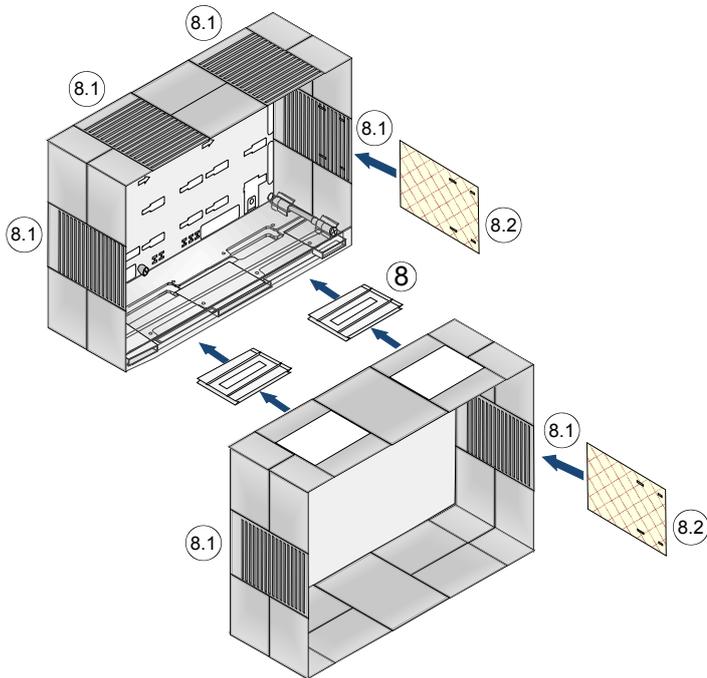


Connect to the power supply module (PSM).  
Take note of the assignments of terminal 1 to 4!

Fig. 25: Tamper contact

## 5.8 Connection between two housings

The compact housing is connected to the expansion housing unit with the supplied connecting plates.

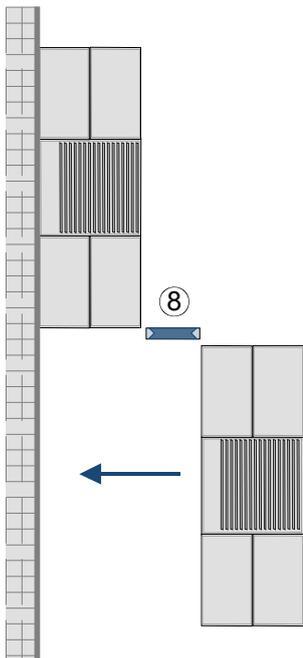


Example of housings fitted vertically on top of each other.

Always use two connecting plates ⑧ with cable entry.



Fit supplied dust filters ⑧.2 to each plate ⑧.1. Observe the proper fixing of the dust filters to ensure an effective dust protection.



Each housing must be individually fastened to the mounting surface with four fastening screws.



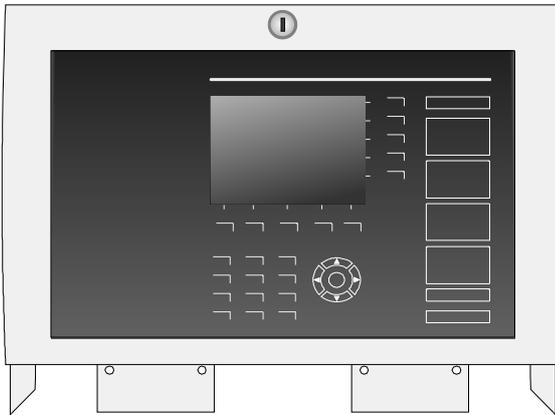
### Danger of damage!

The connecting pieces are not able to bear the weight of the lower housing on their own.

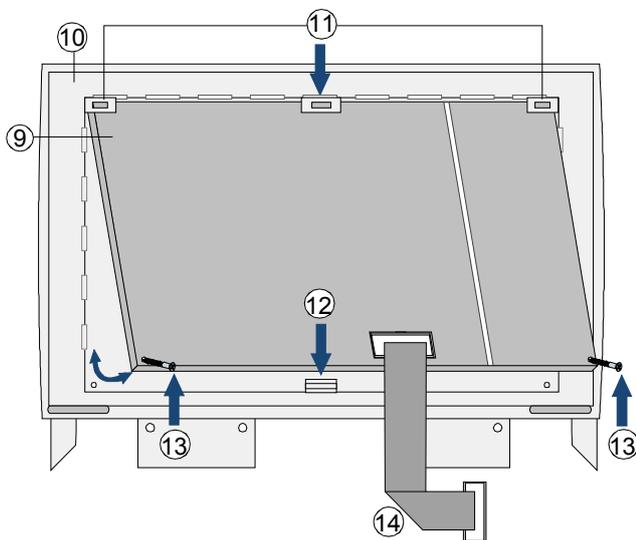
Fig. 26: Connection between the housings

## 5.9 Attaching the label strips to the display and operating panel

The display and operating panel, associated label strips as well as the country-specific lettering sets (e.g. lettering set "Great Brittan" (Part No. FX808402) must be inserted into the front panel in the correct position.



Carefully place the front panel onto a smooth and clean surface.



### Disassembly

Remove the flat connecting cable ⑭ from the display and operating unit ⑨.

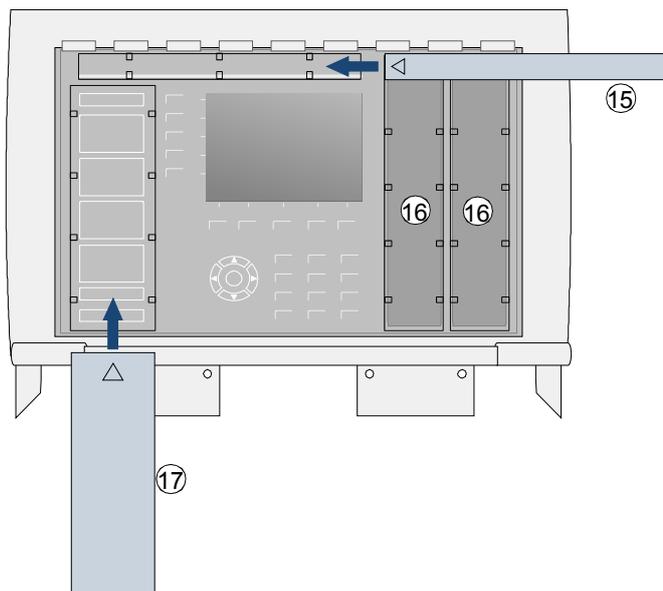
Remove the two fastening screws ⑬.

Carefully push down the holding clip ⑫, D/O panel and lift the D/O panel from the front panel ⑩.

### Collective and function displays

Insert the label strips for the collective display ⑮ and the function display ⑰ in the correct positions.

If there is no SZI, insert the two black cover strips ⑯.



### Installation

Align the display and operating unit (D/O panel) ⑨ on the rear of the front panel's frame ⑩.

Slide the D/O panel, under the top holders ⑪ and press until the holding clip ⑫ positively engages.

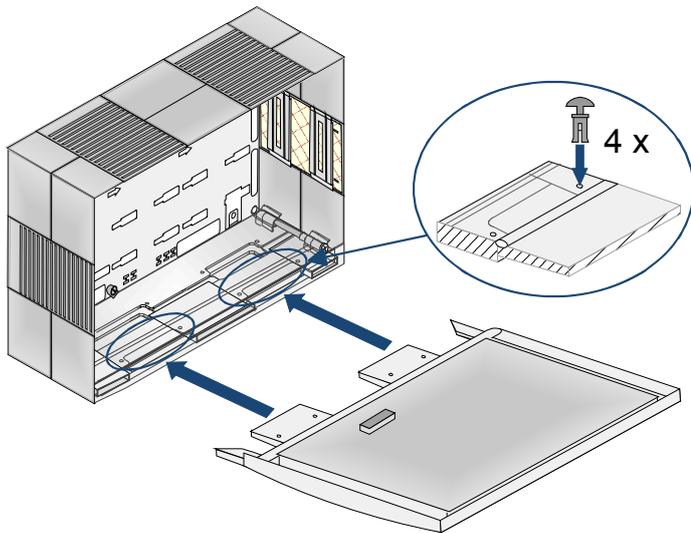
Fasten the display and operating unit with the two screws ⑬.

Connect the ribbon cable ⑭ for the basic module carrier.

Fig. 27: Inserting the operating panel

## 5.10 Fitting the front panel to the housing frame

The fully-assembled front panel with the display and operating unit and ready-inserted labelling strips can now be fitted to the fully-assembled and mounted housing.



Insert the two plastic fittings into the corresponding openings in the panel housing and fasten with the four expanding rivets.

Fig. 28: Inserting the labelling strip and front panel with the operating panel

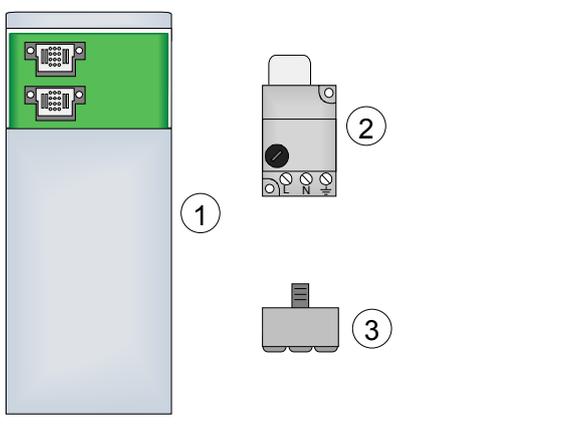


### Danger of damage!

The two housing frames must be firmly screwed to the rear housing panel before fitting the front panel.

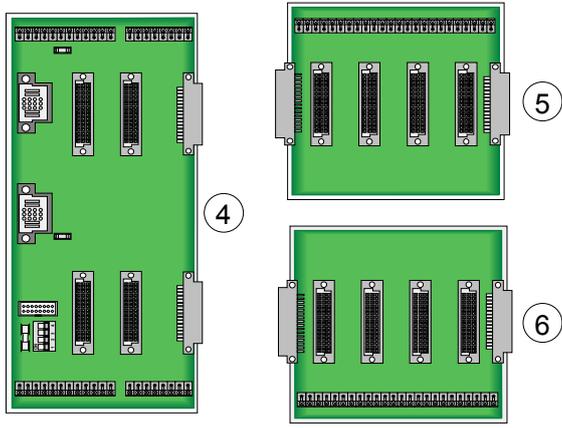
If not fitted to the wall, protect the panel housing from falling over before opening the front panel!

## 6 Electronic components



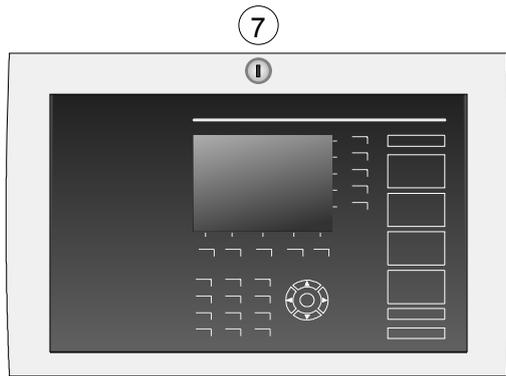
### Power supply

①	Power supply module (PSM) 24 V DC / 150 W
②	PS connection module (PSC)
③	3-way connector



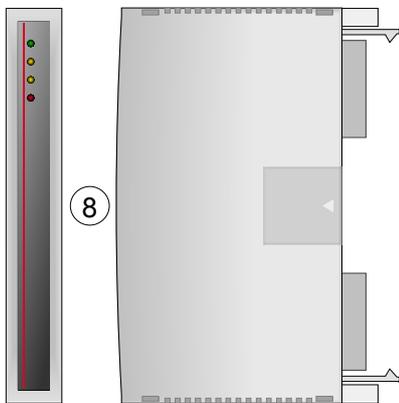
### Module carrier

④	Basic module carrier (BM)
⑤	Expansion module carrier 1 (EMC1)
⑥	Expansion module carrier 2 (EMC2)



**Front panel (with electronic components)**

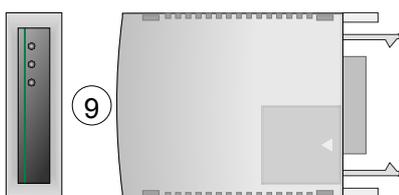
- ⑦ Display and operating unit (D/O unit)



**Function modules**

The FlexES fire alarm system control panel can be expanded by a range of different modules housed inside the large or small module housing.

- ⑧ Control module (CM)



- ⑨
  - esserbus<sup>®</sup> module (ebM)
  - esserbus<sup>®</sup> module with electrical isolation (ebMEI)
  - essernet<sup>®</sup> module 62.5 kBd (enM)
  - essernet<sup>®</sup> module 500 kBd (enM)

## 6.1 Power supply module (24 V DC / 150 W)

The power supply module (Part No. FX808326) supplies the fire alarm system control panel with power and a voltage of 24 V DC for external components. The current supplied for external consumers depends on the battery's charge capacity and the control panel's structure. The max. connectable battery capacity for a power supply module is 48 Ah @ 24 V DC. One power supply connection module can be connected to up to three power supply modules through the 3-way connector (Part No. FX808330). The PSM is supplied with a hybrid cable and a battery connection cable.

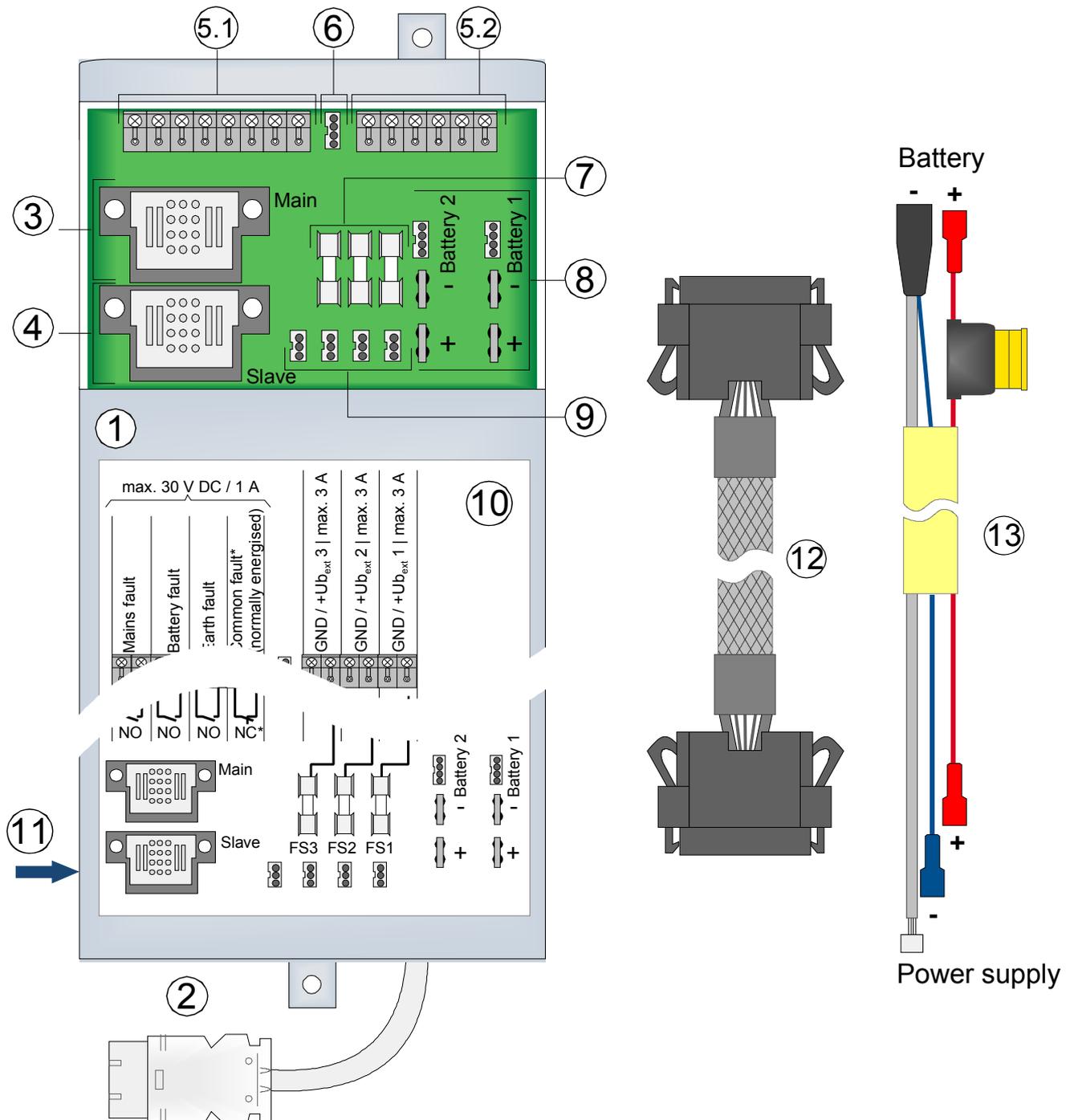


Fig. 29: Power supply module ① incl. hybrid cable ⑫ and battery connection cable ⑬



### Battery capacity of each power supply module max. 24 V / 48 Ah

With two 12 V / 24 Ah batteries connected to connection Battery 1 and two 12 V / 24 Ah batteries to connection Battery 2 (see section 6.1.5 for connection specifications).

①	Power supply module (24 V DC / 150 W) Max. connectable battery capacity 24 V / 48 Ah. The battery capacity must be selected in the tools 8000 programming software to ensure that the batteries are properly charged!	
②	Connector for PS connection module (PSM) The connector locks into place and can only be removed after the safety clip on the PS connection module has been disengaged.  If several power supply modules are connected, connect them using the 3-way connector (Part No.FX808330)	
③	MAIN plug → connection for the hybrid cable for connecting the basic module carrier	
④	SLAVE plug → connection for the hybrid cable for connecting the next power supply module (see section 6.1.5)	
⑤.1	Terminals for 4 relays Common fault relay (break contact = inverse operation) Earth fault relay (normally open) Battery fault relay (normally open) Mains fault relay (normally open)	Potential free contact Max. contact load 30 V DC / 1 A
⑤.2	Connection terminals: 3 x $U_{b_{ext}}/GND$ for external consumers. (see section 6.1.1 for assignments) Max. load per terminal 3 A Max. total load 6 A	
⑥	Connection for LED display when operated as stand-alone	
⑦	3 x individual fuses (T3,15 A) for the three $U_{b_{ext}}/GND$ ( $U_{B1}$ to $U_{B3}$ ) connections	
⑧	Battery and temperature sensor connections Battery 1 = 2 x 12 V / max. 24 Ah Battery 2 = 2 x 12 V / max. 24 Ah	total 24 V / max. 48 Ah (see section 6.1.6)
⑨	Connection for tamper contact (max. 4 tamper contactes)	
⑩	Label on power supply housing stating the terminal connections / components	
⑪	Earth fault detection (see section 6.1.2)	
⑫	Hybrid cable - for connecting the power supply module and basic module carrier	
⑬	Connecting cable for batteries incl. fuse (T10 A) and temperature sensor (see section 6.1.5)	

### Software-supported power supply module configuration

The power supply module and battery charge (capacity, charging current etc.) are configured with the tools 8000 programming software.



#### Danger of damage!

The hybrid cable must not be bent and the cable insulation and protective mesh must not be damaged (provide sufficient space for appropriate bending radius).

Only ever connect batteries of the same type to a power supply module (manufacturer, manufacturing date, capacity, charge).

### 6.1.1 Specification

Rated voltage	: 230 V AC
Rated current	: 0,8 A
Rated frequency	: 50 to 60 Hz
Output voltage	: 24 V DC
Quiescent current	: 65 mA
Total output current	: max. 6 A
Current for ext. devices	: 3 x 24 V DC / 3 A
Battery capacity	: 2 x 24 V DC / 24 Ah
Weight	: approx. 1,4 kg
Dimension (w x h x d)	: 100 x 260 x 66 mm

### 6.1.2 Connection

The label shows the connection terminals assigned to the power supply module (PSM). Only the four PSM relays and associated indicators for the relevant PSM are connected. These connections cannot be used for other components / purposes!

