



Installation Instruction

Fire Alarm Control Panel Compact

Intended use

This product may only be used for the applications outlined in the catalogue and the technical description and in combination with external devices and components which have been recommended or approved by us.

Warning

To ensure correct and safe operation of the product, all instructions concerning its proper transport, storage, installation and mounting must be observed and it must be operated with care.

Safety-relevant user information

This instruction includes all information required for the intended use of the products described.

The term “qualified personnel” in the context of the safety information included in this instruction or on the product itself means:

- project planning personnel that are familiar with the safety guidelines concerning fire alarm and extinguishing systems.
- maintenance personnel that have been instructed in the operation of the components of fire alarm and extinguishing systems and are familiar with the information on their operation as included in this instruction.
- trained installation and service personnel with the necessary qualification for carrying out repairs on such components of fire alarm and extinguishing systems or who are authorised to commission, ground and label electrical circuits and devices/systems according to the standards of security technology.

Safety warnings

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

Safety information and warnings to prevent hazards to life and health of users or maintenance personnel and to prevent damage to property are marked by the symbols defined below. Within the context of this instruction, these symbols have the following meaning:



Indicates that serious or fatal injuries or considerable property damage might result if the specified precautions are not complied with.



Draws particular attention to important information about the product or a part of the instruction.



Instructions regarding the configuration and commissioning according to national and local regulations, requirements and applicable standards must be complied with.

Dismantling



In accordance with Directive 2002/96/EC (WEEE), the electrical and electronic equipment can be returned to the manufacturer for proper disposal after it has been dismantled.

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1 General / Application

This installation instruction describes how to assemble the housing of the fire alarm control panel Compact how to mount in the building and how to install it. All other documents applicable to the planning, commissioning and maintenance of a fire alarm system must be complied with.

The information and technical specifications in this instruction enable experienced installation technicians to quickly mount and install the fire alarm control panel (FACP). The installation technician must have the knowledge and skills required for this task. The fire detection and alarm system can only be properly mounted and installed, if it has been planned correctly and in accordance with all applicable standards and regulations.



The object specific design and planning documents of the FAS must be observed.

Associated Documents

798236.GB0 Operating Instruction Fire Alarm Control Panel Compact
798238.GB0 Commissioning Instruction Fire Alarm Control Panel Compact
798239.GB0 Brief instruction Fire Alarm Control Panel Compact
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 service and programming software

The commissioning and configuration of the fire alarm system requires the use of the tools 8000 service and 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.com homepage.

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2 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 Regulation 305/2011.

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 0800-2 „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. The requirements of the local fire departments and competent authorities must also be complied with. 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.
- Observe national and local building law requirements and regulations (building regulations).

2.1 Approvals

Specification : EN 54-2 : 1997 / A1 : 2006

VdS approval : G 214072

Declaration of Performance: DoP-21390140811

3 Inspection for transport damage

Before starting the mounting and installation work, inspect the packaging and all modules for damage. Visibly damaged modules and components must not be mounted!

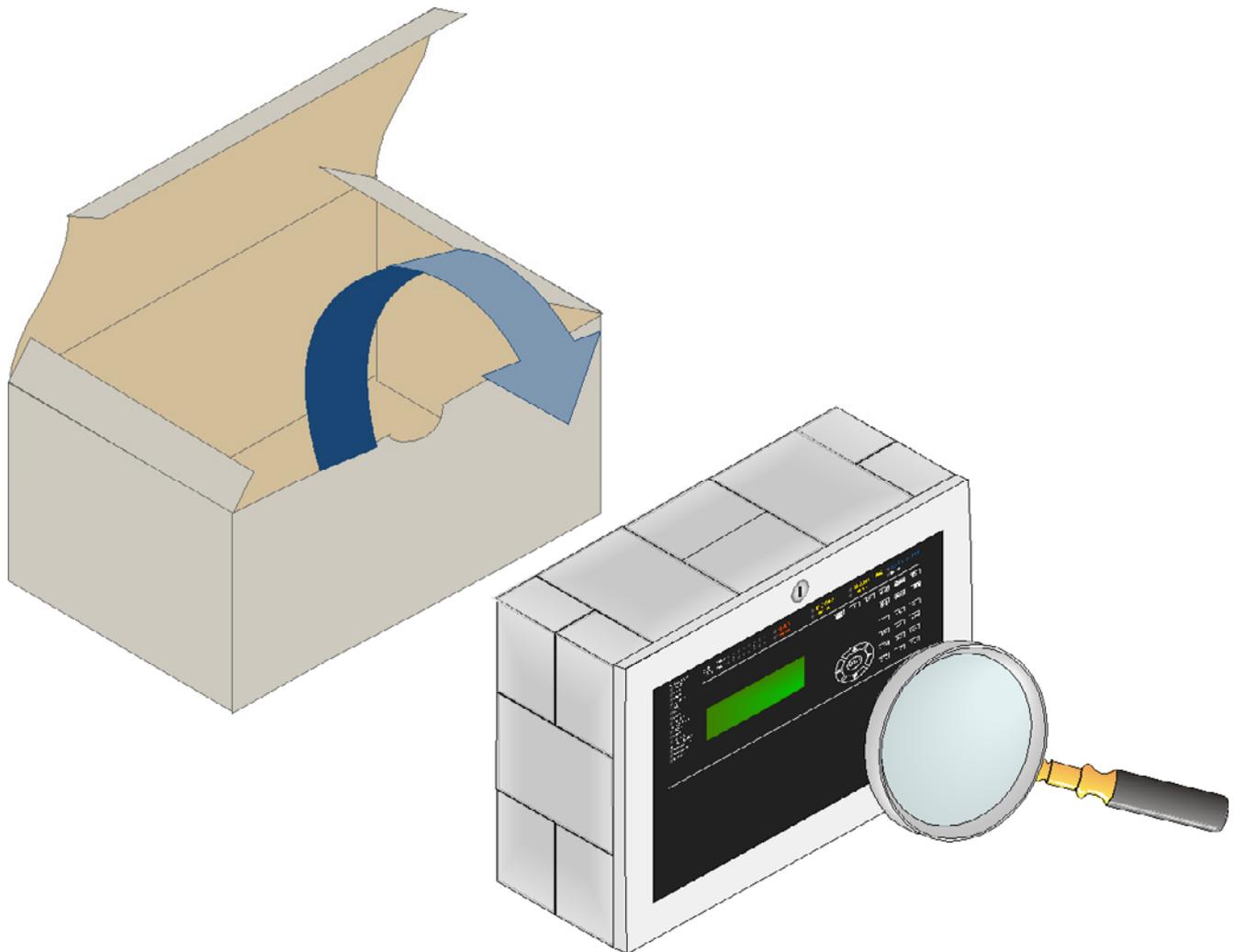


Fig. 1: Inspection of components for transport damage

4 Mounting and installation instructions

- The fire alarm control panel may only be installed in dry, clean rooms with controlled access and appropriate lighting. The environmental conditions must comply with class 3k5 according to DIN EN 60721-3-3.
- The fire alarm control panel must be mounted on a flat mounting surface using appropriate fixing material (screws + dowels). Avoid mechanical stressing. The FACP may only be commissioned after it has been properly mounted on a wall or other mounting surface of sufficient strength to support the weight of the device.
- Avoid strong electric / electromagnetic fields and mechanical influences. In particular, the FACP, its components and installation cables must not be mounted close to fluorescent lighting or power cables or on vibrating, instable surfaces, such as thin partition walls.
- Do not install the system at places of operation where adverse conditions prevail. Parts of the fire alarm control panel may be led through such places of operation if the requirements of standard series DIN VDE 0800 are met.
- Operating modules and visual indicators mounted on a wall must be installed at a height of 800 mm to 1800 mm above the floor where the operator is standing.
- The fire alarm control panel is not suitable for connection to specific power supply systems (e.g. IT).
- In standard mode, the FACP is a technical information device (ITE) of class B according to DIN EN 55022: 2007.



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 protective earthing rail (PE rail) of the power distributor panel from which the fire alarm system will be powered.

Configuration and Commissioning

For the configuration and commissioning of the system, the programming software tools 8000 is required in each case in the current program version.

Installer / Installation Specialist

The fire alarm control panel must be installed by a skilled electrician (according to DIN VDE 0833), who, as a result of the appropriate training and experience, can evaluate the work to be carried out and recognise potential dangers. In addition to the specialist qualifications, knowledge of the validity and application of the relevant standards and their use and compliance with is required.

Operator of the Fire Alarm System / Trained Person

For the operation of the fire alarm control panel, a qualified person must be trained in the basic functioning of the system and its technical requirements. A trained person (according to DIN VDE 0833) must be able to operate the fire alarm control panel and to recognise faults. If a fault signal occurs or the functionality is limited, arrangements must be made for the checking and rectification of the cause of the fault.

4.1 Maintenance / Service

Maintenance is necessary for the proper operation of the fire alarm control panel as the function of the system parts can be affected by environmental conditions and ageing. Maintenance is regulated by national standards (e.g. DIN VDE 0833 in Germany) and guidelines. In addition to the safety directives and notes in this documentation, these standards and guidelines, as well as local requirements for the operational location of the fire alarm control panel must be observed.



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].

4.2 Front cover including display and operating unit

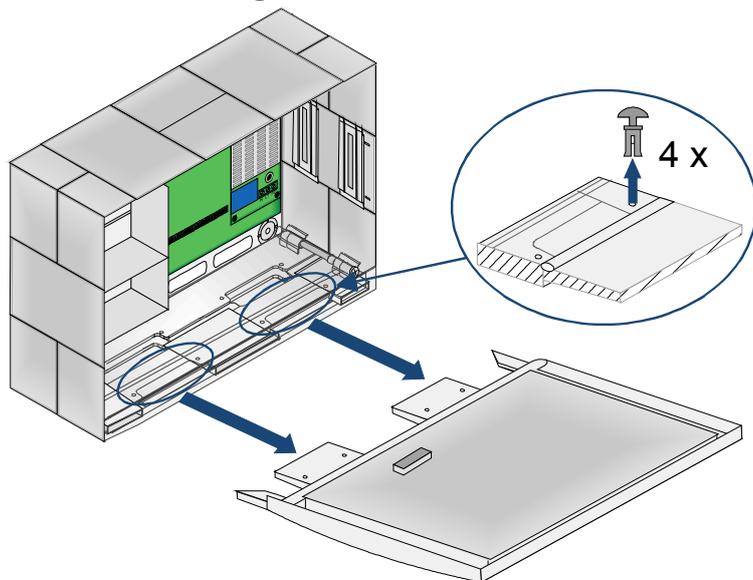


The housing door key is required to open the door.
The housing door can be opened when the key is vertical.



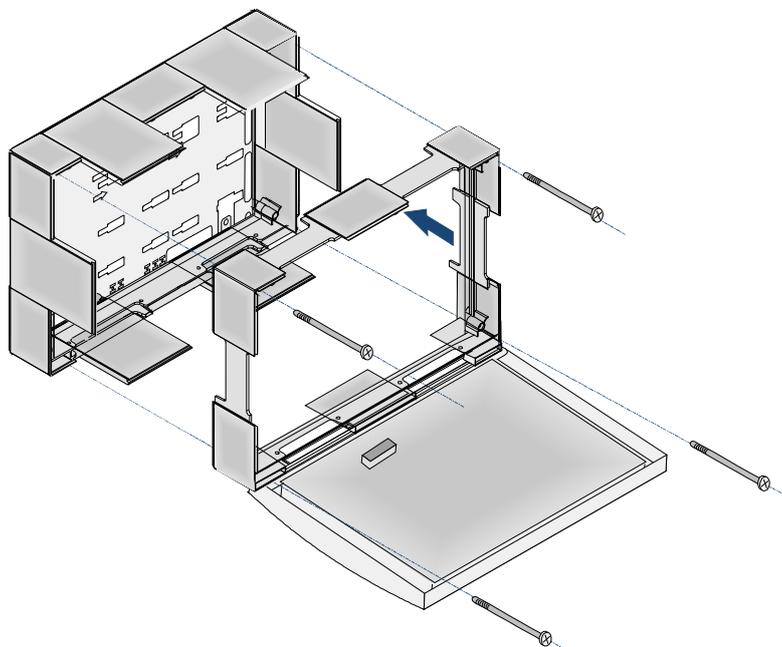
The lock must be in its horizontal position to close the door. The key must not be inserted for this.
The housing door can simply be pushed closed and latched in the snap-in.

