FX 3NET FIRE ALARM SYSTEM

Installation and commissioning manual

Read this manual carefully before installation and commissioning!
Installation and commissioning must be performed according to this manual.
This Installation and Commissioning Manual is to be kept together with the control panel.

Contents

1. About this document

For non-experienced installers this document provides sufficient information to install the FX_ panel (FX, FXL; FXM, FXS) and to commission the whole system successfully.

Experienced installers may select to connect all loops and IO connections at once without testing the connections in between.

However, it is strongly recommended always to do the preliminary checks and an initial test run before any cables (except the necessary main supply) are connected to the panel.

This document uses the following acronyms for the various units (component boards) in the panel:

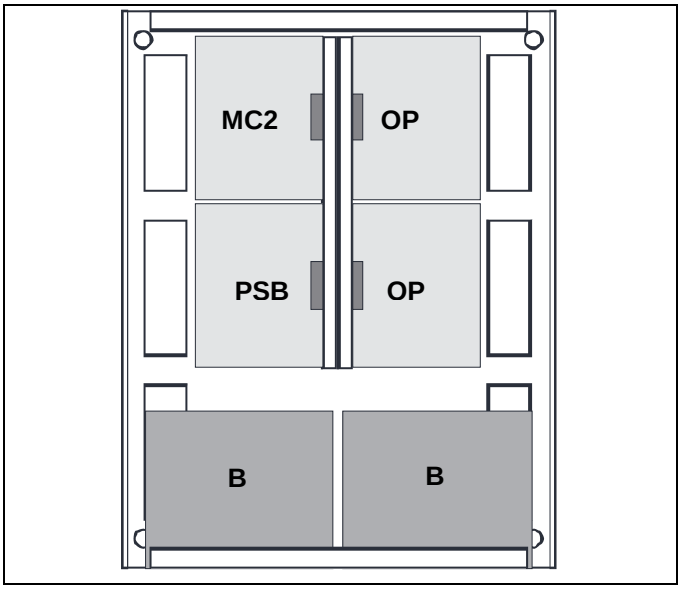
1 MC2 – Master Controller
2 PS – Power Supply
3 UI2 – User Interface
4 SLC – Loop Controller
5 CLC – Conventional Line Controller
6 ALC - Loop Controller
7 IOC - IO Controller
8 OCA – Output Controller
9 LB2-32 – Panel LED Board 2: 32 LED indications
10 LB80 – Zone LED Board: 80 LED indications
11 REPX and REPX-OB protocol repeater
12 MCOX and MCOX-OB logical controller
13 ZLPX and ZLOX-IC Zone Led control unit
14 CODI – Communication adapter
15 FMPX – Fireman panel
16 DAPX – Delay alarm panel

NOTE: If SLC loop controller is configured to LC protocol, please read document.O1771GB0

2. Typical placement of the units in a panel

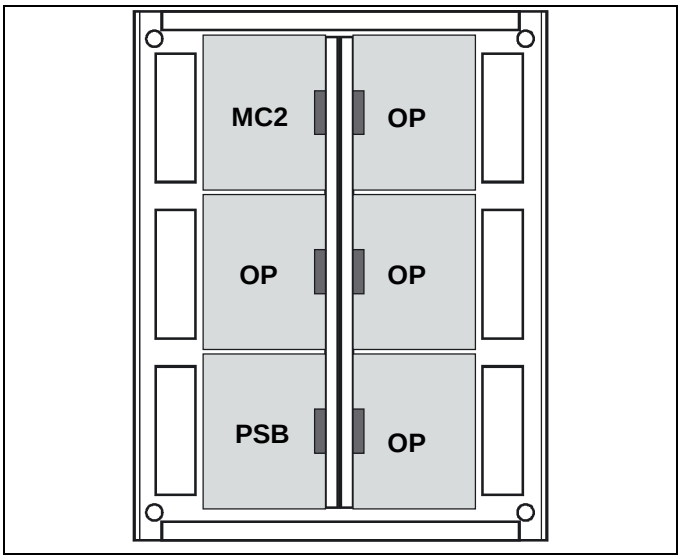
FX cabinet

The FX cabinet has space for the following
- 1 x UI2
- 1 x MC2
- 1 x PSB (4.0 A)
- 2 x Battery (B) 12 V / 17 Ah
- Option board (OP) total 5 pcs:
  SLC/ALC/CLC, max. 4 pcs
  IOC, max. 4 pcs
  OCA, max. 4 pcs
  MCOX-OB, max. 1 pcs
  REPX-OB, max. 1 pcs
  ZLPX-IC, max. 1 pcs



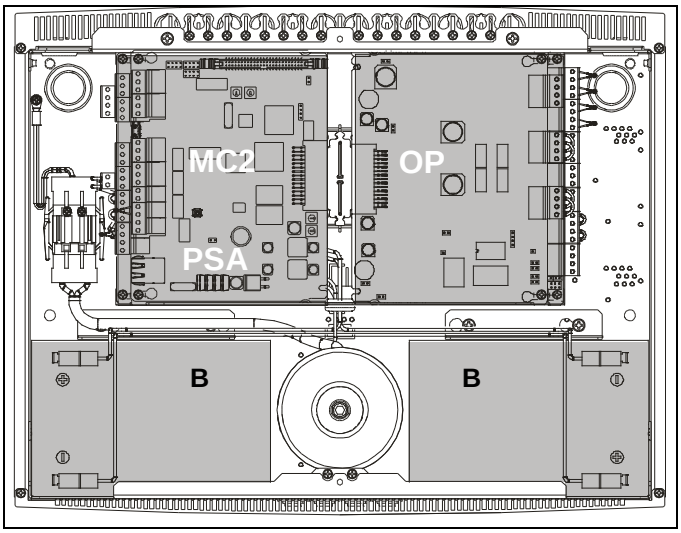
FXL cabinet

The FXL cabinet has space for the following
- 1 x UI2
- 1 x MC2
- 1 x PSB (4.0 A)
- Option board (OP) total 9 pcs:
  SLC/ALC/CLC, max. 4 pcs
  IOC, max. 4 pcs
  OCA, max. 4 pcs
  MCOX-OB, max. 1 pcs
  REPX-OB, max. 1 pcs
  ZLPX-IC, max. 1 pcs



FXM cabinet

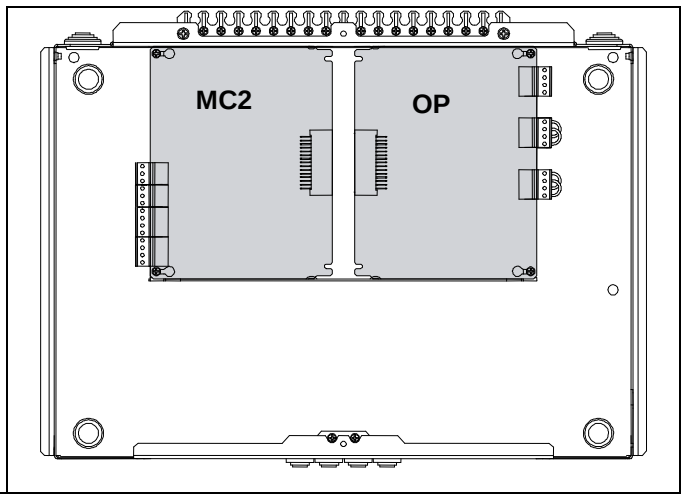
The FX battery cabinet has space for the following
- 1 x UI2
- 1 x MC2
- 1 x PSA (2.2 A)
- 2 x Battery (B) 12 V / 12 Ah
- Option board (OP) total 2 pcs:
  SLC/ALC/CLC, max. 2 pcs
  IOC, max. 2 pcs
  OCA, max. 2 pcs
  MCOX-OB, max. 1 pcs
  REPX-OB, max. 1 pcs
  ZLPX-IC, max. 1 pcs



FXS cabinet

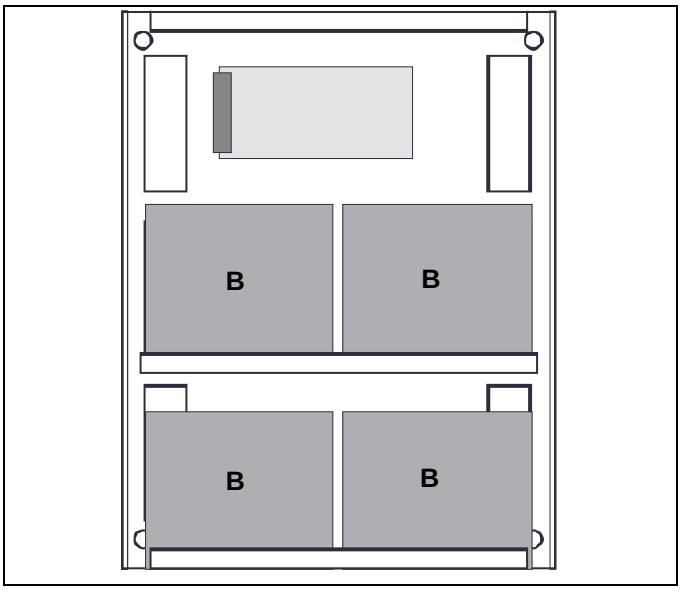
The FXS cabinet has space for the following
- 1 x UI2
- 1 x MC2
- Option board (OP) total 1 pcs:
  SLC/ALC/CLC, max. 1 pcs
  IOC, max. 1 pcs
  OCA, max. 1 pcs
  MCOX-OB, max. 1 pcs
  REPX-OB, max. 1 pcs
  ZLPX-IC, max. 1 pcs

Note! Power supply feed has to be brought from an FX, FXL or FXM panel.



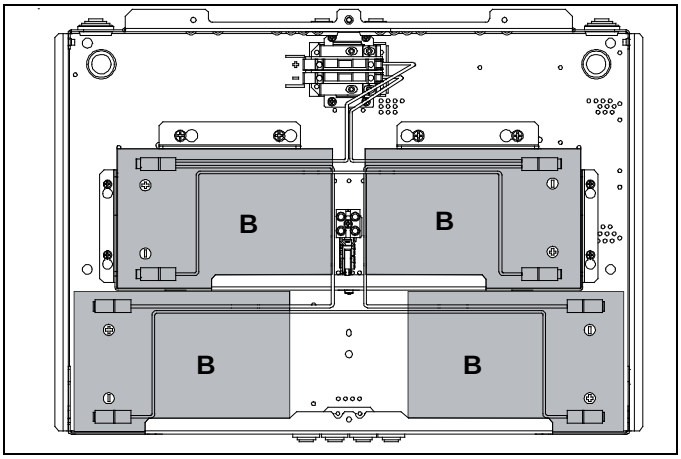
AX/FX/IX-BAT battery cabinet

The FX battery cabinet has space for the following
- 4 x battery 12 V / 17 Ah
- Fire alarm and Fault warning router

