




2X-A Series Compact Repeater Installation Manual

Copyright	© 2023 Carrier. All rights reserved.
Trademarks and patents	<p>2X-A Series is a trademark of Carrier.</p> <p>Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.</p>
Manufacturer	<p>Carrier Manufacturing Poland Spółka Z o.o., Ul. Kolejowa 24, 39-100 Ropczyce, Poland.</p> <p>Authorized EU manufacturing representative: Carrier Fire & Security B.V., Kelvinstraat 7, 6003 DH Weert, Netherlands.</p>
Revision	REV 02.
Firmware compatibility	This document covers control panels with firmware version 5.0 or later.
Conformity	
European Union Directives	<p>2014/30/EU (EMC Directive). Hereby, Carrier declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU.</p> <p>2012/19/EU (WEEE Directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: recyclethis.info.</p>
Contact information and product documentation	For contact information or to download the latest product documentation, visit firesecurityproducts.com .



Content

Important information	ii
Limitation of liability	ii
Product warnings and disclaimers	ii
Advisory messages	iii
Introduction	1
Installation and commissioning	2
Electrical safety	2
Cabinet assembly	3
Cabinet and PCB layout	4
Cabinet installation	5
Recommended cables	9
Connecting to the fire network	9
Connecting inputs	10
Connecting relays	10
Connecting the external power supply	11
Connecting expansion equipment	11
Connecting an external printer	12
Configuration	12
Commissioning	13
Maintenance	14
Technical specifications	15
Regulatory information	18

Important information

Limitation of liability

To the maximum extent permitted by applicable law, in no event will Carrier be liable for any lost profits or business opportunities, loss of use, business interruption, loss of data, or any other indirect, special, incidental, or consequential damages under any theory of liability, whether based in contract, tort, negligence, product liability, or otherwise. Because some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages the preceding limitation may not apply to you. In any event the total liability of Carrier shall not exceed the purchase price of the product. The foregoing limitation will apply to the maximum extent permitted by applicable law, regardless of whether Carrier has been advised of the possibility of such damages and regardless of whether any remedy fails of its essential purpose.

Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction is mandatory.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents, Carrier assumes no responsibility for errors or omissions.

Product warnings and disclaimers

THESE PRODUCTS ARE INTENDED FOR SALE TO AND INSTALLATION BY QUALIFIED PROFESSIONALS. CARRIER FIRE & SECURITY B.V. CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY “AUTHORIZED DEALER” OR “AUTHORIZED RESELLER”, IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL FIRE AND SECURITY RELATED PRODUCTS.

For more information on warranty disclaimers and product safety information, please check <https://firesecurityproducts.com/policy/product-warning/> or scan the QR code:



Advisory messages

Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

WARNING: Warning messages advise you of hazards that could result in injury or loss of life. They tell you which actions to take or to avoid in order to prevent the injury or loss of life.

Caution: Caution messages advise you of possible equipment damage. They tell you which actions to take or to avoid in order to prevent the damage.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Introduction

This is the installation manual for the 2X-A Series compact repeater control panels. Read these instructions and all related documentation entirely before installing or operating this product.

Note: See your fire panel installation and user manuals for information on LED indications and panel configuration options.

Product range

The compact repeater series includes the panels shown below.

Table 1: Compact repeater panels

Model	Description
2X-AER-C	Addressable fire and evacuation alarm repeater panel with fire routing and fire protection controls (compact)
2X-AFR-C	Addressable fire alarm repeater panel (compact)
2X-AFR-D-C	Addressable alarm delay unit (compact)
2X-AFR-FB-C	Addressable fire alarm repeater panel with fire routing and fire protection controls (compact)
2X-AFR-SCFB-C [1]	Addressable SS 3654 fire alarm repeater panel with fire routing and fire protection controls (compact)

[1] Includes a fireman's key.

See "Technical specifications" on page 15 for cabinet dimensions.

Firmware compatibility

Information in this document covers control panels with firmware version 5.0 or later. This document must not be used as a guide to installation, configuration, or operation of control panels with an earlier firmware version.

To check the firmware version of your control panel, see the Revision report in the Reports menu.

Note: Control panels with firmware version 5.0 or later are compatible for use in fire networks with control panels with earlier versions of firmware. However, control panels with earlier versions of firmware cannot be upgraded to firmware version 5.0.

Product compatibility

Products compatible with these control panels are listed in the product compatibility list. Only those products specified in the compatibility list are guaranteed to be compatible.

To download the latest product compatibility list, visit firesecurityproducts.com.

Installation and commissioning

This section provides detailed installation, connection, and commissioning information for your control panel.

Caution: This product must be installed and maintained by qualified personnel adhering to the CEN/TS 54-14 standard (or the corresponding national standard) and any other applicable regulations.