4.2.1 Removing front cover



The front cover including the display and operating unit has been mounted at the factory. For easier wall mounting of the FACP, remove the 4 expanding rivets and the front cover.

Fig. 2: Front cover including display and operating unit



Alternatively, you can remove the front part of the FACP housing.

Fig. 3: Removing front part of FACP housing



If the housing has not yet been mounted to the wall, secure the front cover against tipping before opening!

4.3 Fixing on the mounting surface

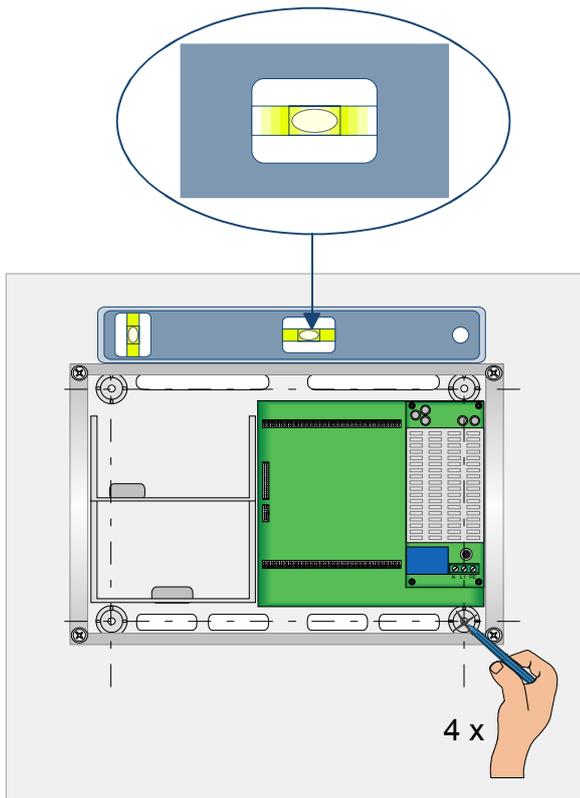


Fig. 4: Fixation on the mounting surface

The fire alarm control panel is delivered as a pre-assembled unit including the factory-mounted Mainboard.

Take care not to damage the installed components when mounting the panel!

- Choose mounting site according to project planning documents.
- Comply with requirements regarding mounting site ambient conditions.
- Observe position of the cables and the corresponding cable entries.
- Level the housing (spirit level) and mark the four fixing points on the mounting surface.



Lead cables through cable entries for surface-mounted or concealed cables before fixing the housing rear wall.

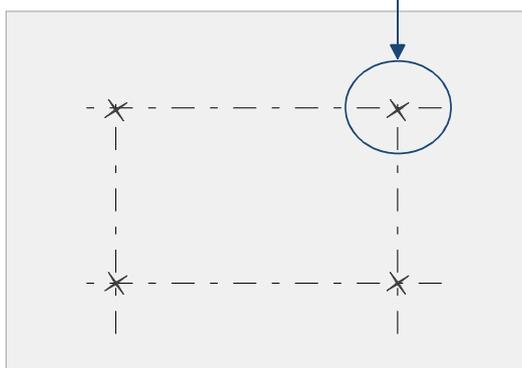
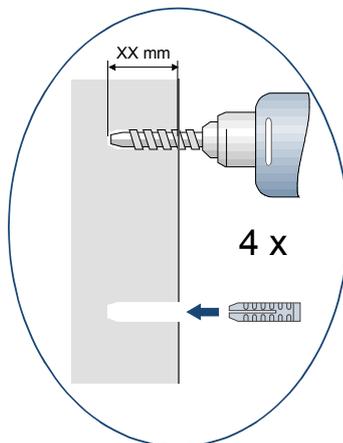


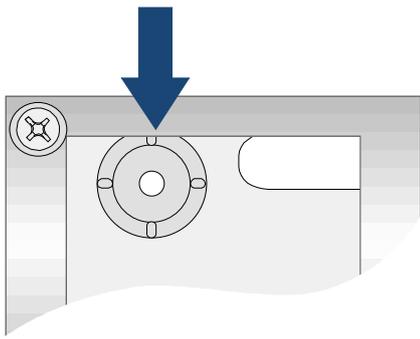
Fig. 5: Drilling fixing holes

- Drill four fixing holes according to the marked fixing points and insert appropriate dowels.
- Dowels must be individually selected in accordance with the mounting surface material (hollow wall, concrete, wood).
- The wall and the fixing devices must have sufficient strength to support the entire weight of the selected configuration (including batteries).



Risk of damage!

Depending on the used battery capacity and the resulting weight of the batteries, the mounting surfaces and the fixing devices must have sufficient strength to support the entire weight of this load.

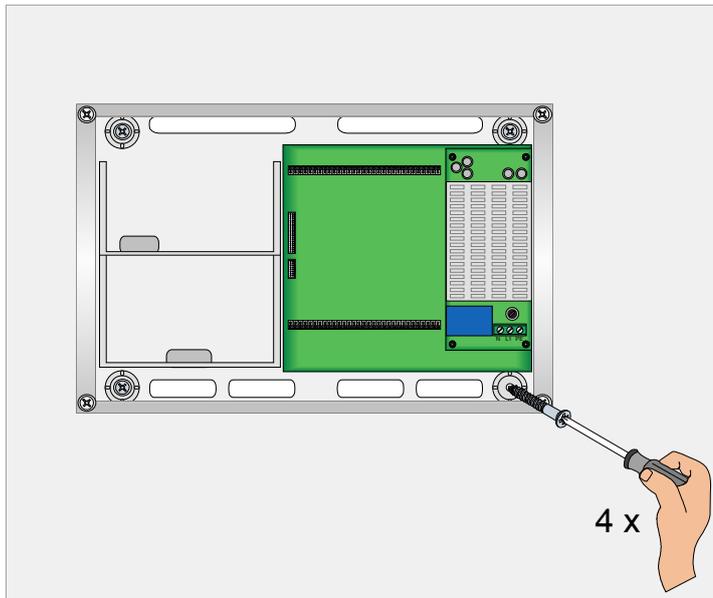


- A slight unevenness of the mounting surface can be compensated by using the four adjustable wall compensation elements.
- The wall compensation elements are adjusted from the inside of the housing using the plastic key supplied with the product.



Plastic key

Fig. 6: Adjustable wall compensation element at the rear wall and plastic key



- Pass cables through cable entries before fixing the housing!
- Place housing on mounting surface and align.
- Insert screws into the dowels and hand-tighten screws.

Fig. 7: Fixation on the mounting surface

4.4 Cable entries

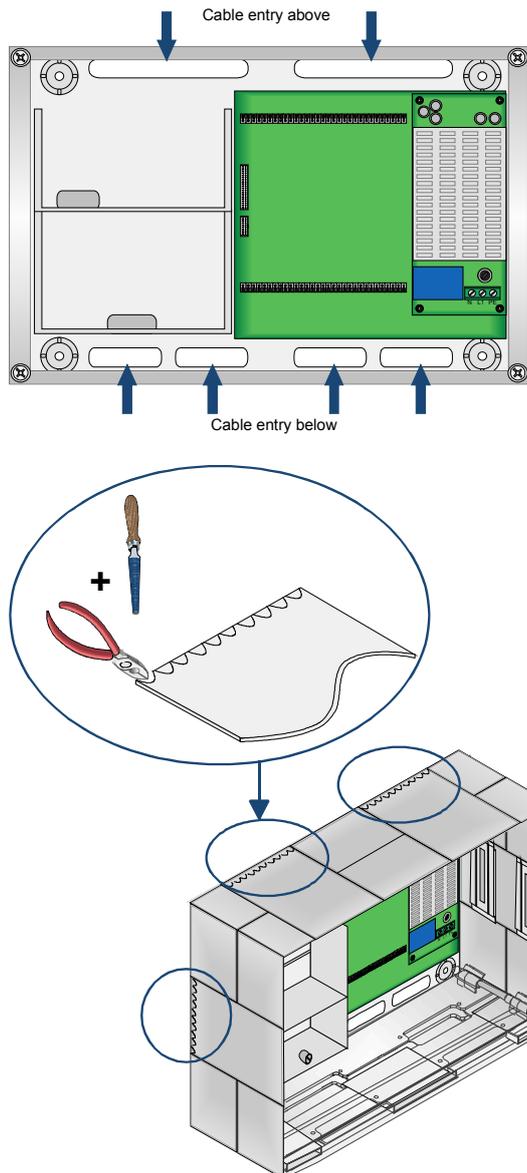


Fig. 8: Cable entries



Danger – Electrical shock !

The device must only be operated when the housing is closed. Operation is not permitted if the housing is open, the housing openings have been tampered with or the housing plates are missing.

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.

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).

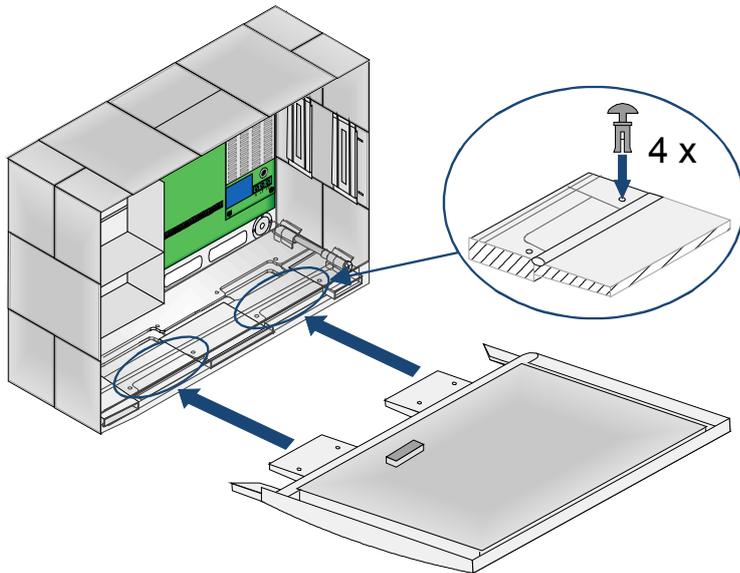
Connecting cable insulation

The sheathing on all of the connecting cables have to be left intact up to a point inside the panel housing and only be removed inside the housing.

- Use separate cable entries for the AC main cable and the signalling cable.
- Pass cables that are “**concealed in the wall**” through the cable entries in the rear wall of the housing and fix using suitable fixing devices, such as plastic cable ties (pull relief).
- Make sure that cable length is sufficient for connection.
- Pass cables that are “**surface mounted**” through the cable entries in the rear wall of the housing and fix using suitable fixing devices, such as plastic cable ties (pull relief).
- Mount cable without front cover.
- Remove housing plates.
- Remove predetermined breaking points of the cable entries on the housing plates using a suitable tool.
- Deburr cut faces and breaking edges.
- Use separate cable entries for the AC main cable and the signal cable.
- Make sure that cable length is sufficient for switching on.
- Insert housing plates making sure not to trap or damage the cables.

4.5.1 Inserting front cover

The front panel, including the display and operating unit and inserted labelling strips, can now be fitted to the assembled and mounted housing.