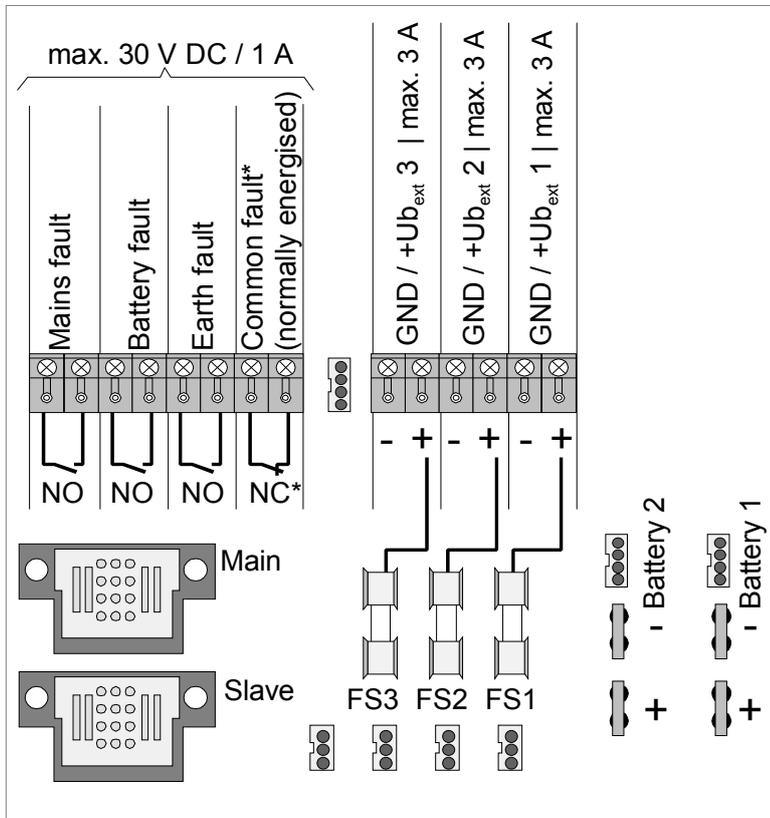


Fig. 30: Label on the power supply module

**\* Inverse operation → Common fault relay (NC, normally closed)**

If this PSU device detects a PSM fault, the corresponding relay is deactivated and changes its switching state (open → closed).

The relay is always activated in the normal state of the PSM or the fire alarm system control panel.

### 6.1.3 Earth fault detection

The earth fault detection function can be activated or deactivated using the jumper on the side of the PSM.

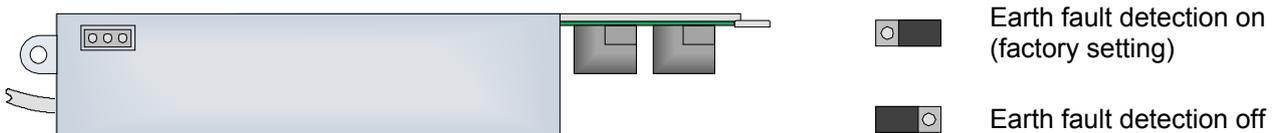


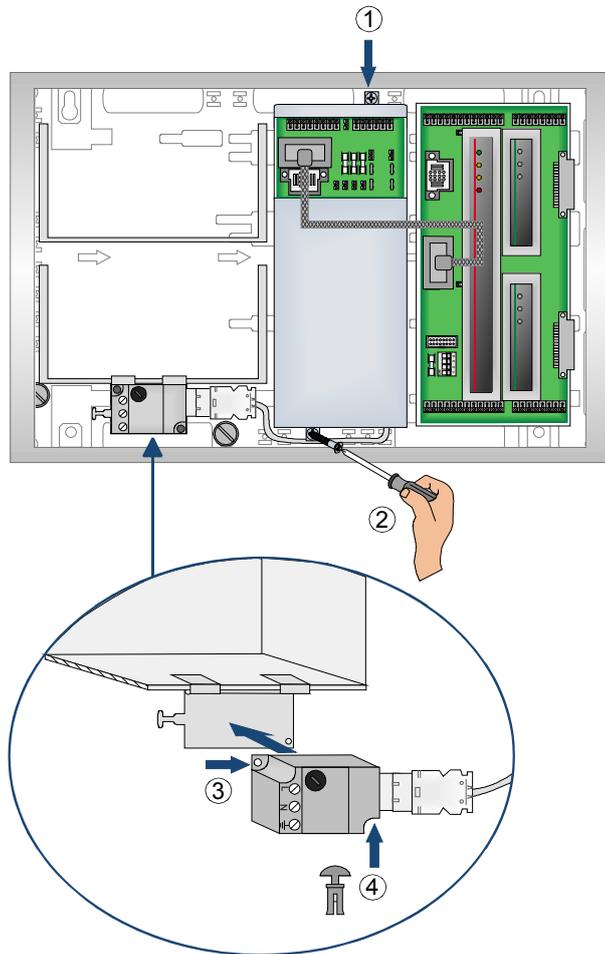
Fig. 31: Location of the >Earth fault detection< jumper on the power supply module



When using more than one PSM, the earth fault detection must be deactivated on PSM 2 and PSM 3 (see section 6.1.2).

### 6.1.4 Installing the power supply module und PS connection module

Depending on the control panel's structure, the power supply module can be fitted in two different locations on rear housing panel 1.



#### FX2 (Part No. FX808360)

Insert the power supply module in the correct position and fasten to the rear housing panel with the two screws ① + ②.

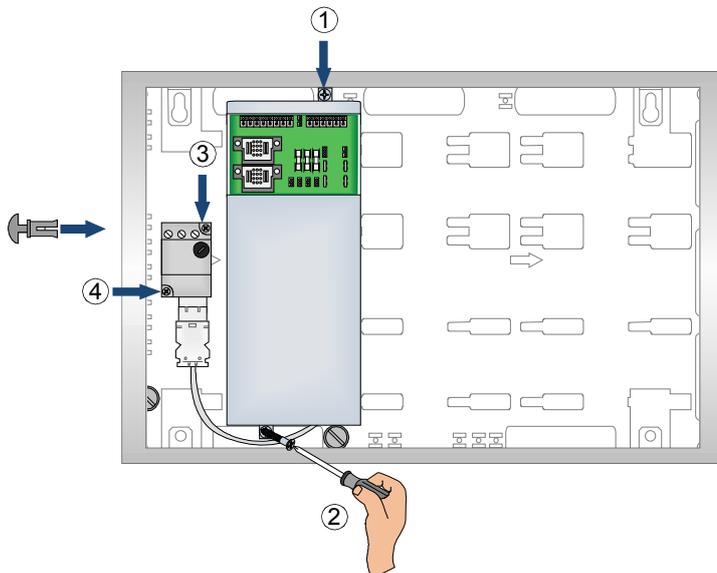
#### PS connection module (Part No. FX808327)

The PS connection module is required for connecting the 230 V AC voltage to the power supply module. Fasten the module to the battery holder angle brackets or rear panel with the two supplied expanding rivets ③ + ④.

See section 6.1.4 for information on how to connect the module to the mains.

Fig. 32: FX2

There are two different power supply expansion units (Part No. FX808363 and FX808364) from which to choose to connect larger batteries and additional power supply modules (max. 3).



FX10 (Part No. FX808361)

FX18 (Part No. FX808362)

PSU extension 24 V / 12 Ah  
(Part No. FX808363)

PSU extension 24 V / 24 Ah  
(Part No. FX808364)

Fig. 33: Models FX10 and FX18 and power supply expansion unit

## 6.1.5 Mains connection and ground connections

The control panel may only be connected to the mains by a qualified electrician and in compliance with all relevant standards and regulations. The corresponding connection terminals are located on the PS connection module (PSM).

### Requirements

- Use a suitable cable, e.g. NYM 3 x 1.5 mm<sup>2</sup> (max. 2.5 mm<sup>2</sup>), or cable with the same characteristics for connecting the system to the mains.
- Connect the fire alarm control panel to the AC mains power supply via a separate mains isolator or a suitably rated circuit breaker. The rated voltage (e.g. 230 V AC) is specified on the control panel's type plate.
- Use a separate FI unit if FI circuit breakers are used.
- Mark the fuse protection for the mains supply for the fire alarm system control panel accordingly (in red, label as 'FACP'). Observe national standards and guidelines!
- Make sure to correctly connect the protective earth (PE) and functional earth (FE). (See section on "Protective and functional earth")
- Observe local power supply provider regulations.
- The fire alarm control panel has been fitted with fine surge protection in accordance with EN 54 and the VdS guidelines. Should coarse protection be required, this should be installed by the installer for the specific system.



Observe the rated voltage (e.g. 230 V AC) specifications on the control panel's type plate!

### Connecting cable insulation

The cable sheath (jacket) of all of the connecting cables must be left intact up to a point inside the panel housing and only be removed inside the housing.

### Power supply module

The fuses of the panel or external power supply units cannot prevent an unexpected fault in electrical modules; rather, these fuses are intended to protect users and their surroundings from damage. Fuses must therefore never be repaired or bridged (e.g. T1 A H / 250 V) or replaced with any fuses other than the stated type!

### Danger of damage!

The mounting surface and mounting material must be strong enough to hold the relevant battery type used.

### Protective and functional earth

For the device to function properly, the network side protective earthing (PE) connection must be connected to the correct terminal. The functional earth (FE) must also be connected to the PE rail.

**Connecting the rated voltage (230 V AC) and ground connections**

The illustration below shows how the 230 V AC mains voltage is connected to the PS connection module as well as the connection between the power supply module and basic module carrier. The control panel must be connected to the functional earth (FE) for compliance with the regulations.

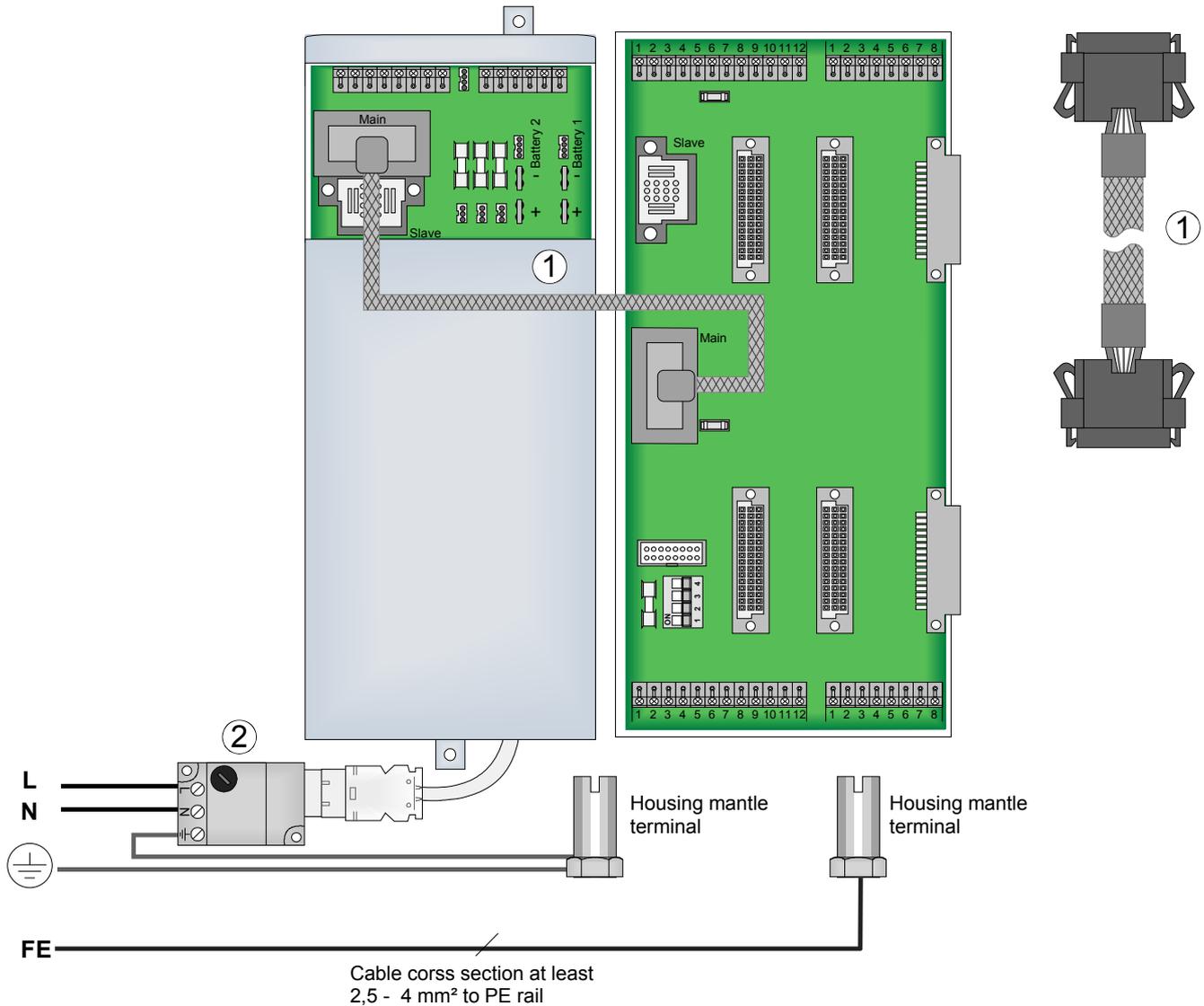


Fig. 34: Power supply connection (schematic diagram)

- ① Hybrid cable (700 mm long), take note of connector labels!  
If the control panel is connected to only one power supply module, the basic module carrier's >Main< connector must be connected to the power supply module's >Main< connector.
- ② PS connection module (Part No. FX808327)

Ground connections and potential equalisation

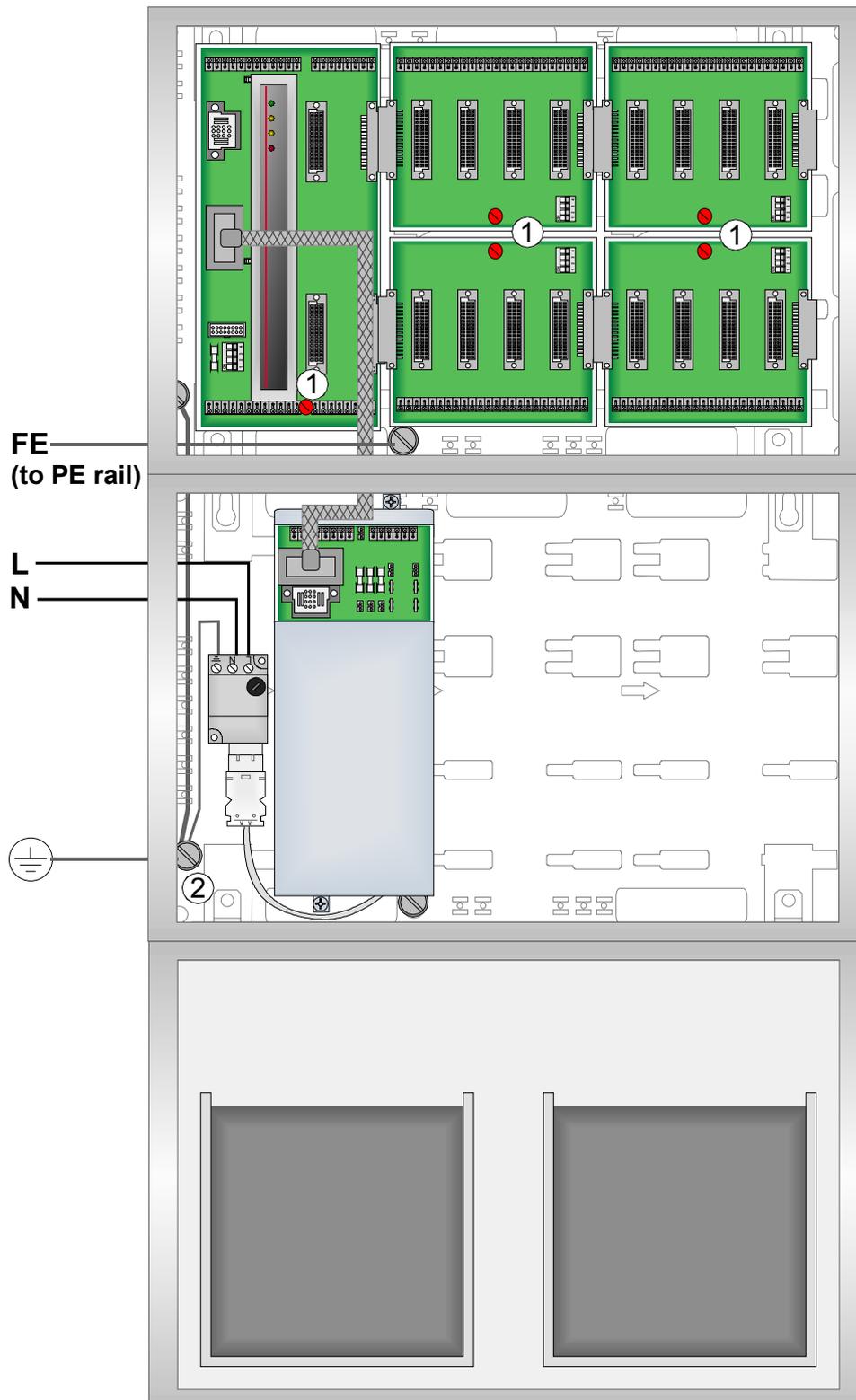


Fig. 35: Protective and functional earth (example showing FX10 or FX18)

- ① Metal screws for creating an electrically conductive connection to the rear housing panel
- ② Sheath clamp on housing (PE connection)  
The sheath clamps on the rear metal panels must be connected to one another.

### 6.1.6 Cascading power supply modules

A FlexEs fire alarm control panel can be fitted with up to three power supply modules. The individual PS modules (and basic module carrier) are connected using hybrid cables (MAIN/SLAVE).

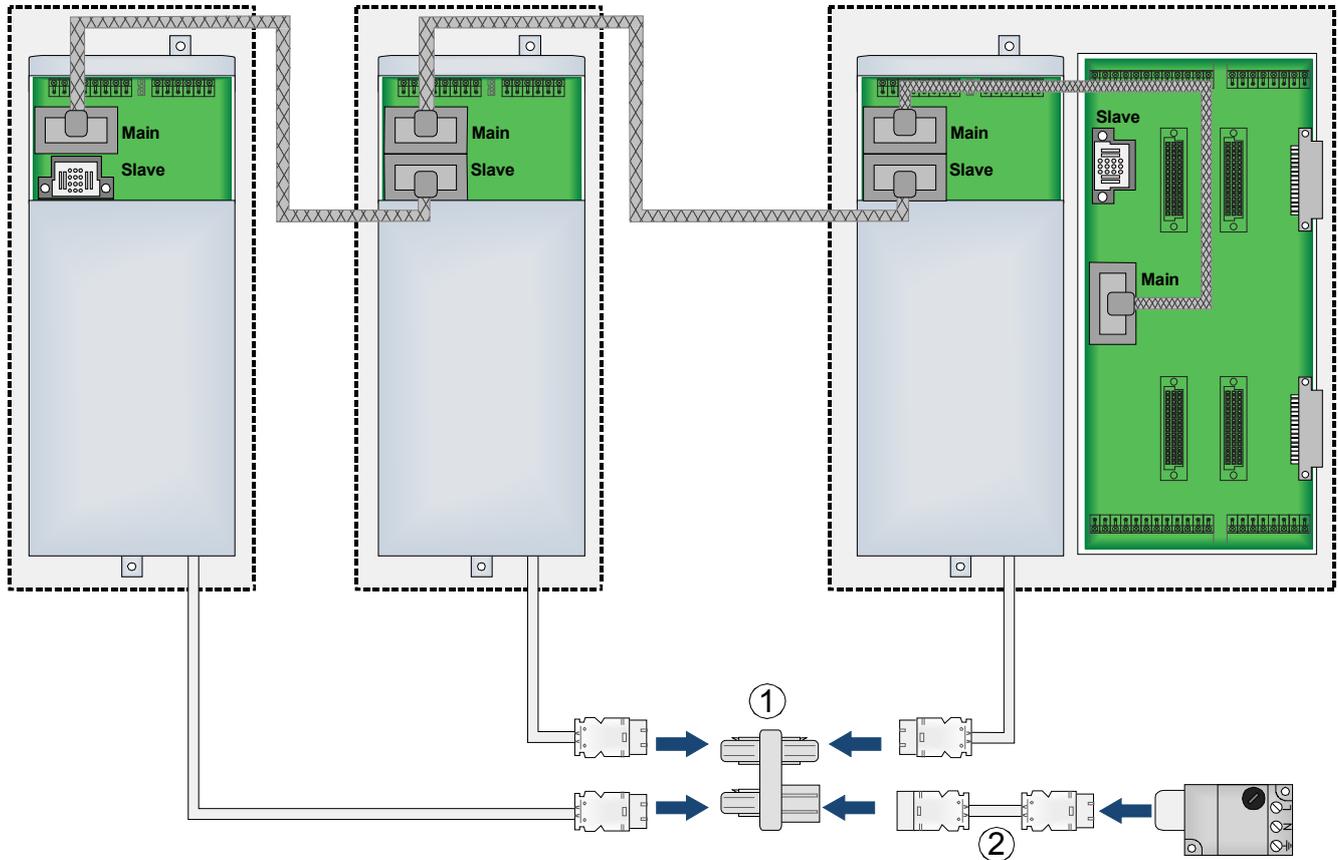


Fig. 36: Cascading with three PSM

① 3-way connector incl. connecting cable ② (Part No. FX808330)



#### Danger of damage!

- The hybrid cable must not be bent and the cable insulation and protective mesh must not be damaged (provide sufficient space for appropriate bending radius).
- The hybrid cable is used exclusively within the FlexES housing(s) and may not be run to the outside!
- When using more than one PSM, the earth fault detection must be deactivated on PSM 2 and PSM 3 (see section 6.1.2).