Electrical safety

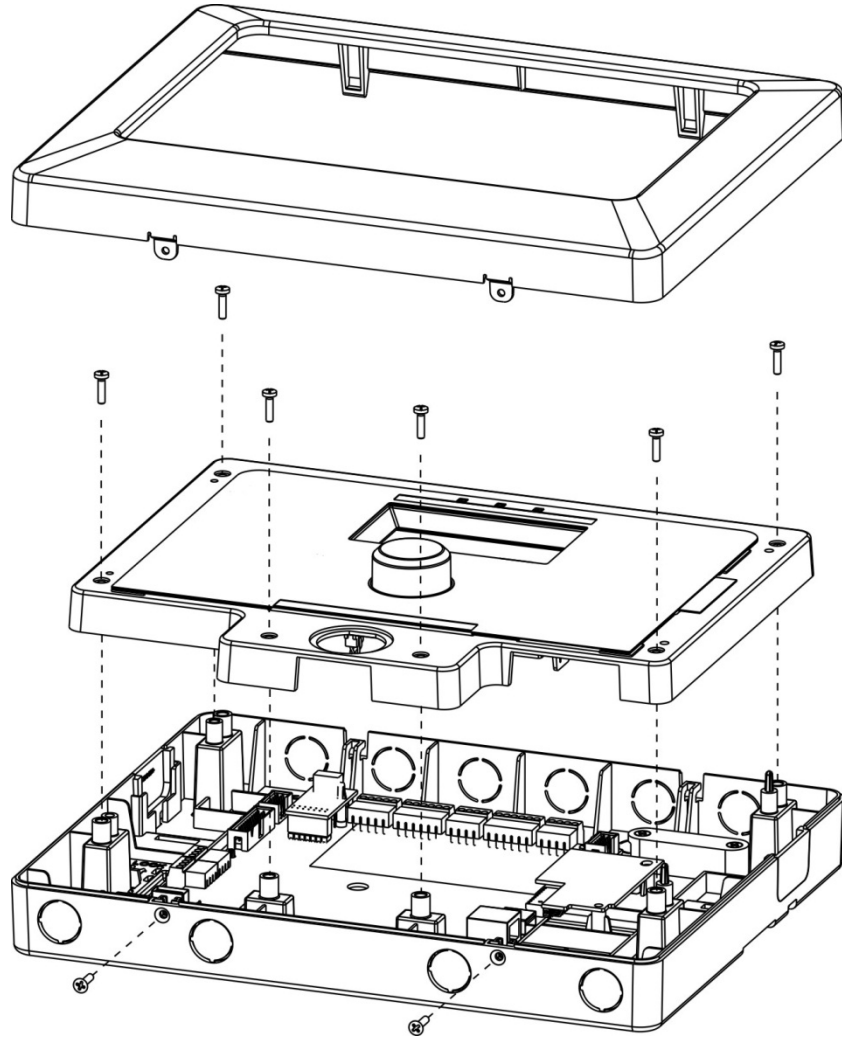
WARNING: Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment.

Caution: Equipment damage hazard. This product is sensitive to electrostatic discharge (ESD). To avoid damage, follow accepted ESD handling procedures.

Cabinet assembly

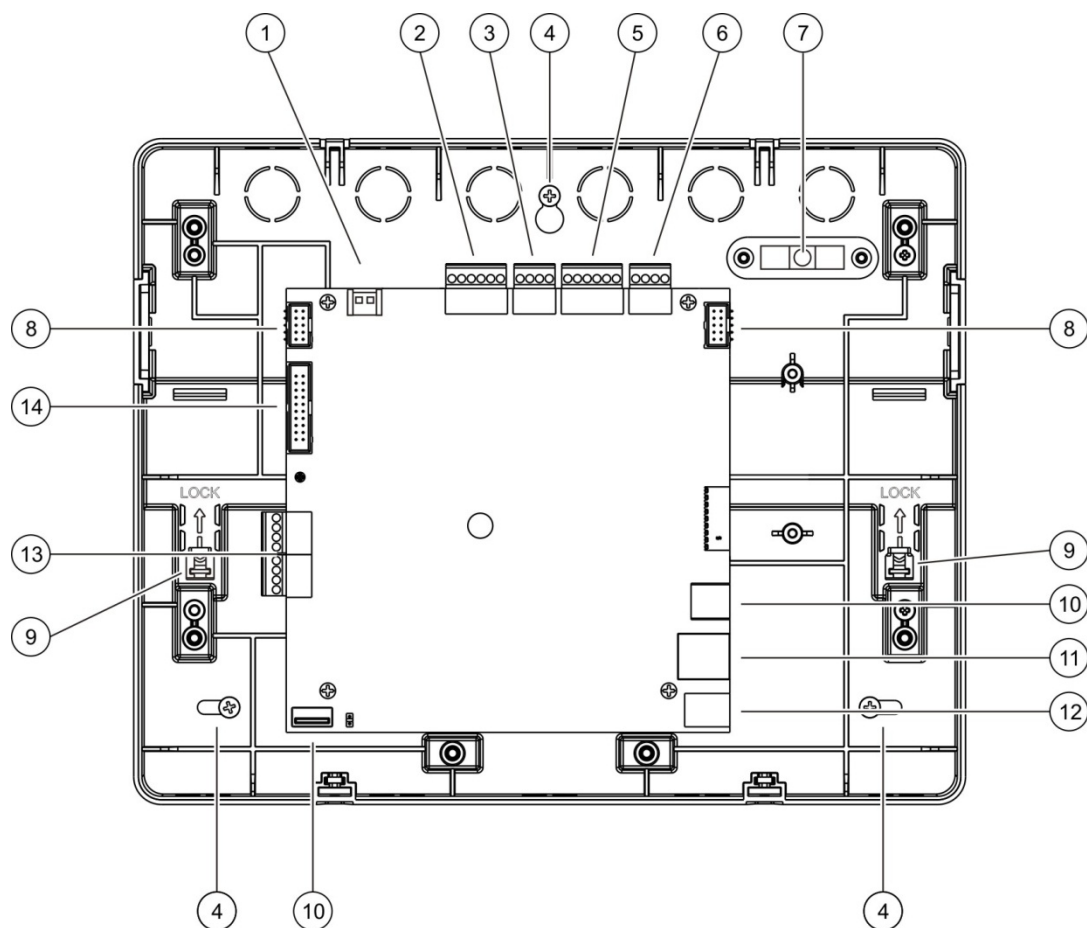
The cabinet assembly is shown below. Remove the cover and the interface to access the PCB.