Insert the two plastic holders into the corresponding openings in the housing and fasten using the four expanding rivets.

Fig. 10: Front cover including display and operating unit



Danger of damage!

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

The front panel must be flush with the housing on all sides to guarantee correct closure.

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

5 Display and operating unit (D/O unit)

The following figure shows the open front cover incl. D/O unit that is mounted to the housing.

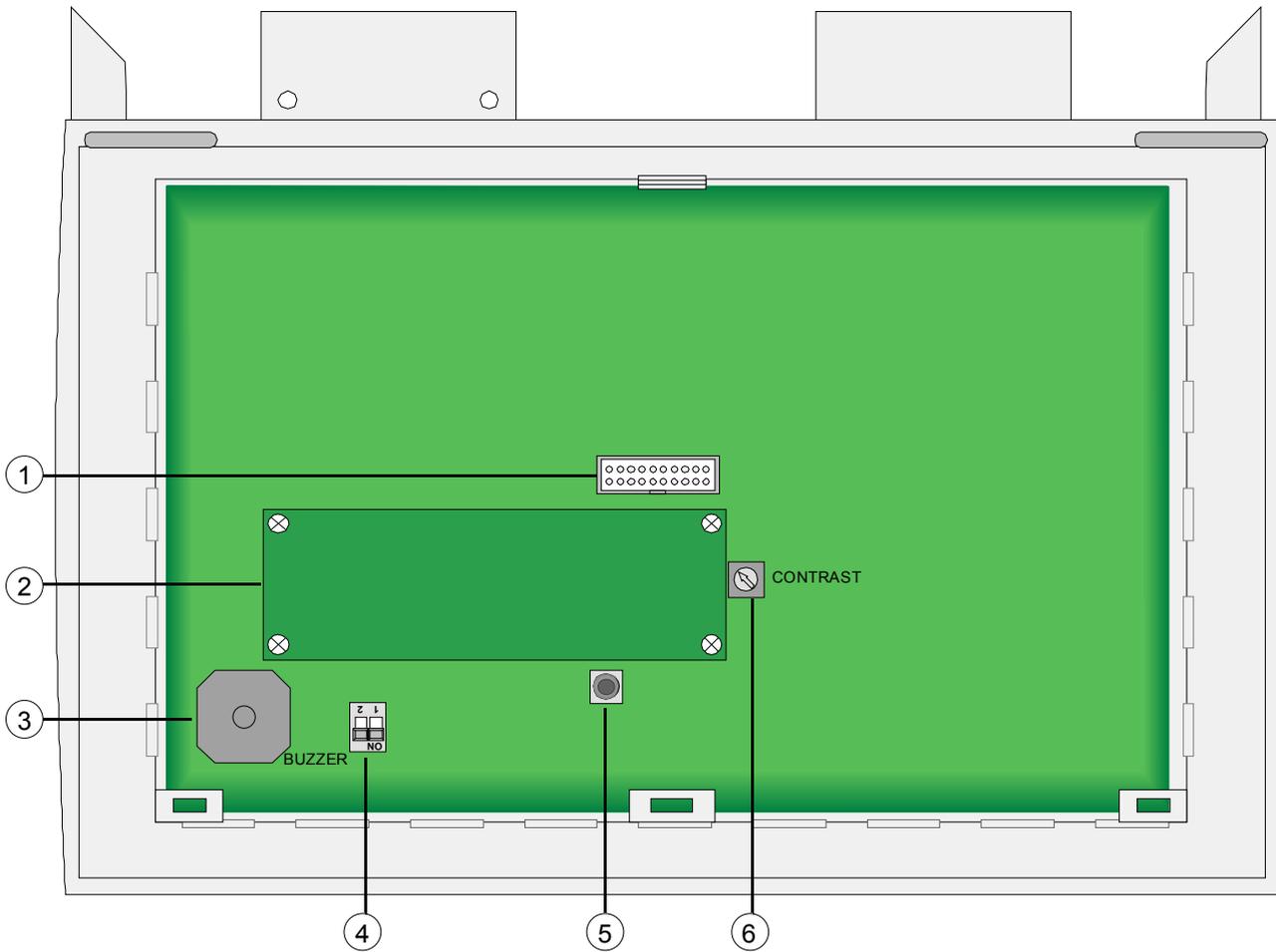


Fig. 11: Position of the modules on the rear wall of the D/O unit - top view

①	Connection to Mainboard via flat cable	
②	Display	
③	FACP buzzer	
④	DIL switch	
	DIL 1 on →	 FACP buzzer on
	DIL 1 off →	 FACP buzzer off
	DIL 2 →	no function
⑤	Reset push button → Resets the D/O unit	
⑥	Poti → Setting of display contrast	

5.1 Mains connection and earthing connections

This connection must be carried out in accordance with all applicable standards and regulations by an electrically skilled person. The corresponding terminals are on the power supply unit.

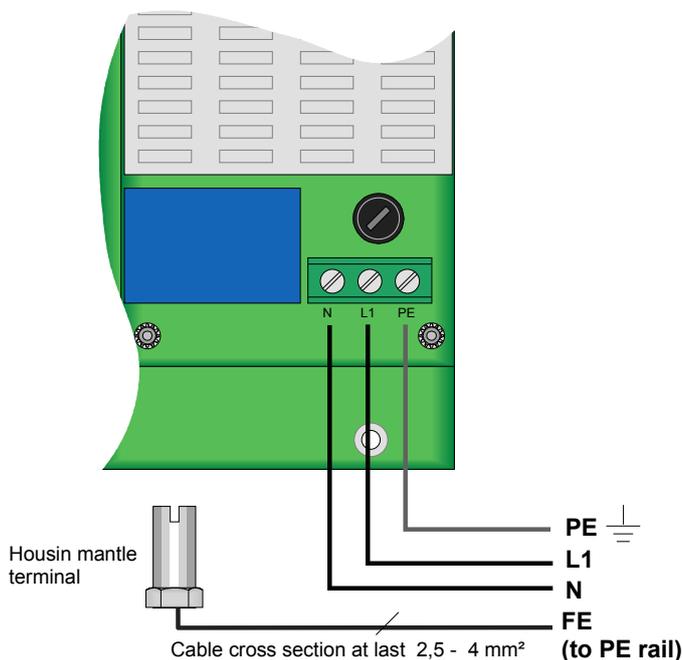


Fig. 12: Connection of power supply (schematic diagram)

Requirements

- Use a suitable cable, e.g. NYM 3 x 1.5 mm² (max. 2.5 mm²), 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 Chapter 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.

Fuses

The fuses of the FACP 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 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 protective earthing rail (PE rail).

5.2 Protective earth and functional earth

To ensure the proper functioning of the fire alarm control panel, connect the mains PE connector (protective earth) to the screw terminal on the Mainboard intended for this purpose.

The PE and FE connection (functional earth) of the housing is connected with the equipotential bonding rail of the distribution board / sub-distribution unit supplying the FACP with the operating voltage.

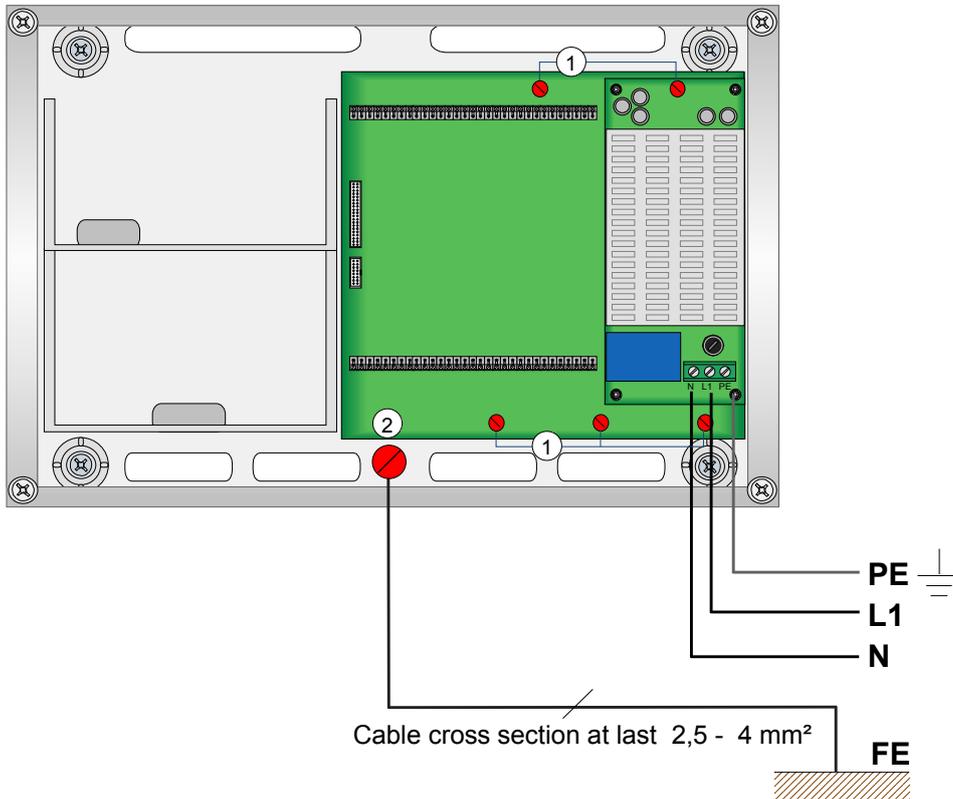


Fig. 13: Protective and functional earth connection

- ① Metal screws for an electrically conductive connection to the rear wall of the housing
- ② Housing mantle terminal (FE connection)



The Mainboard is connected with the housing rear wall via metal spacing pieces and metal screws. Without this electrically conductive connection a corrective functional earthing (FE) of the FACP is not possible.

5.3 Emergency power supply

If the rated voltage (e.g. 230 V AC) fails, the FACP is supplied by the connected batteries without interruption. Depending on the battery capacity, an emergency power supply period of up to 72 hours or longer can be bridged.

After this period has passed, it must still be possible to activate the external alarm signalling devices in case of an event. This activation must still be ensured for a final discharging voltage of 21 V DC.

Initial commissioning

New batteries have to be re-charged at least 24 hours prior to commissioning. If the date of manufacture (see label) was more than nine months ago, they must be re-charged for at least 48 hours.

Exhaustive discharge protection and battery monitoring

The power supply unit cyclically tests the charging condition of the connected batteries. If the value under load obtained during this test is less than 21 V DC or if the internal resistance of a battery is less than 600 mOhm, a battery failure is signalled.

If the >BATT< terminal voltage is permanently less than 21 V DC, the emergency power supply is switched off to protect the fire alarm control panel. The FACP is no longer functional in that case!

Remove the power supply fault before switching the FACP on again. The connected batteries are automatically re-charged, if the internal battery test shows a minimum terminal voltage of 21 V DC after recovery without load. Failure to reach this value will cause a fault message. The discharged batteries must be recharged externally or replaced if required.

During the charging process, the batteries are monitored via a digital thermometer (temperature sensor integrated into the circuit or the battery connecting cable).



Exhausted batteries (U_{batt} less than 21 V DC) will not be charged!

Only use the recommended battery types (see Chapter 5.4) for the emergency power supply of the fire alarm control panel or replace batteries pairwise.

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



Observe the instructions given by the manufacturer and VdS Schadenverhütung GmbH on exhaustive discharge of batteries.