### 6.1.7 Emergency power supply

In the event of a mains power failure (e.g. 230 V AC), the control panel will be supplied with power from the connected batteries without any interruption. Depending on the batteries used, the emergency power supply might therefore be sufficient to power the system for up to 72 hours and longer.

Once this time has elapsed, it must still be possible to activate the external signal transducers in the case of an event. It must also be assured that it is possible to activate these transducers at a final discharging voltage of 21 V DC (e.g. battery 1  $\hat{=}$  battery 1 + 2).

#### Initial start up

New batteries must be recharged for at least 24 hours before the system is started up. If the batteries were manufactured more than nine months ago (see label for date of manufacture), they will have to be recharged for at least 48 hours.

#### Low voltage disconnect

The power supply unit periodically checks the charge state of the connected batteries. If during such a check the battery charge of, for example, >Battery 1 or 2< is lower than 21 V DC while the battery is in use, the unit will issue a battery fault message.

If at battery operation the terminal voltage of >Battery 1 or 2< permanently drops below 21 V DC, the emergency power supply will be switched off to protect the control panel. In this case, the control panel is no longer operational!

Correct the fault in the mains power supply before switching the FACP back on. The batteries connected to >Battery 1 or 2< are automatically charged again when they have returned to a terminal voltage of 21 V DC while in a no-load rest state, as indicated by an internal battery test. If this value is not reached, the unit will issue an error message. The discharged batteries must either be recharged externally or replaced.

While charging, both batteries are monitored by a digital temperature sensor (integrated in the charging circuit or into the battery connector cable).



Exhaustively discharged batteries connected to >Battery 1 or 2> ( $U_{\text{Batt}}$  lower than 21 V DC) are not charged!

Only use approved types of battery for the fire alarm control panel's emergency power supply. See also the instructions and information in section 6.1.10!

Only ever connect batteries of the same type to a power supply module (manufacturer, manufacturing date, capacity, charge).

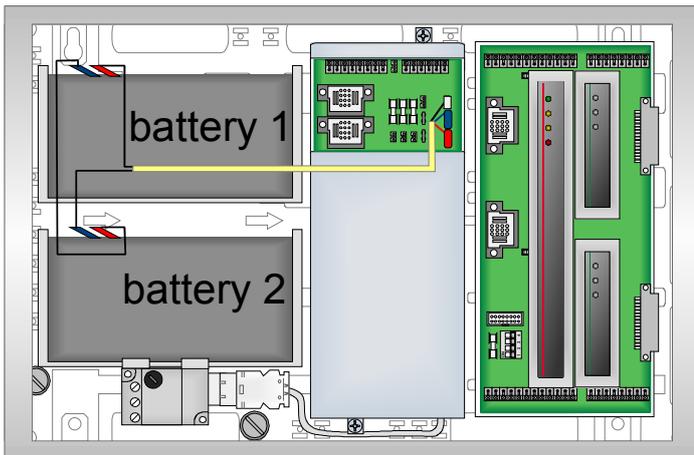


The battery manufacturer and VdS Schadenverhütung GmbH guidelines on the total discharge of batteries must also be observed.



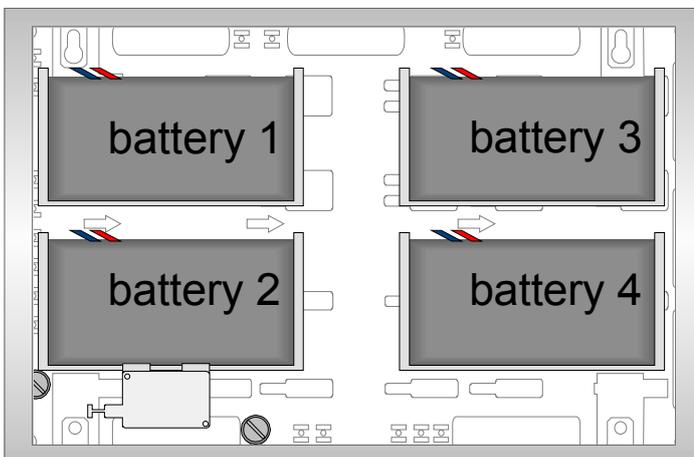
The fire alarm control panel might also issue battery fault warnings for reasons other than totally discharged or defective batteries. Such warnings could also indicate excessive contact resistance (> 200 mOhm) at the battery terminal clamps or connecting cables.

### 6.1.8 Fitting the batteries



A max. of 2 x 12 V / 12 Ah batteries (w x h x d = 152 x 102 x 98 mm) can be fitted in:

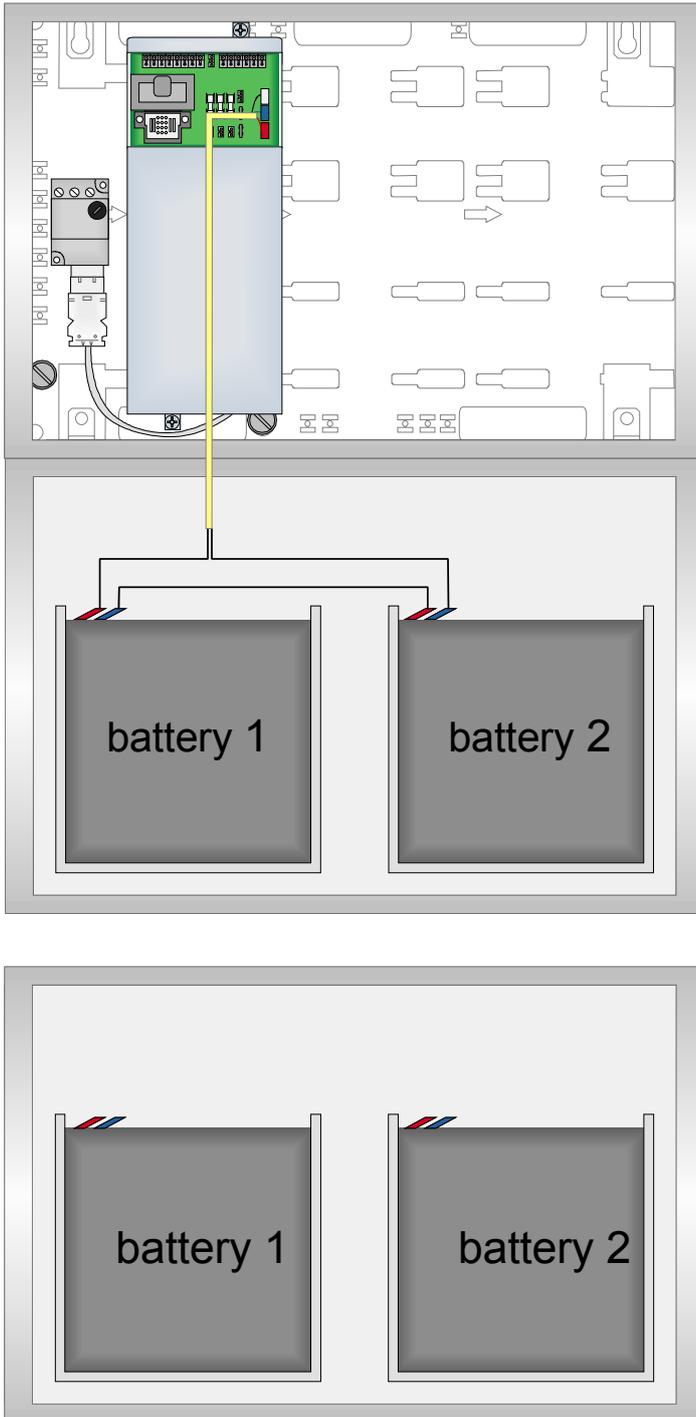
- Variant FX2 (Part No. FX808360)
- PSU expansion unit 24 V / 12 Ah (Part No. FX808363)



A max. of 4 x 12 V / 12 Ah batteries in:

- Extension housing (Part No. FX808314)

Fig. 37: Fitting the batteries



A max. of 2 x 12 V / 24 Ah batteries  
(w x h x d = 168 x 125 x 178 mm) can be  
fitted in:

- Variant FX10 (Part No. FX808361)
- Variant FX18 (Part No. FX808362)
- PSU extension 24 V / 24 Ah  
(Part No. FX808364)
- Extension housing (Part No. FX808313)

Fig. 38: Fitting the batteries

### 6.1.9 Batterie connection

The power supply module can be connected to 4 batteries (2 x to battery 1 and 2 x to battery 2). The max. battery capacity is 24 Ah each.

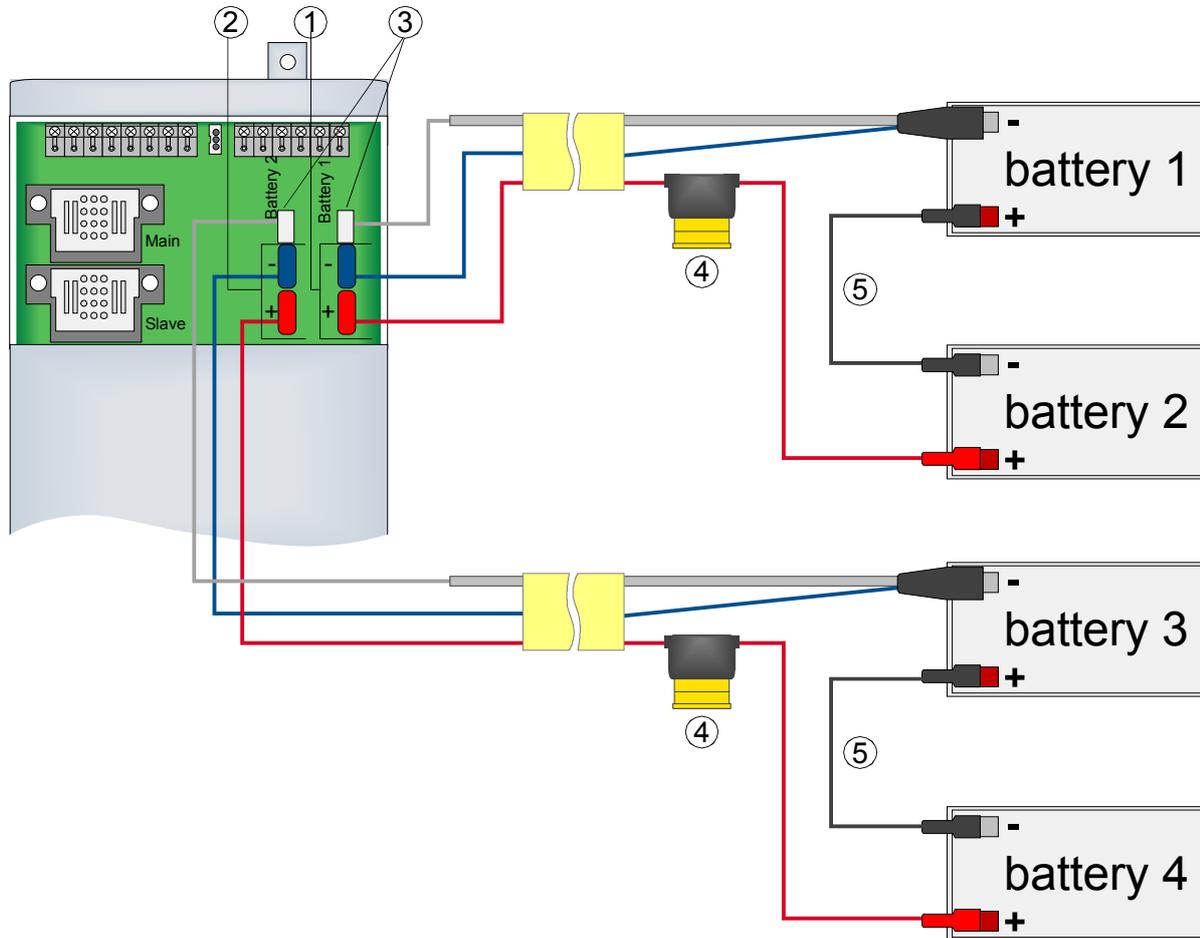


Fig. 39: Four batteries incl. fuse and temperature sensor (example)

①	Battery connector 1 / Battery 1 (max. 24 Ah)	Max. 48 Ah total capacity per PSU module!
②	Battery connector 2 / Battery 2 (max. 24 Ah)	
③	Temperature sensor connection (use of the battery cable with integrated temperature sensor required)	
④	Fuse T10 A (250 V)	
⑤	Cable for series connection of both 12 V batteries (≅ 24 V DC)	



#### Battery capacity

Only ever connect batteries of the same type to a power supply module (manufacturer, manufacturing date, capacity, charge).  
All of the batteries used with a PSM must have the same capacity.  
If necessary, it is possible to connect an additional PSM (max. 3 PSM) with the required battery capacity.



#### Software-supported power supply module configuration

The power supply module and battery charge (capacity, charging current etc.) are configured using the tools 8000 programming software.

The actual connected battery capacity must be programmed in the fire alarm system control panel customer data or conform to the battery capacity configuration in these data.

## 6.1.10 Checking the batteries

### Monitoring the batteries according to EN 54

In event of a failure of the rated voltage (230 V AC) and maximum load on the batteries, the supply of power must be guaranteed to ensure proper operation of the fire alarm control panel as well as the connected components and external devices.

While in a resting state, only a low current generally flows through an FACP. For this reason, an increased contact resistance at the connection terminals of the batteries will not be detected even if the rated voltage fails. It is therefore necessary to test the batteries.

In event of an alarm, if all alarm devices are triggered, the battery voltage could collapse in event of a rated voltage failure and the FACP could switch off completely. Complete alarm notification is then no longer guaranteed.

The maximum resistance at which this functionality is still guaranteed depends on various factors related to the FACP and the way it is used. This resistance value is therefore set at the factory to 200 mΩ. In accordance with the requirements of EN 54, an increase in the resistance must be indicated within four hours.

The FACP FlexEs control has an integrated, standard-compliant test function for monitoring the batteries and their connection lines within the required times and for indicating a fault. This check is performed only while the rated voltage (230 V AC) is present and when the charge level of the batteries is high; it is performed automatically roughly every 15 minutes (factory setting) by the fire alarm control panel in addition to testing the batteries for deep discharging (final discharging voltage).

### Fault display

If the resistance of the batteries and their connection lines is too high, if a battery voltage lies below the final discharging voltage (battery not connected, deep-discharged or defective, or fuse defective) or if a fault exists in the resistance measurement (no load present), the fault message >Battery Fault< is displayed on the FACP.



Extension of the battery connection lines is only possible with limitations. Exceeding the maximum permissible measurement tolerance of 200 mΩ leads to a fault message.

The internal resistance of the batteries increases with age. This change is taken into account and compensated for with the measurement tolerance.

## 6.2 Basic Module Carrier (BM)

The basic module carrier (Part No. FX808321) forms part of the fire alarm control panel's basic structure. The basic module carrier contains a slot for the control module and two free module slots. The two connectors of the basic module carrier can therefore be used to connect 2 x 2 expansion module carriers (= 16 module slots).

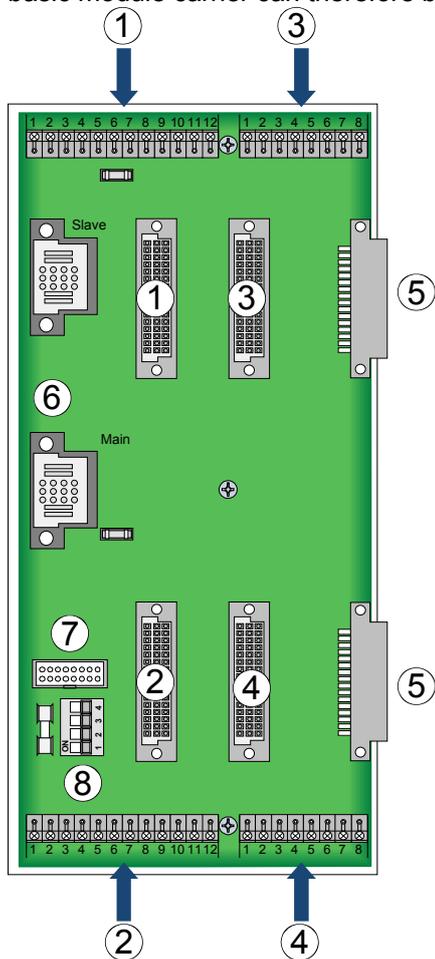


Fig. 40: Basic module carrier

① + ②	Slot for the control module with associated terminal clamps
③	Module slot with associated terminal clamps
④	Module slot with associated terminal clamps
⑤	Plug-in connection for expansion module carrier
⑥	Connector for the hybrid cable for the power supply module
⑦	Connector for the ribbon cable for the display and operating unit
⑧	DIL-switch for the operation panel



DIL-switch 1 – 4 OFF  $\hat{=}$  factory setting with operation panel to ⑦



DIL-switch 1 – 4 ON  $\hat{=}$  without operation panel connected

### 6.2.1 Specification

Mains voltage	: 24 V DC
Quiescent current @ 24 V DC	: 5 mA
Weight	: approx. 305 g
Dimension (w x h x d)	: 120 x 245 x 25 mm

### 6.3 Expansion module carrier 1 (EMC 1)

The expansion module carrier 1 (Part No. FX808322) is equipped with 4 slots and the associated terminal clamps, suitable for connecting any type of module. EMC 1 is connected to the basic module carrier's connecting plug. EMC 1 can then be connected to another EMC 1. In this way, it is possible to connect two expansion module carriers to one of the basic module carrier's connectors. Please see section 4 for example configurations.