Figure 1: Cabinet assembly



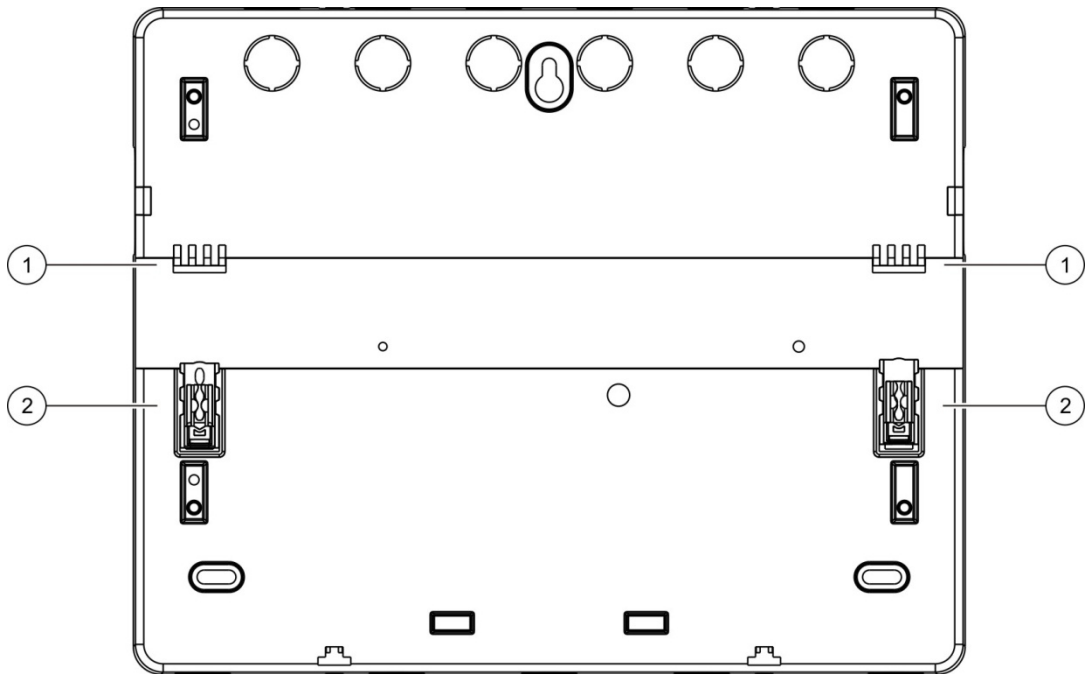
Cabinet and PCB layout

Figure 2: Cabinet and PCB layout



- | | |
|-------------------------------------|---|
| 1. RS-232 connector | 8. Local expansion equipment connectors |
| 2. Network connector (fire network) | 9. DIN rail locking clips |
| 3. Input connectors | 10. USB type A connectors |
| 4. Mounting holes | 11. Ethernet connector |
| 5. Relay connectors | 12. USB type B connector |
| 6. Power in connectors (VIN1, VIN2) | 13. Remote expansion equipment connectors |
| 7. Spirit level | 14. User interface connector |

Figure 3: Cabinet (back view)



- 1. DIN rail hook
- 2. Din rail locking clip

Cabinet installation

Where to install the control panel

Install the control panel in a location that is free from construction dust and debris, and immune to extreme temperature ranges and humidity.