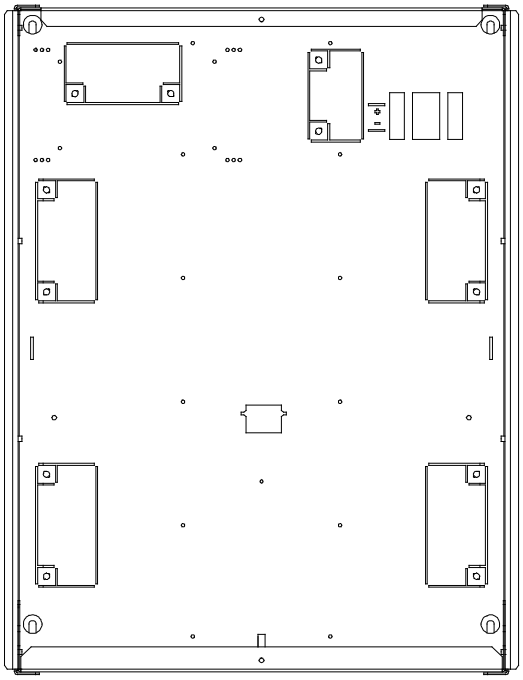


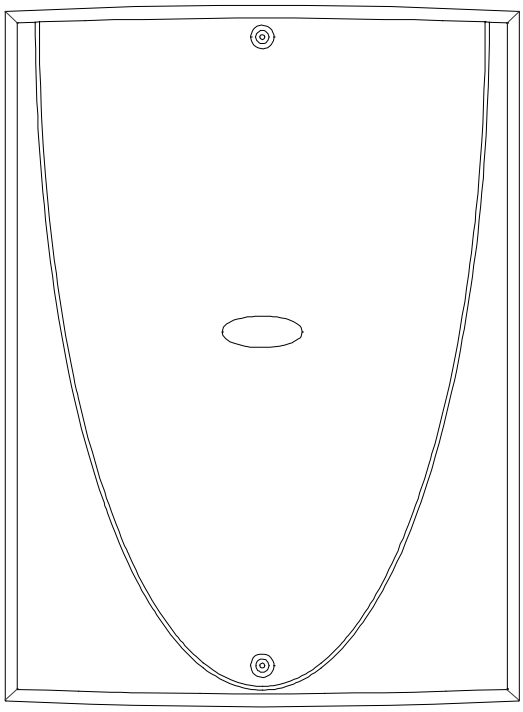
FXM-BAT battery cabinet

The FXM battery cabinet has space for the following
- 4 x battery 12 V / 12 Ah

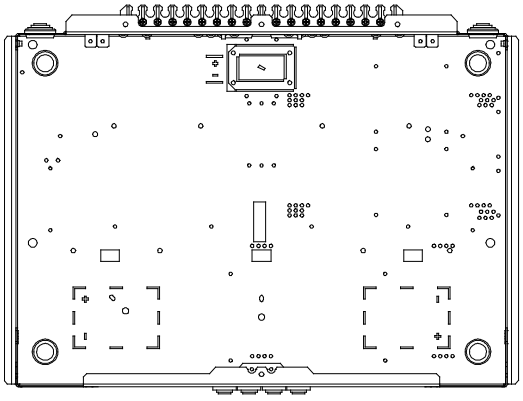


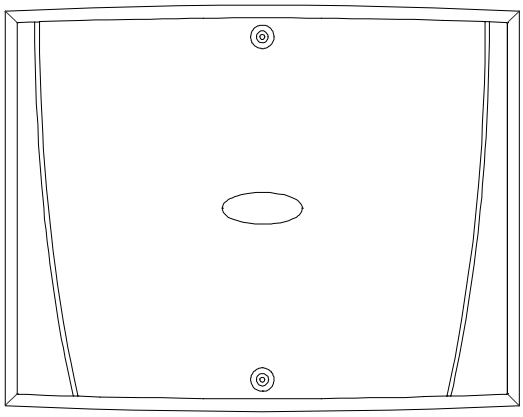
FX-CAB mounting cabinet



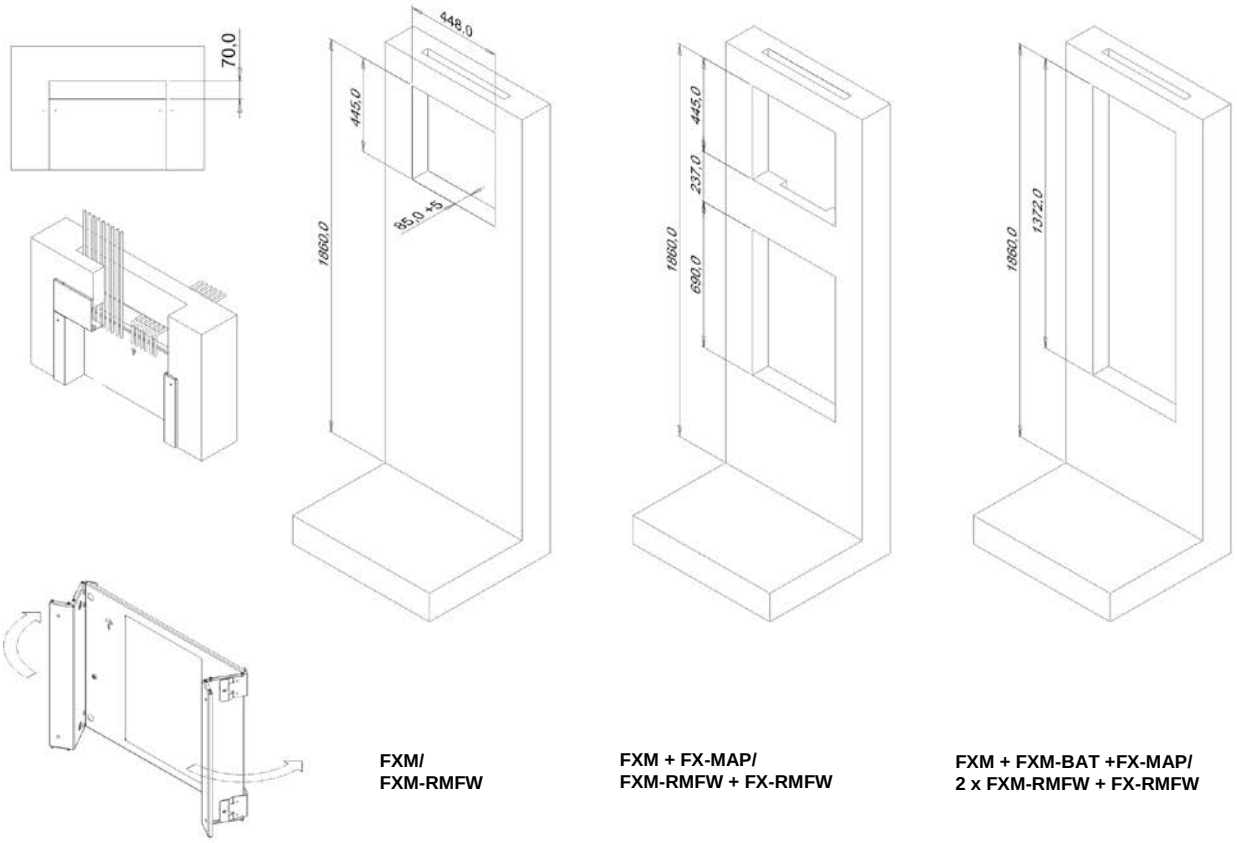


FXM-CAB mounting cabinet





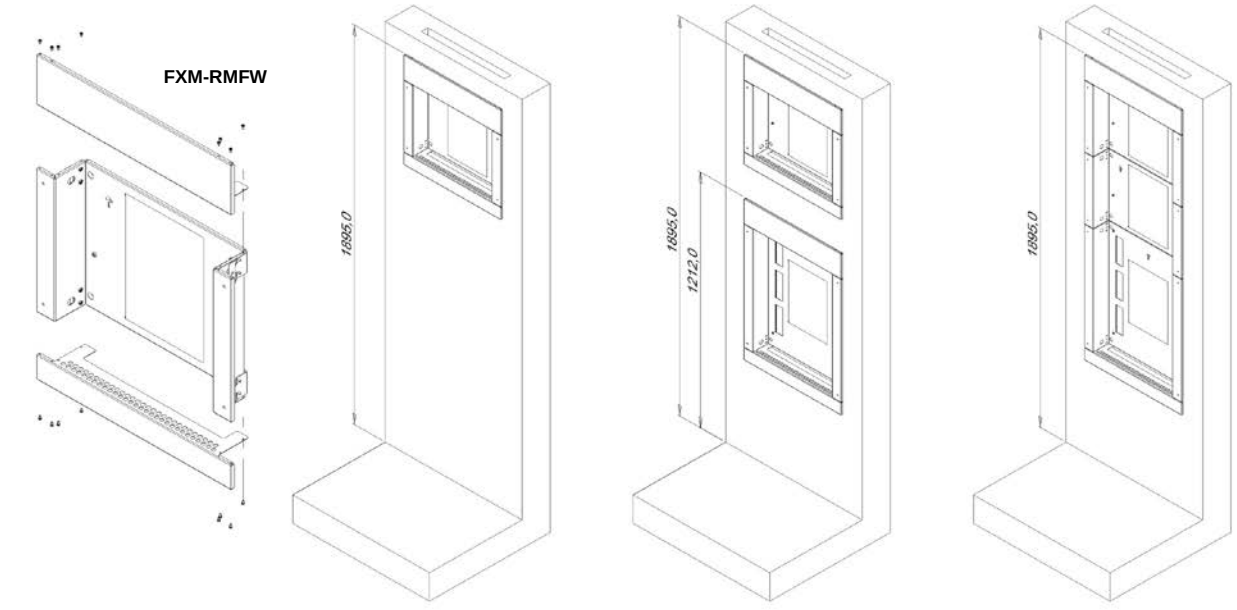
FXM-RMFW mounting frame



FXM/
FXM-RMFW

FXM + FX-MAP/
FXM-RMFW + FX-RMFW

FXM + FXM-BAT +FX-MAP/
2 x FXM-RMFW + FX-RMFW



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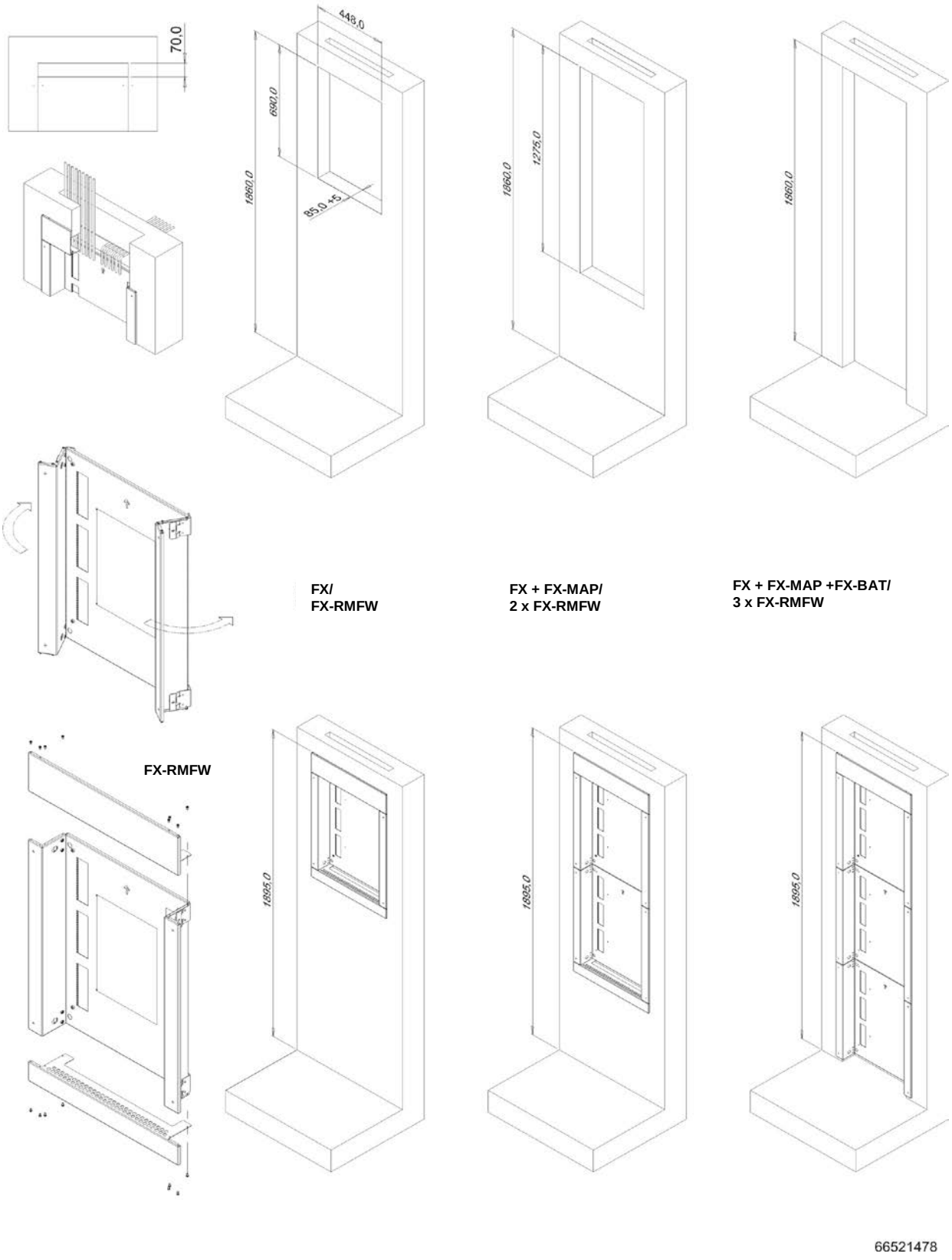
FX-RMFW mounting frame



3. Installation, FX and FXL - control panels

The mounting surface must be flat and it must bear the weight of the control panel and the chart file cabinet.

The weight of the control panel excl. batteries is 11 kg and incl. batteries (2 x 17 Ah) 23 kg. The weight of the chart file cabinet is 9 kg.

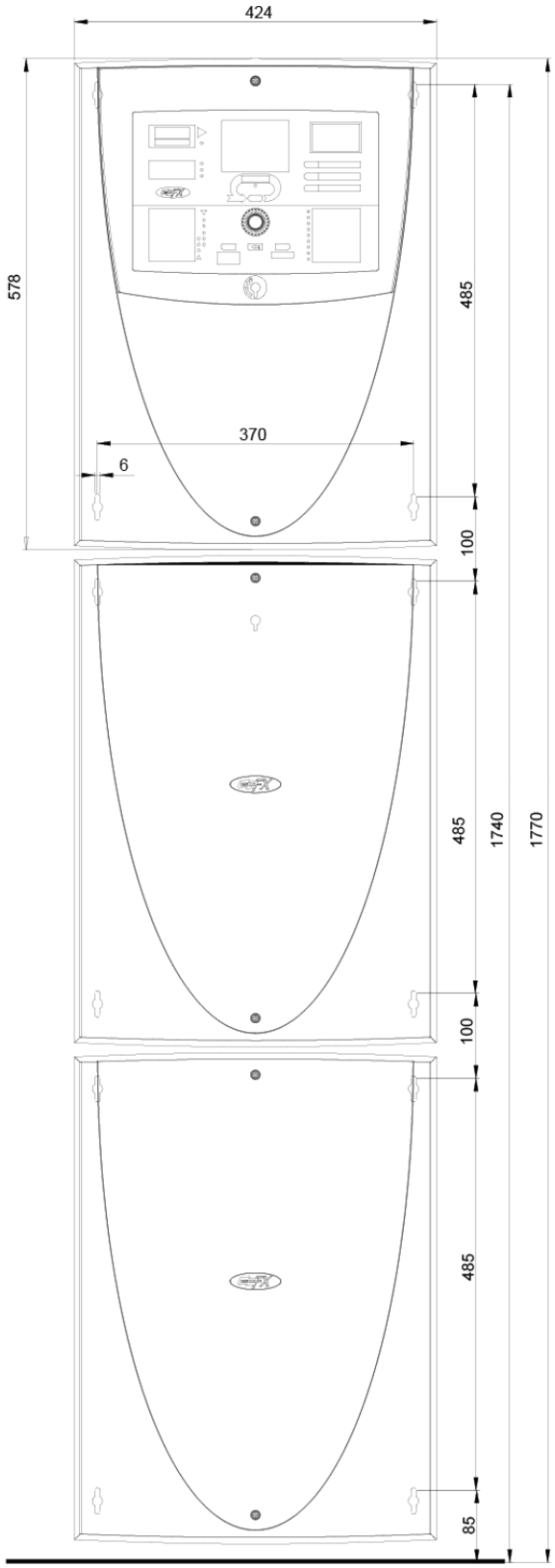
The mounting is to be made straight to the wall surface, without any distance bushings or similar, to ensure ingress protection class of IP30.

The weight of the battery cabinet excl. batteries is 7 kg and incl. batteries (4 x 17 Ah) 31 kg.

FX control panel

Chart cabinet

Battery cabinet



4. Installation, FXM - control panel

The mounting surface must be flat and it must bear the weight of the control panel and the chart file cabinet.

The weight of the control panel is exl. batteries is 8 kg and incl. batteries 20 kg.

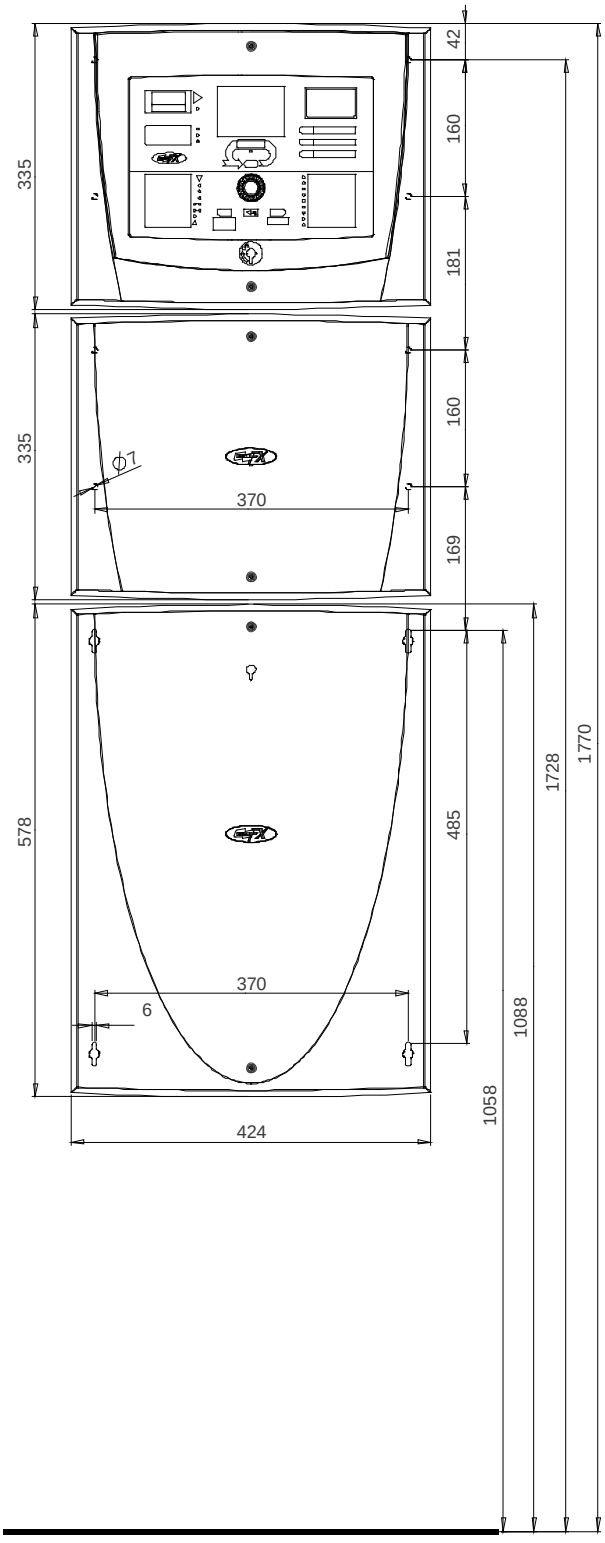
The weight of the battery cabinet is exl. batteries is 4 kg and incl. batteries 28 kg. The weight of the chart file cabinet is 9 kg.

The mounting is to be made straight to the wall surface, without any distance bushings or similar, to ensure ingress protection class of IP30.

FXM control panel

Battery cabinet

Chart cabinet



5. Installation, FXS - control panel

The mounting surface must be flat and it must bear the weight of the control panel and the chart file cabinet.

The weight of the control panel is 4.4 kg.

The weight of the chart file cabinet is 9 kg.

The mounting is to be made straight to the wall surface, without any distance bushings or similar, to ensure ingress protection class of IP30.

FXS control panel

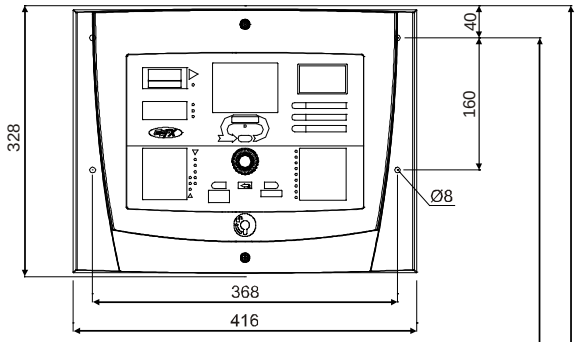
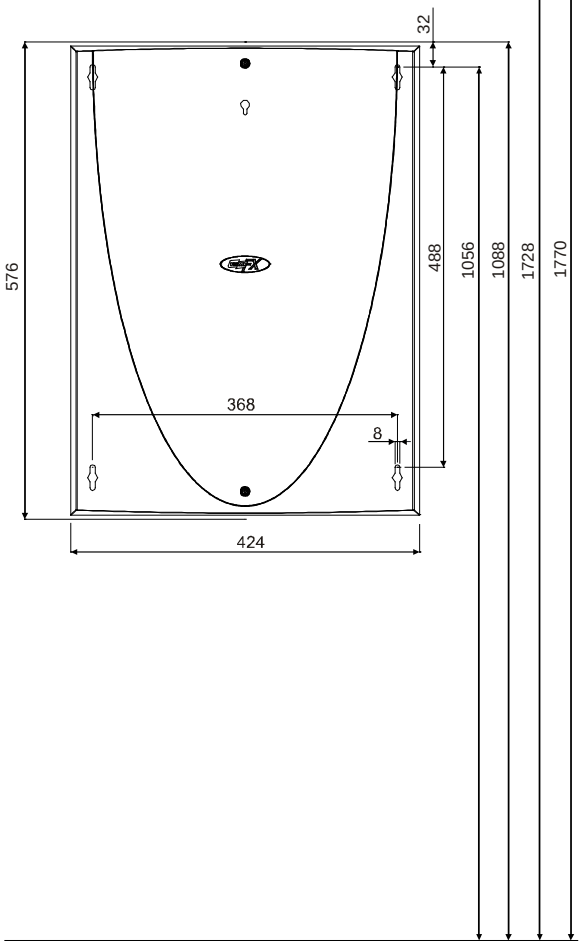
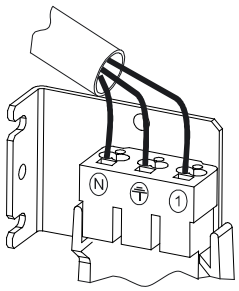


Chart cabinet

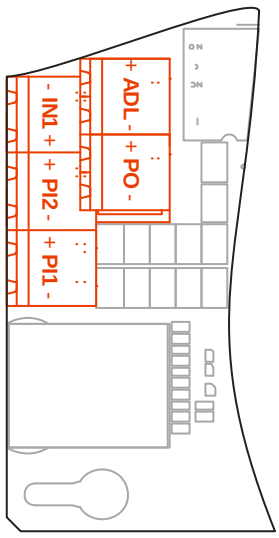


6. Connecting main power supply

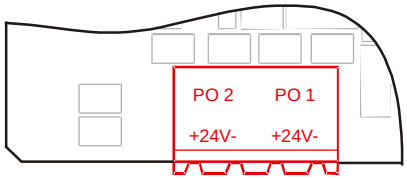
Connect the mains supply (230 VAC)
There must be a separate fuse (10 A) for the control panel power supply.
Cable 3 x 1.5 mm².



Note!
FXS has not any built-in power supply. The power is fed to the FXS panel from FX or FXM power supply unit using 2 power lines. The power supply PI1 and PI2 inputs in FXS are on the MC2 board. Both must be connected and the “PI in use”- jumper on MC2 must be set.



FXS panel: MC2 board



FX or FXM panel:
PSA or PSB board

7. Commissioning

7.1 Necessary devices and documents

Devices

- A universal measuring instrument (voltage, current, resistance, diode).
- A PC and the configuration tool, if the configuration is done when commissioning.

Documents

- This Installation and Commissioning manual.
- Operation manual.
- Planning and installation documents for the project.
- Client/project configuration data if the configuration is done when commissioning.

WARNING!
Do not use an isolation resistance meter for measuring resistance!

Note!
The system does not require configuration in order to function. On the other hand, client specific features may require configuration.

7.2 Order of commissioning

1. Check that the installation has been done correctly according to the plans.
2. Make preliminary checks on the control panel.
3. Test run the control panel.
4. Connect detector loops.
5. Connect monitored output lines.
6. Make site specific settings.
7. Connect the outputs.
8. Connect the inputs.
9. Connect the serial communication ports.
10. Configure the system if required according to the plan or site specific features.
11. Connect the router to the defined control panel.

Note!
For SLC only (System Sensor devices).
If the system is not configured and a loop has the same addresses for both detectors and I/O-modules, the detectors will be assigned addresses from the low range (01…159) and the I/O-modules from the high range (201 and 359). Usually it is easier to start up loops, if the control panel is not configured.

Note!
On ALCA / ALCB - loop (Intellia devices) all detectors and modules must have individual addresses from 1 to 126.

8. Preliminary checks

8.1 General

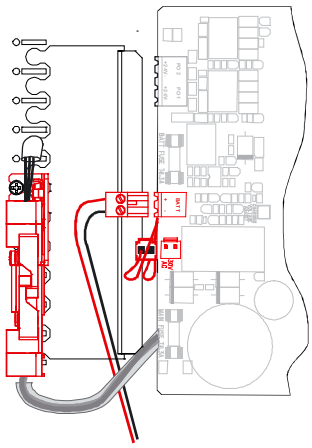
The aim of the preliminary checks is to assure that the settings are correct and that the control panel has not suffered any defects during transportation or installation. This is obviously most easy to do when no external cables are connected, except for the necessary power supply connection.

8.2 Preliminary checks

1. Check that all power is disconnected from the control panel.
   The cable from the transformer to the power supply component board is disconnected from the terminal 30VAC on the component board.
   The battery cable is disconnected from the battery terminal BATT on the component board.
   FXS: PI1 and PI2 are disconnected.

2. Check that the mains cable is connected to the mains terminal.

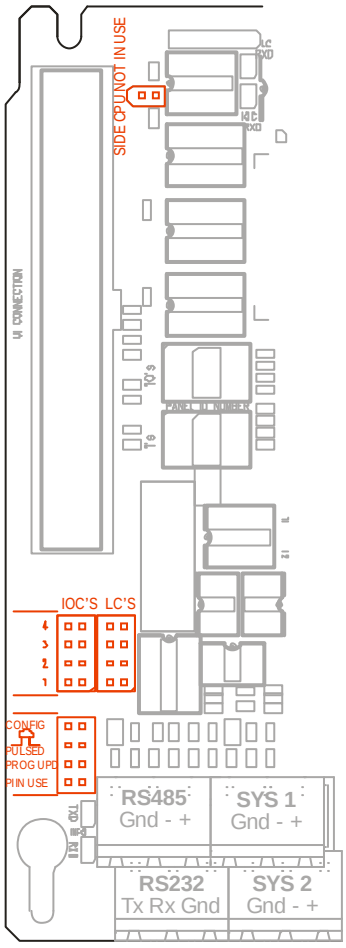
3. Check that the separate fuse reserved for the control panel is in its place.



MC2 jumper settings

'**Side CPU not in use'** jumper should **not** be in place in FX NET systems in seeing panels provided with a fire routing equipment. In case of a system fault the assistant processor takes care of the system communication. If there is a fire alarm in one of the system panels the assistant processor controls:

- the fire routing output CO1 of the MC2 unit (independent of the configuration of the CO1)
- the fire alarm device output of the MC2 unit (independent of the configuration of the output)
- the general fire alarm LED
- the panel specific fire alarm LED (LB2-32)
- the buzzer of the panel



1. Check the following settings:
   The "CONF" jumper is not in place.
   The "PULSED" jumper is not in place (for continuous alarm device signal) or in place (for pulsing alarm device signal).
   The "PROG" jumper is not in place.
   The "PI IN USE" jumper is not in place.
   FXS: PI IN USE in place!
   The "IOC'S" jumper is correctly set for the number of IOC's and OCA's in the panel.
   The "LC'S" jumper is correctly set for the number of SLC's, ALC's and CLC's in the panel.

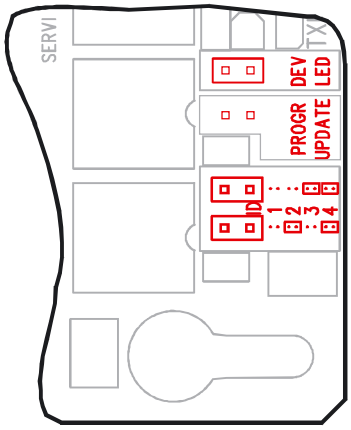
2. Check also that there is a 4.7 kΩ end-of-line resistor in the terminals for the monitored output line.

3. Check also that there is a 4.7 kΩ end-of-line resistor in the terminals for the monitored input lines.

SLC jumper settings

1. Check the following settings:
   "Prog Update" jumper is not in place.
   "Dev LED" jumper is in place if you want the detector leds to flash when communicating with the panel or not in place otherwise.
   Set the right ID. The range is 1…4/panel and is common to SLC, ALC and CLC units.

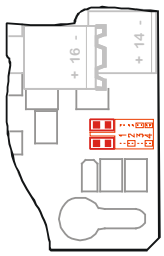
2. Check also that there is a wire between A+ and B+ as well as between A- and B- in the terminals for both loops.



CLC jumper settings

1. Check the following settings:
   Set the right ID. The range is 1…4/panel and is common to SLC ALC and CLC units.

   Check also that all conventional line terminals have their EOL resistors connected to the terminals.