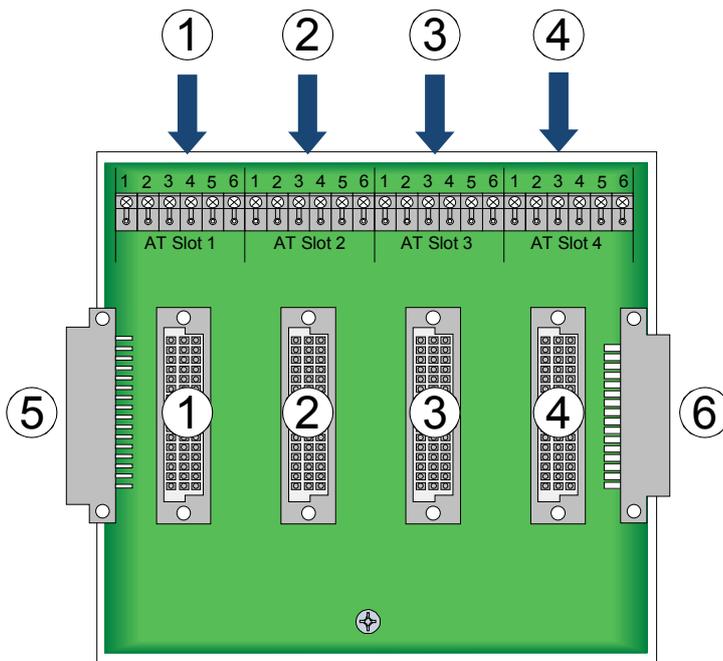


Fig. 41: Expansion module carrier 1 (Part No. FX808322)

①	Module slot and associated connection components	 The assignments of terminal clamps 1 to 6 depend on the relevant module being used.
②	Module slot and associated connection components	
③	Module slot and associated connection components	
④	Module slot and associated connection components	
⑤	Connection for basic module carrier or expansion module carrier 1	
⑥	Connection for the second expansion module carrier 1	

 The location of the terminal clamps on expansion module carrier 1 and expansion module carrier 2 differs. The connector's offset position requires the use of one EMC 1 and one EMC 2 each to connect two expansion module carriers to the basic module carrier.

#### 6.3.1 Specification

Weight : approx. 175 g  
 Dimension (w x h x d) : 140 x 120 x 25 mm

## 6.4 Expansion module carrier 2 (EMC 2)

The expansion module carrier 2 (Part No. FX808323) is equipped with 4 slots and the associated terminal clamps, suitable for connecting any type of module. EMC 2 is connected to the basic module carrier's connecting plug. EMC 2 can then be connected to another EMC 2. In this way, it is possible to connect two expansion module carriers to one of the basic module carrier's connectors. Please see section 4 for example configurations.

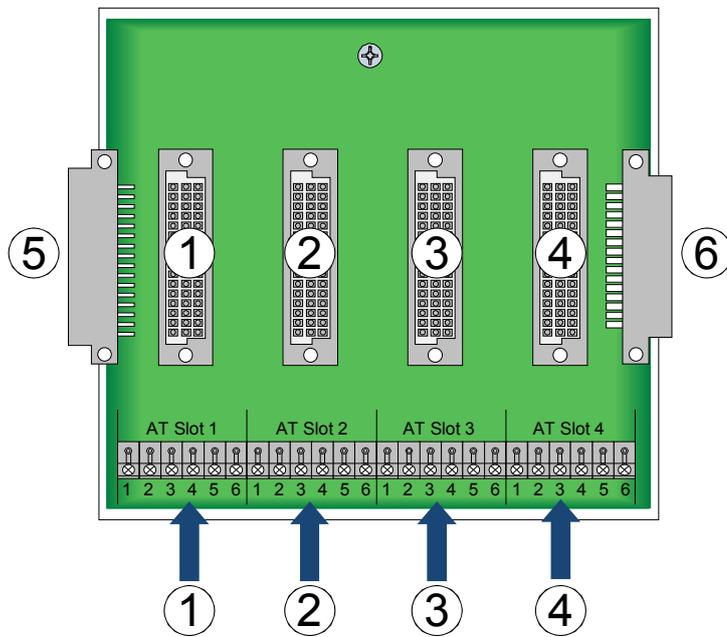


Fig. 42: Expansion module carrier 2 (Part No. FX808323)

①	Module slot and associated connection components
②	Module slot and associated connection components
③	Module slot and associated connection components
④	Module slot and associated connection components
⑤	Connection for basic module carrier or expansion module carrier 2
⑥	Connection for the second expansion module carrier 2



The assignments of terminal clamps 1 to 6 depend on the relevant module being used.



The location of the terminal clamps on expansion module carrier 1 and expansion module carrier 2 differs. The connector's offset position requires the use of one EMC 1 and one EMC 2 each to connect two expansion module carriers to the basic module carrier.

### 6.4.1 Specification

Weight : approx. 175 g  
 Dimension (w x h x d) : 140 x 120 x 25 mm

## 6.5 Display and operating unit (D/O unit)

The figure below shows the front cover incl. operation panel (Part No. FX802324) with an open housing.

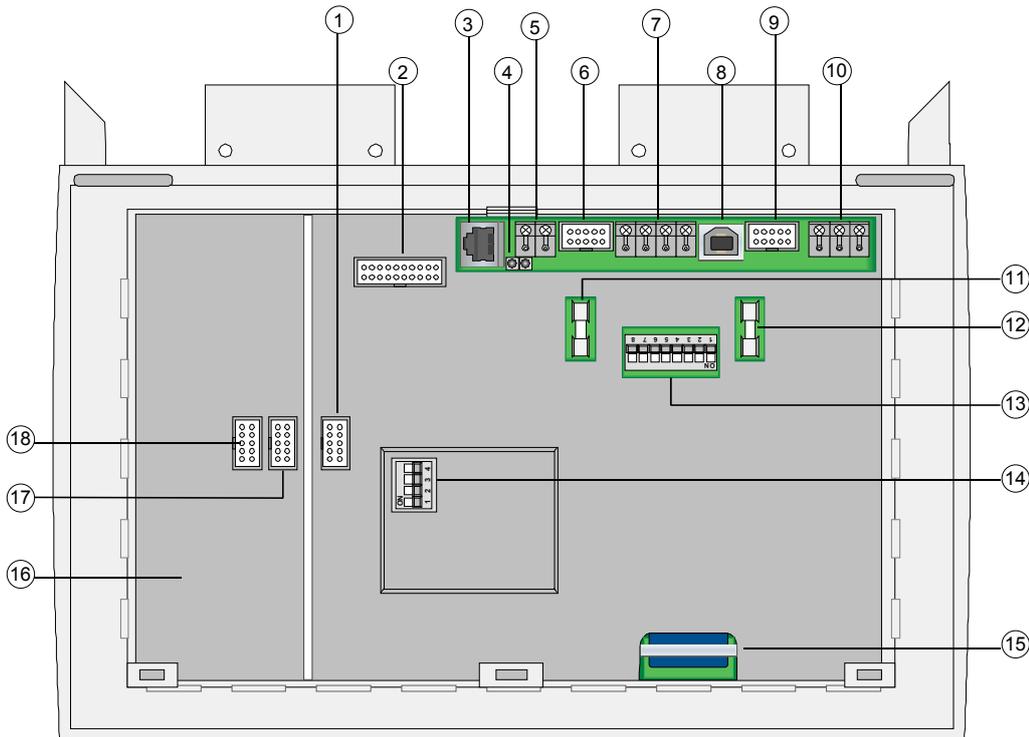


Fig. 43: Location of components on the display and operating panels rear side (Part No. FX808324)

①	Connection for the single zone indicator unit (SZI) via ribbon cable (out)		
②	Connection for the basic module carrier via ribbon cable		
③	Ethernet connection → future function expansion		
④	LED for optical function indicator → future function expansion		
⑤	+24 V DC $U_{b,int}$ for the integrated printer → future function expansion – do not connect!		
⑥	connection for integrated printer with ribbon cable → future function expansion		
⑦	RS485 – interface for remote display and operating units		
⑧	USB connection for service PC		
⑨	→ future function expansion		
⑩	→ future function expansion – do not connect!		
⑪	T2A fuse for integrated printer's + $U_b$ connection		
⑫	T1A fuse for connection ⑩		
⑬	DIL- switch (do not change switch factory setting)		
⑭	Operating panel / CPU electronics cover incl. DIL-switch	 DIL 1 – 3 ON $\hat{=}$ Emergency mode indication activated (factory setting)	 DIL 1 – 3 OFF $\hat{=}$ Emergency mode indication deactivated
		 Buzzer on	 Buzzer of
⑮	Slot for SD memory card → future function expansion		
⑯ / ⑰	Single zone indicator unit (SZI) incl. connector to operation panel (in)		
⑱	Connector for additional Single zone indicator units (out)		

### 6.5.1 Specification

Mains voltage	:	24 V DC
Quiescent current @ 24 V DC	:	156 mA
Alarm current @ 24 V DC	:	161 mA
Display diagonal	:	145 mm (5,7 inch)
Resolution	:	320 x 240 Pixel
Dimension (w x h x d)	:	450 x 320 x 45 mm

## 7 Modules

The FlexES fire alarm system control panel has a modular structure, allowing modules to be replaced/expanded at any time.



### Hot-plug capability

The FlexEs control panel's modules can be replaced and/or fitted while the control panel is operating. This means that the control panel's modules can be replaced without requiring the power supply to be switched off.

### Large module housing

- Control module (Part No. FX808328)

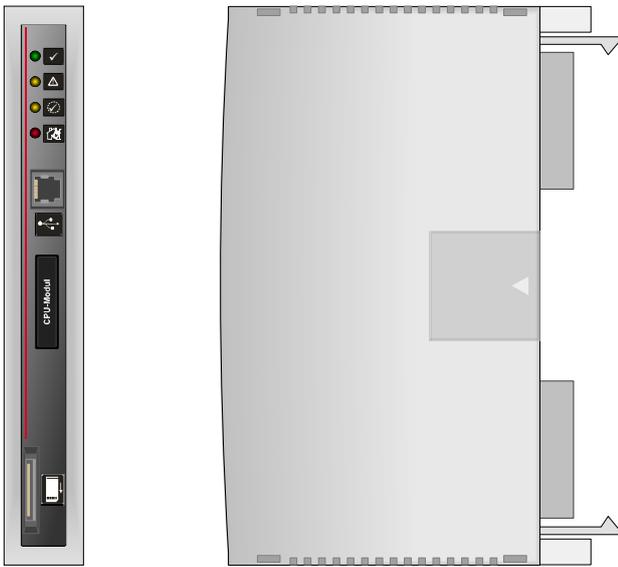


Fig. 44: Large module housing

### Small module housing

- esserbus<sup>®</sup> module (Part No. FX808331)
- esserbus<sup>®</sup> module with electrical isolation (Part No. FX808332)
- esserbus<sup>®</sup> module 62.5 KBd (Part No. FX808340)
- esserbus<sup>®</sup> module 500 KBd (Part No. FX808341)

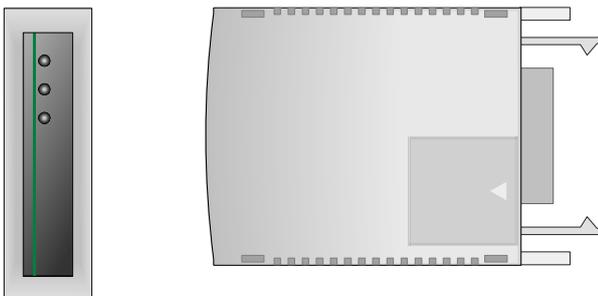
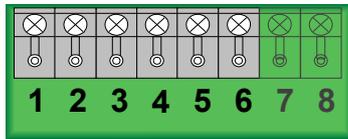


Fig. 45: Small module housing

### Module terminal clamps

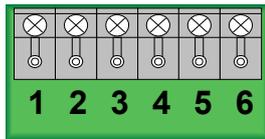
The modules are connected via the terminal clamps assigned to the module slots they occupy.



#### Basic module carrier → Terminal clamps

The basic module carrier is equipped with 8 terminal clamps for the module slot. Only the first six clamps (1 to 6) are required for connecting a module.

Do not use clamps 7 and 8!



#### Expansion module carrier → Terminal clamps

The expansion module carriers 1+2 are equipped with six terminal clamps for each of their four module slots.

Fig. 46: Module terminal clamps

### Removable terminal clamps

The terminal clamps can be removed for ease of installation. When attaching the clamps after connecting the cables, ensure that they are returned to their correct places!

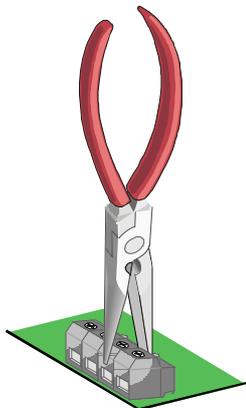


Fig. 47: Removable terminal clamps

## 7.1 Control module (CM)

The control module (Part No. FX808328) forms part of the FlexEs fire alarm control panel's basic structure. This module controls the fire alarm control panel's functions and can be used for connecting external connections. The control module must be slotted into the corresponding slot on the basic module carrier.

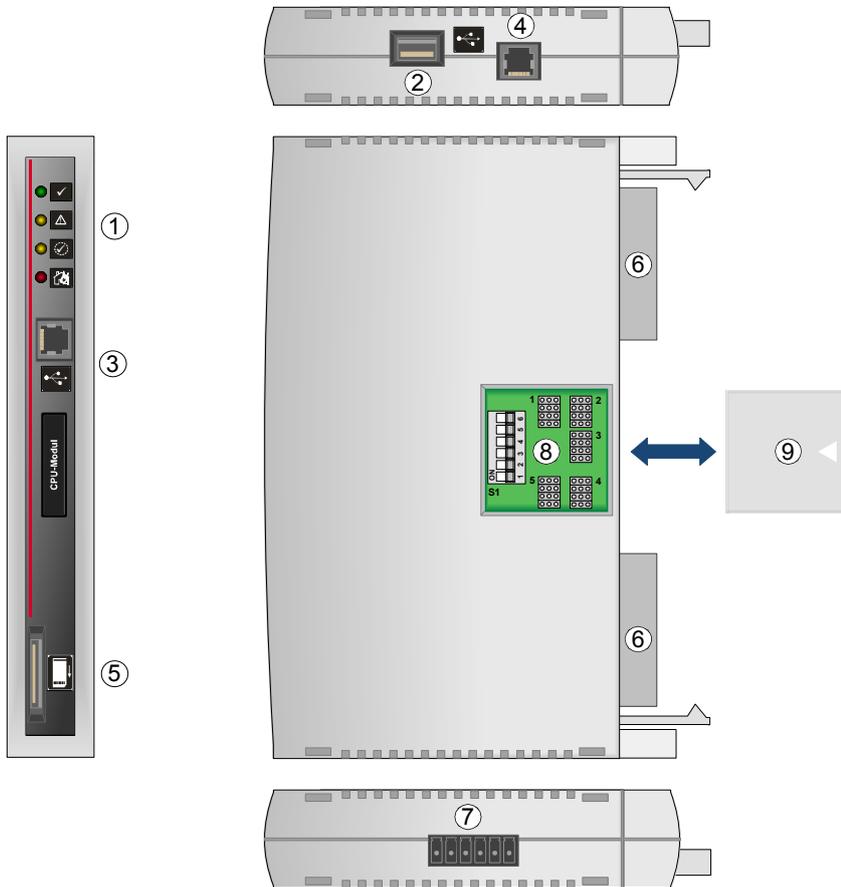
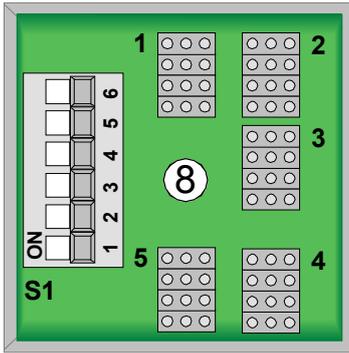


Fig. 48: Control module (Part No. FX808328)

①		Green LED	Lit up → Operation normal
		Yellow LED	Lit up → Control module faulty or reset mode active (emergency operating mode)
		Yellow LED	Flashes 1 Hz → Redundant control module in stand-by mode (future function expansion)
		Red LED	Lit up → Fire alarm (including during emergency operating mode)
②		USB connection (Master, future function expansion)	
③		USB connection (Slave), for service PC	
④		Ethernet connection (future function expansion)	
⑤		Plug-in SD memory card (future function expansion)	
⑥		Connector for connection to basic module carrier	
⑦		Connector plug for TTY interface	
⑧		DIL switch S1 and jumpers 1 to 5	
⑨		Cover	



Each relay is assigned a jumper block for selecting the required operating mode (e.g. relay 1 - jumper block 1 etc.).

Fig. 49: DIL switches S1 and jumpers 1 to 5

**DIL switch S1**

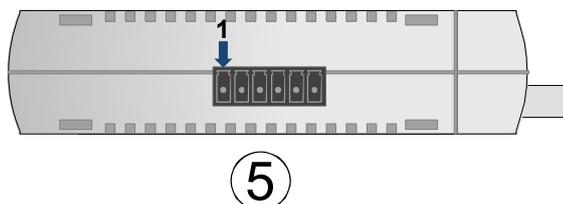
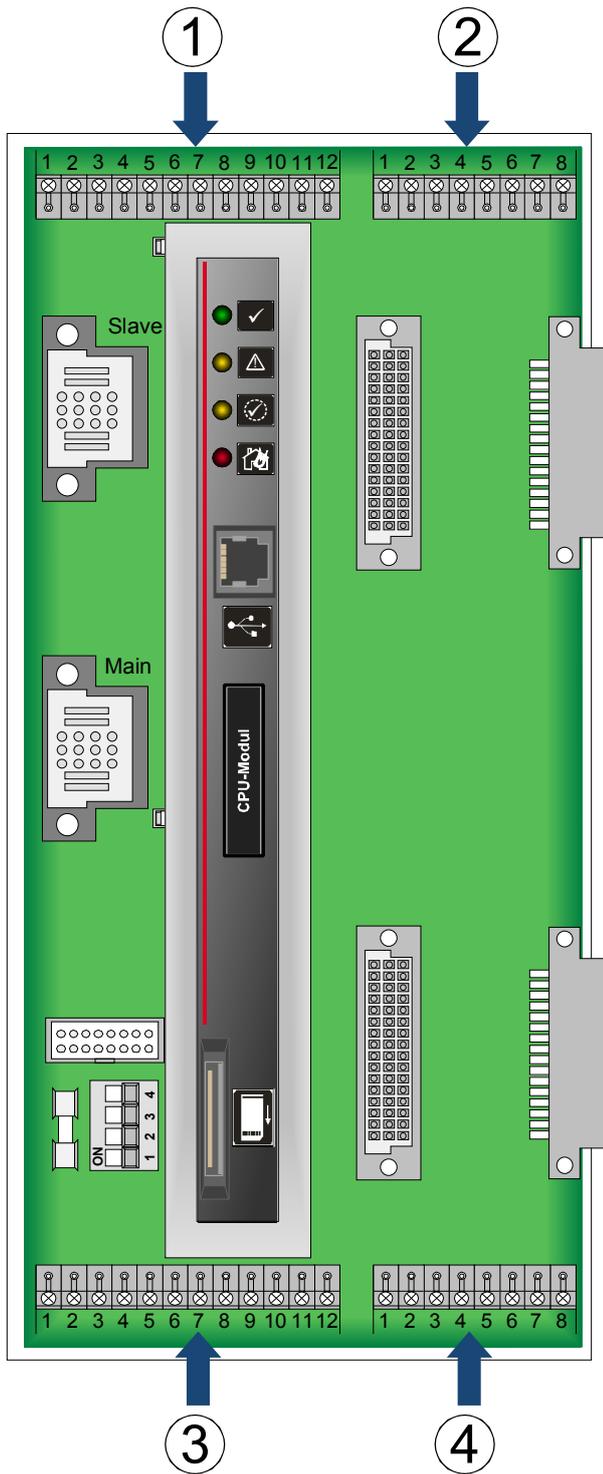
DIL switches 1 to 4 are reserved for future function expansions. Do not change factory setting (OFF)!

DIL switch S1	5	6	
	OFF	OFF	No activation of the alarm transmission unit (ATU) will occur if there is a fire alarm while the system is operating in emergency mode
	OFF	ON	
	ON	OFF	Relay 1 alarm transmission unit (ATU) and relay 2 will be activated if there is a fire alarm while the system is operating in emergency mode. Irrespective of the tamper contact
	ON	ON	Factory setting Relay 1 alarm transmission unit (ATU) and relay 2 will be activated if there is a fire alarm while the system is operating in emergency mode and if the tamper contact is closed

**Jumper block 1 to 5 → Selecting the operating modes for relays 1 to 5**

	Positive switching 24 V DC, non-monitored
	Changeover, electrically isolated, potential-free
	Positive switching 24 V DC, monitored
	Positive switching 24 V DC, monitored - only relay 1 (ATU)

### 7.1.1 Terminal - Control module



①	1	NO → relay 1 (ATU)
	2	C → relay 1 (ATU)
	3	NC → relay 1 (ATU)
	4	ATU feedback signal
	5	NO → Relay 2
	6	C → Relay 2
	7	NC → Relay 2
	8	NO → Relay 3
	9	C → Relay 3
	10	NC → Relay 3
	11	Do not use!
	12	Do not use!