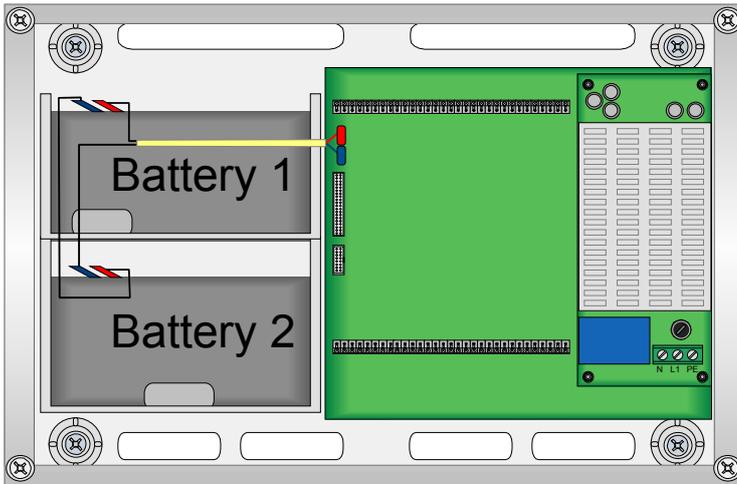
A battery fault of the fire alarm control panel may not only be signalled by an exhausted or faulty battery. A battery fault message might also be triggered if the contact resistance at the battery terminals or the connecting lines is too high (> 200 mOhm).

5.4 Recommended battery

The following batteries have been tested and approved for this device. We recommend using only these battery types for emergency power supply in order to ensure the safe operation of your panel:

Voltage (V)	Capacity (Ah)	Manufacturer	Designation
12	12	Sun Battery	SB 12-12.0

5.5 Mounting the batteries



Max. 2 x 12 V / 12 Ah batteries
(W x H x D = 152 x 102 x 98 mm)

Fig. 14: Mounting the batteries

5.6 Connecting the batteries

2 batteries can be connected at most. The maximum battery capacity is 2 x 12 Ah.

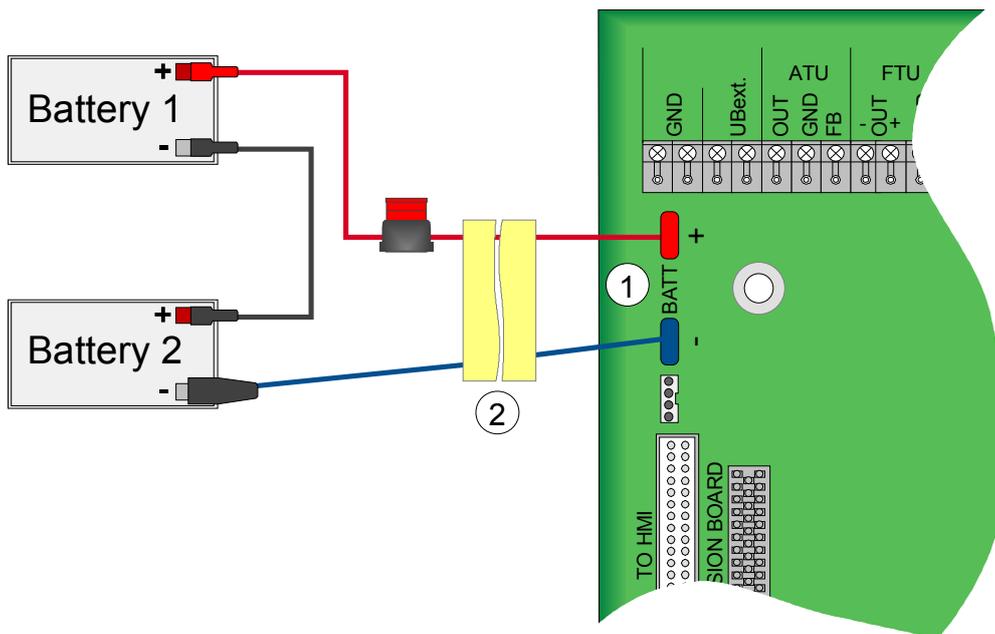


Fig. 15: Connecting the two batteries (example)

①	Battery connection (BATT +/-)
②	Battery cable incl. blade-type fuse T3 A / 32 V
Battery 1	max. 12 V DC / 12 Ah
Battery 2	max. 12 V DC / 12 Ah



Battery capacity

Only connect batteries of the same type to the FACP (manufacturer, date of manufacture, capacity, charging condition).

Operating batteries of different capacities at the same time is not admissible.

5.7 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 external 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 600 mΩ. In accordance with the requirements of EN 54, an increase in the resistance must be indicated within four hours.

For other information (fault type etc.) see Menu > Service / Battery<.

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 600 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 Mainboard

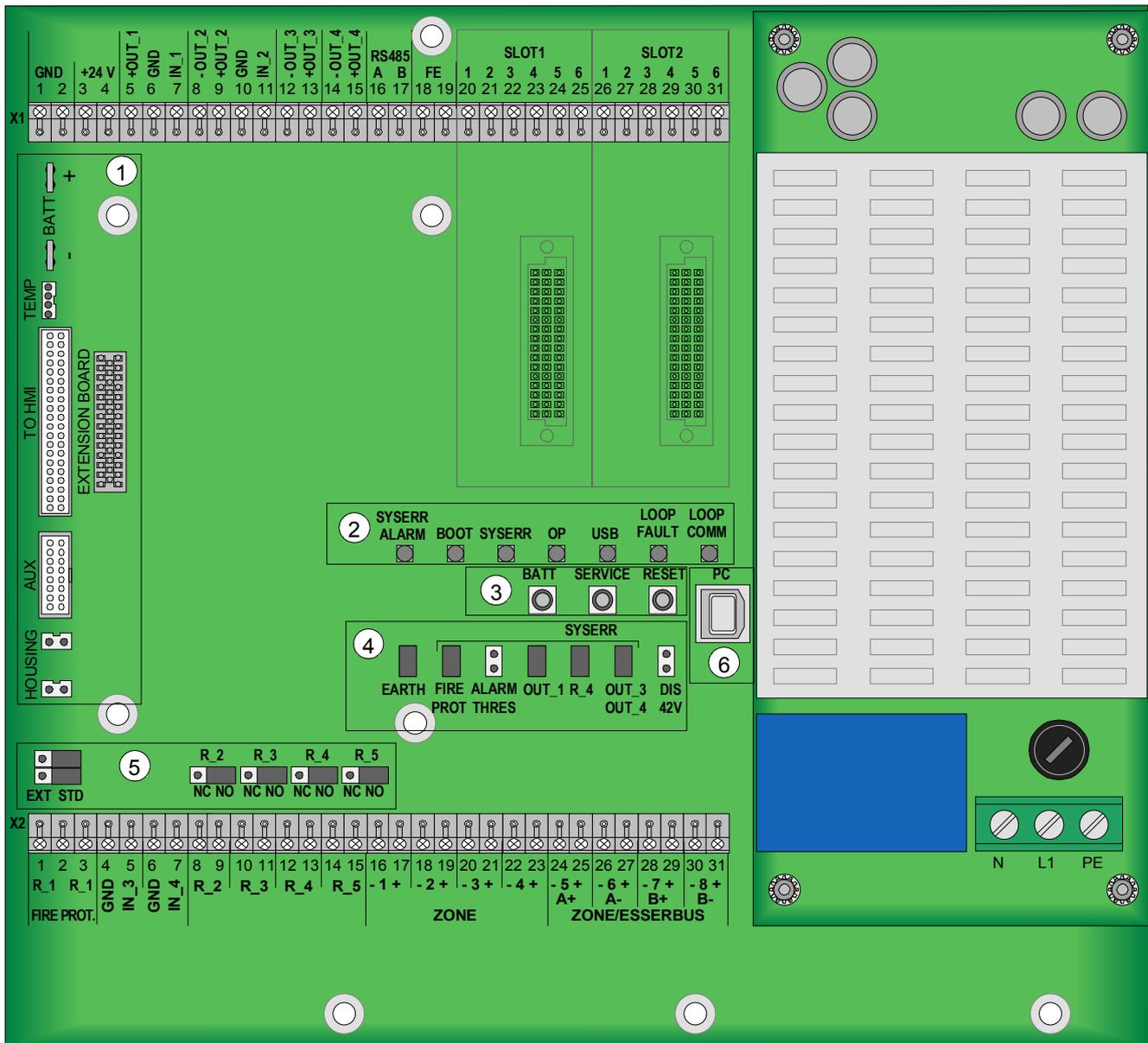


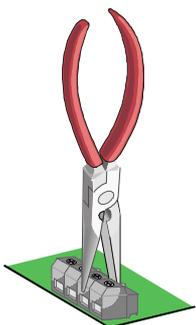
Fig. 16: Mainboard with factory-set jumpers ① and ⑤



Risk of short-circuits!

Secure all connected voltage and signalling lines using suitable fixing devices, such as plastic cable ties, to prevent them from shifting. Make sure that the mains supply line cannot shift and touch the signalling lines.

Always de-energise the system (mains and emergency power supply) before carrying out any mounting and installation work on it!



Removable terminals

The terminals can be removed to facilitate the installation. When installing the terminals after the cables have been connected, make sure that they are correctly matched!

Fig. 17: Removable terminals

Terminals X1	
GND / +24 V	Power supply for ext. loads power on: 29 V DC / max. 500 mA Battery operation: 20 - 29 V DC / max. 500 mA
OUT_1 (+)	Output, current sourcing 12 V DC / max. 200 mA, monitored
GND	for Out_1 and IN_1
IN_1	Input
OUT_2 (+/-)	Output, max. 12 V DC / 200 mA, monitored
GND	for IN_2
IN_2	Input
OUT_3 (+/-)	Alarm signalling device 24 V DC / 500 mA
OUT_4 (+/-)	Alarm signalling device 24 V DC / 500 mA
RS485 (A/B)	RS485 interface
FE	Cable shield connection
SLOT1/SLOT2	→ Future extension of functions
① Internal connections	
BATT / TEMP	Connection of batteries (see chapter 5.6) Optional connection of battery connecting cables with integrated temperature sensor
To HMI	Connection of the display and operating module via a 26-pin flat cable
AUX	→ Future extension of functions
Extension board	→ Future extension of functions
HOUSING	Connection for 2 housing contacts at most
② LED	
SYSERR ALARM	LED red, lit → Fire alarm (only in emergency operation)
BOOT	LED green, lit → FACP is ready for new firmware  Only enable this function after consulting the technical customer service.
SYSERR	LED yellow, lit → FACP in emergency operation
OP	LED green, lit → Normal operation green, flashes → FACP is ready for new firmware  Only enable this function after consulting the technical customer service.
USB	LED green, lit → The service PC is connected via the USB interface
LOOP FAULT	LED yellow, lit → esserbus® has a fault (wire break or short circuit)
LOOP COMM	LED yellow, flashing → esserbus® is in normal operation
③ Taster	
BATT	Press push button for 5 seconds to start FACP <u>without</u> rated voltage (230 V AC). Battery voltage must be at least 21 V DC!
SERVICE	Select access level 4 and press SERVICE key → Access level 4
RESET	RESET push button → Resets the FACP Alarm and fault messages are reset, all zones are turned on. A cold start of the FACP using the RESET button is only possible if the housing contact is open.