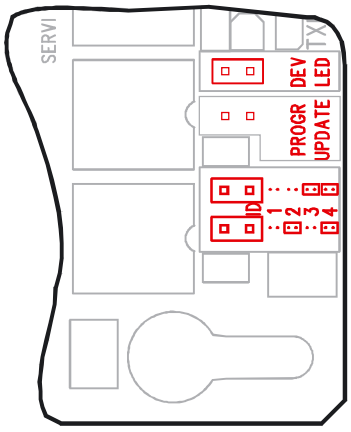


ALC jumper settings

1. Check the following settings:
   "Prog Update" jumper is not in place.
   "Dev LED" jumper is in place if you want the detector leds to flash when communicating with the panel or not in place otherwise.

   Set the right ID. The range is 1…4/panel and is common to SLC, ALC and CLC units.

2. Check also that there is a wire between A+ and B+ as well as between A- and B- in the terminals for both loops.

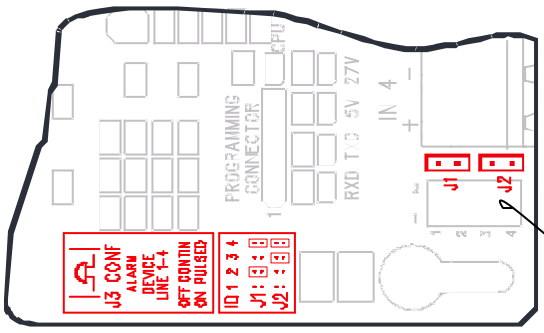


IOC jumper settings

1. Check the following settings:
   Set the right ID. The range is 1…4/FX and FXL panel. The ID must be different for each IOC and OCA.

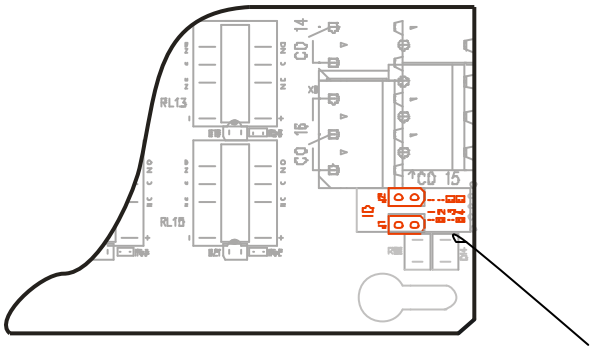
   The monitored output line configuration jumpers are set for desired operation (pulsed or continuous signal).

   Check also that there are 4.7kΩ end-of-line resistors in the terminals for each monitored output line.



OCA jumper settings

1. Check the following settings:
   Set the right ID. The range is 1…4/FX and FXL panel. The ID must be different for each IOC and OCA.



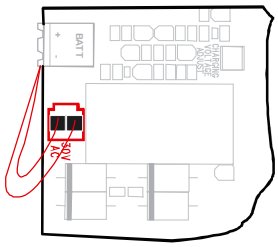
9. Control panel test run: Note differences with the FXS!

9.1 Mains connection

Note! The panel is in access level 2 when the cover is removed.

1. Switch the panel on by connecting the cable between the transformer and the terminal 30VAC on the power supply component board.

   FXS: Connect power supply cables “P1” and “P2” to the MC2 PI1 and PI2 terminals.



The backlight of the display flashes for about 20 s.

The display will show the text:
The text “Panel starting up” will disappear from the display when all addresses are scanned for presence.

13:36	**14.09.2007**
FX	
Fire Panel	
Activate menu by pressing wheel	
Panel starting up	

After approximately one minute from start the panel will indicate a fault alarm due to the missing battery:
Note: FXS does not give any fault alarm, because there in FXS is not built-in power supply and battery.

Buzzer beeps continuously.
FAULT-led blinks.

LCD display shows:

FAULT	**1/1**
PS battery fault	
Panel starting up	

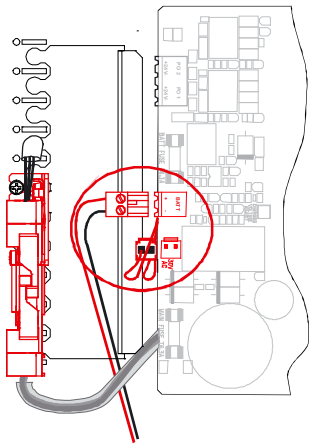
2. Press the “**BUZZER SILENCE**”- button.

The audible signal is silenced.
The “**FAULT**”- led becomes fixed.
The LCD remains the same.

The panel will also indicate a fault alarm for missing. configuration data if the panel is not configured.
This fault alarm can be reset and will not appear again.

9.2 Battery connection

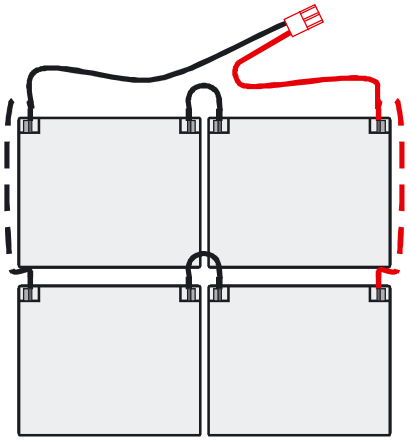
1. Install the batteries in the cabinet. Check that the battery cable is disconnected from the battery terminal BATT.



2. Check battery polarity from the markings on the battery.

3. Connect the battery cables to the poles as follows:
   The batteries are 12 V batteries. If two batteries are used, they are connected in series.
   If four batteries are used, two series connected pairs are connected in parallel (Voltage is 24 VDC).

4. Connect the battery cable to the battery terminal BATT on the PS component board.



WARNING!
Connecting the batteries in the wrong way may cause a short circuit in the batteries, which may lead to an explosion, a strong electric arc or fire in the battery cables.

5. Reset the battery fault indication in the control panel by pressing the "**RESET**"- button until the pulsed audible signal stops.

The "FAULT"- led goes out.
The display shows the text:

13:36	**14.09.2007**
FX **Fire Panel**	
Activate menu by pressing wheel	
Panel starting up	

10. Cable handling and preliminary measurements

WARNING!
Check by measuring that there is no power in the cables.

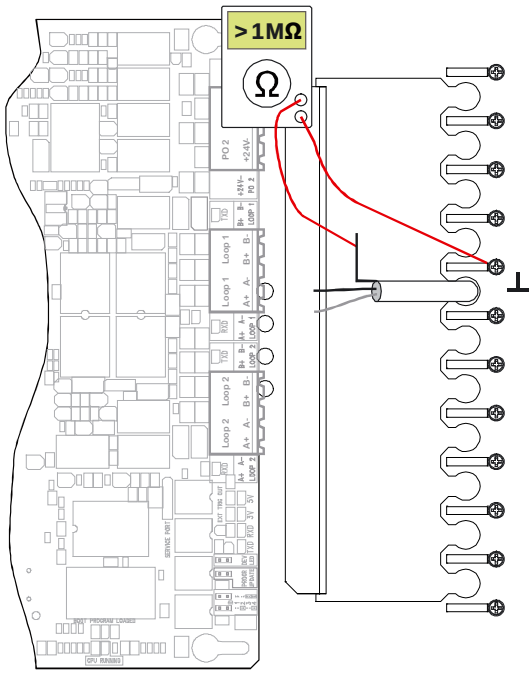
10.1 Cable handling and measurements

At every stage of commissioning, power must be disconnected from the control panel before the cables are installed.

First disconnect the battery then the mains.

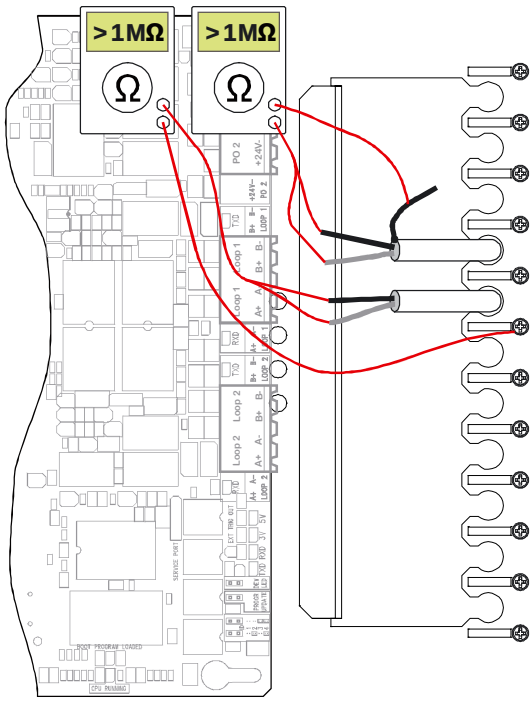
1. Peel off the cable plastic and protective shields. Be careful not to let peeling remains drop onto the component board or between the back wall of the cabinet and the component board.
2. Make sure that the cables have been marked and that the markings can be seen after the peeling.
3. If the cables used are shielded, measure, before connecting the shield that the resistance between the shield and the cabinet ground exceeds 1 MΩ. If the resistance is smaller, the cable shield is in contact with the construction of the building:
   - The outer sleeve of the cable has been damaged.
   - The protective shield is in connection to the construction of the building in a detector socket.

   Repair the fault. Then connect the cable shield to the cabinet ground.



4. Measure for each cable: the resistance between the cable shield and the wires. The resistance must exceed 1 MΩ. If the value is smaller, the earth leak must be located and repaired.

5. If the cables used are not shielded, measure the resistance between the wires and cabinet ground. It must also exceed 1 MΩ.



10.2 Cable table

Cable connection	Conductors x area	Max. length	Comments
Addressable detection circuit cables, **SLC**- loop	2 x 0.5 mm^2 + shield 2 x 1.0 mm^2 + shield	810 m (60 Ω) 1600 m (60 Ω)	The cable resistance of the loop is max. 60 Ω and the capacitance max. 180 nF between conductor and shield, 360 nF between conductors. Max. voltage drop is 6 V.
Addressable detection circuit cables, **ALC**- loop	2 x 0.5 mm^2 + shield 2 x 1.0 mm^2 + shield	810 m (60 Ω) 1500 m (60 Ω)	The cable resistance of the loop is max. 60 Ω and the capacitance max. 180 nF between conductor and shield, 360nF between conductors. Max. voltage drop is 9 V.
Conventional detection circuit cables, **CLC**- line	2 x 0.5 mm^2 + shield 2 x 1.0 mm^2 + shield	1200 m (100 Ω) 2400 m (100 Ω)	The cable resistance of the loop is max. 50Ω, if an Exi barrier is connected to the loop, otherwise max 100Ω. The max. allowed capacitance of the cable is 0.5µF.
Sub-detection circuits of conventional zone modules, **SLC**- loop	Sub-detection circuits of conventional zone modules	1200 m (100 Ω)	Conventional zone module EM210E-CZ, EM210E-CZR, M512ME and conventional detectors or conventional manual call points.
Sub-detection circuits of conventional zone modules, **ALC**- loop	Sub-detection circuits of conventional zone modules	600m (50 Ω)	Conventional zone module EMI-310-CZ / EMI410-CZ and conventional detectors or conventional manual call points.
Power supply to conventional zone modules	2 x 0.5 mm^2 + shield 2 x 1.0 mm^2 + shield	625 m (50 Ω) 1200 m (50 Ω)	Cable resistance max. 50 Ω.
Conventional Exi-area sub-loop unit	2 x 0.5 mm^2 + shield 2 x 1.0 mm^2 + shield	625 m (50 Ω) 1200 m (50 Ω)	From panel through the address module to the Eex barrier resistance max. 50 Ω total. If power supply is brought to several units through the same cable, the real length of this part must be multiplied with the number of units when comparing with the maximum length.
	2 x 0.5 mm^2 + shield	150 m	Loop resistance from the Exi-barrier to most distant detector max.12 Ω. Loop capacitance max. 390 nF.
Printer connection - Serial data	5 x 0.5 mm^2 + shield	15 m	RS232
Serial connections - INFO - FX NET	3 x 0.5 mm^2 + shield	1000 m	RS485
Serial connections between FX NET panels, 2 serial line System1 line System2 line	Cable 1: 4 x 0.5 mm^2 + shield Cable 2: 4 x 0.5 mm^2 + shield	1000 m 1000 m	2 X RS 485 **Note!** Isolated Gnd terminals in RS485 Serial connection must be connected between the panels using signal wire not shield.
FX clean contact input lines	2 x 0.5 mm^2	2000 m	
FX clean contact output lines	2 x 0.5 mm^2 or 2 x 1.0 mm^2	To be calculated separately	The equipment receiving the contact signal may have restrictions on cable properties. Load controlled by the relay output may restrict allowed resistance and length per cross section. Relay contact rating is 30 VDC 1 A
FX monitored output lines – fire bell, sounder line - fault buzzer line	2 x 0.5 mm^2 or 2 x 1.0 mm^2 or 2 x 2.5 mm^2	To be calculated separately	Max. allowed voltage drop defines cable to be used.
Addressable monitor modules, **SLC**- loop - monitor lines	2 x 0.5 mm^2 + shield	625 m (50 Ω)	Monitor modules M500ME, M503ME, M501ME, EM210E, EM220E, EM221E.
Addressable control modules, **SLC**- loop - power supply	2 x 0.5 mm^2 or 2 x 1.5 mm^2 or 2 x 2.5 mm^2	To be calculated separately	Control modules M500CHE, EM201E, EM221E, M201 and M240. Number and distances of the relay control modules define the

- alarm line			conductor area and length of the power supply cable.
Addressable monitor modules, **ALC**- loop - monitor lines	2 x 0.5 mm^2 + shield	625 m (50 Ω)	Monitor modules EMI- 310, EMI-310+, EMI-311, EMI-311/240, EMI-333, -EMI-410, EMI-410+, EMI-411. Mini monitor modules 55000-833 APO, 55000-832 APO.
Addressable control modules, **ALC**- loop - power supply - alarm line	2 x 0.5 mm^2 or 2 x 1.5 mm^2 or 2 x 2.5 mm^2	To be calculated separately	Control modules EMI-301, EMI-311, EMI-311/240, EMI-301S, EMI-401, EMI-401S,EMI-411.
Mains supply cable	3 x 1.5 mm^2		Mains connection: - 230 ±10% V AC, 50-60 Hz, - maximum power 160 W - separate fuse 10 A

Note! The max. current consumption of the **FX** - control panel (with PSB- power supply board), all loops and addresses and all control panel outputs is 1 A in standby condition and 4.0 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.	**Note**! The max. current consumption of the **FXM** - control panel (with PSA- power supply board), all loops and addresses and all control panel outputs is 0.5 A in standby condition and 2.2 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.

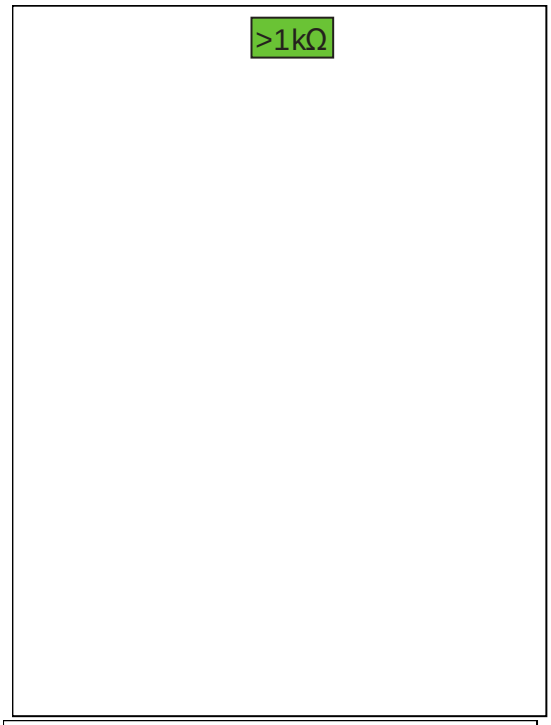
11. Addressable detector loops

11.1 Measuring the Cables

Disconnect all power from the control panel.

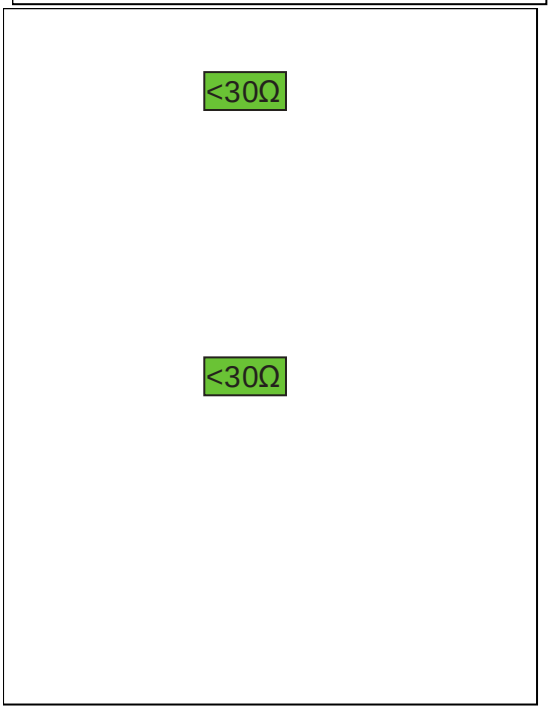
First disconnect the battery, then the mains

1. Measure the resistance between the loop wires + and - so that the resistance meter positive (feeding) probe is in the + -conductor. The resistance must exceed 1 kΩ. If the resistance is smaller, locate the cause of the fault and repair it. (It may be a detector or address unit connected the wrong way or a short circuit isolator).



2. Measure the loop cable + wire resistance from the output and return ends. Also measure the – wire. The loop resistance of the + and – wires added together can be max. 60 Ω on SLC - loop and 60 Ω on ALC - loop.

   The difference between the + and – wire resistances should not exceed 5 Ω. The possible causes of a fault must be located and repaired.



Note!

If there are short circuit isolators in the loop, resistance measuring of the loop cable will give false results. The short circuit isolators must be by-passed by connecting links over the isolators.

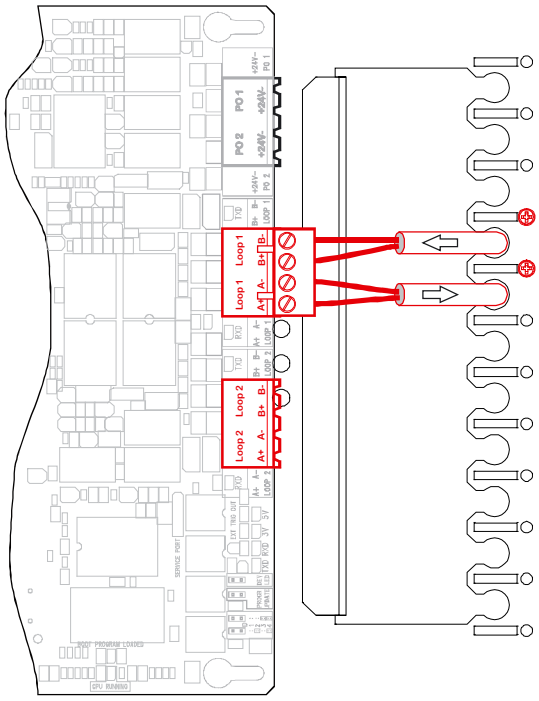
3. Remove short circuit isolators' by-passes.

11.2 Connecting the loop to the control panel

Each FX-SLC and FX–ALCB board has connectors for two loops, FX-ALCA board has only one loop.

1. Check that all power has been disconnected from the control panel.
2. If shielded cable is used, connect the shield to the nearest earth screw in the back plate.
3. Connect the loop wires to the LOOP terminals of the SLC/ALC board.

   Outgoing end to terminals A+ and A-.
   Return end to terminals B+ and B- .



11.3 Functional check of the loop

1. Start the control panel by switching the power on.	First connect the transformer cable, then the battery cable.
2. Wait until the text “PANEL STARTING UP” disappears from the display (about 3 minutes).	The text ‘**Panel starting up’** disappears from the bottom of the display.
3. Verify in the panel display that all addresses are indeed found by selecting “Loops/Address points” from the menu, and stepping through all addresses in all loops. (This is not necessary if the panel is configured).	

The detector loop is in order if the control panel does not give fire, fault or service indications at the start up. Otherwise the fault must be located by following the instructions below.

4. If the panel indicates fire alarm, press the “**BUZZER SILENCE”** button, scroll the alarm indications with the “**MORE ALARMS**”- button and note them.	Possible causes for fire alarm: - A manual call point is pressed down; the glass has been broken or taken off.
5. Eliminate the causes of fire alarm and reset the indications by pressing the “**RESET**”- button until the pulsed signal stops.	- A manual call point or another device connected to the input of an addressable monitoring unit is in active state.
6. Repeat the above mentioned procedures until there are no more fire alarms.	- Smoke, water vapour or thick dust in a smoke detector. - Heat close to a heat detector.
7. If the panel indicates fault or maintenance warning press the “**BUZZER SILENCE**” button, scroll the indications with the “**MORE ALARMS**”- button and note them.	Possible causes for fault or maintenance warnings:
8. Eliminate the causes of fault and maintenance warnings and reset the indications by pressing the “R**ESET**”- button until the pulsed signal stops.	- A break or a short circuit in the loop. See below for how to find the fault. - An earth leak in the loop. See below for how to find the fault.
9. Repeat the above mentioned procedures until there are no more fault and maintenance warnings.	- An address fault in the loop. See table below for possible address fault indications.