②	1	
	2	
	3	Module terminal clamps
	4	(see section 7.2ff for connection details)
	5	
	6	
	7	Do not use!
	8	Do not use!

③	1	RS485a interface 1 +
	2	RS485b interface 1 -
	3	RS485a interface 2 +
	4	RS485b interface 2 -
	5	NO → Relay 4
	6	C → Relay 4
	7	NC → Relay 4
	8	NO → Relay 5
	9	C → Relay 5
	10	NC → Relay 5
	11	Do not use!
	12	Do not use!

④	1	
	2	
	3	Module terminal clamps (see section 7.2ff
	4	for connection details)
	5	
	6	
	7	Do not use!
	8	Do not use!

⑤	1	TTY interface Transmitter data Tx +
	2	TTY interface Transmitter data Tx -
	3	TTY interface Receiver data Rx +
	4	TTY interface Receiver data Rx -
	5	Do not use!
	6	PE

Fig. 50: Control module

### 7.1.2 Relay 1 (ATU), positive switching 24 V DC, monitored

The relay is protected by a self-resetting fuse (multi-fuse). To reset the fuse once triggered, the relay must be deenergised for approx. 30 seconds.

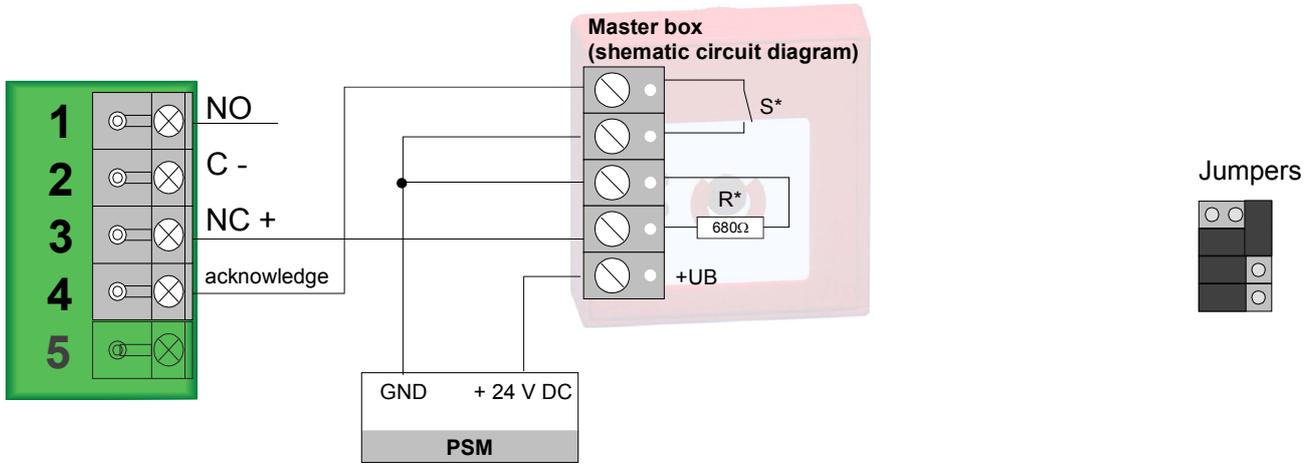


Fig. 51: Connection diagram relay 1 (ATU) and jumper positions

### 7.1.3 Relay 1 (ATU), positive switching 24 V DC, monitored

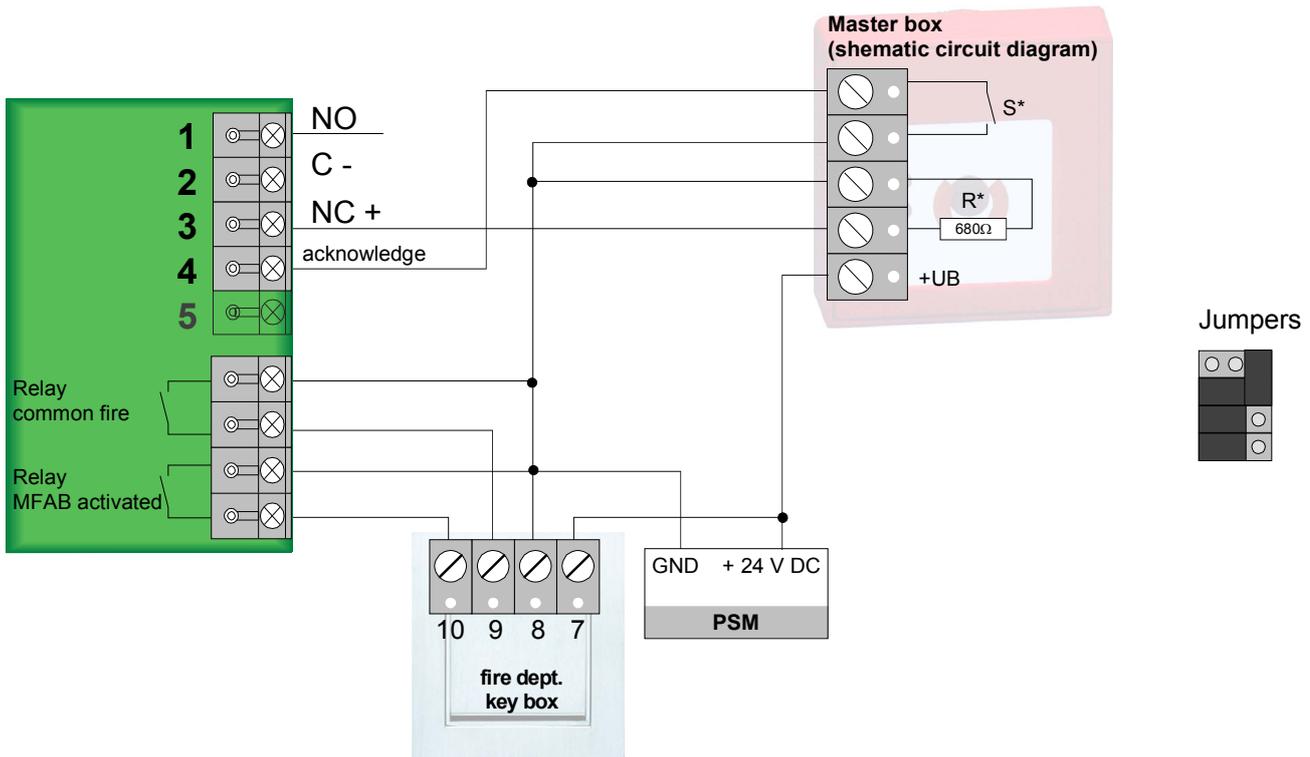


Fig. 52: Alternative connection diagram relay 1 (ATU) with negative-switching FDKB-Adapter and jumper positions



The FDKS adaptor can be connected with positive or negative switching. This is selected directly on the FDKS adaptor.

### 7.1.4 Relays 2 to 5, positive switching 24 V DC, non-monitored

The relay is protected by a self-resetting fuse (multi-fuse). To reset the fuse once triggered, the relay must be deenergised for approx. 30 seconds.

For external consumers: max. 24 V DC / 1 A

Relays 2 to 5

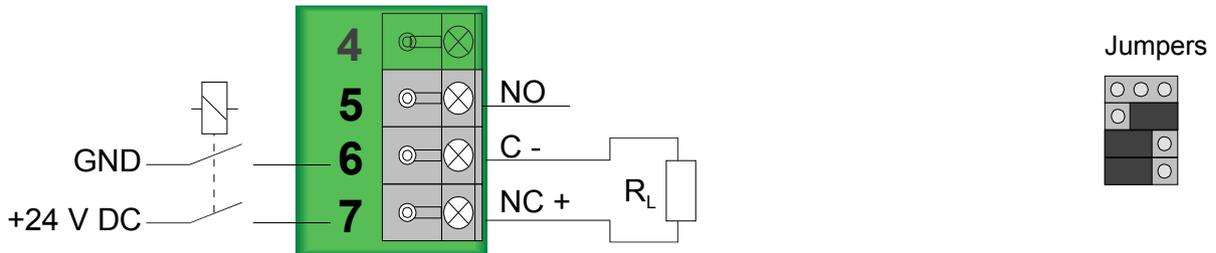
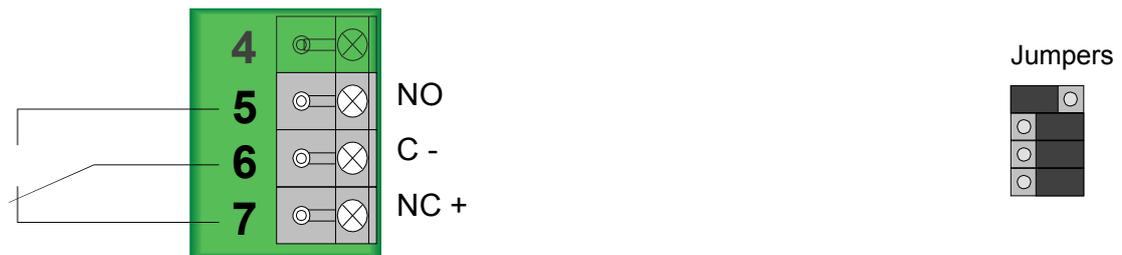


Fig. 53: Connection diagram relays 2-5 and jumper positions

### 7.1.5 Relays 2 to 5, changeover contact, electrically isolated / potential-free

Contact rating: max. 30 V DC/2 A  
Relays 2 to 5



Contact rating: max. 30 V DC/2 A

Fig. 54: Connection diagram relays 2-5 and jumper positions

### 7.1.6 Relays 2 to 5, positive switching 24 V DC, EOL-O monitored

The relay is protected by a self-resetting fuse (multi-fuse). To reset the fuse once triggered, the relay must be deenergised for approx. 30 seconds.

For external consumers: max. 24 V DC / 1 A

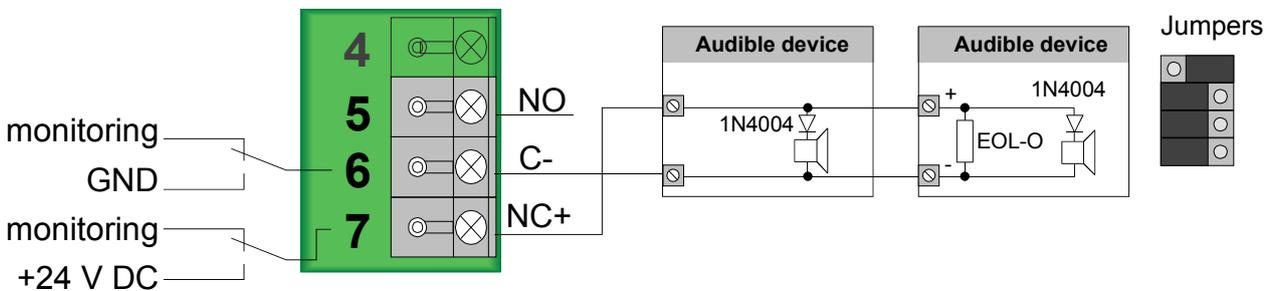


Fig. 55: Connection diagram, e.g. relay 2 and jumper positions



#### EOL-O terminal element

The EOL-O terminal element (Part No. 808624) must be fitted into the last peripheral equipment as shown in Fig. 55. Take note of the polarity (+/-) of the terminal elements.

### 7.1.7 RS485 interfaces

Two RS485 interfaces are available at terminal clamps terminal 1 and 2 and terminal clamps 3 and 4 of the control module. These interfaces can be used to connect external devices, e.g. a fire department indicating panel (see example connections in section 10).

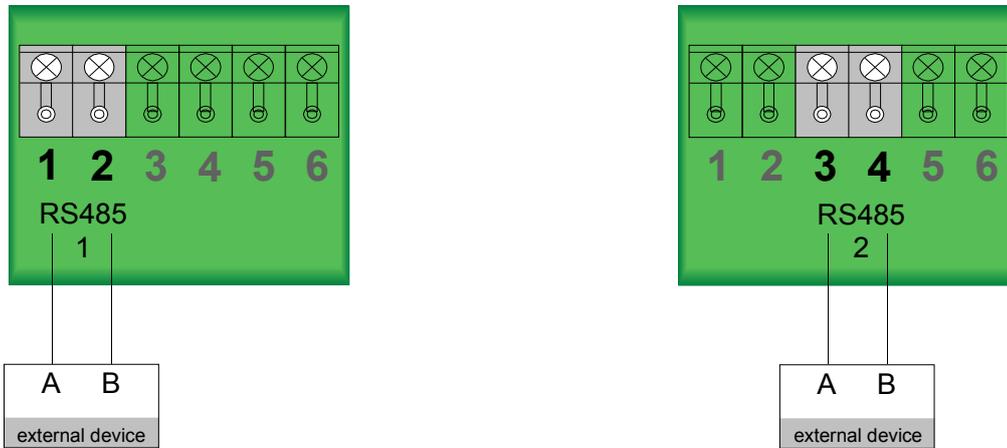


Fig. 56: RS485 interfaces (terminal clamps on the basic module carrier)



#### EOL resistor

The control module features an integrated EOL resistor for the RS485 interface. The connected RS485 interface cable must be connected to an RS485 EOL resistor in the external device.

### 7.1.8 TTY interface of the Control module terminal

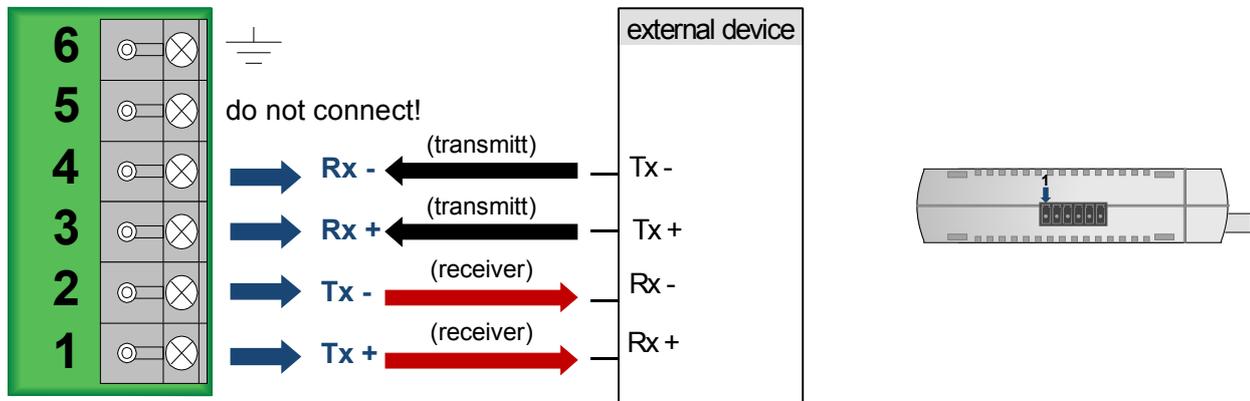


Fig. 57: TTY interface

terminal clamps on the basic module carrier



Max. cable length when using TTY 1000 m. Use communications cable I-Y (St) Y n x 2 x 0.8 mm with special labelling or fire alarm cable!

### 7.1.9 Specification

Mains voltage	:	24 V DC
Current consumption @ 24 V DC	:	122 mA
- TTY interface	:	30 mA
- per relay	:	15 mA
Weight	:	approx. 270 g
Dimension (w x h x d)	:	27 x 202 x 112 mm

## 7.2 essernet® module (enM)

A fire alarm system control panel can be equipped with an essernet® module to connect up to 31 devices, such as fire alarm system FlexES control panels, System 8000 / IQ8Controls, intrusion alarm system 5000, management systems and other network compatible components, using an essernet® network. The essernet® module is available in two different versions with different transmission speeds.



An essernet® network must only be fitted with modules with the same transmission speeds (62.5 kBd or 500 kBd).

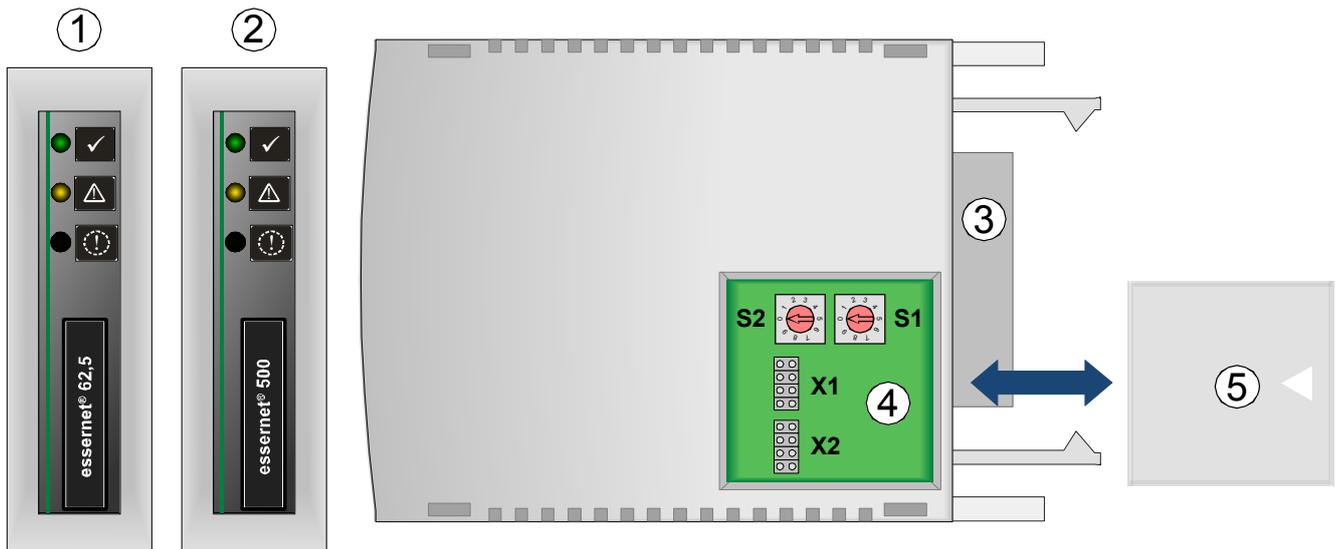


Fig. 58: essernet® module

①	essernet® module 62.5 KBd (transmission speed 62.5 kBd/s) - (Part No. FX808340)	
②	essernet® module 500 KBd (transmission speed 500 kBd/s) - (Part No. FX808341)	
	Green LED	Lit up → Operation normal
	Yellow LED	Lit up → Module error
	Yellow LED	Lit up → essernet® connection fault
③	Connector for module slot	
④	Switch S1 and S2, jumpers X1 and X2	
⑤	Control element cover	



The essernet® network's overvoltage protection or expanded EMC protection must be realised using special LAN protection devices.

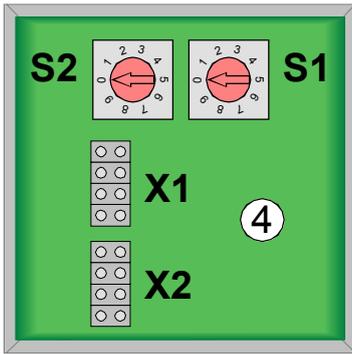


Fig. 59: Switch S1 and S2, jumpers X1 and X2

**Selecting the control panel's address**

The control panel's address is set according to the decimal system using two rotary switches. Turn switch S1 using an appropriate screwdriver to set address factor x 1 (ones place) and switch S2 to set factor x 10 (tens place).

