Installing the FireClass FC700 Series POS800/PCS800 Ethernet Switch

Introduction

This leaflet covers the installation of an Ethernet Switch (an optional accessory) on the following FireClass panels:

- FC708D
- FC718D
- FC702D
- FC702S (PCS800 only)

Table 1 outlines the three Ethernet switch types available.

Switch Type	Optical Ports	Copper Ports
POS800-S	2x 100Base-FX (Single Mode)	4x 10/100Base-T(X) RJ45 Ports
POS800-M	2x 100Base-FX (Multi-Mode)	4x 10/100Base-T(X) RJ45 Ports
PCS800	-	5x 10/100Base-T(X) RJ45 Ports

Table 1: Ethernet switch types

The FireClass POS800-S and POS800-M Ethernet switches are used to connect devices (for example a panel and an AC repeater) with a single, redundant optical or metallic layer.

The POS800-S/POS800-M Ethernet switch has four 10/100Base-T(X) RJ45 ports that connect it to the FC-FI board, the primary graphical user interface (GUI) and additional AC/ DC repeaters. The switch also has two optical ports that can connect an AC repeater using a redundant (or a single) optical path if you require redundant wiring or long distance wiring. After you connect the Ethernet switch, configure it. Refer to the "Configuring the POS800-S and POS800-M Ethernet switches" section.The total maximum number of devices on the network is 254 and this is split between all devices (repeaters, the FC-FI board and Ethernet switches). For the maximum number of LNET GUI repeaters, refer to the latest FireClass Express documentation.

The FireClass PCS800 Ethernet switch provides five 10/100Base-T(X) RJ45 ports that connect it to the FC-FI board, the primary GUI and additional AC/DC repeaters. The PCS800 does not require additional configuration.

Refer to Table 2 for limiting distances for each type of cable.

Switch Type	Limiting Distance (Optical)	Limiting Distance (Copper)[1]
POS800-S	30km	100m
POS800-M	2km	100m
PCS800	-	100m

Table 2: Limiting distances

[1] Limiting distances without a repeater. The distance can increase if a switch or a repeater is used.

Ethernet Switches allow the use of a dual power supply to provide backup power in the event of, for example, a component failure or a blown fuse. Note that there is one power rail in the panel.

⚠️ **CAUTION**

Before you install an Ethernet switch, ensure that the panel is isolated from the mains supply and it is not running on batteries.

Installing the Ethernet Switch (POS800/PCS800) on a FireClass Panel

1 Slide the Ethernet switch (refer to item 1 in Fig. 1) into the slot cage holder (item 2).

2 Align the back of the Ethernet switch with the back of the slot cage holder and secure it with the screws supplied (item 3).

3 Prepare the power supply cables and feed them through the top of the slot cage holes (refer to item 4 in Fig. 2). Connect the wires into the terminal block on the Ethernet switch. Observe the correct polarity. If you require redundant power supply wiring, follow the same procedure.

> ℹ️ A redundant cable is not provided. If required, use a minimum 16/0.2 wire.

4 Fit the other end of the cable to the FC-FI board (XT6 or XT7 connectors) using the connector supplied with the FC-FI. Refer to Table 3. Use both XT6 and XT7 connectors on the FC-FI board for a redundant power supply.

5 The POS800 Ethernet switch also provides a volt-free relay contact to which you can connect the FC-FI isolated inputs (ISOLIN 1, ISO-LIN 2) for fault monitoring. If required, connect a bypass wire from V1+ (pin 5) on the Ethernet switch connector to pin 4 on the same connector. Additionally, connect the wire from pin 3 on the Ethernet switch to ISOL IN+ on the FC-FI board and from V1- on the Ethernet switch to ISOL IN– on the FC-FI. Refer to Fig. 3. Use a minimum 16/0.2 wire (not supplied).
Note: Using a volt-free relay contact on the Ethernet switch allows the panel to see faults which would otherwise go undetected (for example, a power port failure or an Ethernet port downlink). You can select situations in which the relay will actuate in configuration on an individual basis (see the section, "Configuring the POS800-S and POS800-M Ethernet switches"). Each Ethernet switch reports only faults related to its own ports.

6 Plug the power supply connector into the Ethernet switch.

7 Fit the fibre-optic modules into the Ethernet switch and connect the optical cables (POS800 only).

8 Slide the slot cage holder (refer to item 2 in Fig. 2) into the slot cage in the panel.

9 If the switch is a POS800, attach the fibre-optic holder (item 5) into the slot cage and secure it with screws (item 3).