A short circuit indication is caused by a loop component connected the wrong way or a short circuit in the wires. If short circuit isolators are used, the shorted part of the loop between the closest isolators will be non-operative. By scrolling trough the addresses list for the shorted loop and comparing with the installation plan, the shorted area can be located. (If the panel is configured, it will indicate fault alarm for all addresses between the operated short circuit isolators).

A break in the loop is easily found by disconnecting the return end of the loop and comparing the addresses that the panel can communicate with, with the installation plan.

An earth fault can most easy be found by splitting the loop in two parts, disconnecting the return end of the loop from the panel and restart. If the panel still indicates earth fault, the location is in the still connected part of the loop, otherwise in the non-connected part. By splitting the faulty part of the loop in two and restarting again, you will soon find the reason for the earth fault.

Fault and maintenance warnings of the loop devices are identified by codes in the display. The codes and a short explanation of each are listed below.

Fault and maintenance warnings of address point

s = start up phase when scanning devices (after panel (re)start or when is loop connected by user)
The loop has to be re-scanned again after the reason of warning has been fixed.
r = running time when device is normally monitored
c = loop is configured with PC
n = loop is not configured

MAINTENANCE 00: (s,c)	– The anytype of device has been configured for this address but no device is installed. **Indicated only once and will disappear after resetting the warning**
MAINTENANCE 01: (s,c)	– No device has been configured to this address but some device is installed. **Indicated only once and will disappear after resetting the warning**
MAINTENANCE 02: (s,c)	– Definite type of device has been configured but no device is installed. This warning can be removed only by installing device to this address or changing the configuration and scanning the loop again.
MAINTENANCE 03: (s,c)	– The configured type/family and installed type/family is not the same or protocols of devices are not same (types are. This warning can be removed only by changing device to this address or changing the configuration.
MAINTENANCE 04: (s,n)	– NA
MAINTENANCE 05: (s,n)	– Illegal address. For example address 0 found in the loop scanning phase. – Factory setting of address switches are 0,0. The LED's of the unit blinks automatically for easier identification (when LED blink jumper is not installed). Note! It is not possible to detect any other fault or fire conditions for a unit that has the 00 address.
FAULT 06: (s,c/n)	– Unknown type of device installed to the loop. The address is not polled any more.
FAULT 07: (s,n)	– Device removed from this address during the loop disablement. The fault is detected when the loop is re-enabled again. Note! The panel has to be boot to clean up MC loop database
FAULT 08: (s,n)	– The type of device is changed during the loop disablement. Note! The panel has to be boot to clean up MC loop database
FAULT 09: (s,c/n)	– New addresses (devices) are found in the loop. **Indicated only once and will disappear after resetting the warning**

MAINTENANCE 11: (s,c)	– Siren control (separate remote LED control) have been configured for SySe sensor (500 series) but the feature not exist in the sensor (old one)
FAULT 12: (s,c)	– Technical alarm input configured for LC address but SW version of LC is not compatible (> 1.3),
FAULT 13: (s,c/n)	– Two or more Apollo devices are at the same address ("double address").
MAINTENANCE 14:(s,c/n)	– Bad scan responses of a device.
MAINTENANCE 15:(s,c/n)	– The type ID bits is not compatible with memory ID of Apollo unit
MAINTENANCE 16: (s,c)	– Apollo protocol family of device and configuration mismatch (S90/XP95/Discovery),
FAULT 17: (s,c/n)	– Two or more SySeAp devices are at the same address ("double address") Yellow LED of units is ON.
FAULT 18: (s,c/n)	– Two or more SySeClip and SySeAp devices are at the same address ("double address").
MAINTENANCE 19:(s,c/n)	– "Sub" address of SySeAp multi module overlaps with a some other unit.
	–
FAULT 20: (r)	– There is an internal fault in a SySeAp device
MAINTENANCE 21: (r)	– A SySeAp device is detached and attached at the loop (powered up)
FAULT 22: (r)	– A sub address of multi module is out of the address range (a sub address would be > 159)
FAULT 51: (r)	– Too low analog value received from analog sensor or fault in the internal operation of an sensor
FAULT 52: (r)	– The address does not respond (or bad response)
FAULT 53: (r)	– Two or more devices have the same address ("double address").
FAULT 54: (r)	– Break in the input circuit of a monitor module.
FAULT 55: (r)	– Break in the output circuit of a control module.
FAULT 56: (r)	– Short circuit in output circuit of a control module.
FAULT 57: (r)	– The input unit has been configured as "fault input". When the input alarm activated the FX shows it as fault warning.
FAULT 58: (r)	– The input unit has been configured as "zone disablement device" and the disablement time exceeds (default time 12 hours).
MAITENANCE 59: (r)	– The input unit is configured as "maintenance input". When the input alarms the FX shows it as maintenance warning.
MAINTENANCE 60: (r)	– A dirty detector. If the analog value of the detector has exceeded the maintenance limit for more than 24 hours, this warning is indicated. – If detector exceeds value (during 24h) after user reset this fault warning, fault warning is re-generated immediately. – Also at case that value of some other detector(s) stay over the maintenance limit (but 24h timeout has not expired) at the moment when user select from the menu "report dirty detector" and press "enable" at access level 3, this fault warning is created. – drift compensation alert of 2251TEM / 7251LASER / OMNI and other new intelligent sensors. (OMNI / 2251TEM >200 <560; 7251LASER >200 < 650)
MAINTENANCE 61: (r)	– 6 months to cell life expiration of CoPTIR sensor
FAULT 62: (r)	– Break or short circuit at the conventional sub loop of conventional zone module.
FAULT 63: (r)	– Invalid response from detector (> 4000 µs for normal sensors, >860 and < 1600 for the OMNI sensor . – Unstable value read from SySeAp device – System Sensor beam detector 6500 in alignment mode.
FAULT 64: (r)	– Device type (or functional type) changed when loop is running.
FAULT 65: (r)	– Sensor with separate remote LED control feature is changed to same type device without this feature. More often this event is indicated with fault 64
FAULT 66: (r)	– Input alarm function is "fault in extinguisher". When module alarms FX

	show it as fault warning.
MAINTENANCE 67: (r)	– Saturation of infrared detector at CoPTIR/PTIR sensor
MAINTENANCE 68: (r)	– 80% of drift limit (when “report dirty detector” requested)
MAINTENANCE 69: (r)	– 99% of drift limit (when “report dirty detector” requested)
FAULT 70: (r)	– Undefined fault code from ALC/SySeAp device.
FAULT 71: (r)	– Memory write operation of the device failed
FAULT 72: (r)	– Memory read operation of the device failed
FAULT 73: (r)	– Communication troubles with device.
FAULT 74: (r)	– Self test of the detector failed.
FAULT 75: (r)	– Beam sensor CPU fault
FAULT 76: (r)	– Beam sensor align targeting
FAULT 77: (r)	– Beam sensor general fault
FAULT 78: (r)	– Beam sensor signal too high
FAULT 79: (r)	– cell life expiration of CoPTIR sensor
FAULT 80: (r)	– The SW of ALC board is not compatible for desired sounder mode
FAULT 81: (r)	– Input module has been configured as "fire router fault". When module alarms FX show it as fault warning.
FAULT 82: (r)	– Input module has been configured as "VACIE fault". When module alarms FX show it as fault warning.
FAULT 83: (r)	– Unsupported address device has been configured to the loop of LC board (The SW of LC is older than configuration made with WinFXNet).
FAULT 84: (r)	– Power failure of supervised output circuit of a module
FAULT 85: (r,s)	– The OEM code of the device is not Esmi/Pelco code.
FAULT 86: (r)	– The control of output of SySeAp device did not work
FAULT 87: (?)	
MAINT 88: (?)	
MAINT 89: (?)	
FAULT 90: (r,s)	– Unacceptable device ALC: detector is not Intellia, device is XP95 but not configured
MAINTENANCE 91: (r)	
FAULT 92: (r)	– break in input line of the CLC unit
FAULT 93: (r)	– short circuit in input line of the CLC unit
FAULT 94: (r)	– voltage problem in input line of the CLC unit
FAULT 95: (r)	– Voice evacuation mute input active time expired
FAULT 96: (?)	–
MAINTENANCE 98: (r)	– simulated maintenance (service command)
FAULT 99: (r)	– simulated fault (service command)
s = start up phase when scanning devices (after panel (re)start or when is loop connected by user) r = running time when device is normally monitored c = loop is configured with PC n = loop is not configured	

Note !

Fault delays / timeouts

Reason for Fault 52 (no PW1 received) must be active for 99sec. before the fault is shown.
Delay for fault 63 (PW4 out of limits) is 30 sec. if any good pulses are received, counter will stop, and if no bad pulses with in 10sec, the counter is reset

12. Conventional detector lines

12.1 Measuring the Cables

1. Disconnect all power from the control panel.
2. Measure the resistance between the wires of the conventional line cable. Set the meter to low voltage resistance measurement (not diode measurement).

   Depending on connected devices the result should be:
   - If all devices are normally open (NO) types and no EOL resistor is connected the meter should indicate a break in the line
   - If all devices are normally open (NO) types and an EOL resistor is connected the meter should indicate the value of the EOL resistor.
   - If some devices are normally closed (NC) types the meter should indicate the parallel connection of the series resistances of those devices

   If the resistance meter indicates other values, the cause of the fault must be located. (It may be a detector connected the wrong way or a short circuit in the conductors).

3. Short-circuit the wires of the conventional detection line cable at the control panel during measuring.

4. Disconnect the end-of-line resistors from those conventional detection line terminals to which the cables are to be connected.

5. Take the end-of-line resistor with you and walk to the end of the line and measure the resistance between the wires of the cable. The maximum allowed resistance is 100 Ω (50 Ω if the line goes through an Exi barrier). If the resistance is higher, there is a break in the line (did you remember short-circuit the cable wires at the control panel). Locate the breaks and eliminate them.

6. Connect the end-of-line resistors to their respective places (the last detector or manual call point of the line or the end-of-line unit box connected after the last device).

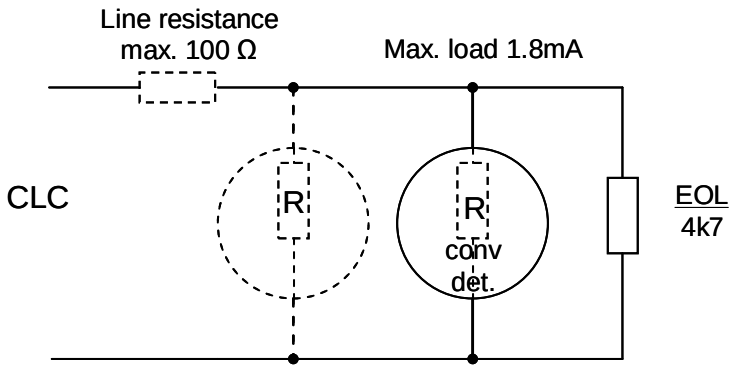
12.2 Connection principles

12.2.1 Conventional line

Min/max. value of conventional devices internal resistance is depending of detectors threshold voltage and the EOL.

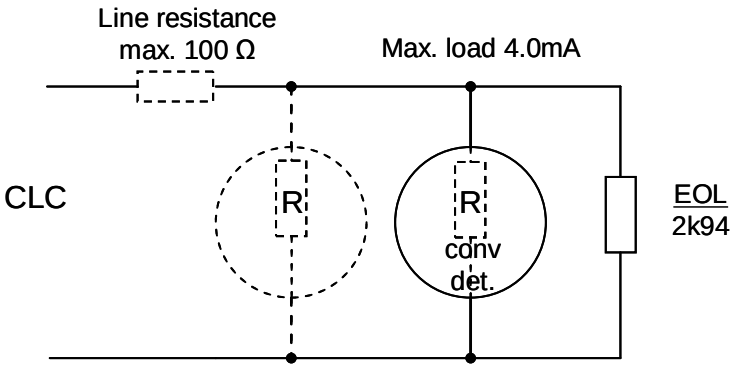
Conventional line 4k7
End of line resistance: 4k7, 5%
Max. Line resistance: 100 Ω
Max load from all detectors
in loop: 1.8 mA

Compatible detectors
(threshold voltage / alarm resistance):
- 8V / 50 - 1000 Ω, 5 %
- 5V / 110 - 1300 Ω, 5 %
- 3V / 140 – 1500 Ω, 5 %
- 1V / 180 – 1700 Ω, 5 %
- 0V / 200 – 1800 Ω, 5 %



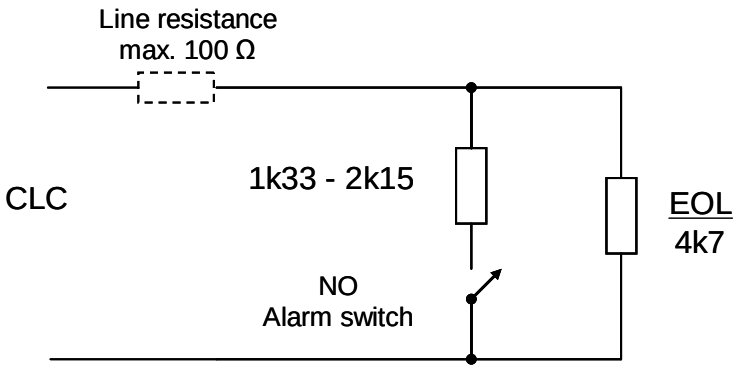
Conventional line 2k94
End of line resistance: 2k94, 1%
Max Line resistance: 100 Ω
Max load from all detectors
in loop: 4 mA

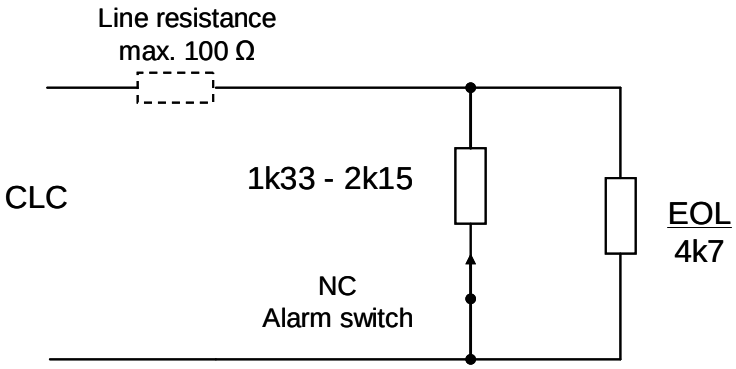
Compatible detectors (threshold voltage / alarm resistance):
- 8V / 50 - 550 Ω, 5 %
- 5V / 110 - 750 Ω, 5 %
- 3V / 150 – 880 Ω, 5 %
- 1V / 190 – 1010 Ω, 5 %
- 0V / 210 – 1070 Ω, 5 %



12.2.2 Input line

End of line resistance: 4k7, 5%
Max. Line resistance: 100 Ω
Alarm resistance: 1k33 – 2k15, 5% (e.g. 4k87 and 2k94 in parallel = 1k833)





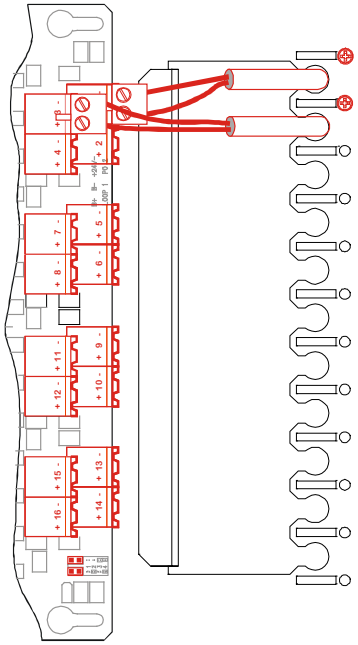
12.3 Connecting the line to the control panel

Each CLC board has 16 conventional lines (detection circuits).

1. Disconnect all power from the control panel.
2. If shielded cable is used, connect the shield to the cabinet ground screw in the back plate.

   Note!
   The free shielded wire must be as short as possible!

3. Connect the pair of wires of the conventional line to the terminals of the CLC board retaining polarity.



12.4 Functional check of the loop

1. Start the control panel by switching the power on.

First connect the transformer cable, then the battery cable.

2. Wait until the text "**PANEL STARTING UP**" disappears from the display (about 3 minutes).

The detector loop is in order if the control panel does not give fire, fault or service indications at the start up. Otherwise the fault must be located by following the instructions below.

3. If the panel indicates fire alarm, press the "**BUZZER SILENCE**" button, scroll the alarm indications with the "**MORE ALARMS**"- button and note them.
4. Eliminate the causes of fire alarm and reset the indications by pressing the "**RESET**"- button until the pulsed signal stops.
5. Repeat the above mentioned procedures until there are no more fire alarms.

Possible causes for fire alarm:
- A manual call point is pressed down; the glass has been broken or taken off.
- Smoke, water vapour or thick dust in a smoke detector.
- Heat close to a heat detector.

6. If the panel indicates fault or maintenance warning press the "**BUZZER SILENCE**" button, scroll the indications with the "**MORE ALARMS**"- button and note them.
7. Eliminate the causes of fault and maintenance warnings and reset the indications by pressing the "RESET"- button until the pulsed signal stops.
8. Repeat the above mentioned procedures until there are **no more fault and maintenance warnings.**
9. Test that each detector and manual call point gives an alarm. Test procedures for the various devices are given in the documentation for those devices.

Possible causes for fault warnings:
- A break or a short circuit in the loop.
- An earth leak in the loop.

Note!
CLC default value for the short circuit is a fault!

12.5 Compatible detectors and manual call points

Compatibility of detectors with the CLC conventional line is determined by the following factors:

- Supply voltage range
- Current consumption in standby condition
- Voltage across the detector in alarm condition
- Series resistance (either in the detector or in the base)
- End-Of-Line resistor

The voltage supplied by the CLC to the conventional line is 21 Vdc to 24 Vdc. The maximum allowable voltage drop in the cable is 21 V minus the lowest operating voltage of the connected devices.

If the line goes through an Exi barrier, the maximum allowed cable resistance and current consumption is less than for a normal line.

The following table shows the required series resistor for a number of detector voltages (in alarm condition), the two allowed EOL types and whether or not a Exi barrier is connected to the loop.

Conventional Line

EOL resistor / Exi	4k7, 5% / not Exi	2k94, 1% / not Exi	4k7, 5% / Exi	2k94, 1% / Exi
Max. cable resistance	100 Ω	100 Ω	50 Ω	50 Ω
Max. detector load	1.8 mA	4.0 mA	1.5 mA	3.0 mA
Threshold voltage over detector / allowed serial resistance in alarm condition	8 V / 50 - 1000 Ω	8V / 50 - 550 Ω	8 V / 10 - 700 Ω	8V / 10 - 320 Ω
	5 V / 110 - 1300 Ω	5 V / 110 - 750Ω	5 V / 150 - 1050 Ω	5V / 170 - 550 Ω
	3 V / 140 - 1500 Ω	3 V / 150 - 880Ω	3 V / 250 - 1250 Ω	3V / 280 - 710 Ω
	1 V / 180 - 1700 Ω	1 V / 190 - 1010Ω	1 V / 340 - 1500 Ω	1V / 380 - 880 Ω
	0 V / 200 - 1800 Ω	0 V / 210 - 1070Ω	0 V / 390 - 1600 Ω	0V / 440 - 960 Ω

Input Line

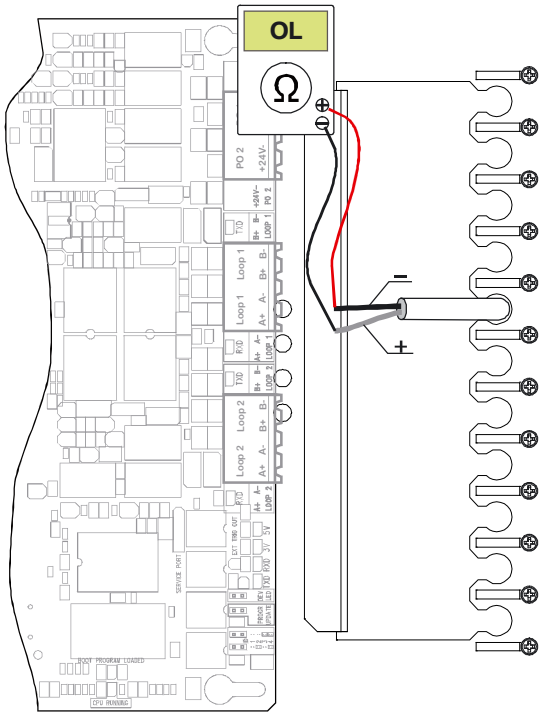
When CLC input is configured as input line, only EOL 4k7 can be used. If it is configured as Exi-area input, line alarm resistance values are different. See table below and chapter 12.2.2.