**Example addresses, e.g. control panel, address 9 or 21**

Module address	Switch setting		Addressing factor	Weight (S1 x 1) + (S2 x 10) = Σ
	S2	S1		
9			S1 = x 1	(9 x 1) + (0 x 10) = 9
			S2 = x 10	
21			S1 = x 1	(1 x 1) + (2 x 10) = 21
			S2 = x 10	

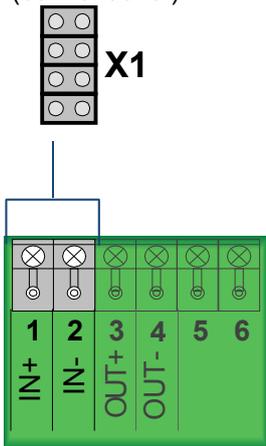
**Configuring the connection type**

Copper cable (conventional)

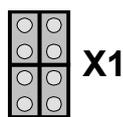
Fibre optic cable

Copper cable (conventional)

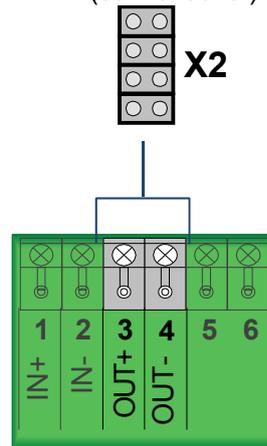
Fibre optic cable



or



or



**Fibre optic cable (FOC)**

If data is transferred via fibre optic cables, the data path between the devices has to always be equipped with two fibre optic converters.

Please refer to documents 798963.10 for more information on FOC converters.

**Cable shielding**

Attach the cable shielding for the essernet® connecting cables to the corresponding terminal block!

### 7.2.1 terminals – essernet® module

essernet® modules are suitable for operation on any of the module slots (basic and expansion module carriers). However, to ensure uniformity when equipping several control panels, it is advisable to use the slot on the basic module carrier shown in the illustration. The terminal assignments (1 to 6) for this module are always identical.

**Example:**

The essernet® module is slotted onto the basic module carrier's bottom module slot. This slot is assigned the corresponding terminal clamps (1 to 8).

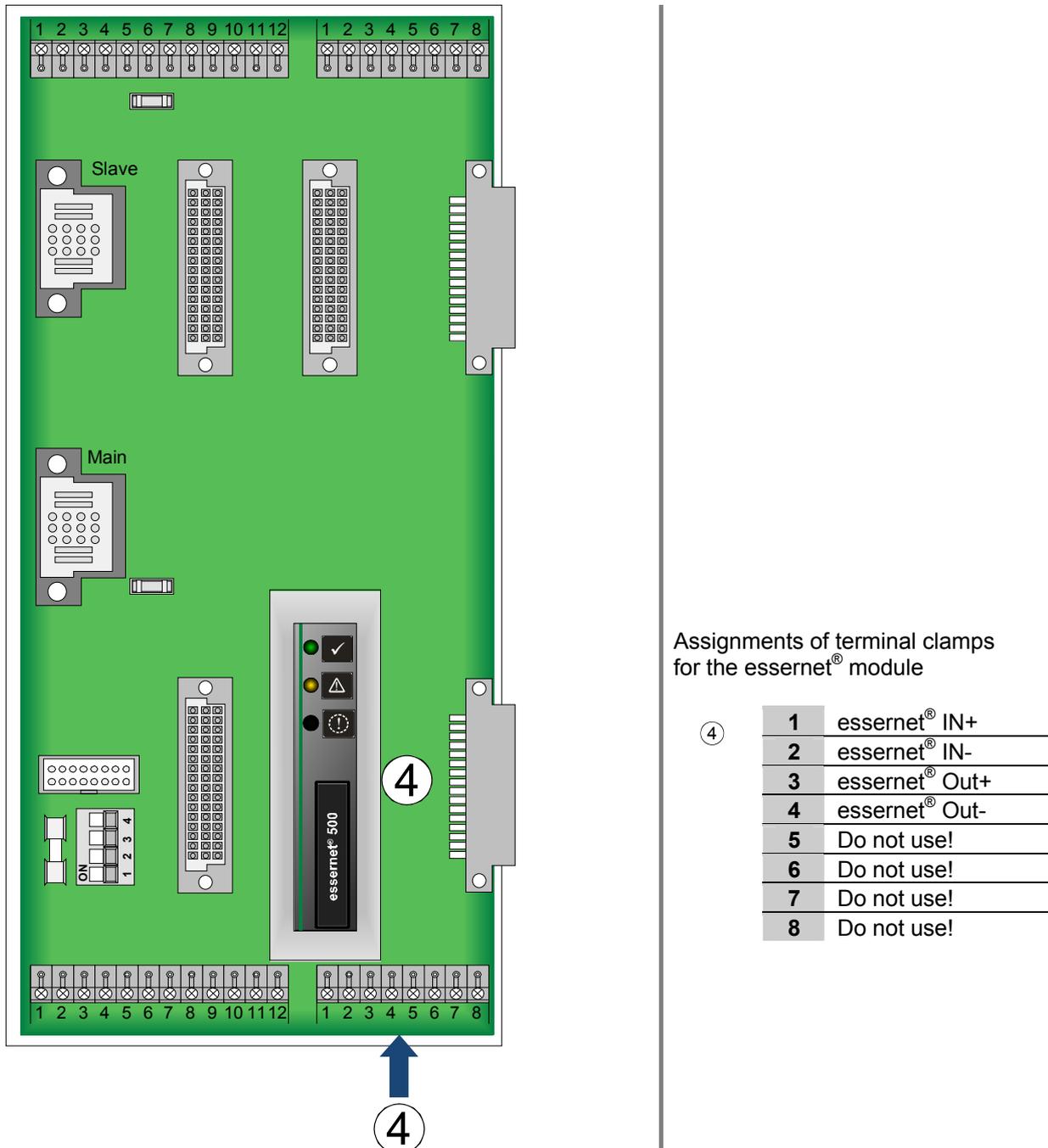


Fig. 60: Terminal assignments for the essernet® module when in the basic module carrier slot (example)

### 7.2.2 Copper cable, conventional

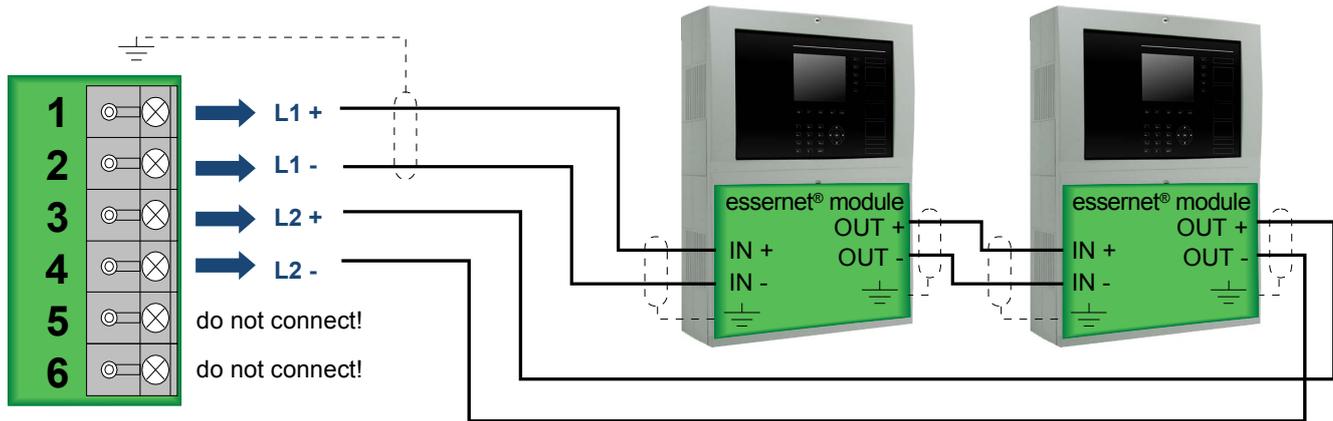


Fig. 61: Wiring diagram (copper cable, conventional) incl. cable shielding of the essernet®

### 7.2.3 FOC transmission line in the essernet®

#### FOC converter (Part No. 784763 / 784764 / 784765)

The FOC converter (fibre optic cable) converts electrical signals into optical signals for reliable data transmission under difficult transmission conditions in which, for example, copper cables cannot be used. It is possible to use both FOC and conventional copper technology within one network simultaneously. The connection of fire alarm system control panels through FOC requires at least one FOC converter and one essernet® module per control panel. Depending on the type of fibre optics used, FOCs can be used to connect two control panels spaced a max. of 3,000 metres apart. The FOC converter can optionally be supplied with the FOC connection type F-ST (Part No. 784763) or F-SMA (Part No. 784764).

The FOC converter must be fitted directly inside the control panel housing or the same control cabinet as the housing. When doing so, the FOC converter must be fitted directly to the DIN rail (Part No. FX808387) without using any additional fastening material.

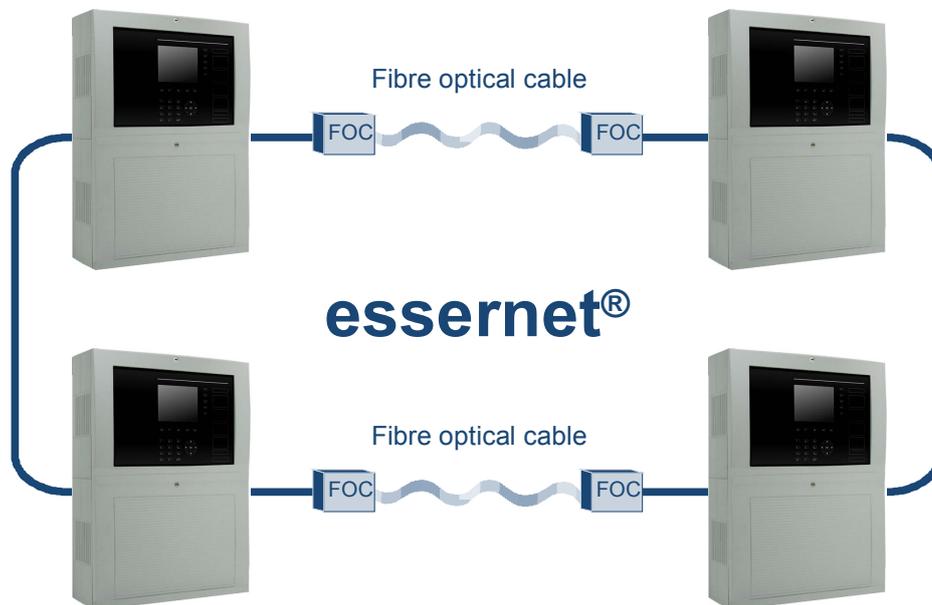


Fig. 62: Connection of the FOC transmission line in the essernet®

#### Requirements / restrictions

- Each loop segment needs to be equipped with two multimode optical fibres.
- The fibres must be connected directly and without interruption (e.g. they cannot be connected using multiplexers).
- Fibre type G50 / 125 µm, with a max. attenuation of 6 dB, corresponds to a max. length of approx. 2000 m and fibre type G62.5 / 125 µm, with a max. attenuation of 9 dB, corresponds to a max. length of approx. 3000 m.
- Maximum of 16 FOC lines per essernet® when using a transmission speed of 62.5 kBd.
- Maximum of 31 FOC lines per essernet® when using a transmission speed of 500 kBd.

## 7.2.4 Features and installation informations

### For essernet<sup>®</sup>-modul 62,5:

- Communication cable I-Y (St) Y n x 2 x 0,8 mm with appropriate labelling or designated fire protection cable - max. length 1000 m.
- For this transmission speed a suitable cable must be used, twisted-pair cable with plastic insulation. Other cables, e.g. paper covered cable, control leads (NYM) or smaller diameter are not suitable. For each A+B connector a separate pair of wires must be used. If a fourfold twisted-pair wire is used the second pair must not be connected.
- Two essernet<sup>®</sup>-repeater allow a distance between two devices of max. 3000 m.

### For essernet<sup>®</sup>-modul 500:

- IBM Typ1 / 1A or similar, max. length 1000 m.
- Two essernet<sup>®</sup>-repeater allow a distance between two devices of max. 3000 m.
- Alternatively für distances of max 400m between two devices cable CAT 5 with shielding or similar may be used.
- This cable may be ordered by following distributors:  
Belden, Helukabel or Lapp Kabel.
- The outward and return lines of the essernet<sup>®</sup> connection must always be routed separately from one another other; i.e. they must not be installed in one multipair cable or in one cable duct. Joint installation may affect the function or, if the cable/cable duct is destroyed, can cause complete failure of the connection if the outward and return cables become disconnected.
- Attach the cable shielding for the essernet<sup>®</sup> connecting cables to the corresponding terminal block!
- The respective overvoltage protection modules should be used for both essernet<sup>®</sup> module types.
- Always avoid installing an essernet<sup>®</sup> loop together with power supply cables, motor control cables, phase control cables or other performance-related switching cables. Observe corresponding standards and guidelines.

### Possible error sources

- Interruptions or interchanged connections in the essernet<sup>®</sup> connection line.
- Damaging the line (for the essernet<sup>®</sup> module 500 kBd) due to insufficient bending radii.
- Incorrect setting of the essernet<sup>®</sup> address on the DIL switch of the essernet<sup>®</sup> module (display: SYS fault. essernet<sup>®</sup> cont: xx), yellow LED on the essernet<sup>®</sup> module is lit up.
- Loop is too long or attenuation too high. Typical loop resistances for loop lengths:  
IBM cable approx. 100 ohms/km or transmission cable I-Y (ST) Y n x 2 x 0.8 mm approx. 70 ohms/km.
- The panel or the unrecognised device is in emergency mode or is switching on, e.g. after a reset.
- Panel or essernet<sup>®</sup> device is not receiving any power or the connecting line is disconnected at both ends.

### Error messages

- The following states are reported only after the essernet<sup>®</sup> module has been restarted and are saved until the next restart.
  - Wrong address setting
  - Hardware error
  - Measuring mode
- The states >Communication fault<, >Short circuit/interruption< and >Normal operation< are not saved.

## 7.2.5 Specification

Main voltage	:	24 V DC
Quiescent current	:	37 mA
Weight	:	100 g
Dimension (w x h x d)	:	27 x 93 x 113 mm

### 7.3 esserbus<sup>®</sup> module (ebM / ebMEI)

These modules can be connected to a loop. Depending on the control panel's structure or number of available module slots, a fire alarm system control panel can be connected to up to 18 loops.

There are two different types of modules, i.e. modules with and without electronic isolation. The FACP can be fitted with up to four modules without electronic isolation. The fifth and any further modules do have to feature electrical isolation (ebMEI).

It is possible to use a mixture of different modules, i.e. ebM and ebMEI, within one control panel.

#### esserbus<sup>®</sup> / esserbus<sup>®</sup> PLus functionality

Every esserbus<sup>®</sup> module can be upgraded to esserbus<sup>®</sup>-PLus functionality by using a corresponding software license (subject to a fee).

Within one fire alarm control panel, each module can be individually set to one of these operating modes, which means that one fire alarm control panel can simultaneously operate both esserbus<sup>®</sup> and esserbus<sup>®</sup>-PLus components.

Part No.	Module types
FX808331	esserbus <sup>®</sup> module (ebM)
FX808332	esserbus <sup>®</sup> module GI with electrical isolation (ebMEI)



- Up to 18 esserbus<sup>®</sup> modules per fire alarm control panel:
  - Module 1 to 4 → ebM (FX808331)
  - Module 5 to 18 → ebMEI (FX808332)
- The esserbus<sup>®</sup> and esserbus<sup>®</sup>-PLus operating modes can be selected individually.
- The esserbus<sup>®</sup>-PLus operating mode can only be used with an optionally available software license
- Configuration using the tools 8000 programming software

Every module (esserbus<sup>®</sup> or esserbus<sup>®</sup>-EI) allows connection of a loop.

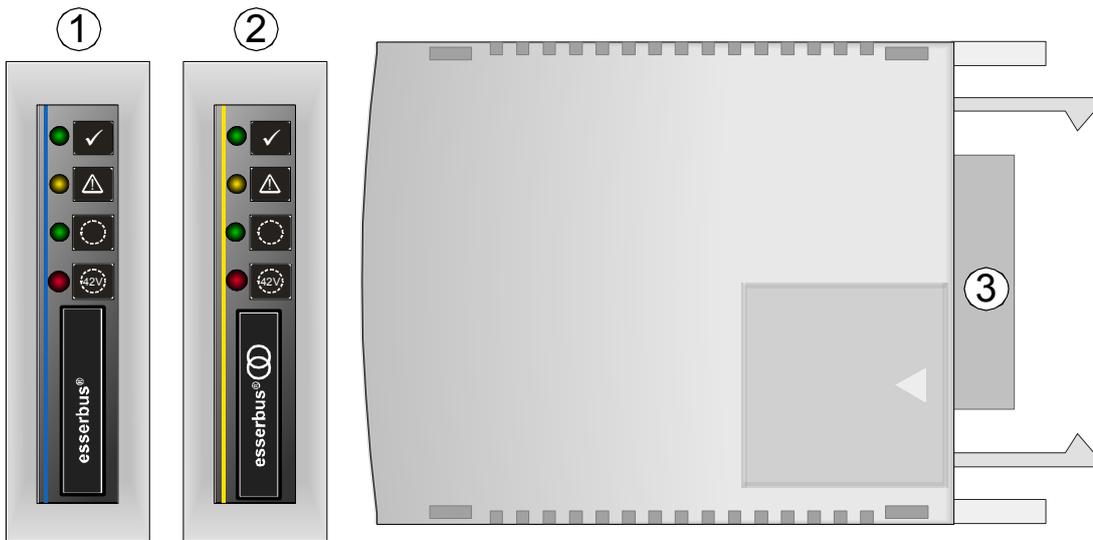


Fig. 63: esserbus<sup>®</sup> modules

① esserbus<sup>®</sup> module (ebM) – up to 4 modules per fire alarm control panel (see section 7.3)



Green LED Flashes 1 Hz → Normal operation



Yellow LED Flashes 1 Hz → Fault, it is not possible to communicate through the internal BUS



Green LED Flashes → During signal transmission on the loop



Red LED Lights up → If the loop is connected to 42 V. (Only in esserbus<sup>®</sup>-Plus mode during 42 V activation)

② Like ①, although with esserbus<sup>®</sup> module (ebMEI) – up to 18 modules per fire alarm control panel (see section 7.3)

③ Plug-in contact for the module slot on the basic or expansion module carrier



- Up to 18 esserbus<sup>®</sup> modules per fire alarm control panel:
  - Module 1 to 4 → ebM (FX808331)
  - Module 5 to 18 → ebMEI (FX808332)

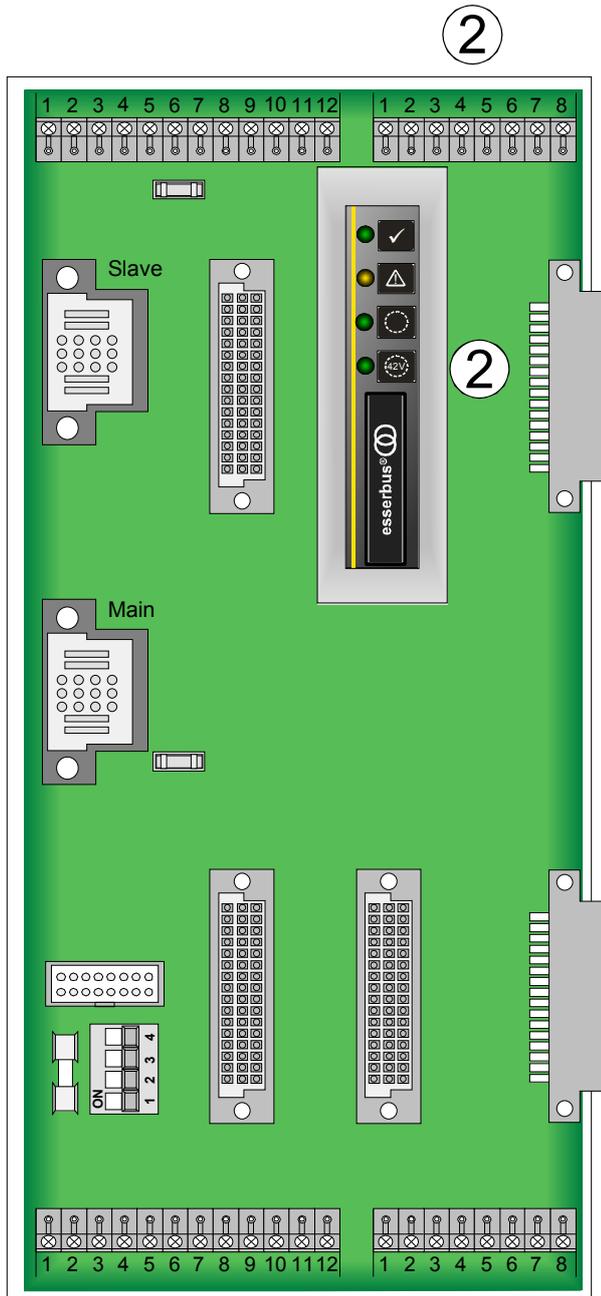
### 7.3.1 esserbus<sup>®</sup> module connection

essernet<sup>®</sup> modules are suitable for operation on any of the module slots (basic and expansion module carriers). The terminal assignments (1 to 6) for this module are always identical.