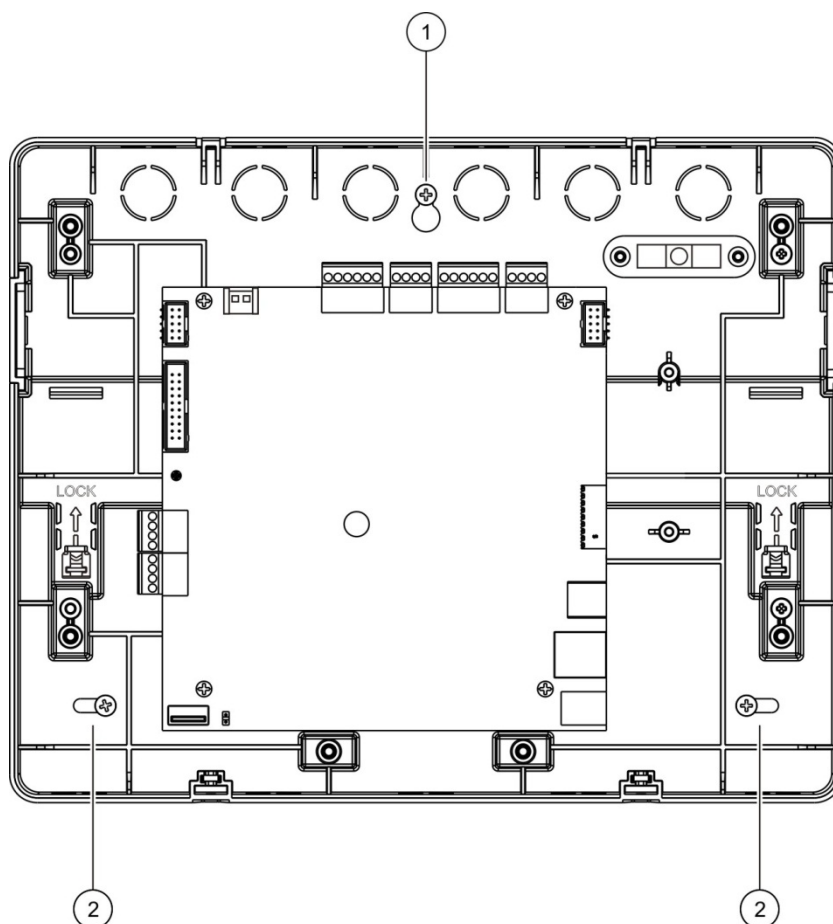
Leave enough floor and wall space to allow the control panel to be installed and serviced without any obstructions.

The cabinet should be mounted so that the user interface is at eye level.

Fixing the cabinet to a wall

Fix the cabinet to a wall using three M4 × 30 screws and three Ø 6 mm wall plugs, as shown in Figure 4 below.

Figure 4: Mounting hole locations



To fix the cabinet to a wall:

1. Hold the cabinet to the wall at the required installation height.
2. Ensure that the cabinet is level using the built-in spirit level and mark drill points on the wall.
3. Drill all required holes and insert a 6 mm wall plug into each.
4. Insert a screw in position (1) and hang the cabinet onto this screw.
5. Insert screws in positions (2) and tighten.
6. Tighten screw in position (1).