④ / ⑤ jumpers		Fire protection equipment	
EXT / STD		STD = standard interface for extinguishing device (monitoring with 3.3 KOhm / 680 Ohm)	
		EXT = potential-free contacts for external activation (R1 / R2) see also chapter 6.5.10	
R_2 / R_3 / R_4 / R_5		→ normally open factory setting	Select relay function
		→ normally closed	
EARTH		Ground fault detection on	
		Ground fault detection off	
FIRE PROT		In system fault mode of the FACP, a fire alarm relay R_1 is activated.	
		No activation	
ALARM THRES	→ Future extension of functions		
OUT_1		Output is activated in system fault operation mode <u>when</u> fire alarm is signalled.	
		No activation	
R_4		Relay R_4 is activated in system fault mode <u>when</u> fire alarm is signalled.	
		No activation	
OUT_3 / OUT_4		Outputs 3 and 4 are activated in system fault mode <u>when</u> fire alarm is signalled.	
		No activation	
DIS 42 V		42 V DC for esserbus® switched <u>off</u>	
		42 V DC for esserbus® switched <u>on</u>	
⑥ service PC	USB port of service PC		
Terminals X2			
R_1		→ Delete standard interface (BSL)	Connection fire protection equipment
		→ Relay 1, potential-free	
GND / IN_3	Input, monitored, reference GND		
GND / IN_4	Input, monitored, reference GND		
R_2 bis R_5	Relay, not monitored, potential-free		
ZONE	Detector zones 1 to 8 (+/-)		
ZONE/ESSERBUS	esserbus® connecting terminals		
Mains connection			
N / L1 / PE	Mains connection terminals for connecting cable 1.5 - 2.5 mm ²		

6.1 esserbus® connection



Fig. 18: esserbus® circuit diagram

The esserbus®-PLUS loop is connected to the A+/A- and B+/B-terminals on the Mainboard.

ZONE								ZONE/ESSERBUS							
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
- 1 +	- 2 +	- 3 +	- 4 +	- 5 +	- 6 +	- 7 +	- 8 +	A+	A-	B+	B-				
ZONE								ZONE/ESSERBUS							

Terminal	Connection
24	esserbus® A+
26	esserbus® A-
28	esserbus® B+
30	esserbus® B-

Fig. 19: esserbus® connection



Automatic fire detectors and manual fire alarm call points or manual activation devices may not be operated on a common detector zone according to DIN VDE 0833-2 and VdS regulations. A separate detector zone must be provided for each of these two detector types.

6.2 esserbus[®] 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!
- Up to 3500 m total loop length including all branches and under consideration of the load factor for IQ8Quad detector ring bus device. This corresponds to a max. output resistance of 130 Ω (measured from terminal A+ to B+) for a cable with a 0.8 mm diameter.

Function

The esserbus[®]/esserbus[®]-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.

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

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 V1.20 or higher. The programming software automatically detects the wiring configuration of the loop and automatically addresses all esserbus[®] 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 customer data online help file for the tools 8000 programming software or higher for more information on programming the panel.

The corresponding LED on the esserbus[®] module will flash to indicate the status of the communication between the esserbus[®] module and detectors. Furthermore 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[®] 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 (depending on detector type) can be delivered with or without isolators. 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 12.000 m² to 48.000 m² 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<.

6.3 The esserbus®-PLus loop load factor

The max. number of loop-participants depends on load factor, cable length and –cross-section. For this purpose, add the individual load factors (LF) of the participants (see technical data). The max. total load factor of a ring main is 96 and has to be calculated before the installation / commissioning.
The devices are supplied with power through the loop (including in an alarm event or when activated).



A calculation tool is available on www.esser-system.com to determine the load factor values.

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

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

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

Other examples can be found in the BMT product group catalogue.

Max. loop length	Total load factor
up to 700 m	91 to 96
up to 800 m	85 to 90
up to 900 m	79 to 84
up to 1.000 m	73 to 78
up to 1.100 m	67 to 72
up to 1.300 m	61 to 66
up to 1.500 m	55 to 60
up to 1.700 m	49 to 54
up to 2.000 m	43 to 48
up to 2.500 m	37 to 42
up to 3.000 m	31 to 36
up to 3.500 m	1 to 30



- Take note of max. possible loop length
- Check bus device compatibility
- Max. permissible total load factor per loop = 96
- Take note of max. permissible quantity of every device type
- Max. 127 bus devices per loop
- The permitted loop length depends on the number and type of the loop devices and may differ from the max. loop length!
- The required emergency power bridging time and the corresponding battery capacity of the FACP must also be determined. Additional energy supply modules (up to 3 per FACP) incl. emergency power supply may be required!
- Note the max. ambient temperature of the FACP!

6.4 Relay outputs

The FACP has four relay outputs that can be used for alarm, fault or any control functions.

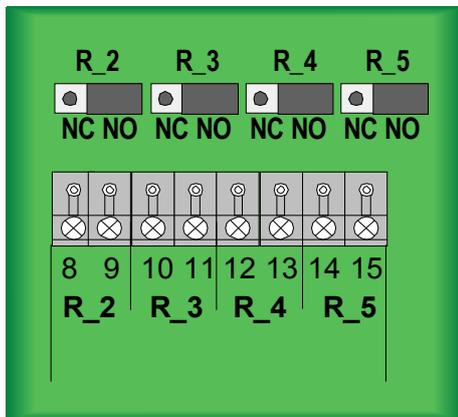
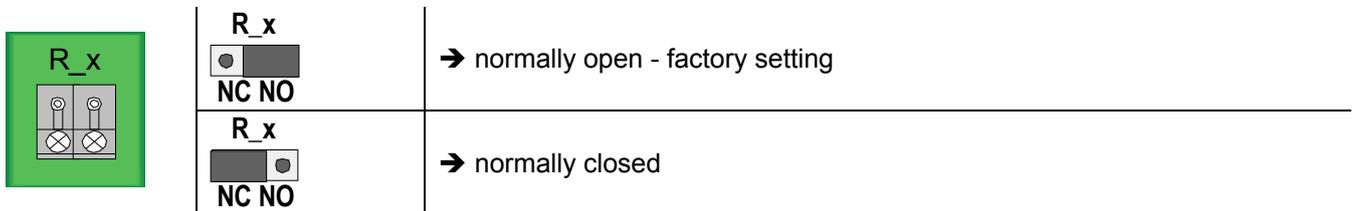


Fig. 20: Terminals Relay outputs



6.4.1 Audible and optical alarm devices

Audible and optical alarm devices for external alarms can be connected via the terminals OUT_3 +/- and OUT_4 +/- . In case of a fire alarm these outputs are activated according to EN 54-2 unless they have been manually switched off using the D/O unit prior to this.

Total current for outputs OUT_3 and OUT_4 is 500 mA each.

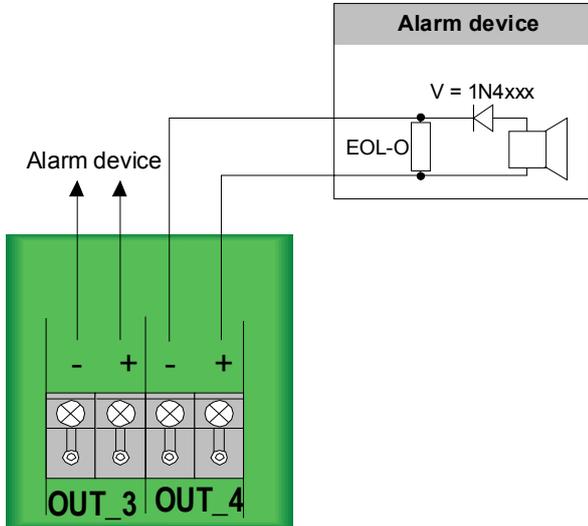


Fig. 21: Terminals for acoustic alarm signalling device



If outputs OUT_3 / OUT_4 are configured as outputs that are monitored via EOL-O, the EOL-O is set to test mode every 20 seconds by reversing the polarity.

The connected cable is tested for short-circuits / wire breaks in this way.

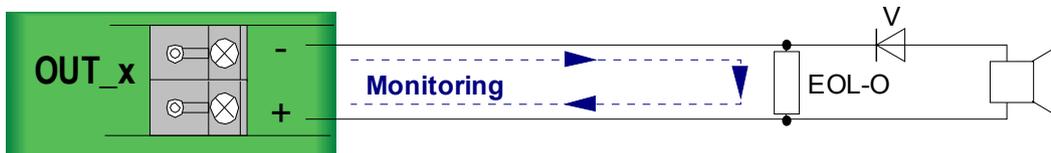


Fig. 22: Monitoring (normal operation), example with OUT_x output

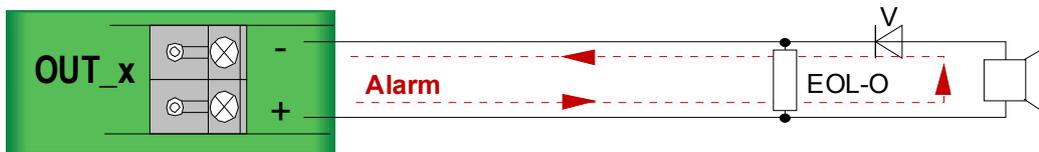


Fig. 23: Activation (Fire alarm), example with OUT_x output

6.4.2 Accessory

Part No.	Description
808624	End of line element EOL-O
808626	End of line element EOL-I

6.5 Fire brigade peripherals

The following components can be connected to the Compact FACP.

Part No.	Description
FX808380	FIP3000 fire brigade indicating panel
FX808381	ADP-N3E-U-EDP adapter module
FX808382	Fire brigade operating panel FOP2003-EDP (RS485)
FX808460	Touch screen operating panel, surface-mounted
FX808461.10	Touch screen operating panel, flush-mounted
070450	Auxiliary relay



Please see technical information 798962.GB0 for additional connections to the fire brigade peripherals, including those that are optional.

6.5.1 Connection of fire brigade indicator panel (FIP) / fire brigade operating panel (FOP)

A RS485 interface is available at terminals RS485 (A and B) on the Mainboard. An external device, such as a fire brigade indicator panel or fire brigade operating panel can be connected.

The RS485 interface must be enabled for connecting a fire brigade indicator panel or fire brigade operating panel in the customer data programming of the FACP.

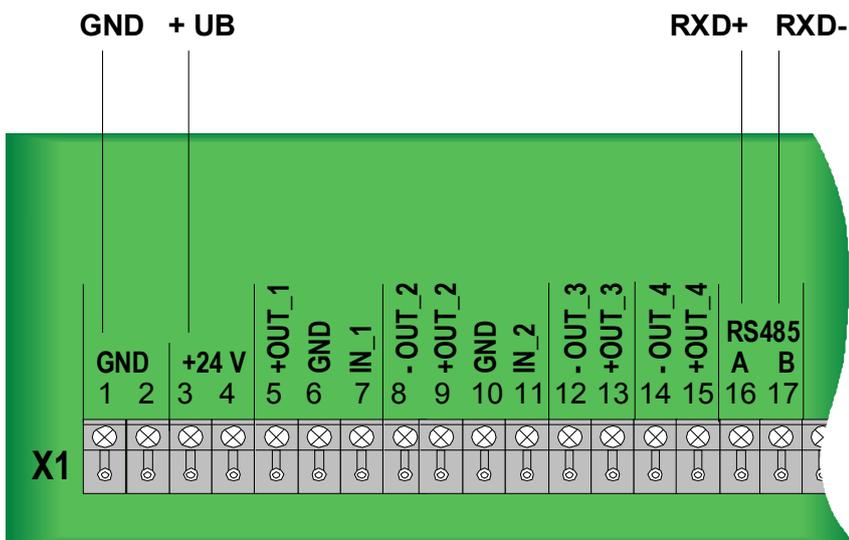


Fig. 24: Connection of fire brigade indicator panel or fire brigade operating panel



End of line resistor

An end of line resistor for the RS485 interface has been integrated on the Mainboard.