**Example:**

The essernet<sup>®</sup> module is slotted onto the basic module carrier's top module slot. This slot is assigned the corresponding terminal clamps (1 to 8).

Every module slot is assigned the corresponding terminal clamps for this slot.



Assignments of terminal clamps for the essernet<sup>®</sup> module

②	1	esserbus <sup>®</sup> A+
	2	esserbus <sup>®</sup> A-
	3	Do not use!
	4	esserbus <sup>®</sup> B+
	5	esserbus <sup>®</sup> B-
	6	Do not use!
	7	Do not use!
	8	Do not use!



Attach the cable shielding to the corresponding terminal block!

Fig. 64: Module terminal clamps on the basic module carrier (example)

### 7.3.2 esserbus<sup>®</sup> module performance characteristics

- max. 127 devices or max. 127 zone isolators per loop.
- A loop can be divided into 127 individual zones (see customer data programming)
- max. 32 fire detectors per zone.
- Simultaneous use of loop and spur loop mode possible. No sub-spur branching!
- Recommended cable type for loop: Communications cable I-Y (St) Y n x 2 x 0.8 mm with corresponding labelling or fire alarm cable!
- Loop length, including all branches and under consideration of the load factor for IQ8Quad detector: max. 3500 m.  
This corresponds to a max. output resistance of 130  $\Omega$  (measured from terminal A+ to B+) for a cable with a 0.8 mm diameter.
- Up to 3500 m total loop length is possible for IQ8 fire detectors or alarm devices with consideration of the load factor

#### Function

The esserbus<sup>®</sup>/esserbus<sup>®</sup>-PLus is a two-wire loop which can be combined with a loop /branch topology and is energised and monitored from two sides. The use of zone isolators allows the simultaneous use of loop and stub lines and a division of the loop into 127 zones with a total of 127 devices.

This also ensures that all esserbus<sup>®</sup> devices remain fully functional if the loop is broken (wire break). In the event of a short circuit, only the defect section/segment between two zone isolators will be isolated, while all other devices remain fully functional.

An esserbus<sup>®</sup> can be used to combine automatic detectors and manual call points or manual release devices into individual zones. Simultaneous operation of esserbus<sup>®</sup> transponders in separate zones within the loop is also possible. esserbus<sup>®</sup> transponders are decentralised input/output components that can be used as devices on the esserbus<sup>®</sup>.

A wired and operational loop can only be put into service using the service PC and the current version of the programming software tools 8000, version V1.16 or higher. The programming software automatically detects the wiring configuration of the loop and automatically addresses all esserbus<sup>®</sup> devices. Addresses therefore do not have to be entered manually. The individual detectors are subsequently assigned to the different zones as required using the programming software. Please refer to the online help file for the tools 8000 programming software, version V1.16 or higher for more information on programming the panel.

The corresponding LED on the basic module carrier will flash to indicate the status of the communication between the control panel and detectors. The green detector LED will flash approx. 1 x per minute for the IQ8Quad fire detectors.

#### Zone separator function

In the event of a short circuit within the loop, the cut-off relays of the corresponding group separators open and isolate the affected segment (e.g. a detector zone) from the rest of the loop. The isolated detectors are listed in the plain text display together with the fault parameter >Com. error< (communication error). All of the other devices on the loop, including fire detectors and the esserbus<sup>®</sup> transponder whose group separator has been triggered, remain fully functional.

The group separators do not activate in the event of a disruption, such as a wire break. However, the bidirectional loop scanning ensures that all devices on the loop continue to be fully functional.

Series IQ8Quad fire detectors always feature integrated separators. All of the other bus devices on the loop can be optionally fitted with group separators.

#### Group separator installation

1. Group separators are generally installed upstream of the points where the loop runs into a different fire zone
2. When there is a change from automatic to manual alarms (and vice versa)
3. In at least the 32nd fire detector of a group



Due to their emergency operation characteristics, fire alarm system control panels that have been installed in compliance with the guidelines of VdS Schadenverhütung GmbH meet the requirements for monitoring areas of 12000 m<sup>2</sup> to 48000 m<sup>2</sup> or for activating more than 512 detectors (VdS 2095) using redundant components and the additional use of a fire department indicating panel featuring a >Redundant transmission path<.

### 7.3.3 The esserbus®-PLus loop load factor

The load factor can restrict both the length of the esserbus®-PLus loop and maximum number of loop devices. The following transducers are suitable for direct connection to the esserbus®-PLus loop. These transducers are also supplied with power through the loop (including in an alarm event or when activated).

Part No.	Name	Load factor (LF)
<b>Fire detector IQ8 Quad with alarm transmitter</b>		
802383	Visual	2
802384	Audible	
802385, 802385.SVxx	Visual + audible + speech	3
802386, 802386.SVxx	Audible + speech	
<b>IQ8Alarm alarm transmitter</b>		
807205, 807206	Audible	3
807212, 807213, 807214,	Visual → sphere colour red or amber white, blue or green	
807224	Audible + speech	
807322, 807332	Audible + visual	
807372, 807372.SVxx	Audible + visual + speech	
<b>Signal base</b>		
806282	Audible	2

Length of esserbus® PPlus loop	Max. total load factor
≤ 700 m	<b>96</b>
1,000 m	78
1,300 m	66
1,600 m	54
2,000 m	48
2,500 m	42
3,000 m	36
3,500 m (max. total length)	30

Example: A loop can contain a range of different transducers.

$$\begin{aligned}
 &8 \text{ IQ8Quad fire detectors (Part No.-Nr. 802385) with load factor 3} &&= \text{Load factor 24} \\
 & &&+ \\
 &9 \text{ IQ8Alarm alarm transmitters with load factor 3} &&= \text{Load factor 27} \\
 & && \hline
 &\text{Total load factor} &&= \text{51}
 \end{aligned}$$

Result: The total loop length permitted for the load factor calculated in the example above is a max. of 1600 m (see table).



- Take note of max. possible loop length
- Check bus device compatibility
- Do not exceed max. permissible total load factor of 96 (per loop)
- Take note of max. permissible quantity of every type of transducer
- Do not exceed max. total permissible quantity of 127 bus devices per loop

**Maximum line lengths based on the total load factor of a loop**

FACP	max. loop length	Loop 1	Loop 2	Loop 3	Loop 4	Loop 5	Loop 6
<b>IQ8Control M</b> up to 4 loops	up to 700 m	91 to 96	91 to 96	91 to 96	91 to 96	X	X
	800 m	85 to 90	85 to 90	85 to 90	85 to 90	X	X
	900 m	79 to 84	79 to 84	79 to 84	79 to 84	X	X
	1000 m	73 to 78	73 to 78	73 to 78	73 to 78	X	X
	1100 m	67 to 72	67 to 72	67 to 72	67 to 72	X	X
	1300 m	61 to 66	61 to 66	61 to 66	61 to 66	X	X
	1500 m	55 to 60	55 to 60	55 to 60	55 to 60	X	X
	1600 m	49 to 54	49 to 54	49 to 54	49 to 54	X	X
	2000 m	1 to 48	1 to 48	1 to 48	1 to 48	X	X
	2100 up to 3500 m	0	0	0	0	X	X
<b>IQ8Control M</b> up to 6 loops	up to 700 m	46 to 48					
	800 m	43 to 45					
	900 m	40 to 42					
	1000 m	37 to 39					
	1100 m	34 to 36					
	1300 m	31 to 33					
	1500 m	28 to 30					
	1600 m	25 to 27					
	2000 m	1 to 24					
	2100 up to 3500 m	0	0	0	0	0	0



The permitted loop length depends on the number and type of the loop devices and may differ from the max. loop length.

**7.3.4 Specification**

	<b>FX808331</b>	<b>FX808332</b>
Main voltage :	24 V DC	
Current consumption :	17 mA	30 mA
Weight :	ca. 110 g	ca. 140 g
Dimension (w x h x d) :	27 x 93 x 112 mm	

## 8 Commissioning

The fire alarm system FlexES control panel can only be put into service and configured with the aid of the tools 8000 from Version 1.16 programming software.

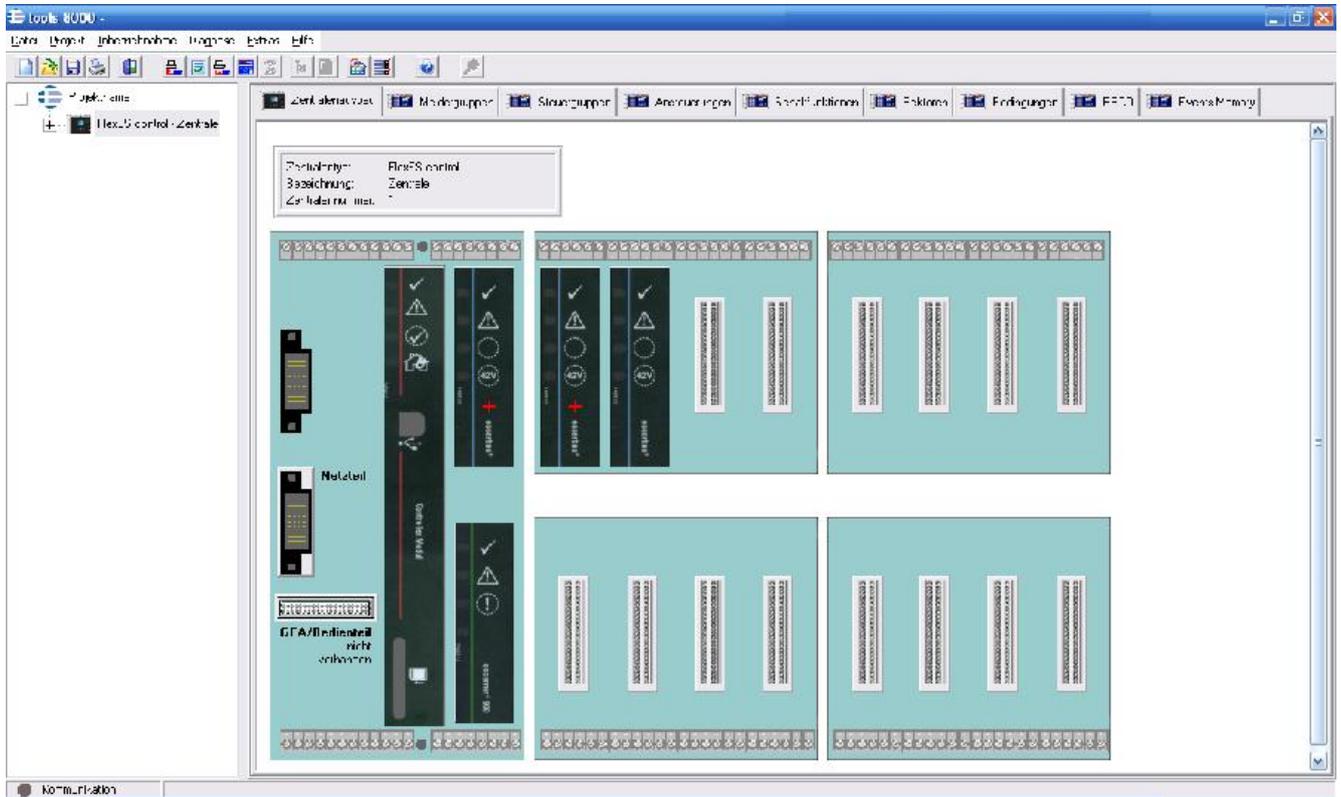


Fig. 65: Program surface tools 8000 (example)

### Documentation provided on CD

The commissioning of the FlexES fire alarm control panel is detailed in the documentation (Part No. 798982) and the online help for the tools 8000 programming software. This documentation has been provided on the supplied CD and can be downloaded at [www.esser-systems.de](http://www.esser-systems.de).

### Online Help

The tools 8000 programming software includes a context-sensitive online help programme. This help programme can be accessed by pressing the >Help< button or >F1< once the programme has started.

This online help programme contains detailed descriptions of the programme's functions and programming options.

### Device and system design training

We constantly offer project design, planning and commissioning training courses for the fire alarm system FlexES control panel.

Please visit [www.esser-systems.de](http://www.esser-systems.de) or contact us by telephone at 0049 (0) 2137 / 17-600 for more information on our training courses.

## 9 System overview

The fire alarm system FlexES control can be configured for use on its own, i.e. as a stand-alone unit, or for use within an essernet® network with up to 31 devices.

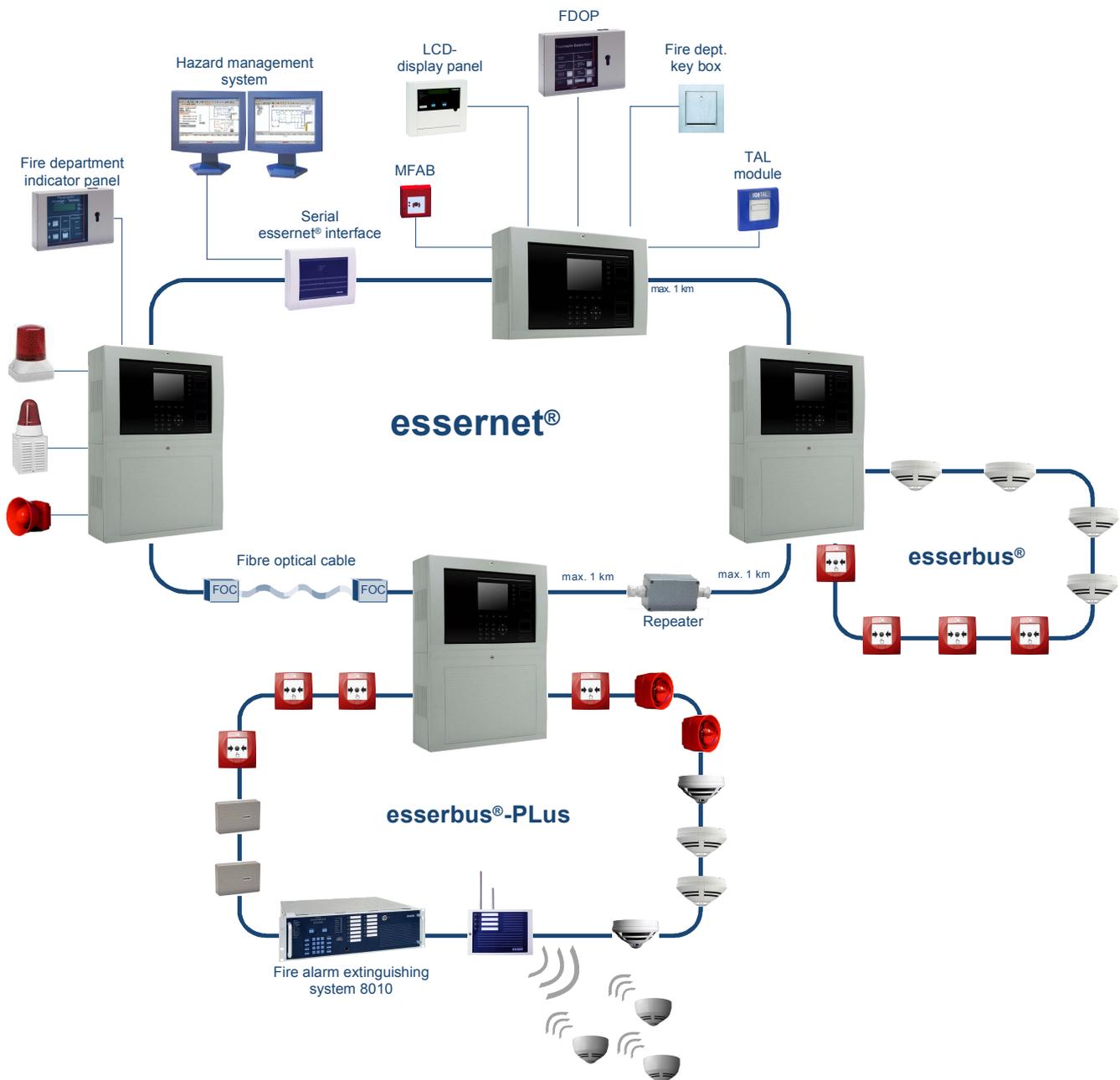


Fig. 66: System overview

### System couplings

The fire alarm control panel can also be coupled to other systems, such as intrusion detection systems, voice alarm systems, emergency call systems or hazard management systems, through the network or separate interfaces.

## 10 Example connection

Only the following devices with EPD protocol in the illustration are suitable for the operation with the FACP FlexES control:

Part No.	Description
FX808380	FDIP 3000 fire department indicating panel
FX808381	ADP-N3E-U adapter module
FX808382	Fire brigade operating panel serial FDIP 2003 (RS485 direct)
FX808383	Fire brigade operating panel serial FDIP 2003 (RS485 to FDIP)

### 10.1 Specification

#### 10.1.1 Fire department indicating panel FAT 3000 (Part No. FX808380)

Main voltage	:	10 to 30 V DC
Quiescent current @ 24 V DC	:	approx. 15 mA
Alarm current @ 24 V DC	:	approx. 40 mA
Protection class	:	IP 30
Housing	:	Sheet steel
Colour	:	grey, similar to RAL 7032
Weight	:	3,4 kg
Dimension (w x h x d)	:	255 x 185 x 58 mm

#### 10.1.2 Adapter module ADP-N3E-U (Part No. FX808381)

Main voltage	:	10 to 30 V DC
Quiescent current @ 24 V DC	:	approx. 40 mA
Rated current @ 24 V DC	:	approx. 60 mA
Dimension (w x h x d)	:	150 x 80 x 32 mm

#### 10.1.3 Fire brigade operating panel serial FDIP - RS485 direct (Part No. FX808382) Fire brigade operating panel serial FDIP 2003 - RS232 to the FDIP (Part No. FX808383)

Main voltage	:	10 to 30 V DC
Quiescent current @ 24 V DC	:	approx. 15 mA
Alarm current @ 24 V DC	:	approx. 40 mA
Protection class	:	IP 30
Housing	:	Sheet steel
Colour	:	grey, similar to RAL 7032
Weight	:	3,4 kg
Dimension (w x h x d)	:	255 x 185 x 58 mm

## 10.2 Fire department indicating panel FDIP 2003 (Part No. FX808382)

FACP FlexES control

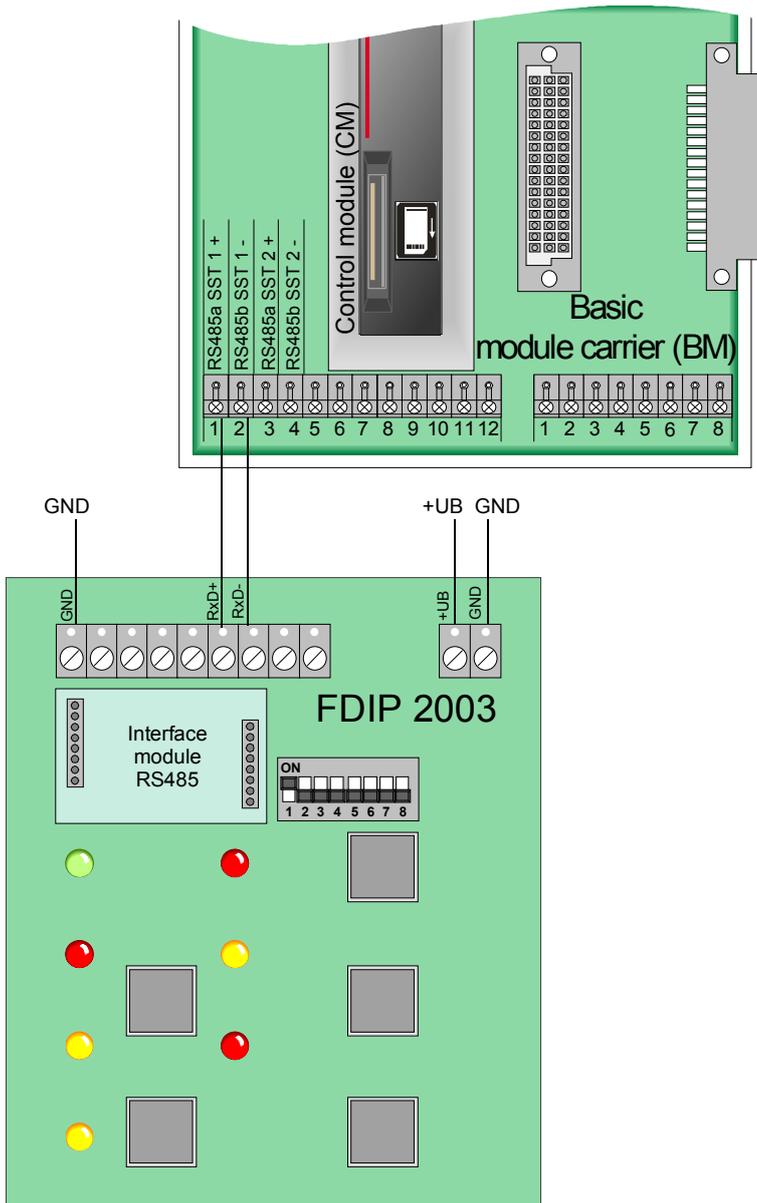


Fig. 67: FBF 2003 directly to RS485-1 (example)



- The FDIP 2003 with system software of version V4.00.02.00 or higher is required for connection.
- Please refer to the documentation FDIP 2003 for more information on connecting and configuring these devices.
- The fire alarm control panel RS485 interface programmed in the customer data using the >Fire department FIP + FDOP< log (see online help of the programming software tools 8000 for more information).