EOL resistor / Exi	4k7, 5%	4k7, 5% Exi
Max. cable resistance	100 Ω	100 Ω
Alarm resistance	1k33 – 2k15, 5% (e.g. 4k87 and 2k94 in parallel = 1k833)	715 – 1870 Ω, 5% (e.g. 4k87 and 2k94 in parallel = 1k833)

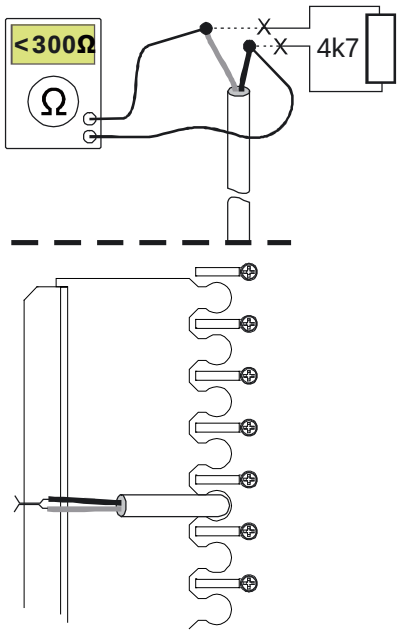
13. Monitored output lines

13.1 Measuring the cables and connecting the end-of-line resistors

1. Disconnect all power from the control panel.
2. Measure the resistance between the monitored output line cable wires so that the resistance meter positive (feeding) measuring end is in the "–" wire of the line. The resistance meter must indicate a break. If the resistance meter indicates a resistance value, the cause of the fault must be located. (It may be an alarm device connected the wrong way, a serial diode missing from the alarm device or a short circuit in the conductors).



3. Short-circuit the monitored output line cable wires at the control panel during measuring.
4. Disconnect the end-of-line resistors from those monitored output line outputs to which the cables are to be connected.
5. Measure the resistance between the wires of the cable at the last alarm device or end-of-line unit box in each monitored output line with the resistance meter. The allowed resistance should not be more than 300 Ω depending on the current consumption of the alarm devices connected to the same line (*See picture on the right*). If the resistance is considerably higher, there is a break in the line (did you remember short-circuit the cable wires at the control panel). Locate the breaks and eliminate them.
6. Take the end-of-line resistors to their respective places (the last alarm device of the line or the end-of-line unit box connected after the last alarm device) and connect them.



Note!
There must not be other resistors or end-of-line units in the monitored output line.

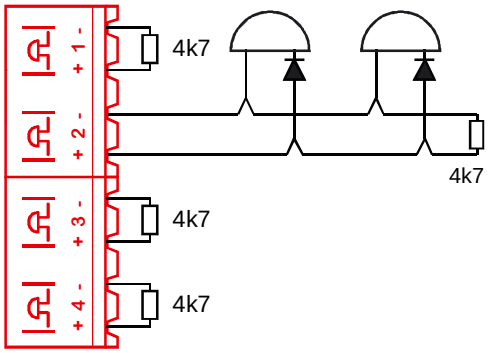
13.2 Connecting the monitored output lines to the control panel

The FX-MC board has one monitored output line connector.

Note! If the 'Side CPU not in use'- jumper is NOT in place in the MC2 (system assistant processor is in use), then in the case of the MC2 system fault the system assistant processor controls the CO1 output as a fire router output regardless of the configuration.

The FX-IOC board has four monitored output line connectors.

1. Check that all power has been disconnected from the control panel.
2. Connect the monitored output line cable wires to the terminals as follows:
   - The fire alarm line is connected to the output marked with bell symbol on the MC and the outputs 1 to 3 marked with the bell symbol on the IOC.
   - The fault alarm line is connected to the output 4 marked with the bell symbol on the IOC.
   - 4.7 kΩ resistors are left in the terminals of outputs that are not in use.



Note!
The above usages of the outputs are valid for non-configured panels. If configured, the purpose may have been changed. Verify with the configuration.

13.3 Functional check of monitored output lines

1. Start the control panel. The monitored output lines are in order if the control panel does not give fault indications.
2. If the alarm devices give fault indications, press the "**BUZZER SILENCE**"- button on the user panel.
3. You may also want to silence fault warning devices by pressing the "**SILENCE/RESOUND**" button.

Possible causes of fault indications:
- A short circuit in the line, the end-of-line resistor is too small (should be 4.7kΩ), a serial diode is missing from an alarm device or the device has been connected with the wrong polarity.
- A break in the line, the end-of-line resistor is missing or its resistance is too big.
- An earth leak in the line.

4. Eliminate the causes for fault indication and reset the panel by pressing the "**RESET**"- button until the audible signal stops.
5. Test the monitored output line operation as follows:

Note! Ensure that all persons in the building have been informed of the alarm device test.

6. Press the wheel to activate the menu and select:
7. Then press the wheel again and select:
8. Press the "TEST"- button, at which the display will show the text:

CONTROLS
FIRE ALARM DEVICES CONTROL
PRESS WHEEL TO ACTIVATE THE CONTROL
ACTIVE

Pressing the wheel activates all fire alarm devices.

9. The test is stopped by pressing the "**TEST**"- button. Check the operation of the alarm devices. Eliminate any faults and repeat the test until all alarm devices operate.

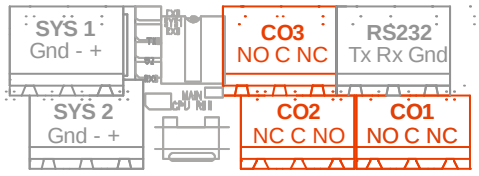
14. Control outputs

14.1 Clean relay outputs

The FX-MC2 board has **three** clean contact outputs.
Each FX-IOC board has two clean contact outputs.
Each FX-OCA board has 16 clean contact outputs.

The function of the outputs is defined with the configuration tool. The default functions of the outputs of a control panel that has not been configured are:		
MC2-CO1	Fire alarm router activation	**Note**! If the 'Side CPU not in use'- jumper is in place in the MC2 (system assistant processor is **NOT** in use), then in the case of the MC2 system fault the system assistant processor does **NOT** control the CO1 output as a fire router output **regardless of the configuration.**
MC2-CO2	Fault warning router activation	The relay is energized in normal condition and releases in fault warning condition or if power is removed **regardless of the configuration.**
MC2-CO3	**Fire alarm output**	
IOC-CO1	Fire alarm output	
IOC-CO2	Fire alarm output	
OCA-CO1-2	Fire alarm output	
OCA-CO3-4	Fire door output	
OCA-CO5-6	Pre-alarm output	
OCA-CO7-8	Technical alarm output	
OCA-CO9-10	Fault warning output	
OCA-CO11-12	Maintenance warning output	
OCA-CO13-14	Disablement output	
OCA-CO15-16	Access level 2 output	

1. Disconnect all power from the control panel.
2. Select suitable outputs and connect the device to be controlled to the output.
   The relay contacts are rated for max. 30 VDC, 1 A.



WARNING!
Voltage 230 VAC must not be brought to the relay contacts.
If a device with 230 VAC is to be controlled, a suitable intermediate relay must be used. It is to be placed in a casing outside the control panel cabinet and equipped with a protective diode (e.g. 1N4005).

Test the fire outputs control operation as follows:

1. Start the control panel.
2. Press the wheel to activate the menu and select: **CONTROLS**
3. Then press again the wheel and select: **FIRE OUTPUTS CONTROL**
4. Press the "**TEST**"- button, at which the display will show the text: **PRESS WHEEL TO ACTIVATE THE CONTROL**
5. Pressing the wheel activates all control outputs. **ACTIVE**
6. The test is stopped by pressing the "**TEST**"- button.

14.2 Free power outputs

The power supply is normally 27 VDC, max. 500 mA. During a power failure the supply follows the battery voltage. The power supply may momentarily be 30 VDC at the most.

IOC, SLC and ALCB, PO1 and PO2
ALCA only PO1
MC2, only PO

PSA , PO1 and PO2; 2 A
PSB , PO1 and PO2; 4 A

24VDC / 500mA

24VDC / 500mA

24VDC / 2A / 4 A

24VDC / 2 A / 4 A

Note!	**Note!**
The max. current consumption of the **FX** - control panel (with PSB- power supply board), all loops and addresses and all control panel outputs is 1 A in standby condition and 4.5 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.	The max. current consumption of the **FXM** - control panel (with PSA- power supply board), all loops and addresses and all control panel outputs is 0.5 A in standby condition and 2.2 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.

1. Start the control panel.
2. If the control panel gives a fault indication press the "**BUZZER SILENCE**" button. You may also want to press the **"SILENCE/RESOUND"** button to silence fault warning devices.
3. If the control panel gives an earth fault indication, the cause may be an earth leak in the cable or an earth leak caused by the device to be supplied with power.
4. Power output fault indication means overload or short circuit in the output.
5. Disconnect all power from the control panel, repair any fault and restart the control panel.

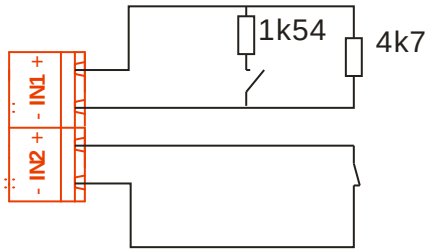
15. Signal inputs

15.1 Connecting the inputs to the control panel

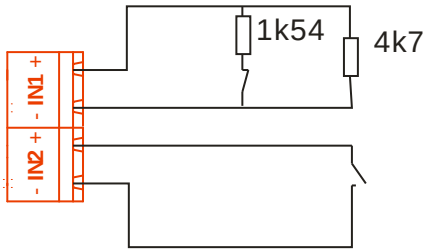
The FX-MC2 board has two clean contact input connectors.
Each FX-IOC board has four clean contact input connectors.

Input	Default Function	Default state	also configurable as
MC2-IN1	Fault in fire alarm router equipment	Normally open / monitored	Normally open / closed Monitored / not monitored
MC2-IN2	Fault in fault warning router equipment	Normally open / monitored	Normally open / closed Monitored / not monitored

Normally open / monitored



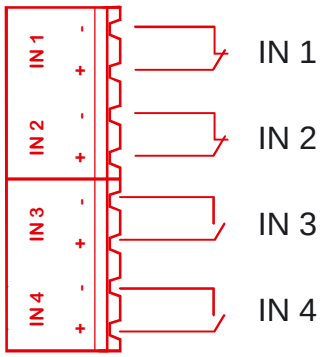
Normally closed / monitored



Normally closed / not monitored

Normally open / not monitored

Input	Default Function	Default state	also configurable as
IOC-IN1	Fault warning	Normally closed	Normally open
IOC-IN2	Fault in extinguisher	Normally closed	Normally open
IOC-IN3	Extinguisher activated	Normally open	Normally closed
IOC-IN4	Smoke vents activated	Normally open	Normally closed



1. Disconnect all power from the control panel.
2. Select suitable inputs and connect the device to be monitored (e.g. extinguisher call point, router fault output) to the control panel.
3. Start the control panel.
4. If the control panel gives an earth leak indication, press the "**BUZZER SILENCE**"- button and disconnect all power. Repair any fault and restart the control panel.
5. Test the operation of the inputs with the connected device (remember that a fire alarm or fault warning also activates fire and fault alarm devices and alarm routing equipment).

15.2 Testing the inputs

The inputs for Fault in fire alarm router, Fault in fault warning router and Fault in extinguisher can be tested without activation of fault warning outputs, as follows:

Press the wheel to activate the menu and select:	**INPUT INTERFACES**
Then press again the wheel and select:	**MC MONITORED INPUT 1** or **2**
Press the "**TEST**"- button, at which the display will show the text:	**IN TEST STATE**
The display indicates now the status of the input.	**FAULT** or **OK**
The test is stopped by pressing the "**TES**T"- button.	

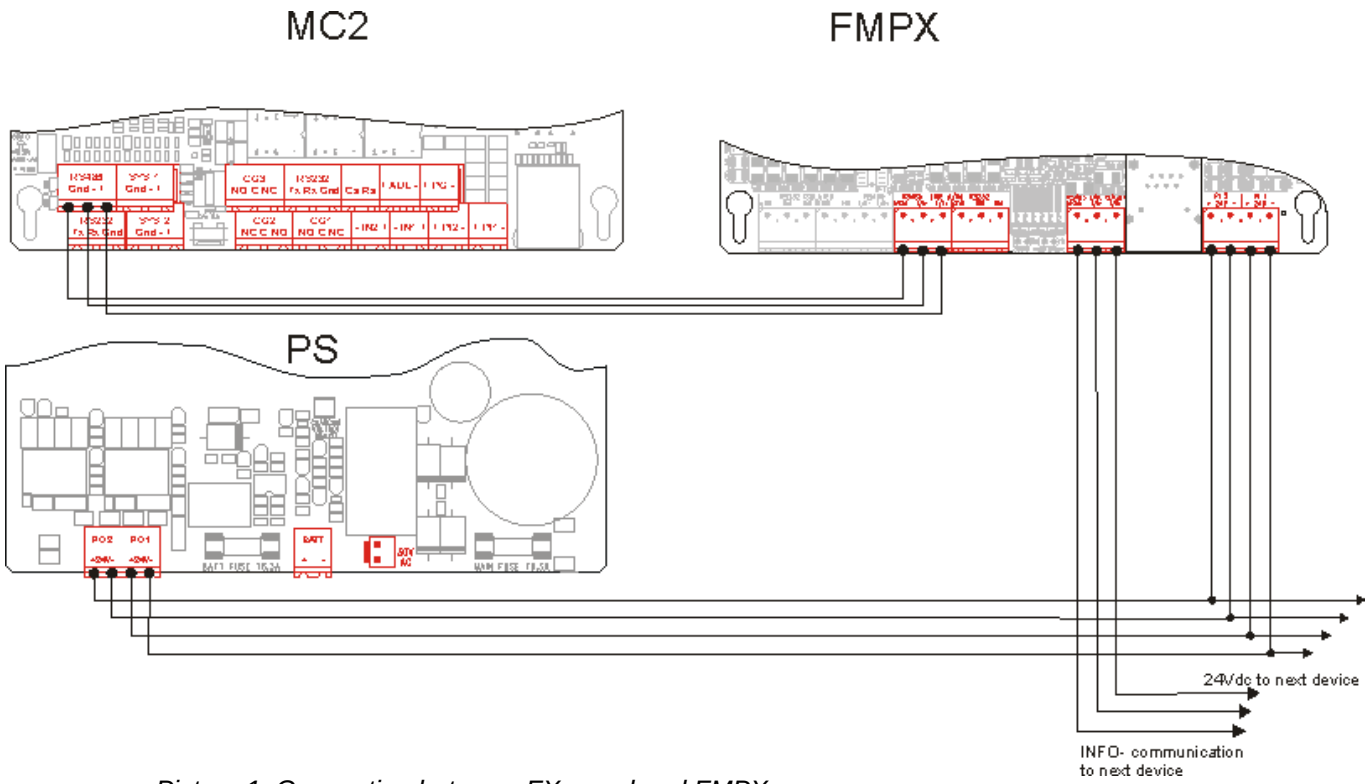
16. Info-line devices / connections

16.1 INFO-fault messages

Text at display	Description
fault in info port X comm.	When acknowledge bit not received after 10 retries of some message or external system will send "**EXTERNAL FAULT**" message
info X external device fault 0	MCO/Repeater reports that outport of the unit has communication fault
info X external device fault 1	MCO/Repeater reports that external port of the unit has communication fault.
info X external device fault 2	MCO reports that control logic part of unit has recognized problems
info X device fault 3	When transmitting does not success for some reason. Monitored internal by SW. **Note!** configuration bit "not monitored" does not prevent this fault *
info X device fault 4	When receiver gets whole time a lot of rubbish, not real Info frames. Monitored internal by SW. **Note!** configuration bit "not monitored" does not prevent this fault
info X external device fault 5	IC unit reports about power input 1 fault
info X external device fault 7	IC unit reports about fault in the configuration files of IC
info X external device fault 255	IC unit reports about fault which is unknown for FX

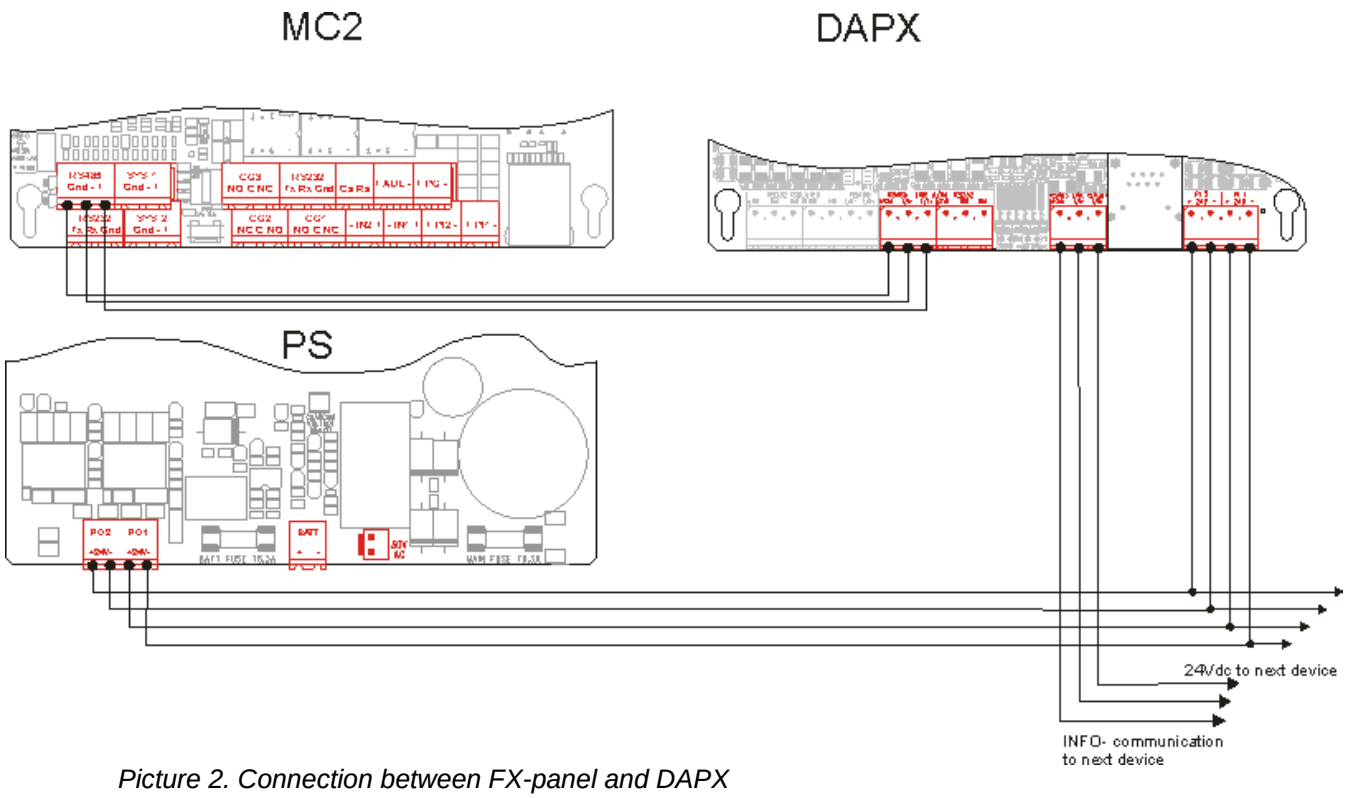
X = 0; Info configured to RS232 service port
X = 1; Info configured to RS485 at SA board