6.5.2 Fire brigade indicating panel FIP3000-EDP (Part No. FX808380)

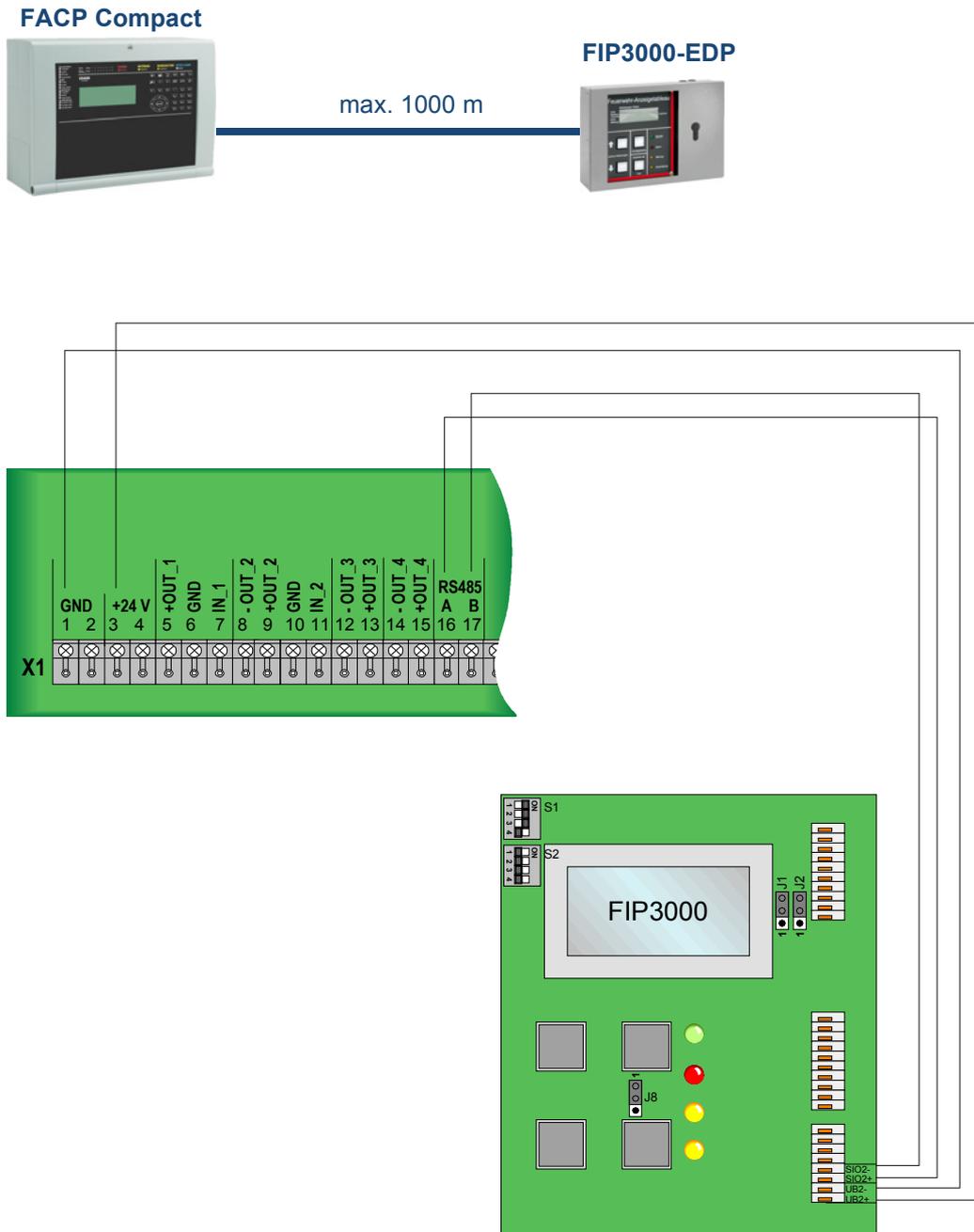


Fig. 25: FIP3000-EDP fire brigade indicating panel (Part No. FX808380)

6.5.3 Fire brigade operating panel FOP 2003-EDP RS485 (Part No. FX808382)

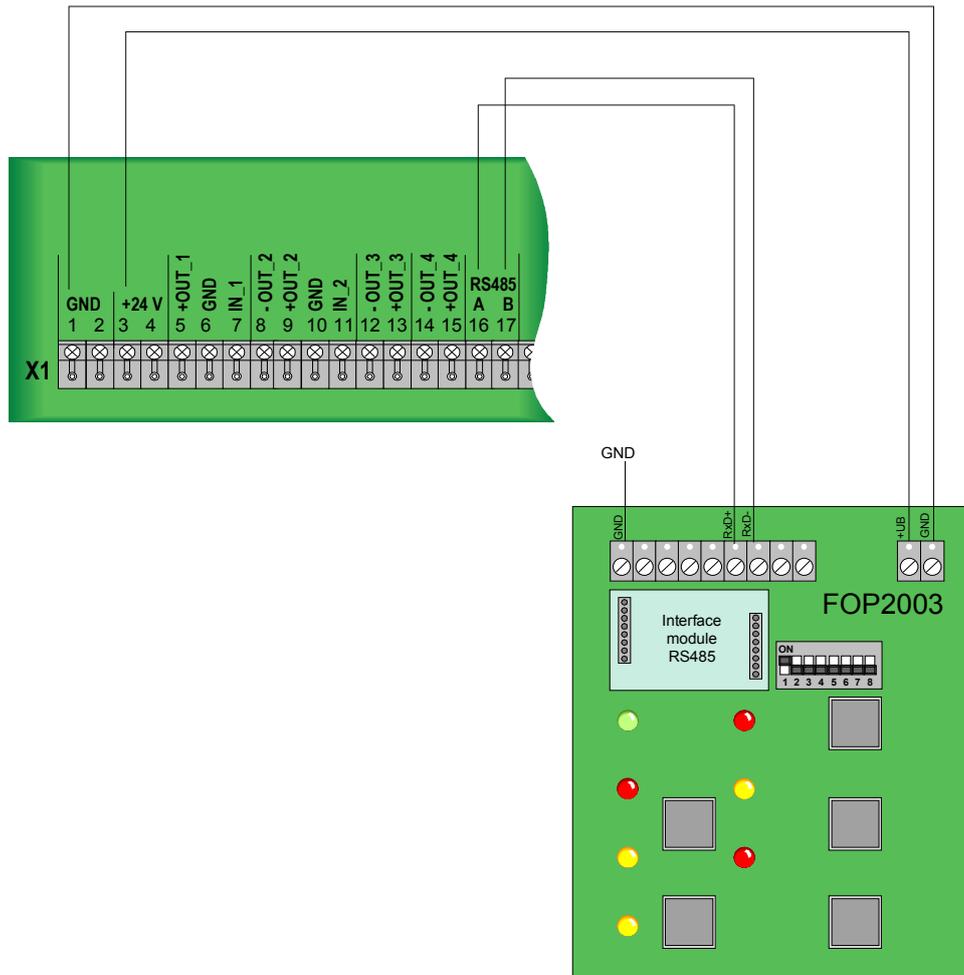


Fig. 26: Fire brigade indicating panel FOP 2003-EDP RS485 (Part No. FX808382)

6.5.4 Two FIP3000-EDP (Part No. 808380) with ADP-N3E-U-EDP (Part No. FX808381) – redundant connected

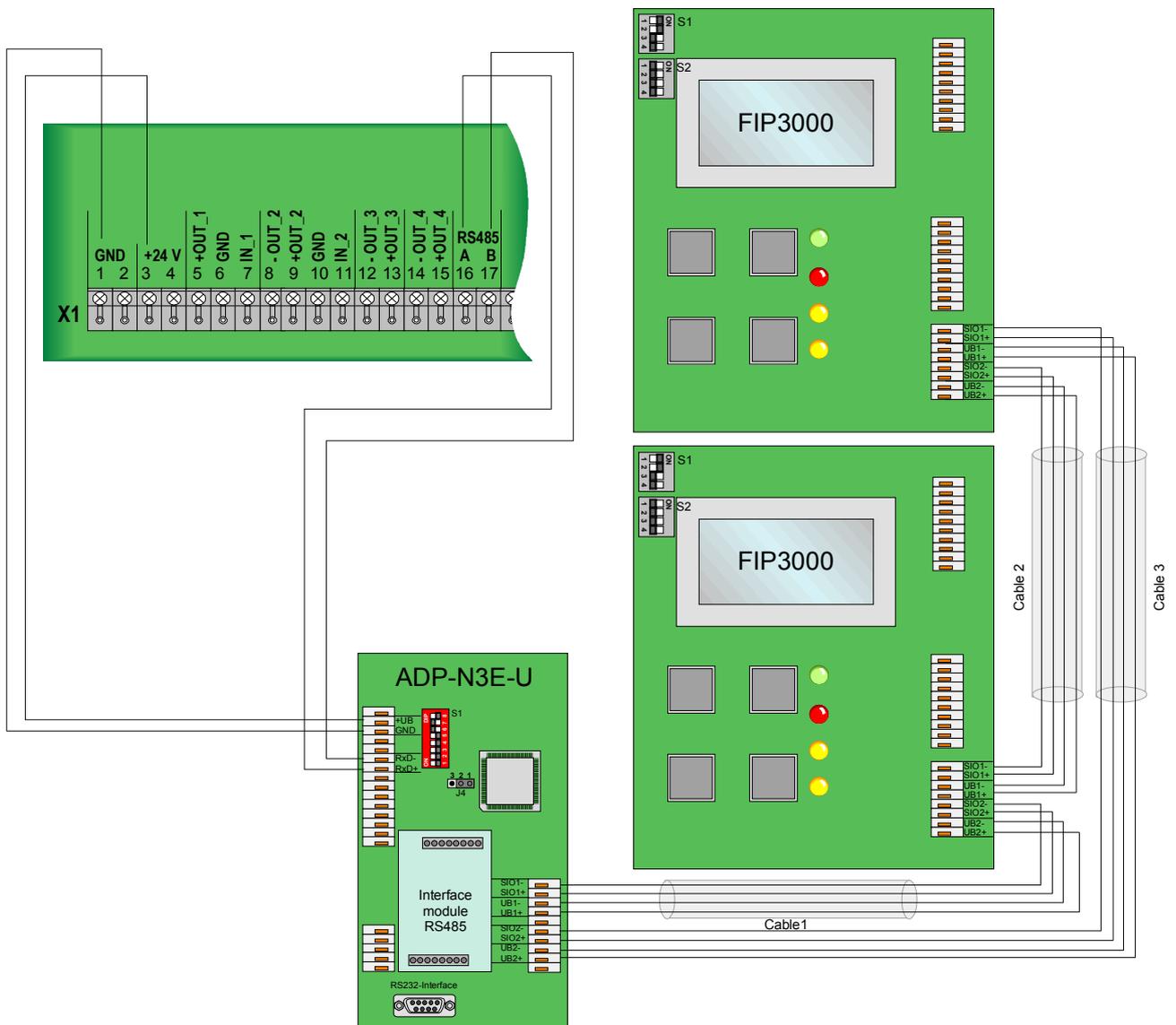
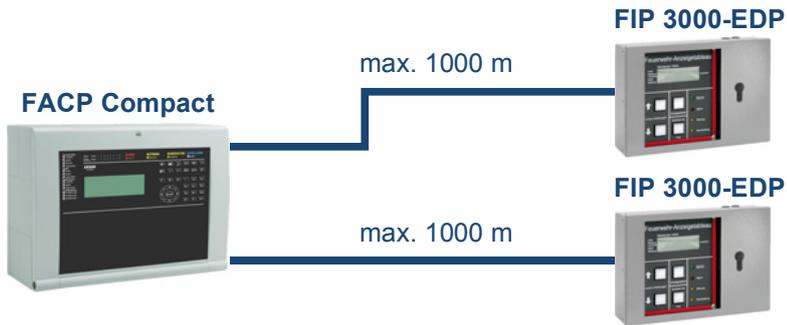


Fig. 27: Two FIP3000-EDP (Part No. FX808380) with ADP-N3E-U-EDP (Part No. FX808381) – redundant connected