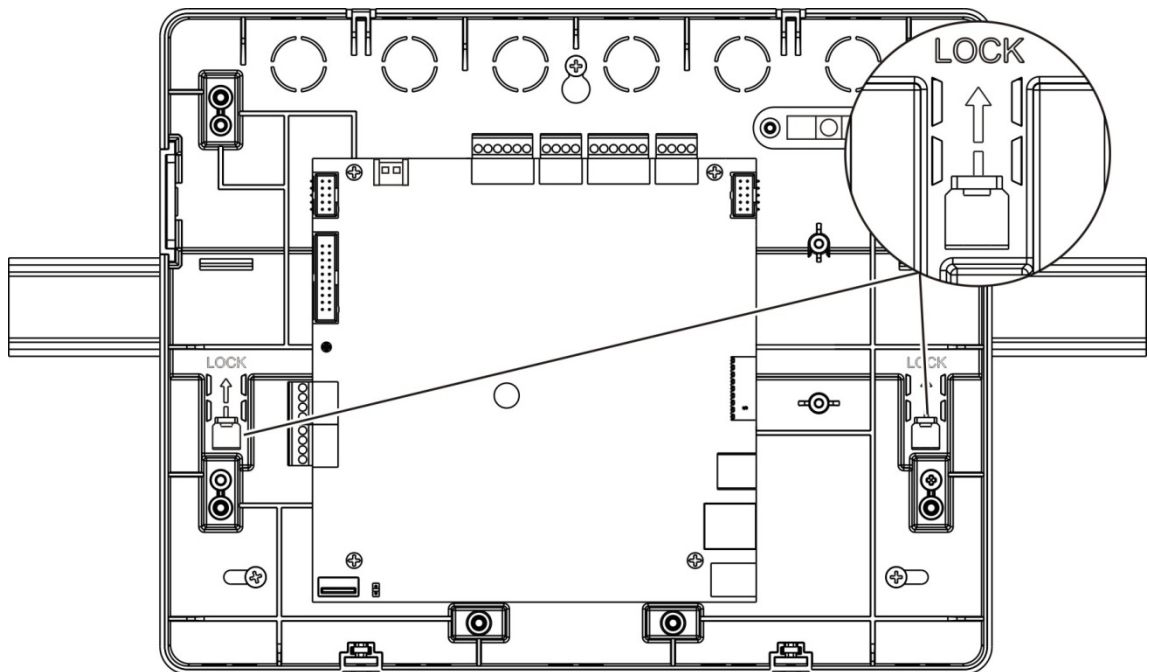
Fixing the cabinet to a DIN rail

The cabinet can also be installed onto a top hat DIN rail (type EN 50022) using the mounting hooks and locking clips provided (see Figure 3 on page 5).

To fix the cabinet to a DIN rail:

1. Hang the cabinet onto the rail using the mounting hooks on the back on the cabinet.
2. Using a screwdriver, push both of the locking clips up to lock the cabinet to the rail, as shown in Figure 5 below.

Figure 5: Fixing the cabinet to a DIN rail

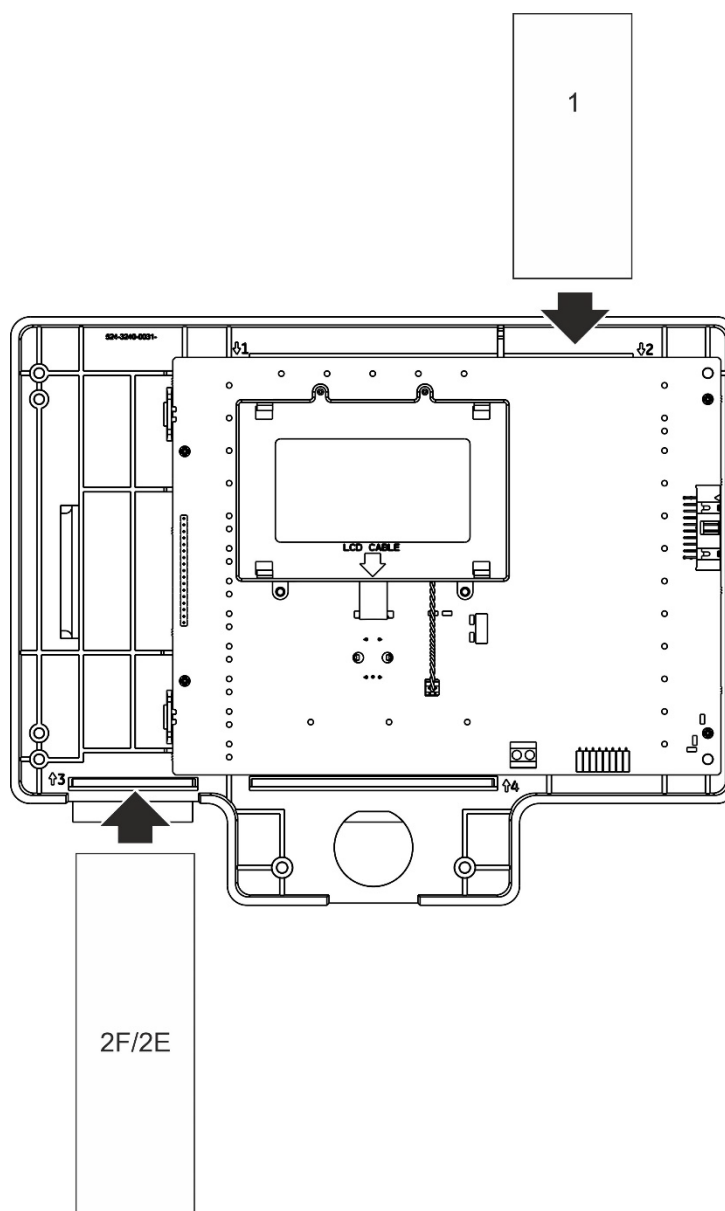


Adding the menu inserts

Add the control panel interface menus as shown below.

Note: Different versions of insert 2 are provided for fire panels (2F) and for evacuation panels (2E), and each is marked with the corresponding control panel product code. Be sure to use the correct version of the insert for your product.

Figure 6: Adding the menu inserts



Menus numbered 1 and 2F/2E are inserted at the location indicated (with the printed area facing the front of the control panel).

For evacuation panels, remember to add descriptions for any output groups assigned to the programmable buttons to insert 2E.

Recommended cables

Recommended cables for optimal system performance are shown in the table below.