16.2 FMPX



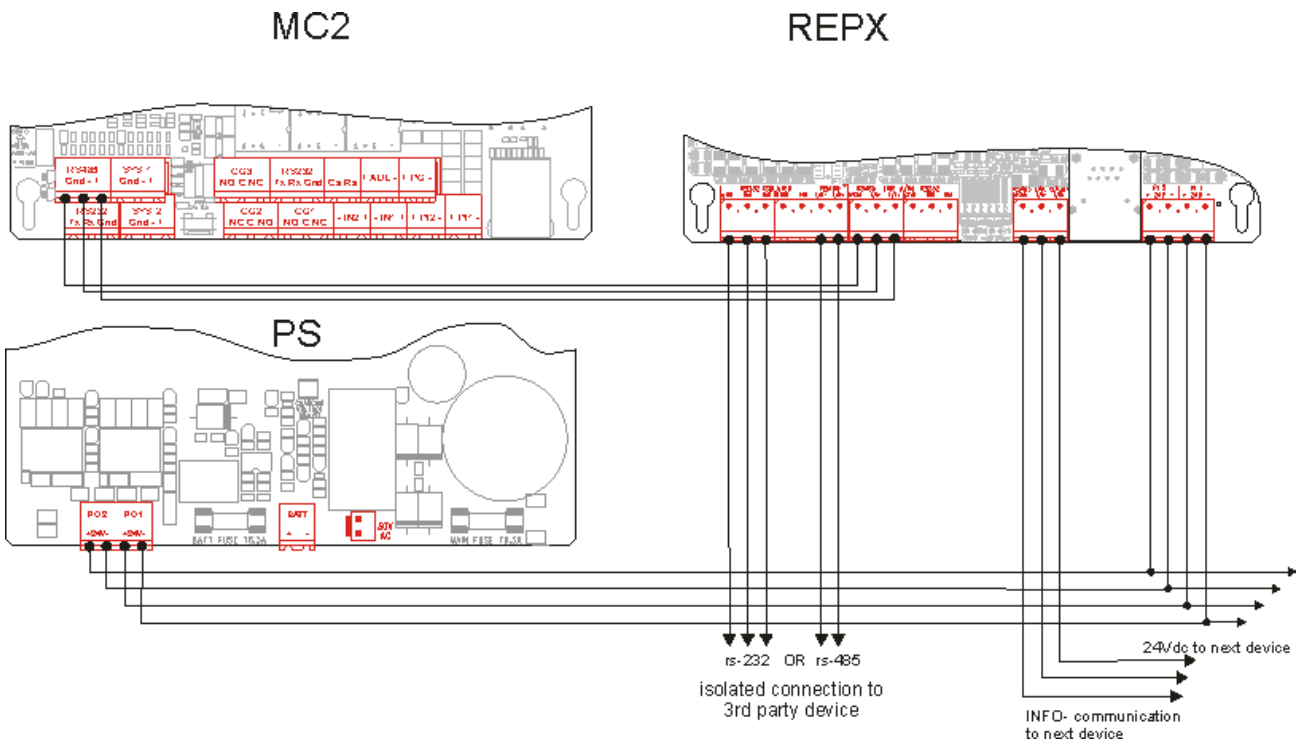
Picture 1. Connection between FX-panel and FMPX

16.3 DAPX



Picture 2. Connection between FX-panel and DAPX

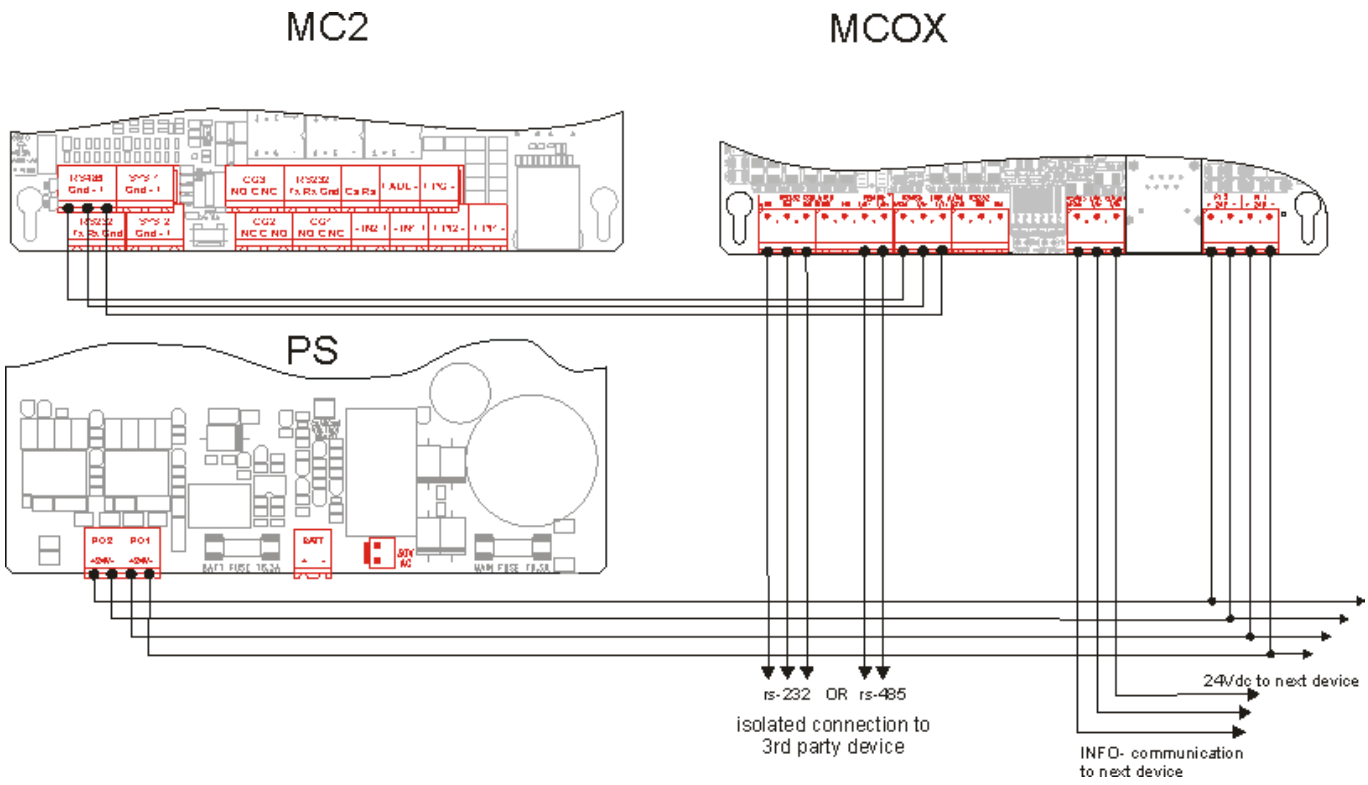
16.4 REPX and REPX-OB



Picture 3. Connection between FX-panel and REPX

Note! If REPX-OB is installed in FX: rack, only INFO line needs to be connected.

16.5 MCOX and MCOX-OB



Picture 4. Connection between FX-panel and MCOX

Note! If MCOX-OB is installed in FX: rack, only INFO line needs to be connected

16.6 CODI / Codinet

There are two versions of CODIs: CODI and CODINET.
Only CODINET may be used in panel communications (19200bd).
CODI is only up to 9600bd.
The Codinet 24Vdc power input is isolated

17. Configuration

Note! The panel is set to the configuration mode with configuration tool. This can be done also with the following procedure.

Set control panel to access level 3.

1. Select with “**MENU**”-button from main menu.
2. Press the wheel.
3. Select the first digit with the wheel and press the wheel to enter.
4. Repeat with the other digits.
5. Press “**ENABLE**” when the right code is entered.
6. The panel is now in access level 3.
7. Set panel to configuration state.
6. Set control panel to the configuration state by putting a jumper in position “CONF” on the MC board. The display shows the text:
7. Transfer the configuration.
8. Connect configuration cable to the terminal RS232.
9. Configure the control panel with the configuration tool
10. Remove the configuration cable from the terminal RS232 and the jumper from the position “CONF” on the MC.

Restart the panel.

11. Restart the control panel by pressing “**RESET**” button on the MC.

CURRENT ACCESS LEVEL:2
CHANGE TO ACCESS LEVEL 3:0000

CURRENT ACCESS LEVEL: 3

CONFIGUARTION STARTED
READY FOR CONFIGURATION

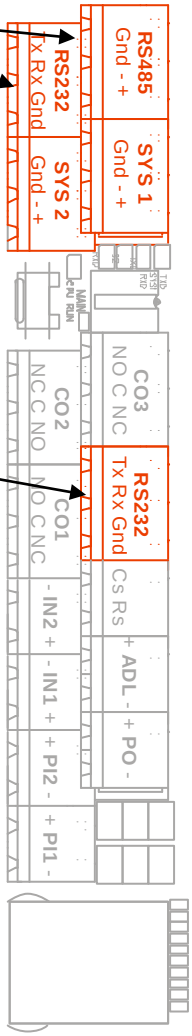
18. Serial communication ports

RS232 and RS485 serial communication ports using INFO protocol are on the top of the FX-MC2 board. **These ports are isolated.** FX panel can communicate with INFO devices such as FMPX, MCOX etc. via these ports. Also a printer using serial communication can be connected to either of these ports.

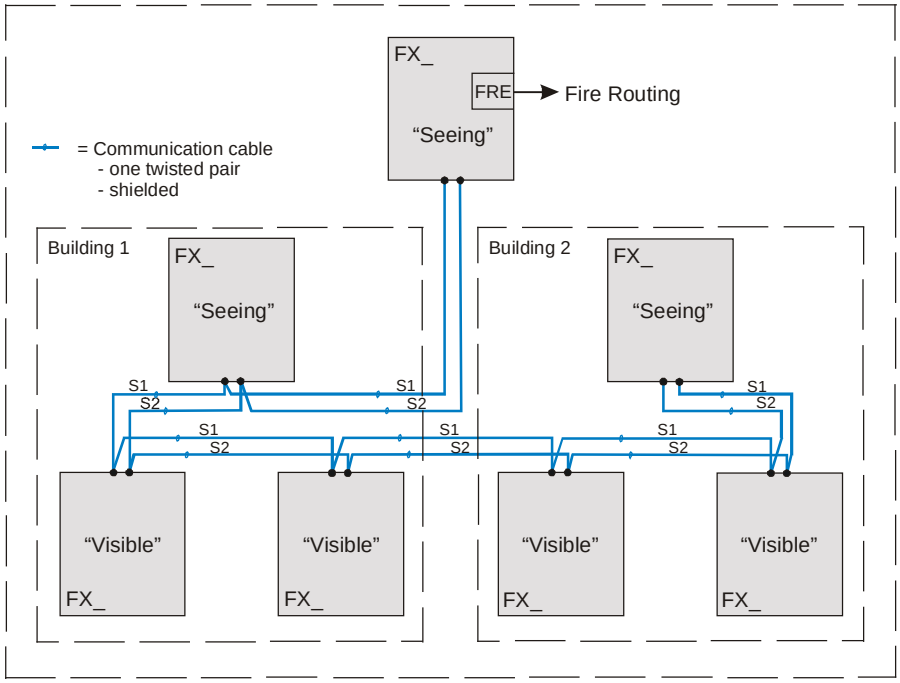
NOTE! Only one of these ports can be connected at a time.

Connectors SYS 1 and SYS 2 are used for interpanel communication in networked systems.

The RS 232 connector in the middle of the connector row is used for configuration and maintenance.



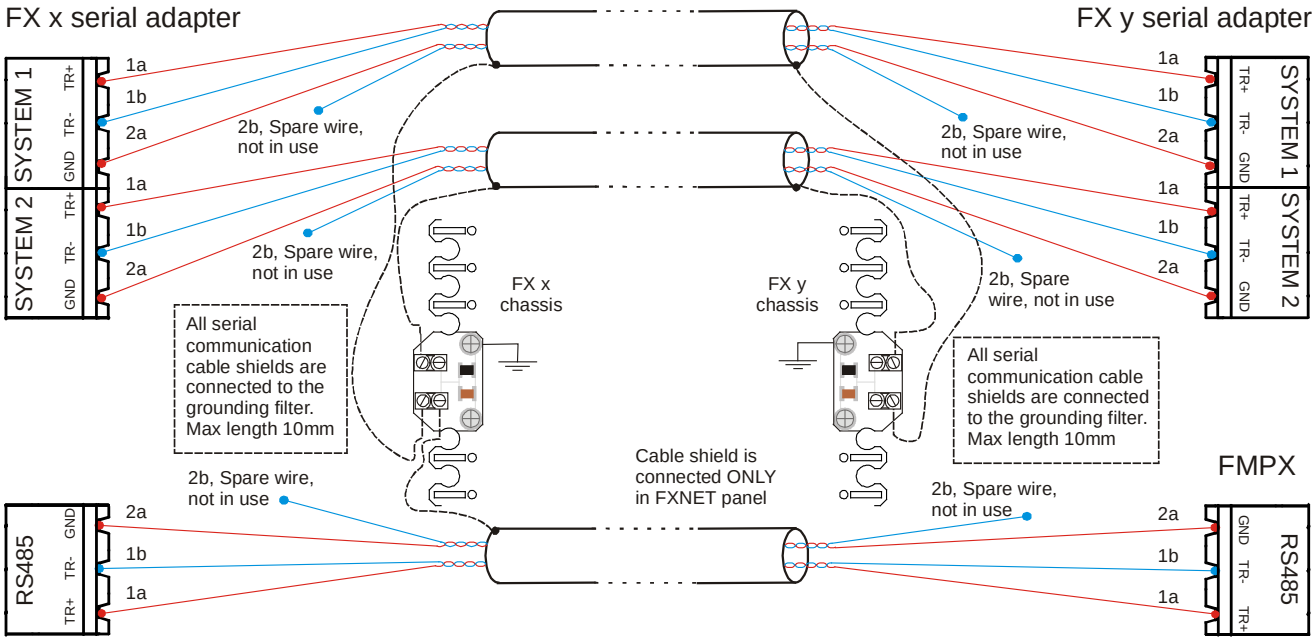
18.1 FX 3NET communication network



System 1(S1) and System 2 (S2) = serial communication line

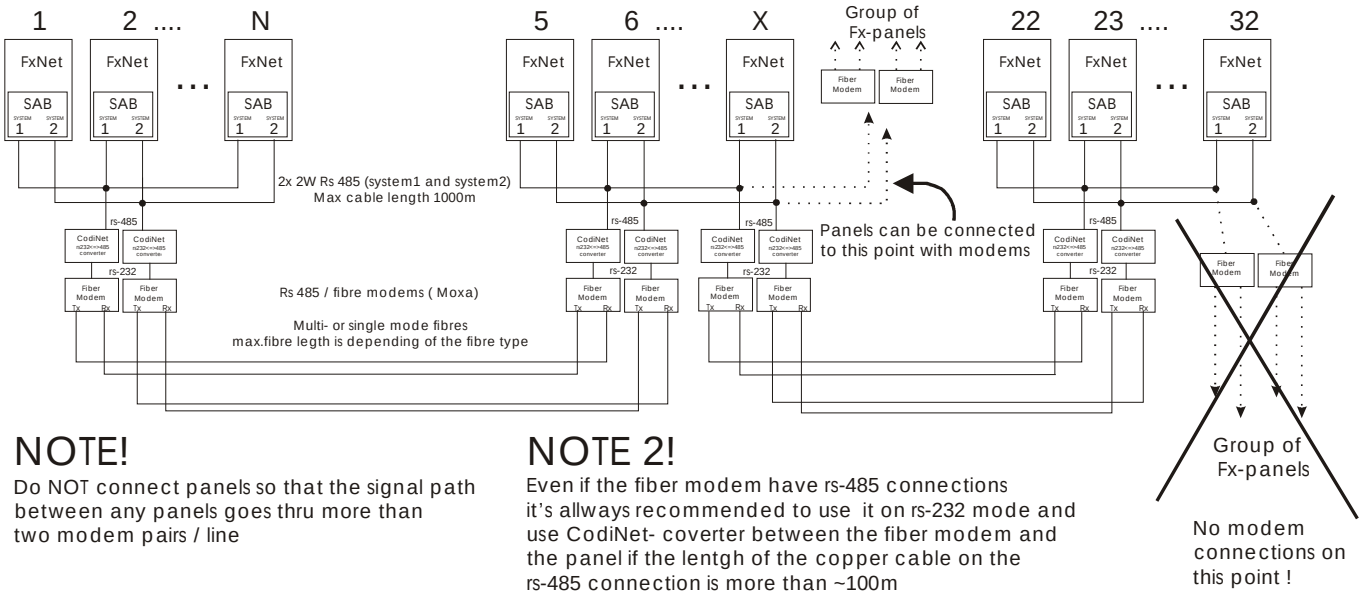
Picture 5. Example: FX 3NET communication network

18.2 Communication grounding



Picture 6. Communication grounding in the FX NET system

18.3 Modem connections in the communication network



Picture 7. Max. two modem pairs between two panels

1. Disconnect all power from the control panel.
2. Connect the RS485 serial communication wires to the
   RS485 terminals (INFO) and
   System1 terminals (RS485 type) and
   System2 terminals (RS485 type) as follows

   Signal wires to terminals T/R + and T/R – and GND. (Note that shield wire of the cable can not be connected to the GND terminal).

   The shields of the cables may not be connected to the metal part (earth) of the cabinet directly. The shields must be connecter through the parallel connected capacitor and varistor as follows (because long distances may cause big differences in earth potential). Loosen three screws of the backplate. Install the small circuit board from the SA package under the screws and tighten the screws and connect the shield to the terminals.
3. Connect the RS232 serial communication conductors to the RS232 terminals as follows:

   The control panel transmitter wire to terminal TxD

   The control panel receiver wire to terminal RxD.

   GND wire (not shield) to terminal GND.

   Connect the shield directly to the metal part (earth) of the cabinet.
4. **Start the control panels: first visible panels and then seeing panels**
5. If the control panel gives an earth leak indication, line fault (one of S1 and S2 is not functioning) or communication fault (either of S1 and S2 is not functioning), press the "BUZZER SILENCE"- button and disconnect all power from the control panel. Repair any fault and restart the control panel.
6. If the control panel has been configured, the operation of serial communication should be tested (remember that a fire or fault also activates fire or fault alarm devices and alarm routing equipment).

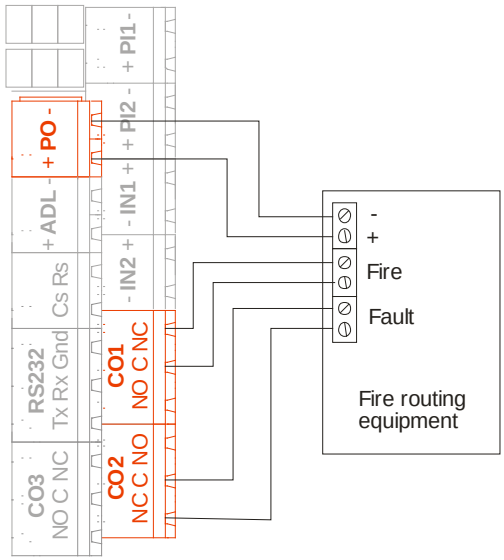
19. Alarm routing equipment

19.1 Connecting the alarm routing equipment to the control panel

The alarm routing equipment must not be connected until all other necessary commissioning procedures have been performed.

Note!	Inform the alarm receiver about the alarm routing equipment test.

1. Disconnect all power from the control panel.
2. Connect the alarm routing equipment to the terminals CO1, CO2 and PO on the MC2 board.



The default function of CO1 and CO2 are:
CO1 = Fire Alarm Router

NOTE! If the 'Side CPU Not in use'- jumper is in place in the MC2 (system assistant processor is NOT in use), then in the case of the MC2 system fault the system assistant processor does NOT control the CO1 output as a fire router output regardless of the configuration.

CO2 = Fault Warning Router
The PO terminal provides 24 VDC supply for the routing equipment.

Note! CO2 is energized (as drawn) when the panel is in normal condition

3. Start the control panel.

If the control panel gives a fault indication, press the "**BUZZER SILENCE**"- button.

If the control panel gives an earth leak indication, the cause may be an earth leak in the cable or an earth leak caused by the alarm routing equipment.

If the control panel gives a power output fault indication, the alarm routing equipment connected draws too much current and is probably faulty or the connection is wrong.

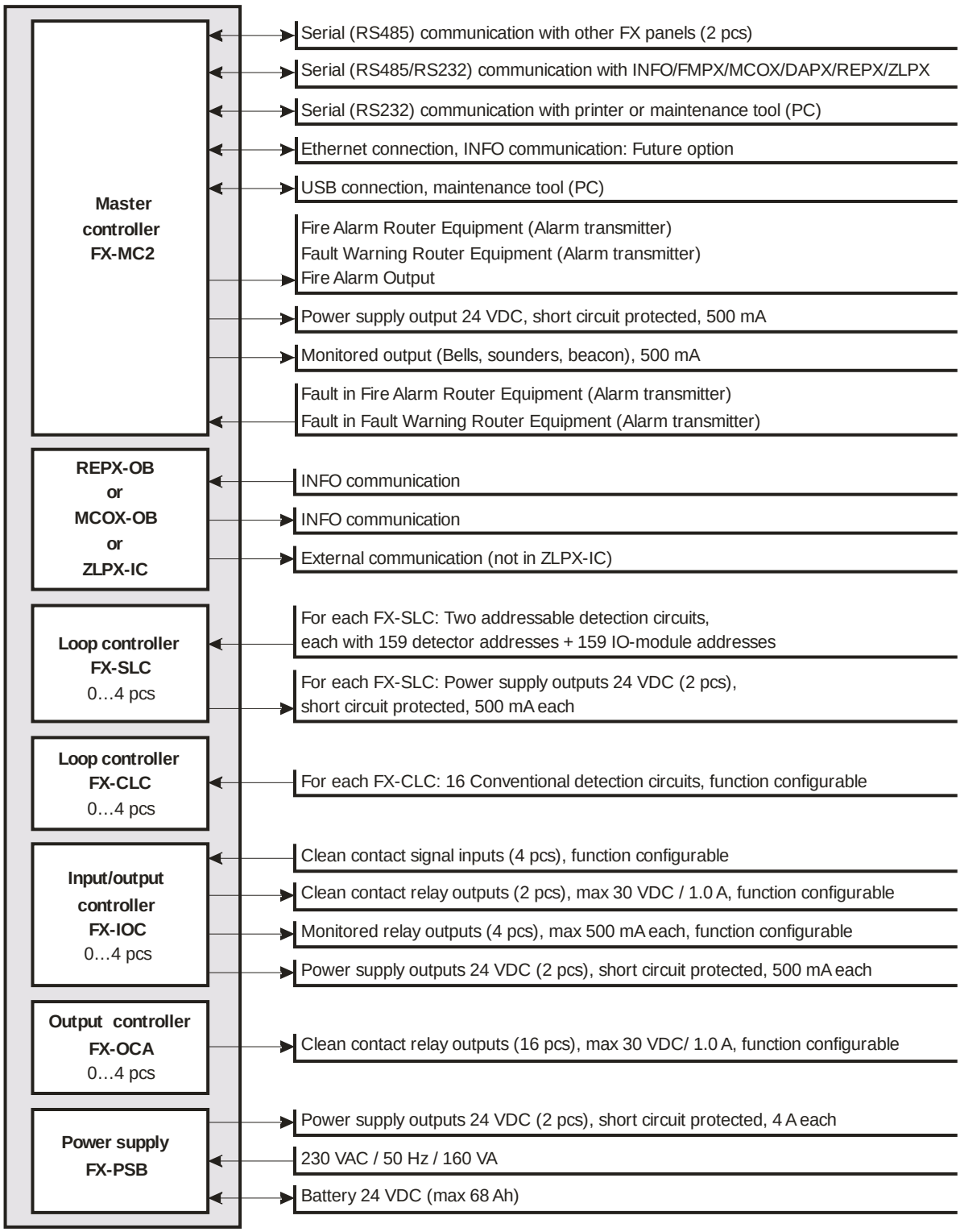
Disconnect all power from the control panel, repair any fault and restart the control panel.