10 Connect the metallic cables from the GUI and the FC-FI board to the Ethernet port on the switch.

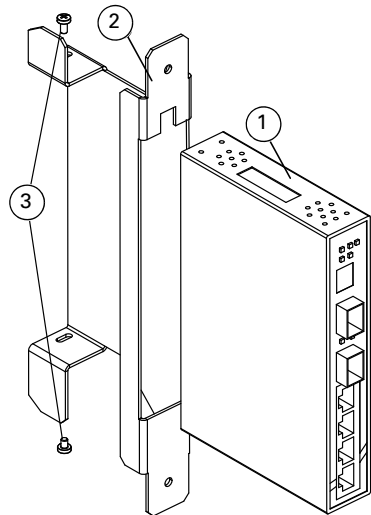| XT6, XT7	Ethernet Switch
+24V	V1+
-	V1-

Table 3: FC-FI connections

Fig. 1: Mounting the Ethernet switch to the slot cage holder
1– Ethernet switch
2– Slot cage holder
3– Screws

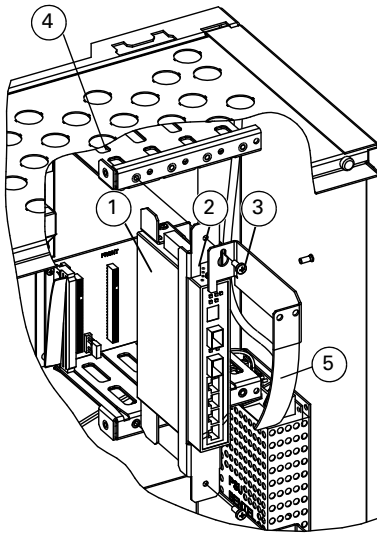Fig. 2: Mounting the Ethernet switch and slot cage holder into the slot cage.
1– Ethernet switch
2– Slot cage holder
3– Screws
4– Slot cage holes
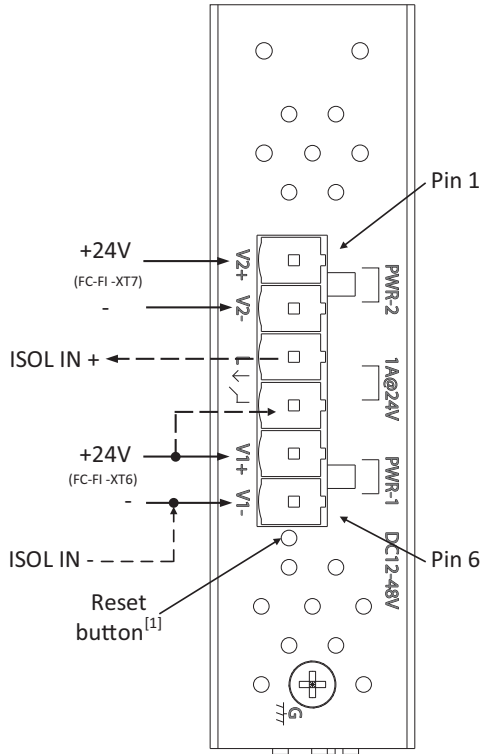5– Fibre-optic holder

Fig. 3: POS800 connectors overview
The dashed line indicates optional switch fault monitoring.

[1] Press the reset button for 10 seconds to restore the switch to the factory default configuration.

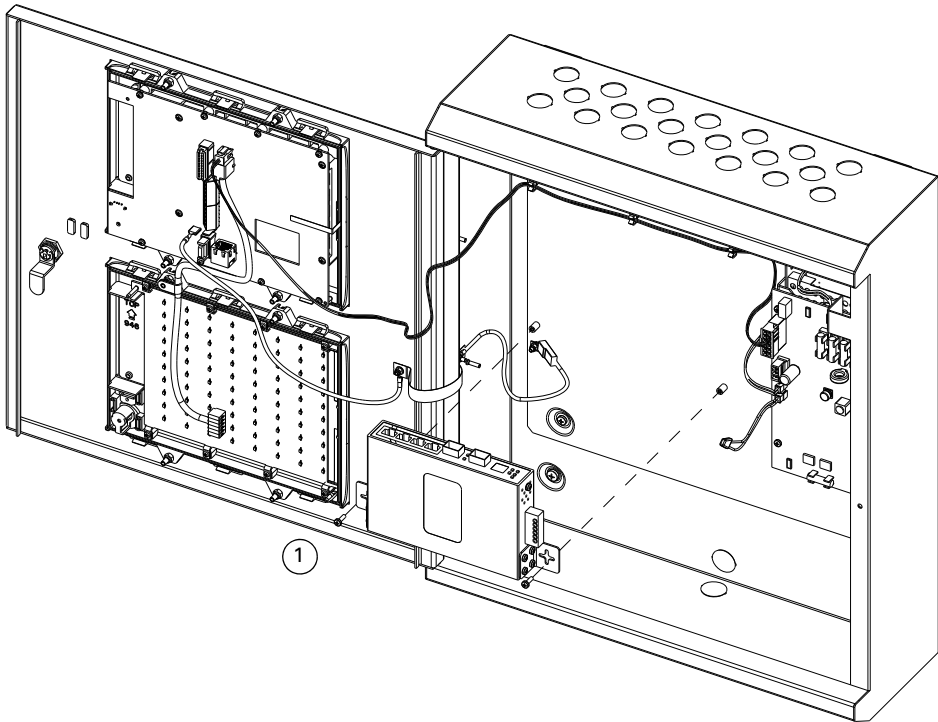# Installing the Ethernet Switch on a FC8AS AC

Fig. 4: Installing the Ethernet switch on a FC8AS AC repeater
1– Earth cable screw (optional)

Repeater

To mount the Ethernet switch on an FC8AS repeater, complete these steps:

1   Ensure that the panel is isolated from the mains and it is not running on batteries.

2   Mount the fixing elements (refer to item 2 in Fig. 4) with screws (supplied) on the Ethernet switch housing.

3   Connect the DC power supply to the Ethernet switch connector (refer to item 4 in Fig. 4), observing the correct polarity. If you require a redundant power supply, connect a minimum 16/0.2 wire (not supplied).