6.5.5 FIP3000-EDP (Part No. FX808380) with downstream FOP2003-EDP RS232 (Part No. FX808383)

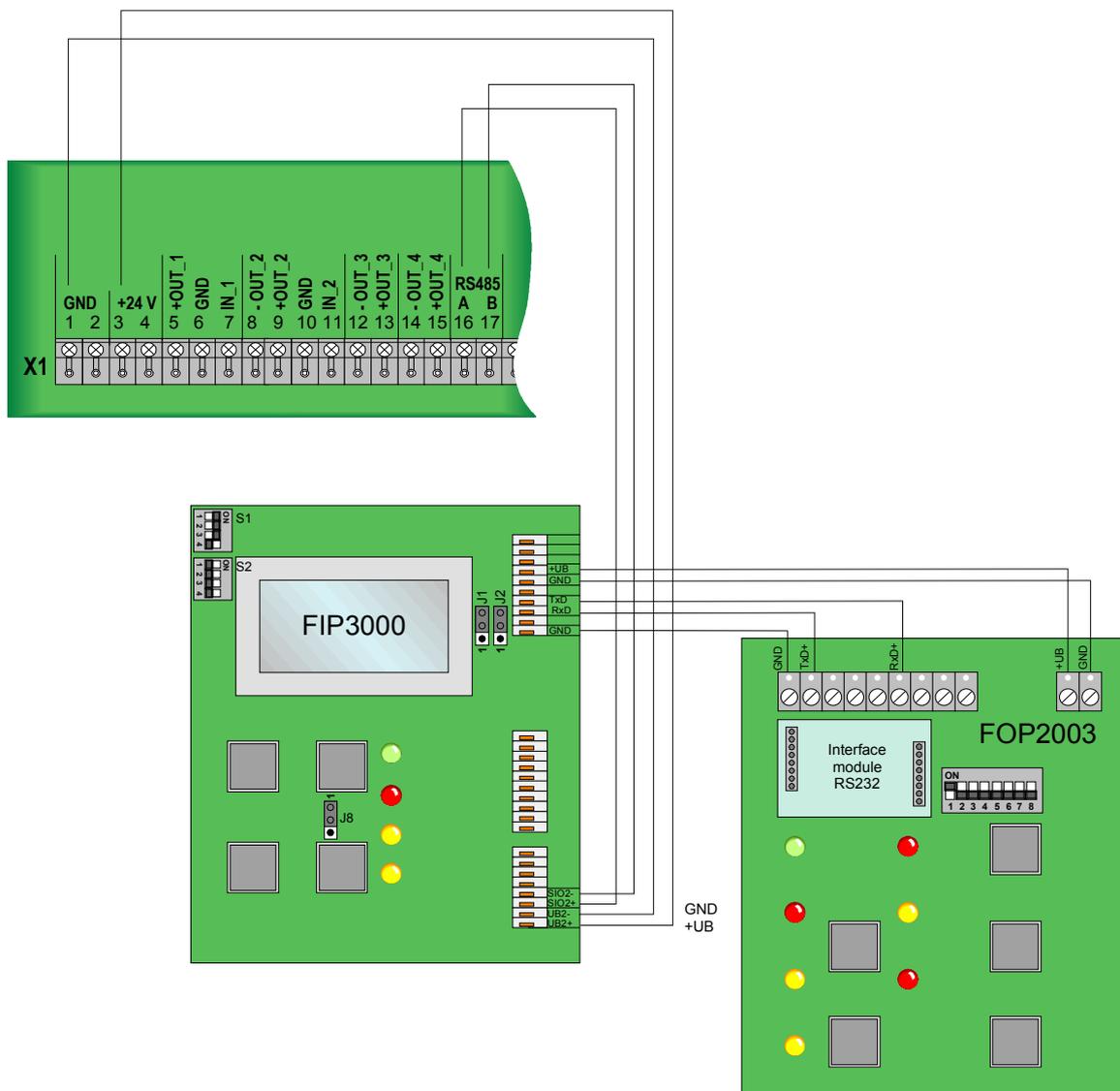
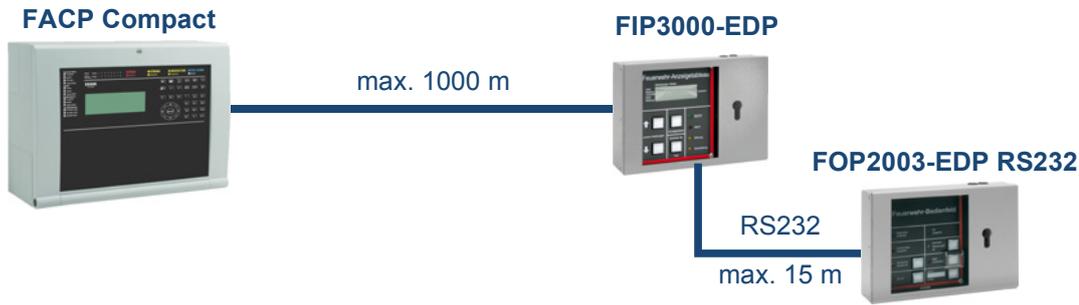
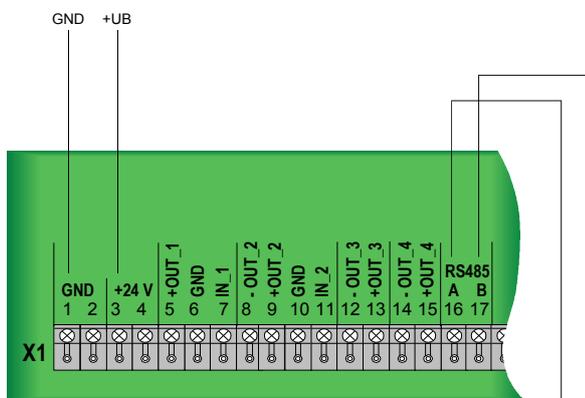


Fig. 28: FIP3000-EDP (Part No. FX808380) with downstream FOP2003-EDP RS232 (Part No. FX808383)

**6.5.6 Touch screen indicating and operating panel surface-mounted (Part No. FX808460)
Touch screen indicating and operating panel flush-mounted (Part No. FX808461.10)**



PIN assignment 9-pin DSUB-plug ①

PIN	Description	
1	GND	do not connect
2 + 5	RS485a (+)	bridge over pin 2 +5 in DSUB-plug
3 + 4	RS485b (-)	bridge over pin 3 + 4 in DSUB-plug

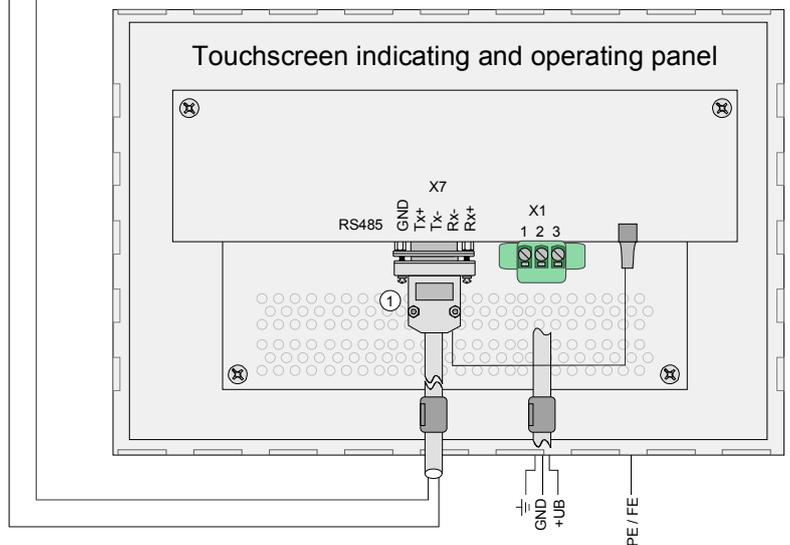


Fig. 29: Touch screen operating panel connected to RS485-1 (example)



- Please refer to the touch screen indicating and operating panel documentation (Part No. 798990.GB0) for more information on connecting and configuring these devices.
- A typical 9-pin DSUB connector is required to connect the touch screen operating panels.
- Program the RS485 interface of the FACP in the customer data with the protocol >WINMAG< (For information, see the online help of the programming software tools 8000).

6.5.7 Auxiliary relay (Part No. 070450)

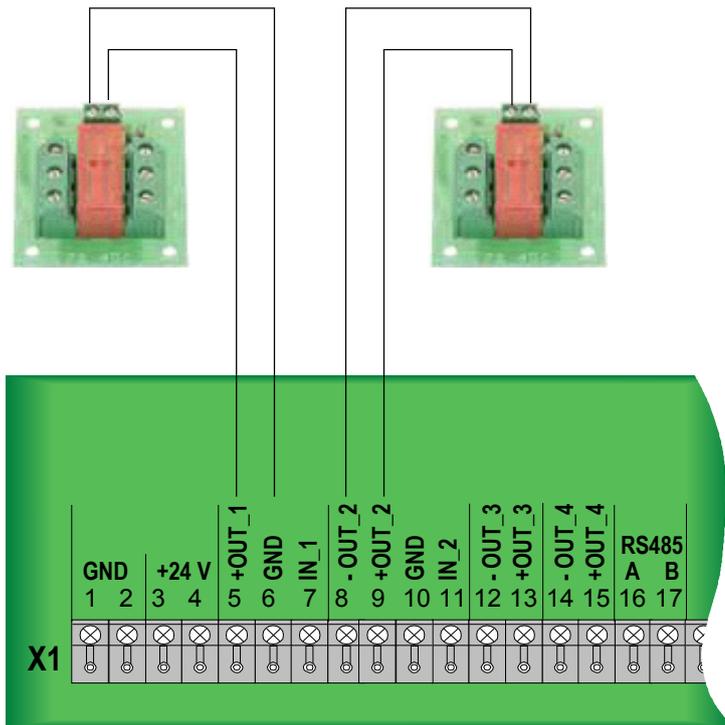


Fig. 30: Auxiliary relay

6.5.8 Connecting fire brigade key depository

The inputs and outputs for the alarm transmission unit and the fire department key box must be programmed accordingly in the customer data of the FACP.