Table 2: Recommended cables

Cable	Cable requirements	Maximum cable length
Power cables	2 × 1.5 mm ²	N/A
Fire network cable	Twisted-pair, CAT5 28 to 16 AWG (0.08 - 1.5 mm ²)	1.2 km
Ethernet cable	Unshielded CAT5	30 m [1]
USB cable	Standard USB cable with A-B connectors	3 m
External printer cable	Accessory cable 2010-2-232-KIT [2]	3 m

[1] Connect the control panel to an Ethernet hub installed within 30 m if greater distances are required.

[2] This kit contains a 3 m cable and the 2010-2-232-IB isolation board required for external RS-232 device connections.

Other types of cable may be used subject to site-specific electromagnetic interference (EMI) conditions and installation testing.

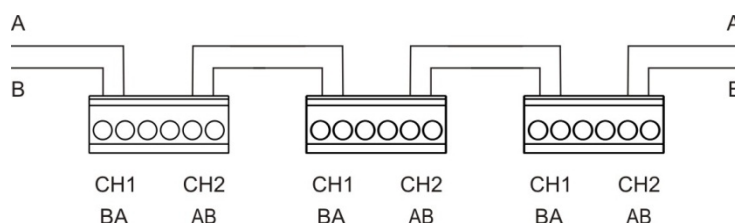
Securing cables

Use 20 mm cable glands to ensure clean and secure connections. All cables should be fed through the cable guides in the cabinet housing to eliminate movement.

Connecting to the fire network

Connect fire network cables to CH1 and CH2, as shown in Figure 7 below.

Figure 7: Connecting to the fire network

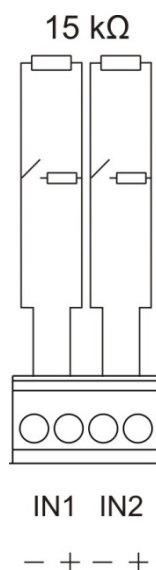


The connector has two ports (BA, AB). Each port is connected (point to point) to the corresponding ports of the network board in another control panel.

Connecting inputs

Connect input switches to IN1 and IN2, as shown in Figure 8 below. For input supervision (open and short circuit), install a 15 k Ω resistor.

Figure 8: Connecting inputs



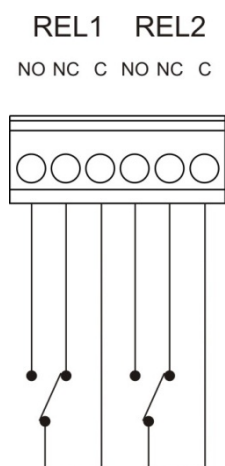
If an input is not used, the 15 k Ω end-of-line resistor must be installed across the unused terminals to avoid an open circuit fault on the input.

See “Technical specifications” on page 15 for input activation characteristics.

Connecting relays

Connect relays to REL1 and REL2, as shown in Figure 9 below.

Figure 9: Connecting relays

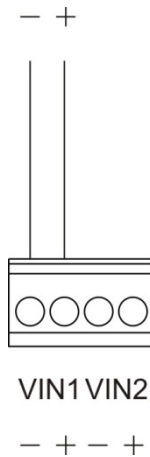


Connecting the external power supply

Connect the external power supply to VIN1, as shown in Figure 10 below.

Note: You can connect an optional secondary external power supply to VIN2. In the event of a failure in the primary power supply, the panel will automatically switch to the secondary power supply.

Figure 10: Connecting the external power supply



Connecting expansion equipment

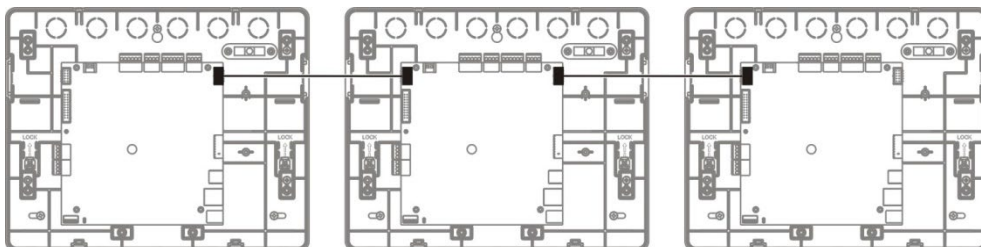
Local and remote expansion equipment may be connected to the control panel.

Connecting local expansion equipment

Connect local expansion equipment as shown in Figure 11 below. Remove the cable knockout on each side of the chassis as required.

Equipment connected to the local expansion connectors must be installed next to the control panel. If greater distances are required, use the remote expansion connectors.