Test the alarm transmission (combined test of fault warning router and fire alarm router) operation as follows:

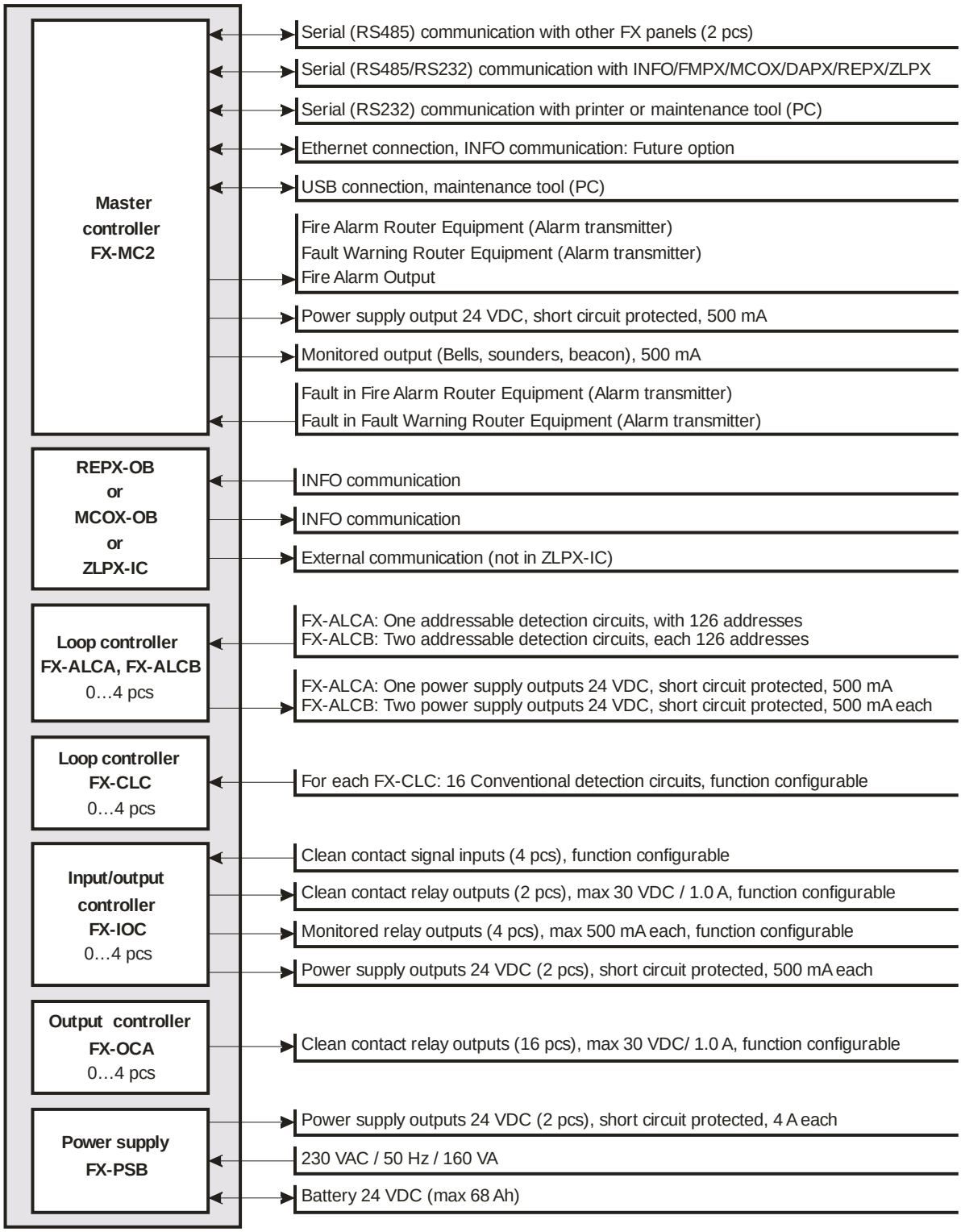
4. Press the wheel to activate the menu and select:	**ALARM TRANSMISSION TEST**
5. Press the "**TEST**"- button, at which the display will show the text:	**PRESS WHEEL TO ACTIVATE THE TEST**
6. Pressing the wheel activates the fault warning router.	**ALARM TRANSMISSION TEST STAGE 1** Fault routing activated
7. After 30 seconds also the fire alarm router is activated.	**ALARM TRANSMISSION TEST STAGE 2** Fire routing activated
8. After a further 30 seconds the test stops automatically. The test can also be stopped at any time by pressing the "**TEST**" – button.	**ALARM TRANSMISSION TEST**

20. FX, FXL and FXM connections

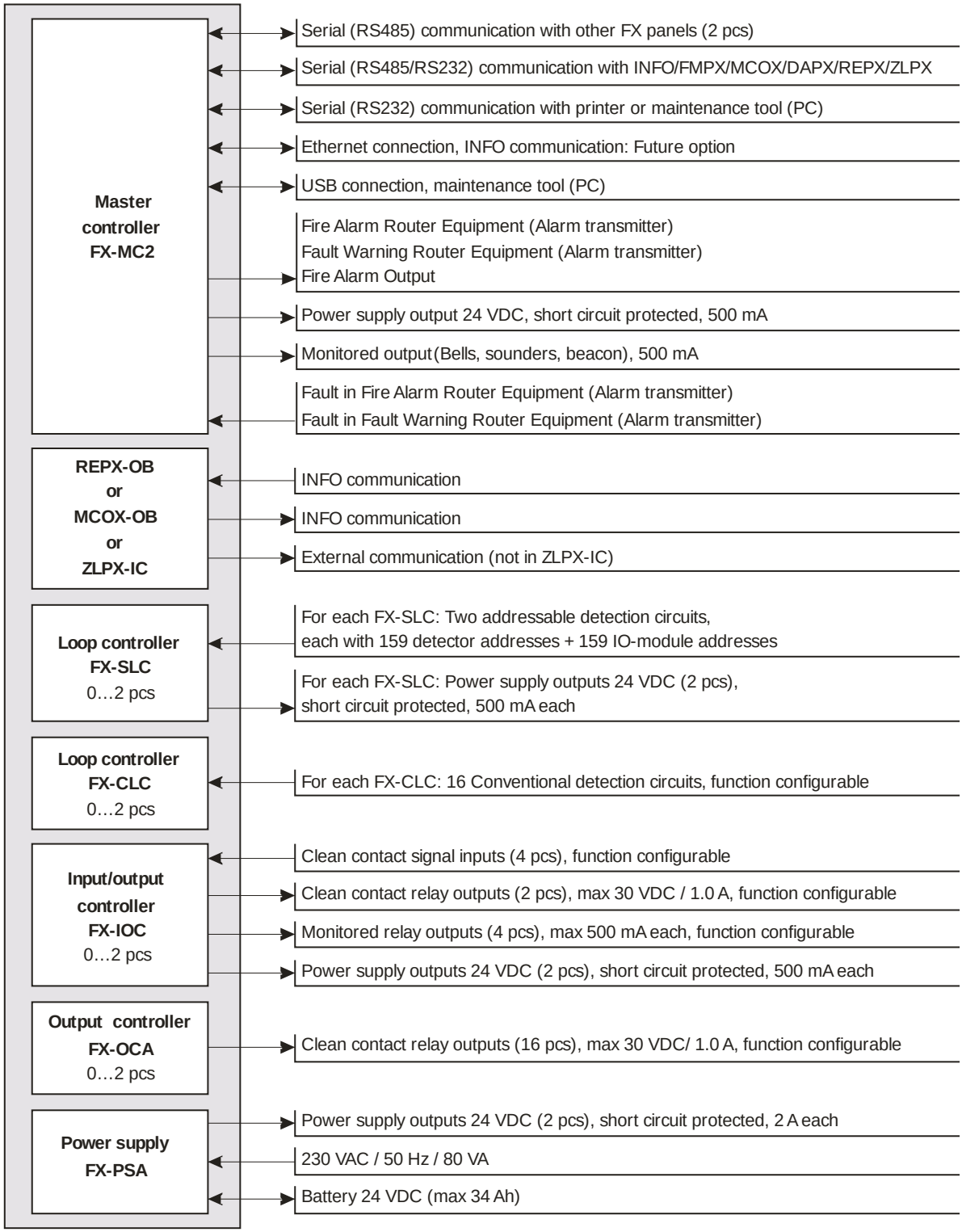
20.1 FX and FXL panel external connections, SLC



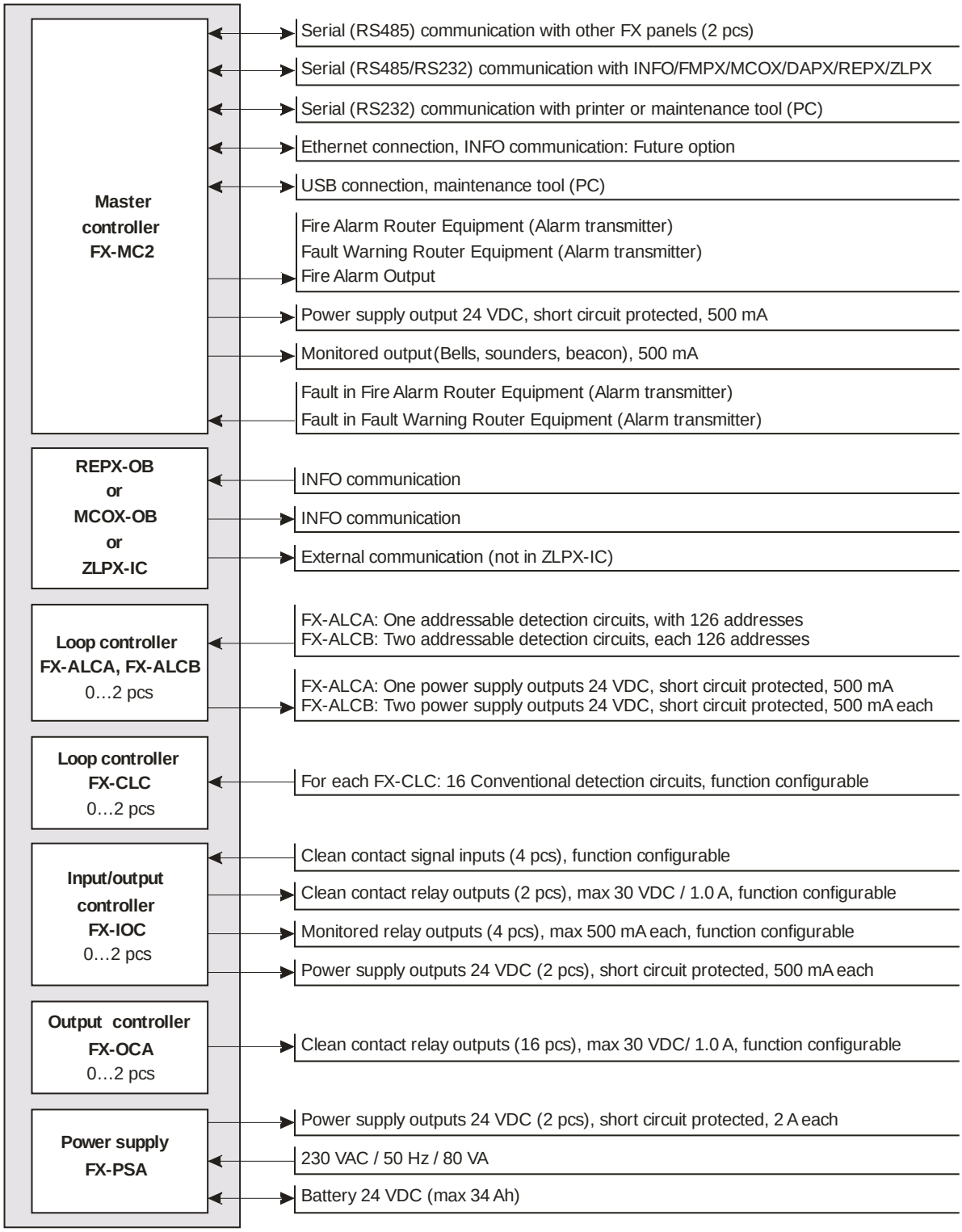
20.2 FX and FXL panel external connections, ALC



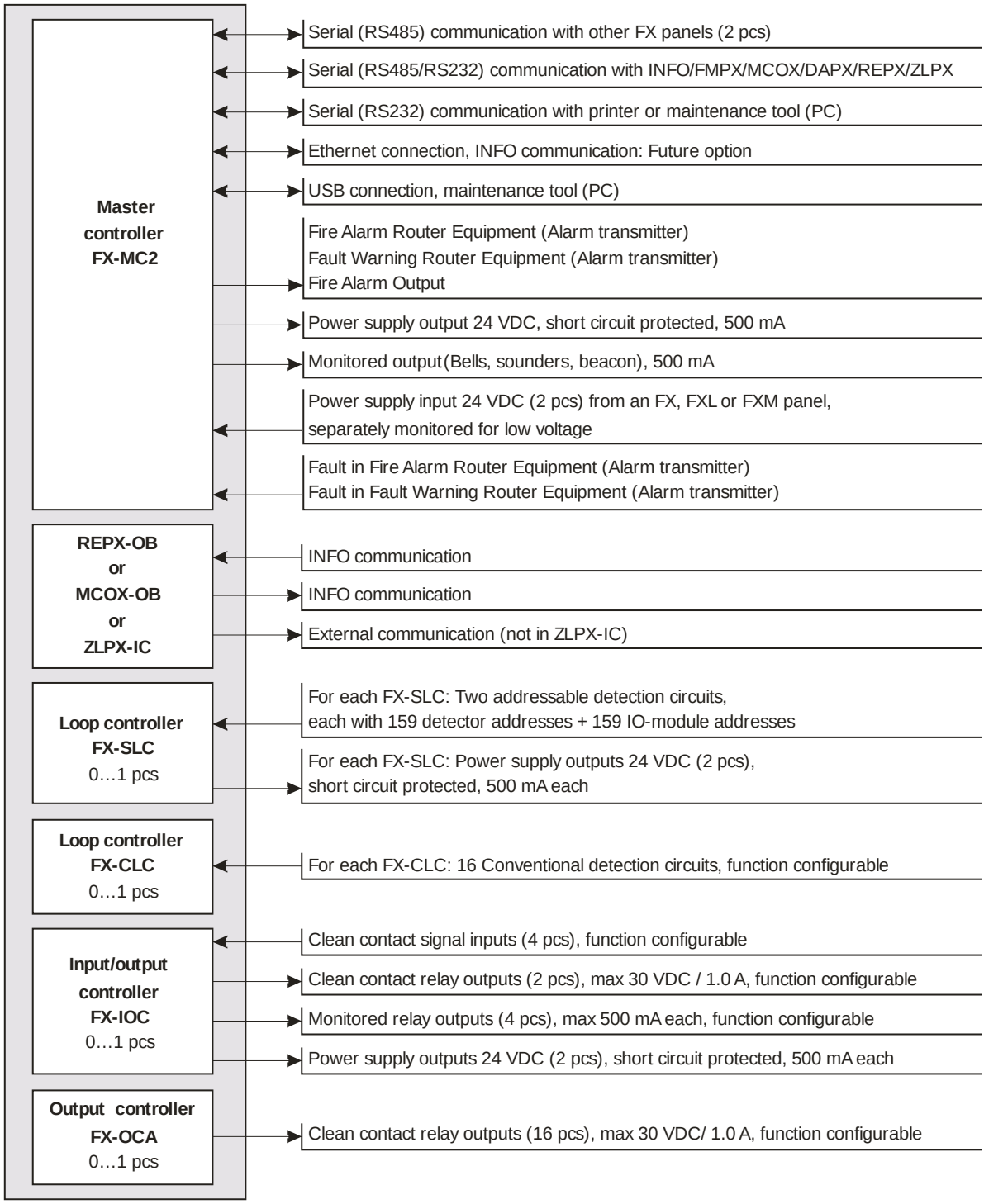
20.3 FXM panel external connections, SLC



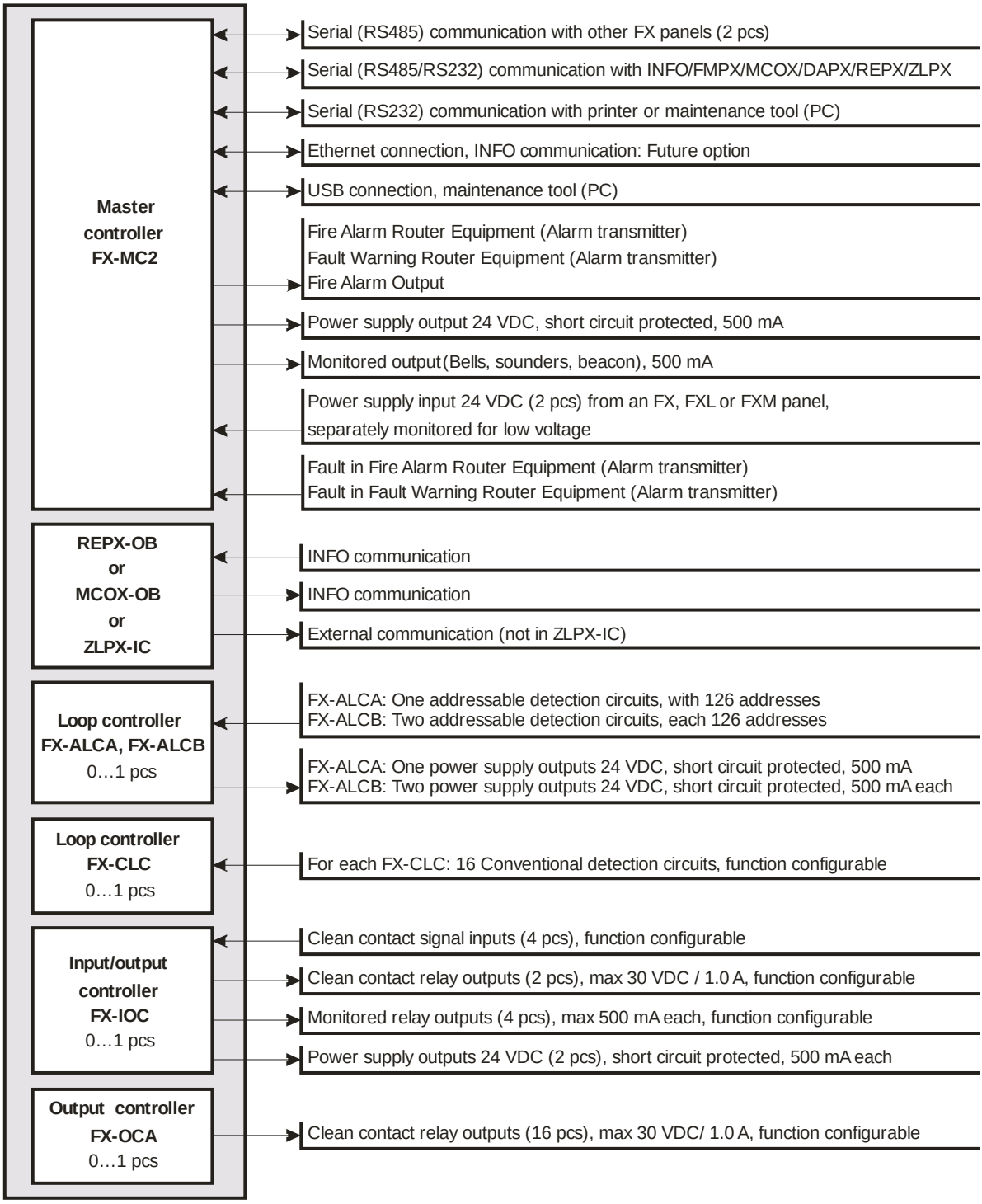
20.4 FXM panel external connections, ALC



20.5 FXS panel external connections, SLC



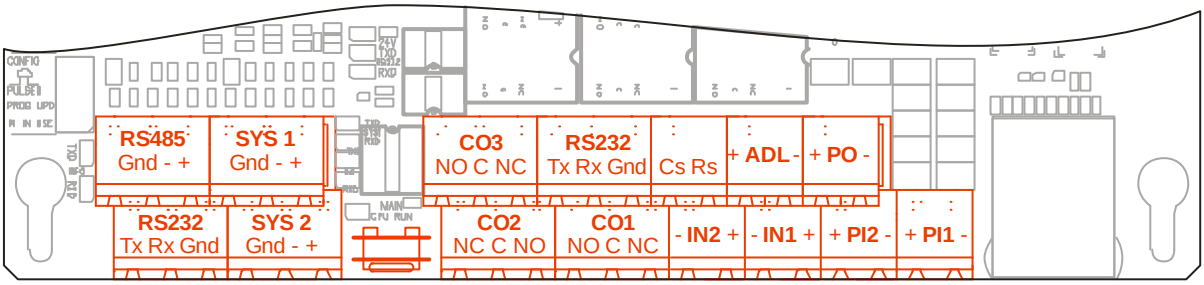
20.6 FXS panel external connections, ALC



Note!	**Note!**
The max. current consumption of the **FX** - control panel (with PSB- power supply board), all loops and addresses and all control panel outputs is 1 A in standby condition and 4.0 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.	The max. current consumption of the **FXM** - control panel (with PSA- power supply board), all loops and addresses and all control panel outputs is 0.5 A in standby condition and 2.2 A in alarm condition. The standby time required for the system may limit the max. load of the outputs.