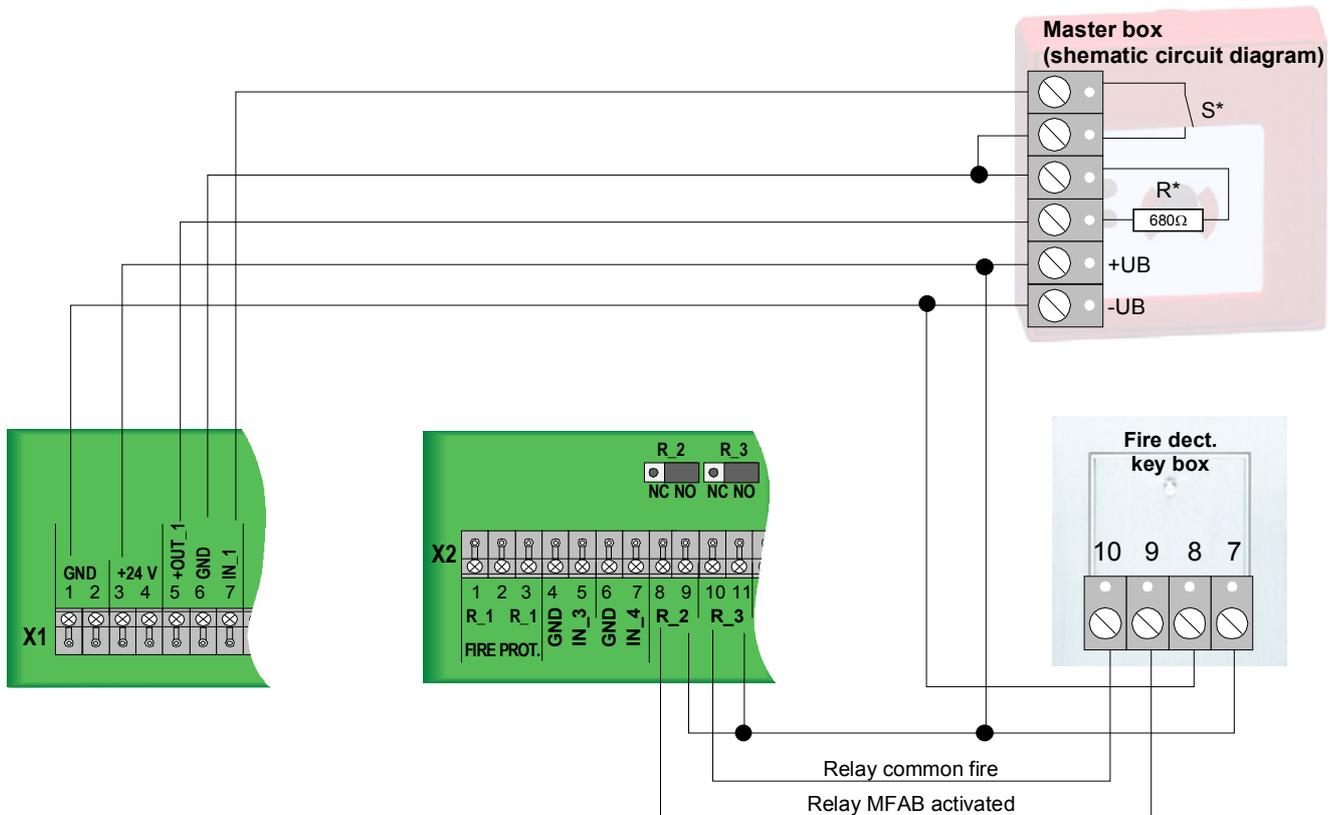


Fig. 31: Connection of fire department key box

OUT_1:

Switch on monitoring in menu Configuration / Extension / Mainboard and calibrate output. Program a control zone of the type transmission equipment to OUT_1 and enter activation event (e.g. fire) in configuration / control zone.

IN_1:

Program a detector zone which responds to IN_1 and program switching function “transmission equipment triggered” to system input and allocate to the control unit for OUT_1.

R_2:

Program a control zone which has been allocated to R_2 and responds to >transmission equipment triggered<.

R_2
 NC NO → normally open - factory setting

R_3:

Program a control zone which has been allocated to R_3 and responds to >Fire<.

R_3
 NC NO → normally open - factory setting

6.5.9 Connection of alarm transmission unit (ATU)

The inputs and outputs the inputs and outputs according to the circuit diagram for the alarm transmission unit must be programmed accordingly in the customer data (access level 3 - configuration menu see commissioning instructions Part No. 798238.GB0).

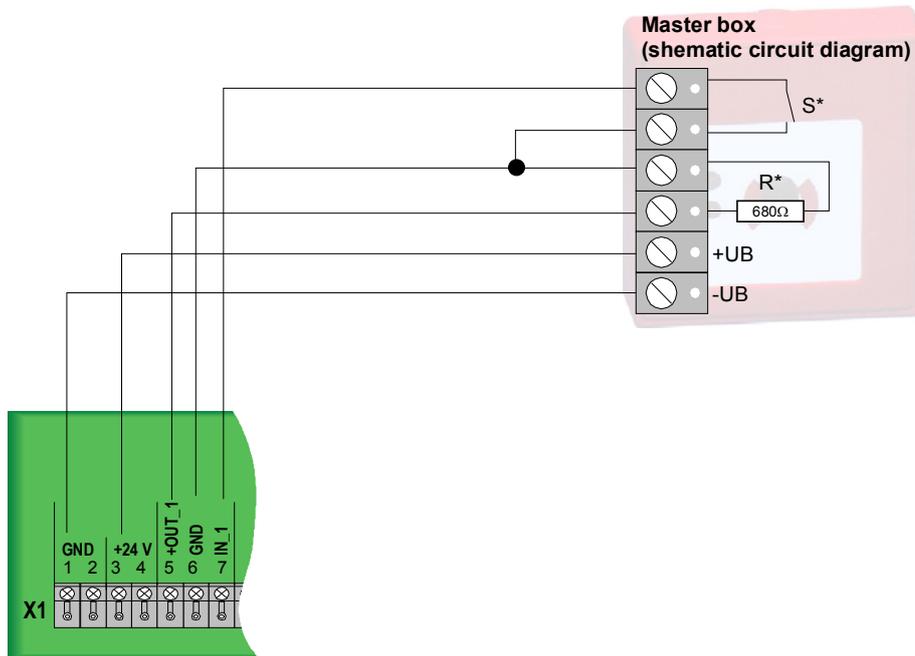


Fig. 32: Connection of an alarm transmission unit

OUT_1:

Switch on monitoring in menu Configuration / Extension / Mainboard and calibrate output.

Program a control zone of the type transmission equipment to OUT_1 and enter activation event (e.g. fire) in configuration / control zone.

IN_1:

Program a detector zone which responds to IN_1 and program "transmission equipment triggered" to system input and allocate to the control unit for OUT_1.

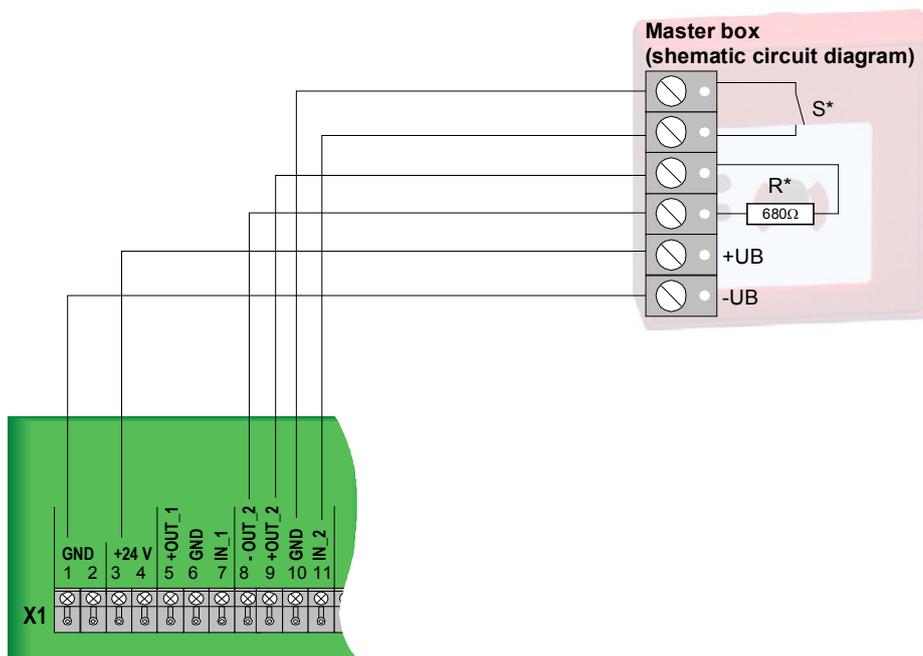


Fig. 33: Connection of a fault transmission unit

6.5.10 Connection of fire protection equipment

In the customer data, the inputs and outputs must be programmed according to the connection of fire protection equipment (access level 3 - configuration menu see commissioning instructions Part No. 798238.GB0).

R_1:

Relay R_1 is activated via the jumper as STD = standard interface for extinguishing device or as EXT = potential free contact with external wiring.

IN_3 / IN_4:

The inputs must be set to the existing wiring (e.g. 3.3 K Ohm / 680 Ohm) in the configuration menu (extension/mainboard).

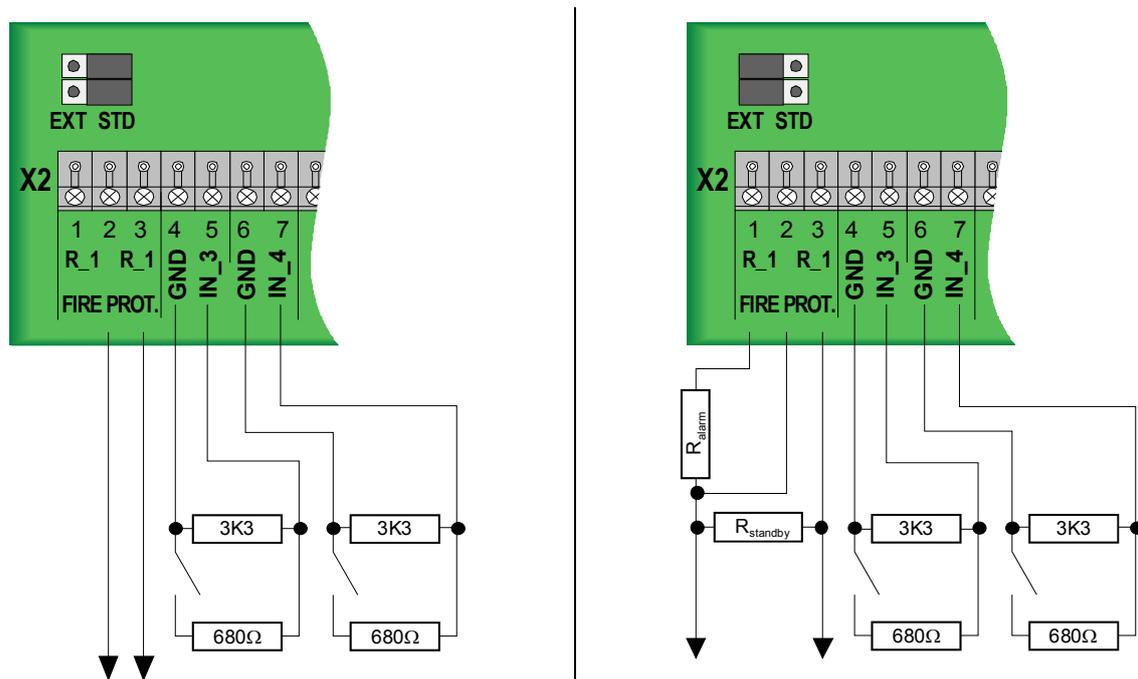


Fig. 34: Connection of fire protection equipment



→ Standard interface for extinguishing device (BSL) - (monitoring with 3.3 KOhm / 680 Ohm)



→ Relay 1, potential-free contacts for external connection between terminals 1 and 3



- Always replug both jumpers!
- Where applicable, project-specific resistance values are required that deviate from the connection example!

7 Specification

Rated voltage	:	230 V AC (+10% / -15%)
Operating voltage	:	24 V DC
Rated current	:	0.8 A
Rated frequency	:	50 ... 60 Hz
Output voltage	:	20 ... 29 V DC, typically 24 V DC
Quiescent current	:	100 mA @ 24 V DC (without peripheral equipment)
Operating current for ext. loads, $I_{\max a}$:	1.5 A
Operating current for ext. loads, $I_{\max b}$:	2.7 A
Total current consumption ^{*1}	:	1.5 mA @ 24 V DC
Battery capacity	:	min. 7 Ah ... max. 12 Ah
Battery charge voltage	:	27.15 V DC @ 25 °C
Exhaustive discharge protection	:	19.8 V DC
Terminals	:	0.6 mm ... 1.5 mm ²
Ambient temperature	:	-5 °C ... +45 °C
Storage temperature	:	-5 °C ... +50 °C
Protection rating	:	IP 30
Housing	:	ABS, 10 % fibre glass reinforced, V-0
Colour	:	grey
Weight	:	approx. 5 kg
Dimensions (w x h x d)	:	450 x 320 x 185 mm
VdS approval	:	G 214072
Declaration of performance	:	DoP-21390140811

^{*1} Admissible total current consumption for 72 hrs emergency power supply with maximum battery capacity of 12 Ah ($I_{\max a}$)

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