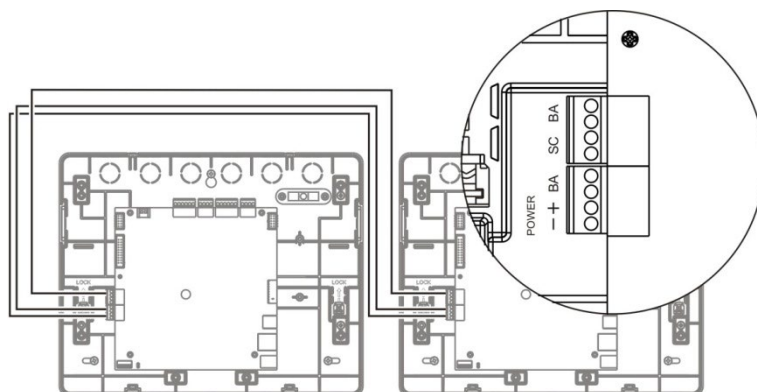
Figure 11: Connecting local expansion equipment



Connecting remote expansion equipment

Connect remote expansion equipment as shown in Figure 12 below. Use the power connector to supply power to remote equipment, if required.

Figure 12: Connecting remote expansion equipment



Connecting an external printer

Connect an external EPSON LX300 printer to RS-232.

Note: This option requires the 2010-2-232-KIT (not supplied) to be installed onto the RS-232 connector (see Figure 2 on page 4). The kit contains a 3 m cable and the 2010-2-232-IB isolation board required for external RS-232 device connections.

Configuration

See your fire panel installation and operation manuals for panel configuration options.

Commissioning

After the compact repeater is installed and configured, the panel must be commissioned.

Check the following:

- That the fire system is designed in accordance with all required regulations and standards
- That the maximum alarm current in your installation does not exceed the maximum current specifications of the power supply
- That all equipment is correctly installed and tested and that all cabling complies with the recommendations outlined in “Recommended cables” on page 9
- That all software functions are correctly programmed
- That all inputs and outputs operate correctly
- That any input/output logic (rules and actions) configuration is correct
- That the fire system is functioning correctly in standby and is not reporting any alarms or faults
- That under the alarm conditions (with all applicable devices activated), the current consumption does not exceed the power supply specifications

Maintenance

To ensure correct functioning of your control panel and fire alarm system, and compliance with all European regulations, the following maintenance checks should be followed.

Caution: Ensure that fire routing (where configured) has been disabled or that the fire brigade has been notified of any planned fire alarm tests.

Quarterly maintenance

Contact your installation or maintenance contractor to carry out a quarterly inspection of the fire alarm system.

This must test at least one device per zone and verify that the control panel responds to all fault and alarm events.

Annual maintenance

Contact your installation or maintenance contractor to carry out an annual inspection of the fire alarm system.

This must test all system devices and verify that the control panel responds to all fault and alarm events. All electrical connections must be visually inspected to make sure that they are securely fastened, that they have not been damaged, and that they are appropriately protected.

Cleaning

Keep the outside and inside of the control panel clean. Carry out periodic cleaning using a damp cloth for the outside. Do not use products containing solvents to clean the unit. Do not clean the inside of the cabinet with liquid products.

Technical specifications

Power supply specifications

Supply voltage (VIN1, VIN2)	
Nominal	24 VDC
Minimum	20 VDC
Maximum	30 VDC
Typical current consumption (with no devices connected)	190 mA at 24 VDC

LCD specifications

Display type	240 x 128 dot graphic LCD (monochromatic)
LCD dimensions (L x W)	83 x 44 mm (active area)
Backlight type	LED style
Backlight colour	White

Communication port specifications

Ethernet	Ethernet 10/100BaseT port (10 Mbps) Note: For increased security, we recommend against using Ethernet for remote connection to the control panel via the Internet.
TCP/IP	IPv4
USB host port	USB 2.0, type A connector
USB device port	USB 2.0, type B connector

Fire network specifications

Maximum distance between two control panels	1.2 km
Maximum default capacity	32 loops and 32 nodes
Communication protocol	Proprietary protocol based on RS-485

Input and output specifications

Configurable inputs

Number of inputs	2 supervised inputs, end-of-line resistor 15 k Ω , 1/4 W
Active value	$60.2 \Omega \leq \text{active value} \leq 8 \text{ k}\Omega$
Normal value	$10 \text{ k}\Omega \leq \text{value} \leq 20.2 \text{ k}\Omega$
Short circuit values	$\leq 60.2 \Omega$
High-impedance fault value	$8 \text{ k}\Omega < \text{value} < 10 \text{ k}\Omega$
Open circuit values	$\geq 20.2 \text{ k}\Omega$
Configurable options	For configuraton options, see your fire panel installation manual.

Relay outputs

Number of relay outputs	2
Relay output specification	Potential free, NO/NC/C
Maximum output current	2 A / 30 VDC

Remote equipment outputs

Output voltage [1]	
Minimum	Supply voltage (VIN1, VIN2) – 1.5 V (for example, 22.5 V at 24 V)
Maximum	Supply voltage (VIN1, VIN2) – 0.6 V (for example, 23.4 V at 24 V)
Maximum output current	1A

[1] For all local and remote expansion equipment outputs combined.