### 10.3 FDIP 2003 (Part No. FX808382) and FAT3000 (Part No. FX808380) – separate connection

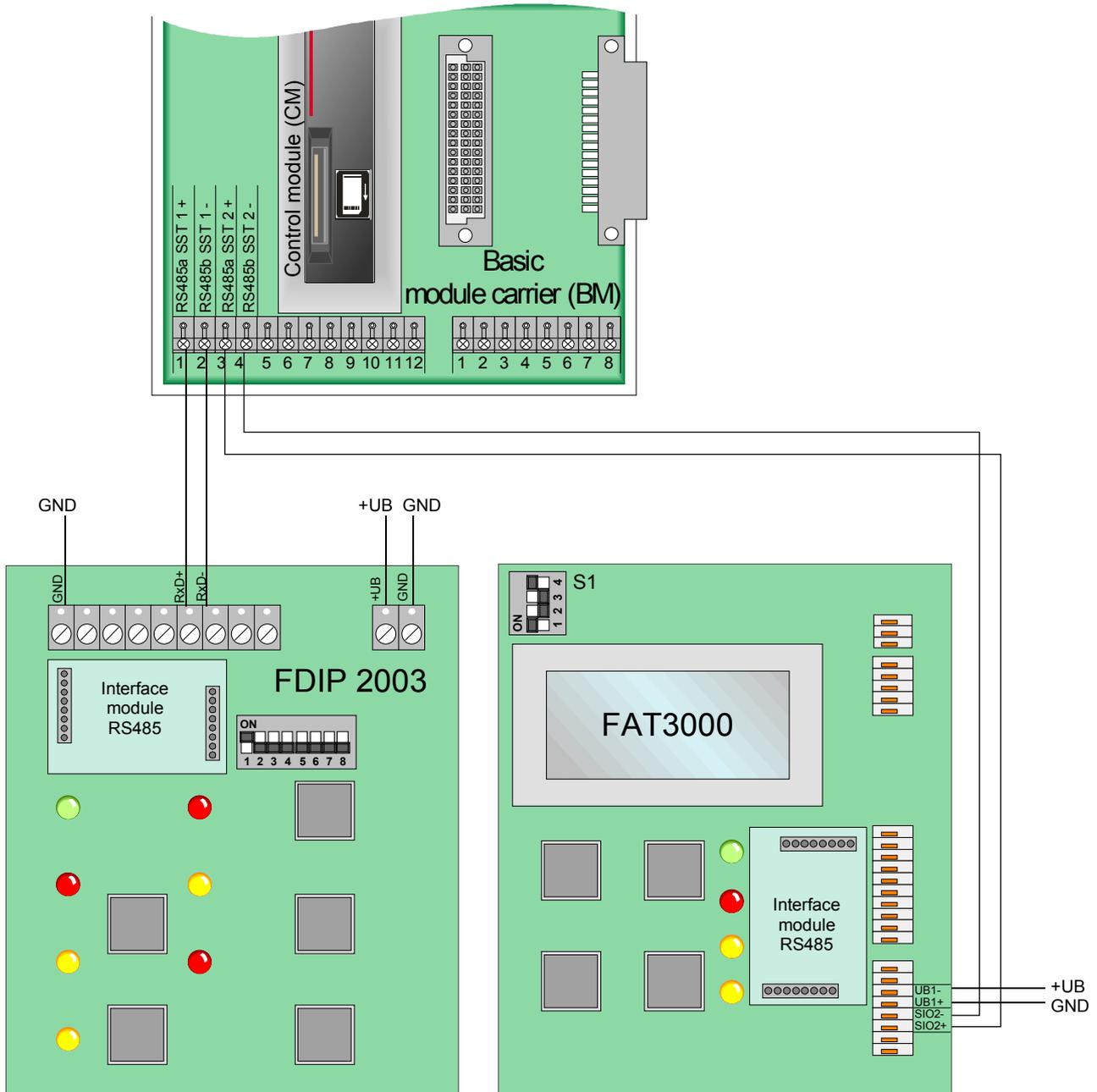


Fig. 68: FBP 2003 connected to RS485-1 and FAT3000 connected to RS485-2 (example)



- The FDIP 2003 with system software of version V4.00.02.00 or higher and FAT3000 of version V1.01.01.08 are required for connection.
- Please refer to the documentation FDIP 2003 and FAT3000 for more information on connecting and configuring these devices.
- The fire alarm control panel RS485 interface must be configured in customer data using the >Fire department FIP + FDOP< log (see online help tools 8000 for more information).

## 10.4 FAT3000 (Part No. FX808380) with downstream FDIP 2003 (Part No. FX808383)

FACP FlexES control

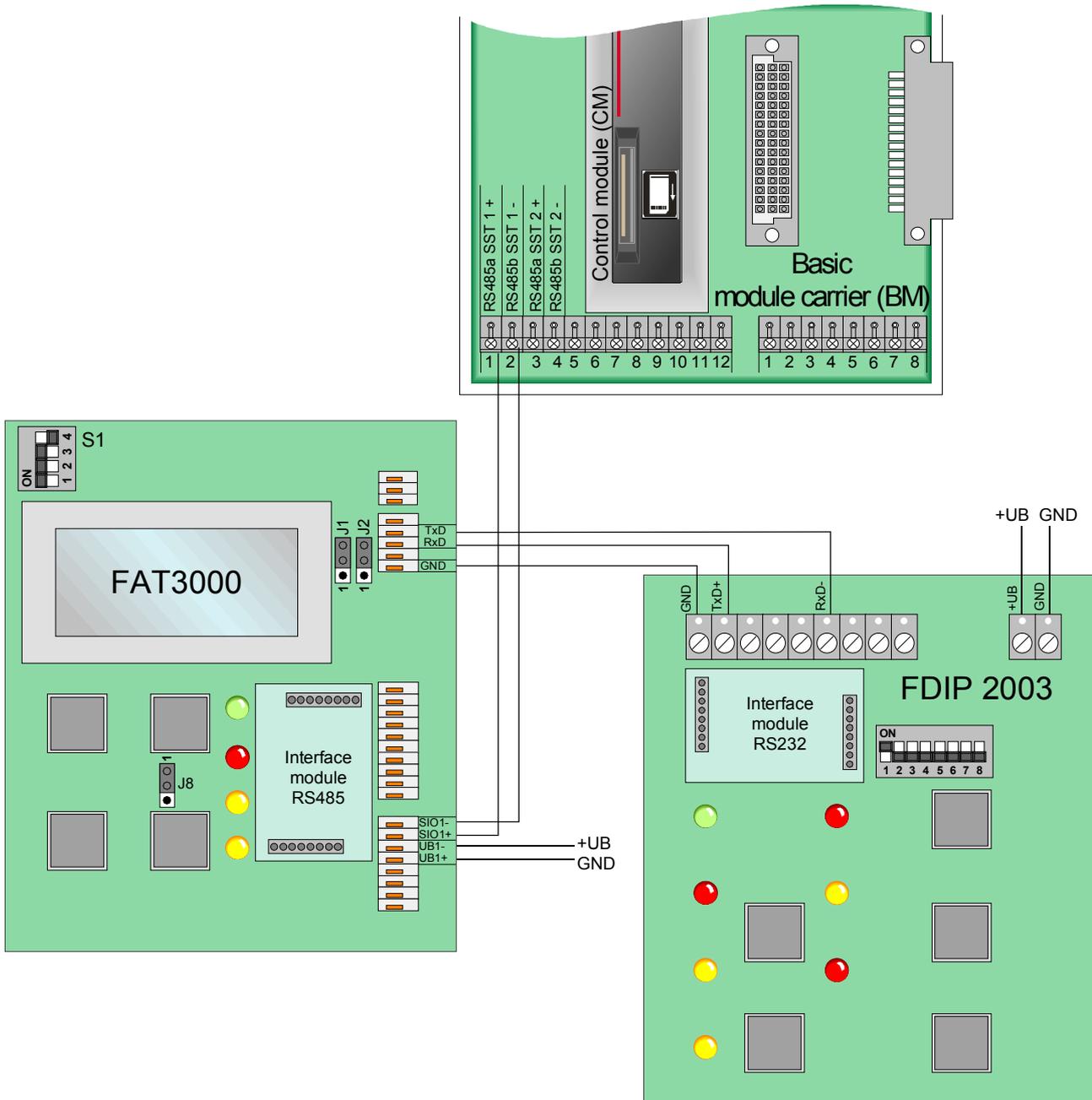


Fig. 69: FAT3000 connected through RS485-1 with downstream FDIP 2003 connected through RS232 (example)



- The FDIP 2003 with system software of version V4.00.02.00 or higher and FAT3000 of version V1.01.01.08 are required for connection.
- Please refer to the documentation FDIP 2003 and FAT3000 for more information on connecting and configuring these devices.
- The fire alarm control panel RS485 interface must be configured in the customer data using the >Fire department FIP + FDOP< log (see online help tools 8000 for more information).

## 10.5 Two FAT3000 (Part No. FX808380) with ADP-N3E-U (Part No. FX808381) – redundant connected

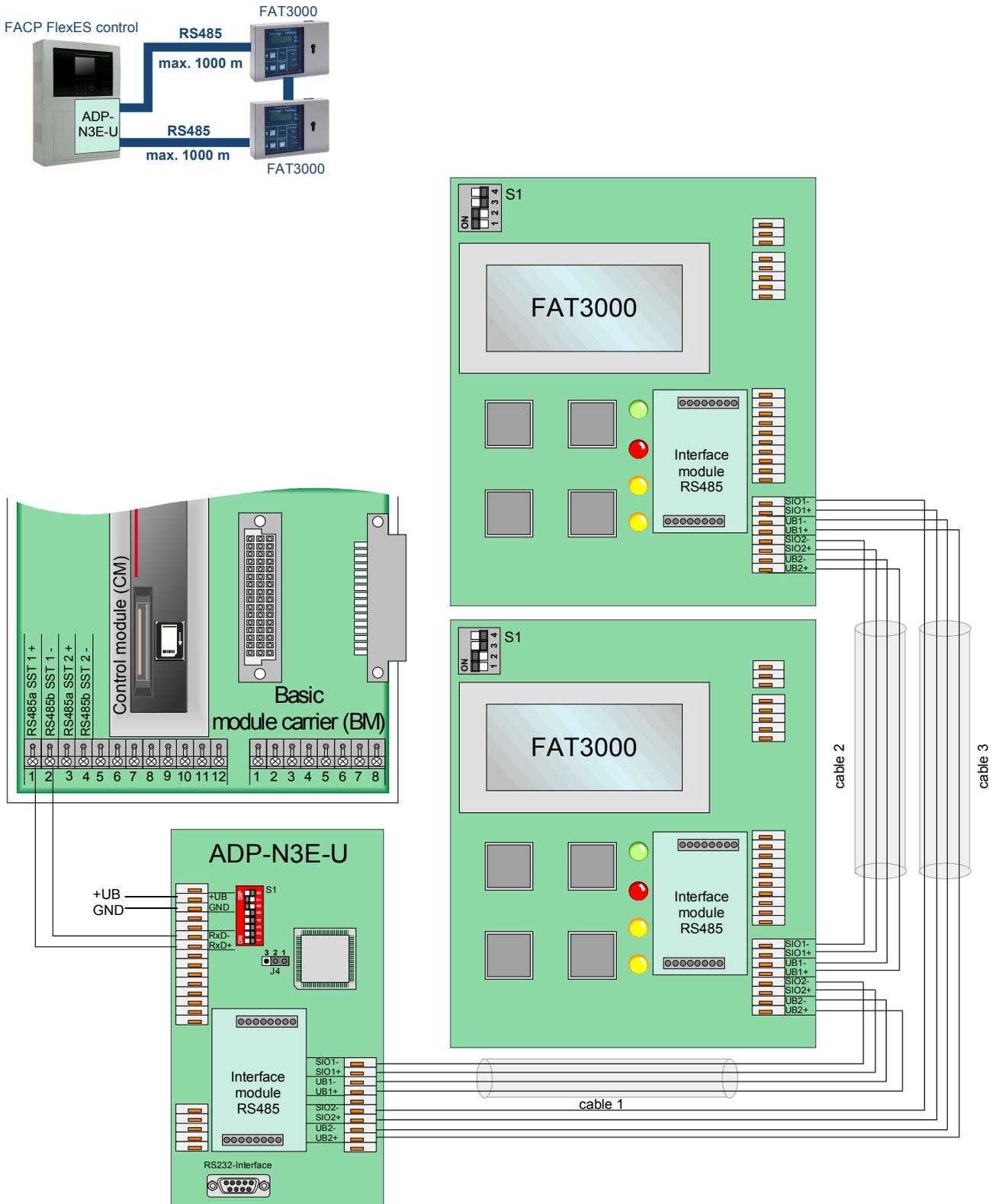


Fig. 70: Two FAT3000 through adapter module ADP-N3E connected redundant to RS485-1



- The FDIP 2003 and the ADP-N3E-U with system software of version V1.01.01.08 or higher is required for connection.
- Please refer to the documentation FAT3000 for more information on connecting and configuring these devices.
- The fire alarm control panel RS485 interface must be configured in the customer data using the >Fire department FIP + FDOP< log (see online help tools 8000 for more information).

## 10.6 Two FAT3000 (Part No. FX808380) with ADP-N3E-U (Part No. FX808381) and FDIP 2003 (Part No. FX808383) – redundant connected

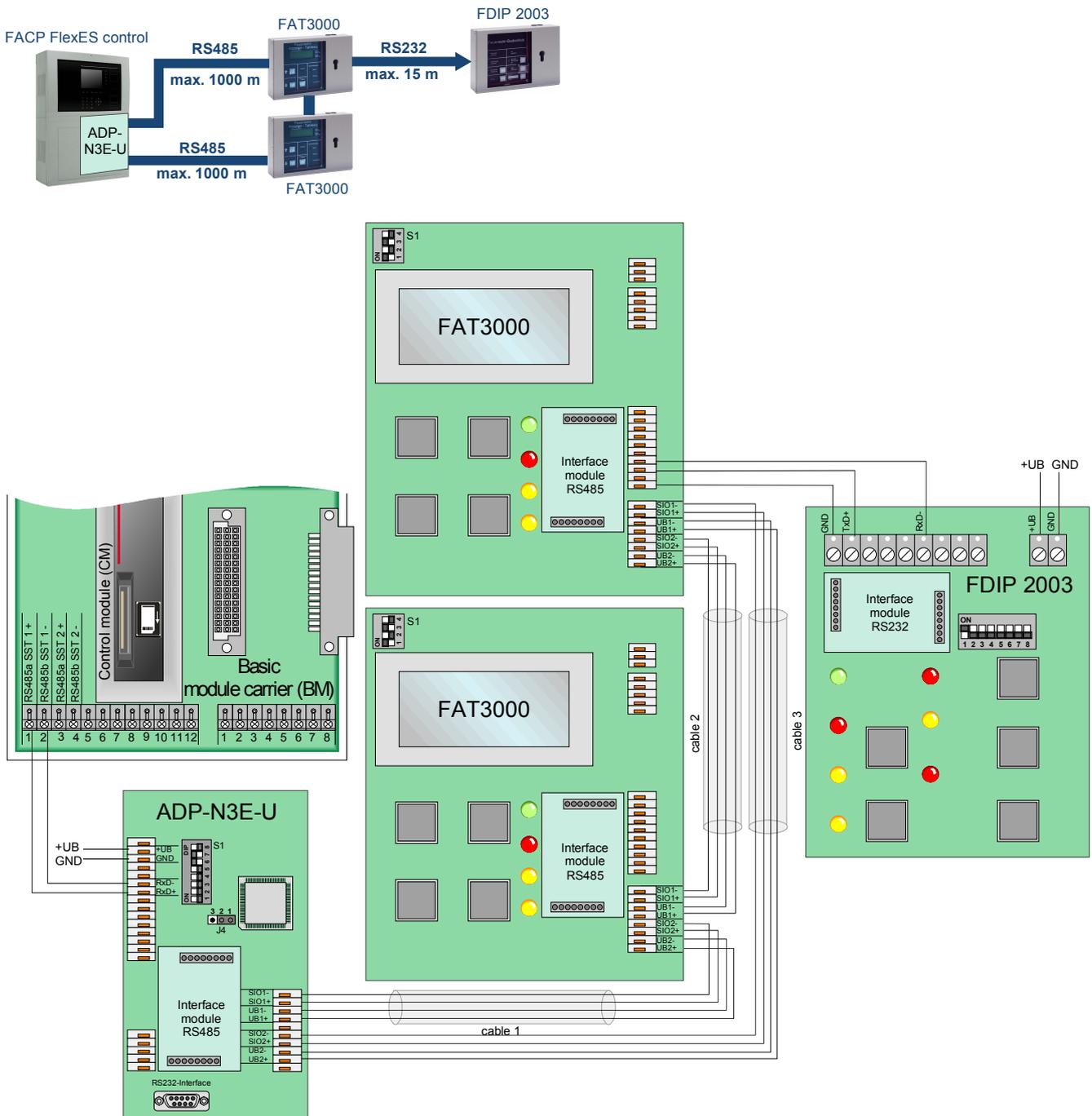


Fig. 71: Two FAT3000 through adapter module ADP-N3E and FDIP 2003 connected redundant to RS485-1



- The FAT3000 and the ADP-N3E-U with system software of version V1.01.01.08 or higher and the FDIP 2003 with system software of version V4.00.02.00 or higher are required for connection.
- Please refer to the documentation FAT3000 for more information on connecting and configuring these devices.
- The fire alarm control panel RS485 interface must be configured in the customer data using the >Fire department FIP + FDOP< log (see online help tools 8000 for more information).

**Notes**

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for taking notes.

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