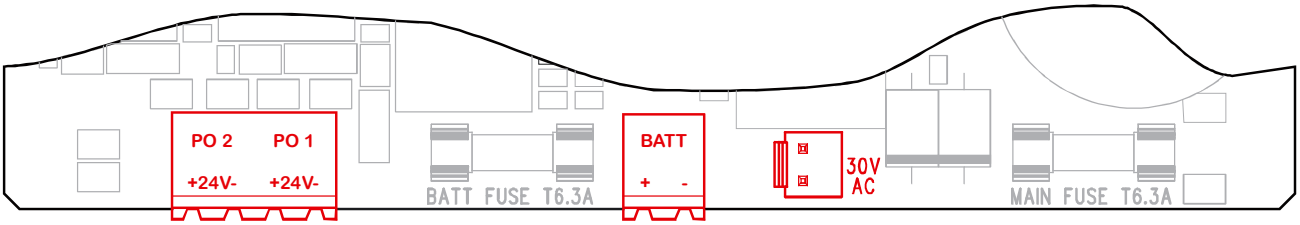
20.7 Connectors on the MC2 board

Terminal name	Connector symbol	Purpose	Description
PI 1	24 V -	Power supply 1 in (-)	For external power supply only. Not to be used if the panel is equipped with an internal power supply unit.
	24 V +	Power supply 1 in (+)	
PI 2	24 V -	Power supply 2 in (-)	For external power supply only. Not to be used if the panel is equipped with an internal power supply unit.
	24 V +	Power supply 2 in (+)	
PO	24 V -	Power supply out (-)	Power supply out for auxiliary equipment
	24 V +	Power supply out (+)	
MO	-	Monitored output line (-)	General fire monitored output line as default. Other functions can be selected with the configuration tool.
	+	Monitored output line (+)	
CO 1		Relay output 1 NC	Fire alarm router output as default
		Relay output 1 C	
		Relay output 1 NO	
CO 2		Relay output 2 NO	Fault warning router output as default. The relay is energized in normal condition (as drawn) and releases in fault condition.
		Relay output 2 C	
		Relay output 2 NC	
CO 3		Relay output 3 NC	Fire alarm output as default
		Relay output 3 C	
		Relay output 3 NO	
IN 1	+	Input 1	Fault in fire alarm router. Monitored and normally open as default function. Other functions can be selected with the configuration tool.
	-		
IN 2	+	Input 2	Fault in fault warning router. Monitored and normally open as default function. Other functions can be selected with the configuration tool.
	-		
RS232	CTS	Clear To Send	Serial communication with printer or configuration / maintenance tool
	RTS	Request To Send	
	GND	Ground	
	RxD	Received data	
	TxD	Transmit data	
SYSTEM 1	T/R +	Transmit/Received Data +	Serial communication with other FX panels
	T/R -	Transmit/Received Data -	
	Gnd	Ground	
SYSTEM 2	T/R +	Transmit/Received Data +	Serial communication with other FX panels
	T/R -	Transmit/Received Data -	
	Gnd	Ground	
RS485/RS232	T/R +	Transmit/Received Data +	Serial communication with INFO/FMP/MCO/ABC or other alarm management systems
	T/R -	Transmit/Received Data -	
	Gnd	Ground	
Ethernet	RJ45	INFO communication	Future option
USB	Micro USB		Configuration / Maintenance tool



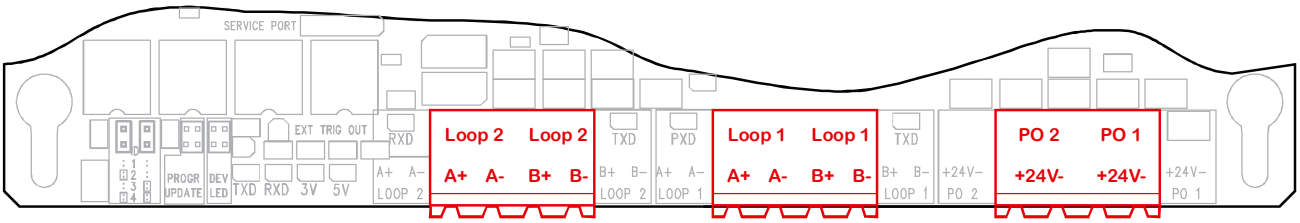
20.8 Connectors on the PSA and PSB - board

Terminal name	Connector symbol	Purpose	Description
30 VAC			30 VAC input from transformer.
BATT	-	Battery -	Connection for the standby battery.
	+	Battery +	
PO 1	24 V -	Power supply 1 out -	Power supply output 1 for external load.
	24 V +	Power supply 1 out +	
PO 2	24 V -	Power supply 2 out -	Power supply output 2 for external load.
	24 V +	Power supply 2 out +	



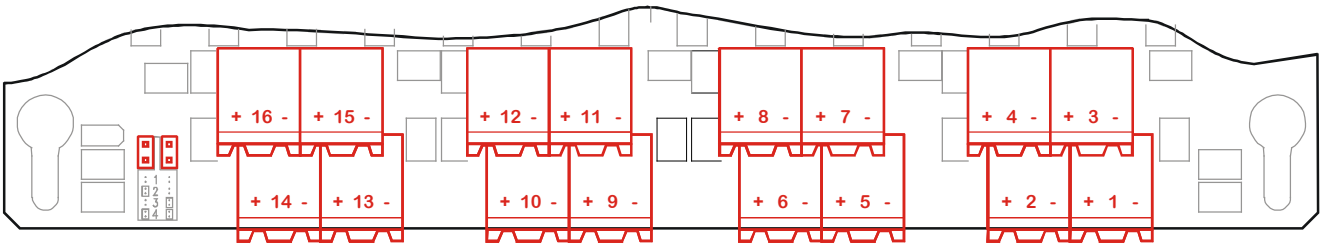
20.9 Connectors on each SLC board

Terminal name	Connector symbol	Purpose	Description
PO 1	24 V -	Power supply out (-)	Power output for loop devices in loop 1 that require external power supply.
	24 V +	Power supply out (+)	
PO 2	24 V -	Power supply out (-)	Power output for loop devices in loop 2 that require external power supply.
	24 V +	Power supply out (+)	
LOOP 1	B -	Return end -	System Sensor- loop devices.
	B +	Return end +	
	A -	Outgoing end -	
	A +	Outgoing end +	
LOOP 2	B -	Return end -	System Sensor- loop devices.
	B +	Return end +	
	A -	Outgoing end -	
	A +	Outgoing end +	



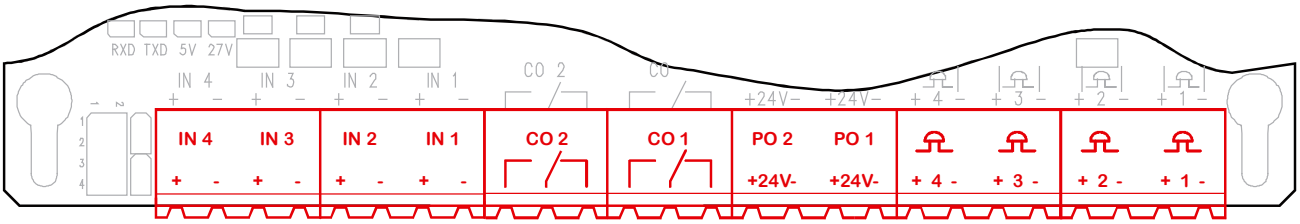
20.10 Connectors on each CLC board

Terminal name	Connector symbol	Purpose	Description
1	-	Conventional line 1 -	
	+	Conventional line 1 +	
...			
16	-	Conventional line 16 -	
	+	Conventional line 16 +	



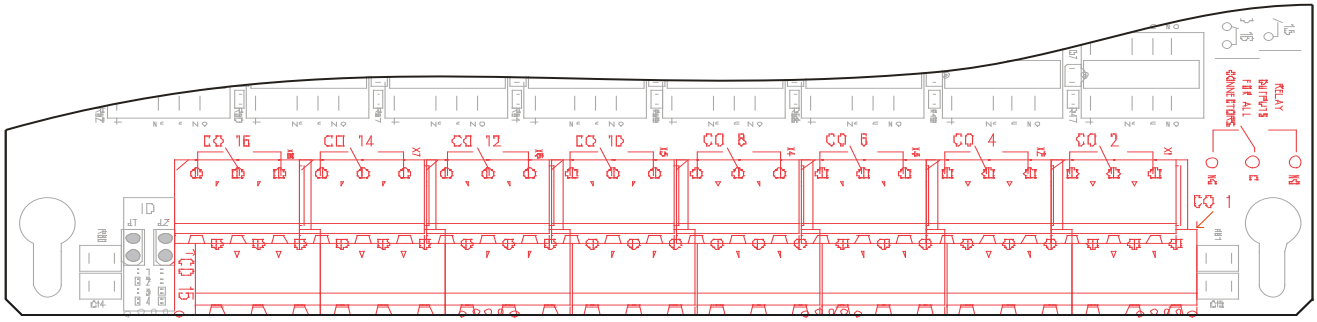
20.11 Connectors on each IOC board

Terminal name	Connector symbol	Purpose	Description
1		Monitored output line 1 -	Fire monitored output line as default.
		Monitored output line 1 +	
2		Monitored output line 2 -	Fire monitored output line as default.
		Monitored output line 2 +	
3		Monitored output line 3 -	Fire monitored output line as default.
		Monitored output line 3 +	
4		Monitored output line 4 -	Fault warning device line as default.
		Monitored output line 4 +	
PO 1	24 V -	Power supply 1 out -	Power supply output 1.
	24 V +	Power supply 1 out +	
PO 2	24 V -	Power supply 2 out -	Power supply output 1.
	24 V +	Power supply 2 out +	
CO 1		Relay output 1 NC	Clean contact relay output. General fire alarm output as default.
		Relay output 1 C	
		Relay output 1 NO	
CO 2		Relay output 2 NC	Clean contact relay output.
		Relay output 2 C	
		Relay output 2 NO	
IN 1	-	Clean contact input 1	
	+		
IN 2	-	Clean contact input 2	
	+		
IN 3	-	Clean contact input 3	
	+		
IN 4	-	Clean contact input 4	
	+		



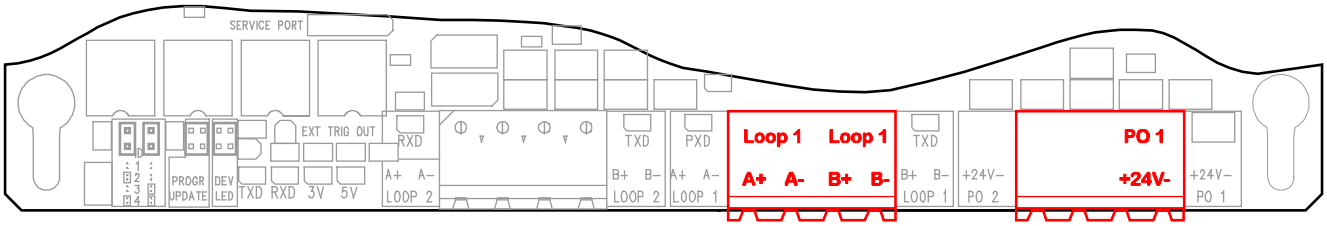
20.12 Connectors on each OCA-board

Terminal name	Connector symbol	Purpose	Description
CO 1-2		Relay output 1-2 NC	Fire alarm output.
		Relay output 1-2 C	
		Relay output 1-2 NO	
CO 3-4		Relay output 3-4 NC	Fire door output.
		Relay output 3-4 C	
		Relay output 3-4 NO	
CO 5-6		Relay output 5-6 NC	Pre-alarm output.
		Relay output 5-6 C	
		Relay output 5-6 NO	
CO 7-8		Relay output 7-8 NC	Technical alarm output.
		Relay output 7-8 C	
		Relay output 7-8 NO	
CO 9-10		Relay output 9-10 NC	Fault warning output.
		Relay output 9-10 C	
		Relay output 9-10 NO	
CO 11-12		Relay output 11-12 NC	Maintenance warning output.
		Relay output 11-12 C	
		Relay output 11-12 NO	
CO 13-14		Relay output 13-14 NC	Disablement output.
		Relay output 13-14 C	
		Relay output 13-14 NO	
CO 15-16		Relay output 15-16 NC	Access level 2 output.
		Relay output 15-16 C	
		Relay output 15-16 NO	



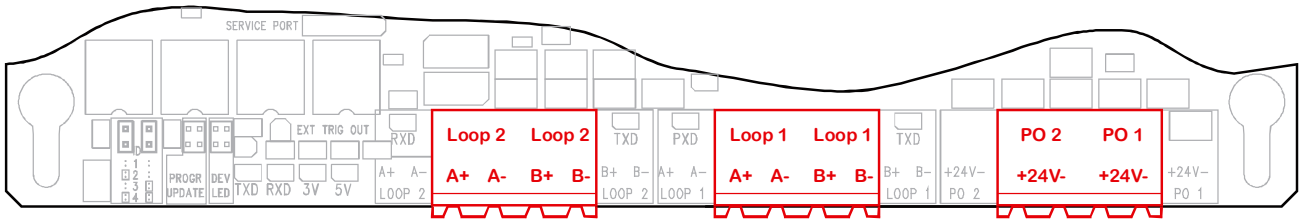
20.13 Connectors on each ALCA- board

Terminal name	Connector symbol	Purpose	Description
PO 1	24 V -	Power supply out (-)	Power output for loop devices in loop 1 that require external power supply.
	24 V +	Power supply out (+)	
LOOP 1	B -	Return end -	Intellia loop devices.
	B +	Return end +	
	A -	Outgoing end -	
	A +	Outgoing end +	



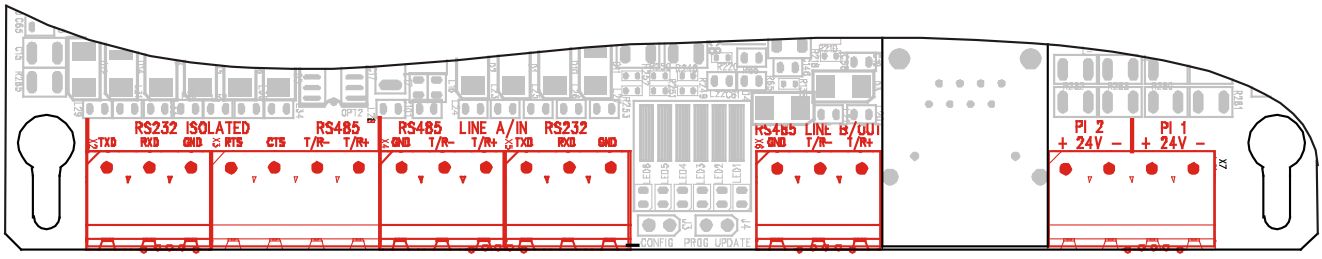
20.14 Connectors on each ALCB- board

Terminal name	Connector symbol	Purpose	Description
PO 1	24 V -	Power supply out (-)	Power output for loop devices in loop 1 that require external power supply.
	24 V +	Power supply out (+)	
PO 2	24 V -	Power supply out (-)	Power output for loop devices in loop 2 that require external power supply.
	24 V +	Power supply out (+)	
LOOP 1	B -	Return end -	Intellia loop devices.
	B +	Return end +	
	A -	Outgoing end -	
	A +	Outgoing end +	
LOOP 2	B -	Return end -	Intellia loop devices.
	B +	Return end +	
	A -	Outgoing end -	
	A +	Outgoing end +	

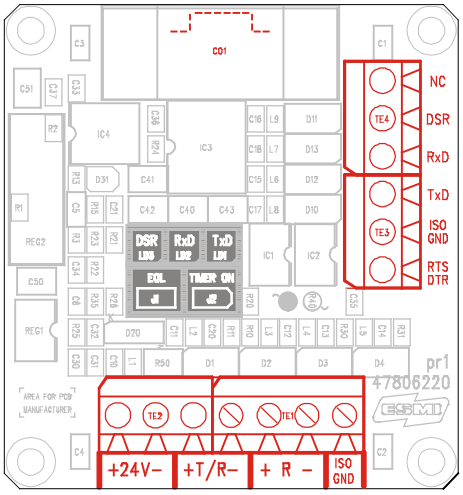


20.15 Connectors on FMPX, DAPX, REPX and REPX-OB- board and MCOX and MCOX-OB- board

	Terminal name	Connector symbol	Description
Isolated serial port for 3rd part external devices	RS232	TXD	For 3rd part devices. Ie. integration to BMS.
		RXD	
		GND	
	RS485	RTS	
		CTS	
		T/R-	
		T/R+	
Line IN	RS485	GND	Configuration / input port. Panel connection must be disconnected during configuration.
		T/R-	
		T/R+	
	RS232	TXD	
		RXD	
		GND	
Line OUT	RS485	GND	For PELCO devices using INFO- protocol.
		T/R-	
		T/R+	
Power input 1	PI 1	24 V -	**Note!** Both inputs must be connected.
		24 V +	
Power input 2	PI 2	24 V -	
		24 V +	



20.16 Connectors on CODINET modem adapter

Terminal name	Connector symbol	Purpose	Description
CO1 (D9-connector)	2:RxD (in)	RS232-line.	
	3:TxD (out)		
	4:DTR (out)		
	5:ISO GND		
	6:DSR (in)		
	7:RTS (out)		
TE4	NC		
	DSR		
	RxD		
TE3	TxD		
	ISO GND		
	DTS DTR		
TE2	+24 V	Power input. (Isolated)	
	GND		
	T/R+	RS485-line.	
	T/R-		
TE1	R+		
	R-		
	ISO GND		
J1	Mounted	Terminating resistor of 120 ohm between ±T/R. Normally not used.	
J2	Mounted (default)	RS485 2-wires, ±T/R.	
	Not mounted	RS485 4-wires, ±T/R and ±R.	

CE

0832

Pelco Finland Oy P.O. Box 415, 02601 Espoo Finland

For FX 0832-CPD-1082 Issue 4
For FXL 0832-CPD-1083 Issue 3
For FXM 0832-CPD-1084 Issue 3

EN 54-2:1997/AC:1999/A1:2006
EN 54-4:1997/AC:1999/A1:2002/A2:2006

Options:
7.8; 7.9.1; 7.10.3; 7.11; 7.12.2; 7.13; 8.3; 8.4; 8.9; 9.5; 10

Control and indicating equipment for fire detection and fire alarm systems for buildings

FX, FXL, FXM

Other technical data:
66571764: installation and commissioning
66571744: operation manual
66571758 (SLC), 66571761 (ALC): system planning (held by the manufacturer)

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