Mechanical and environmental specifications

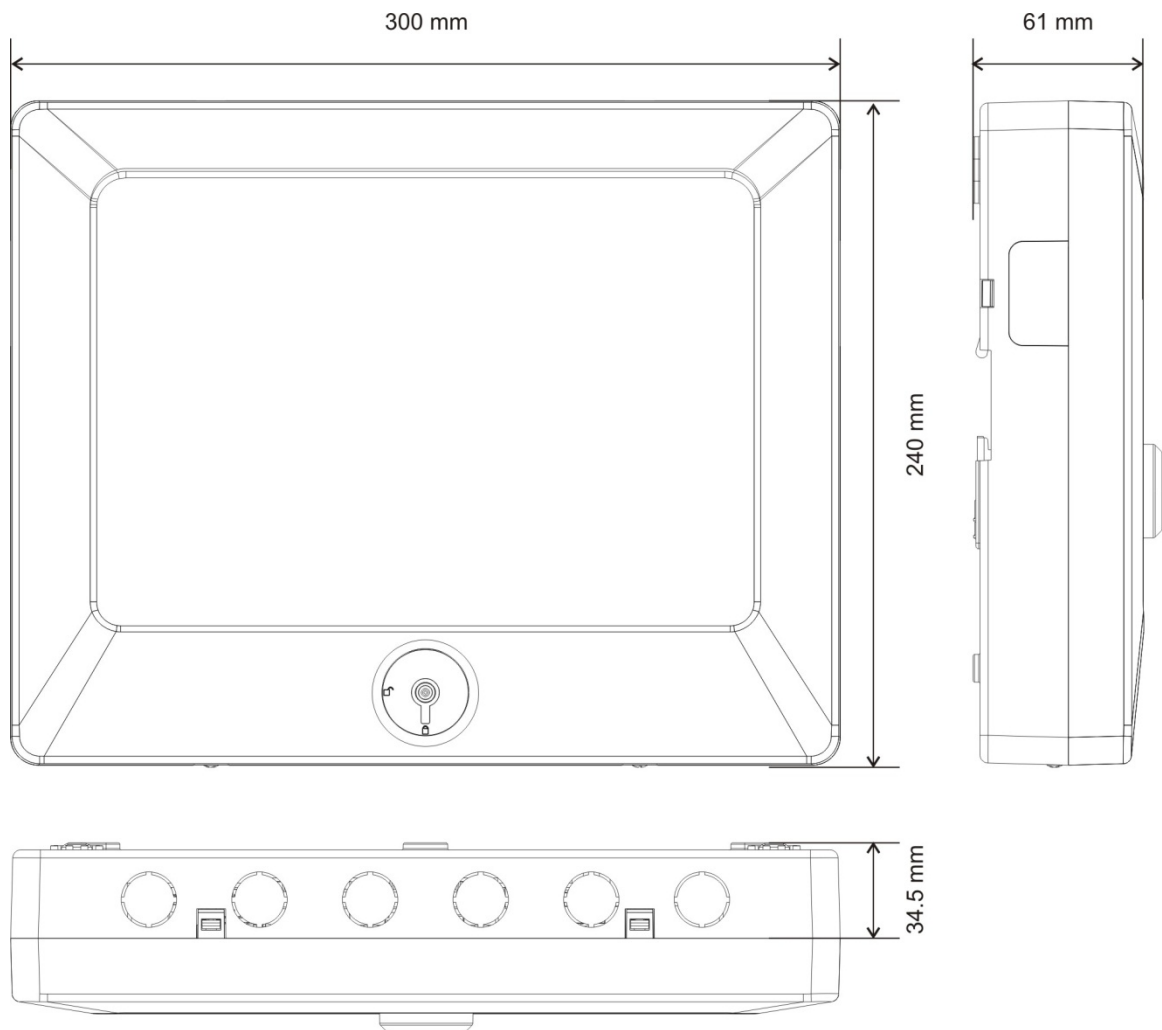
Mechanical

Cabinet dimensions (L x W x H)	300 x 61 x 240 mm
Weight	2 kg
Number of cable knockouts	6 x Ø 20 mm at top of cabinet 4 x Ø 20 mm at bottom of cabinet 6 x Ø 20 mm at back of cabinet
IP rating	IP30 (DIN rail mounting only)

Environmental

Operating temperature	-5 to +40°C
Storage temperature	-20 to +50°C
Relative humidity	10 to 95% noncondensing

Figure 13: Cabinet dimensions



Regulatory information

European standards for electrical safety and electromagnetic compatibility

These control panels have been designed in accordance with the following European standards for electromagnetic compatibility:

- EN 50130-4
- EN 61000-6-3
- EN 61000-3-2
- EN 61000-3-3