4   Connect the other end of the DC supply cable to the PMM800 board. Refer to Table 4.

5   If you require a redundant supply, use the other pins on the same terminals on the PMM800 board and connect to V2+ and V2- on the Ethernet switch.

6   Fit the fibre-optic modules on to the Ethernet switch and connect the optical cables.

7   Connect the metallic cable from the GUI to the Ethernet port on the switch.

PMM800	Ethernet switch
24V (TB6)	V1+
0V (TB4)	V1-

Table 4: Power supply wiring connection

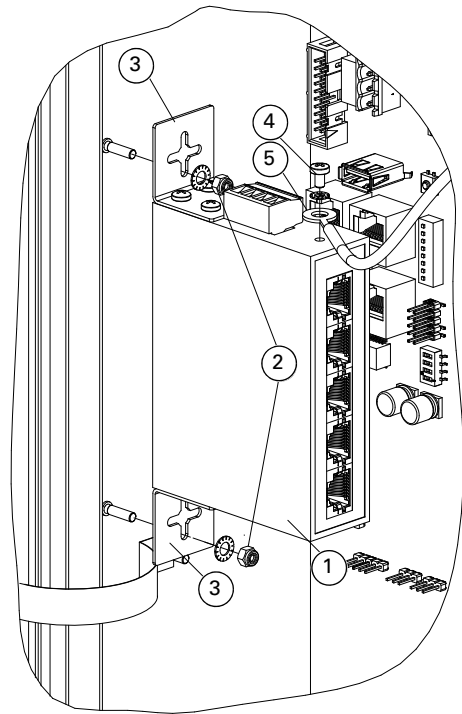# Installing the PCS800 on a FireClass FC702S Panel

Fig. 5: Installation of the PCS800 to the FireClass FC702S panel
1– Ethernet switch
2– Washers and nuts
3– Fixing elements
4– Earth cable fixing screw
5– Earthing cable

To install the PCS800 Ethernet switch on a FC702S panel, complete these steps:

1   Mount the fixing elements (refer to item 3 in Fig. 5) with the screws provided on to the Ethernet switch housing.
2   Fix the Ethernet switch on to the chassis studs with nuts and washers (item 2).
3   Fix the Earthing cable (item 5) supplied with the switch accessories to the top of the Ethernet switch. Secure the cable with a fix-ing screw (item 4) and connect the other end to the housing earthing bar.
4   Connect the DC power supply cable to the FC-FI connector. Refer to Table 4. Connect to XT6 or XT7, (or both if you require a redundant supply) and to the PCS800 connector.
5   If you require a redundant supply, use the same terminals on the PMM800 board and connect to V2+ and V2-.
6   Plug the DC power supply into the Ethernet switch.
7   Connect the Ethernet cabling.

Configuring the POS800-S and POS800-M Ethernet switches

To configure a POS800-S or a POS800-M Ethernet switch, complete these steps:

⚠ **CAUTION**
Before configuring an Ethernet switch, ensure that you disconnect all devices that are connected to it (apart from your computer).

1   Configure the DIP switch on the front of the Ethernet switch. Refer to Table 5.

Redundant optical connection	Redundant metallic connection*	Single line connection
Ethernet switch no.1: Position1 - OFF. Position 2,3,4 - ON	Ethernet switch no. 1: Position 1,4 – OFF. Position 2,3 – ON	All positions OFF
Ethernet switch no. 2,3,...: Position 1,3 - OFF. Position 2,4 - ON	Ethernet Switch no. 2,3...: Position 1,3,4 – OFF. Position 2 – ON	-

Table 5: POS800-S/POS800-M configuration
* Supported on port 1 and 2 only

2   Connect a PC to one of the Ethernet ports. Configure the PC Ethernet adapter with an IP address: 192.168.10.253 (subnet 255.255.0.0).

3   Open a web browser. In the address bar, type in the IP address 192.168.10.1 and press Enter.

    User name: admin

    Password: admin

4   In the left menu, select "Basic setting" and then "admin password". Change these to non-default and make a note of them.

5   Under "Basic setting", select "IP setting" and set the address:

    First switch IP address: 192.168.1.254

    Second switch IP address: 192.168.1.253 Note: To configure additional switches, decrease the final byte of the IP address by 1, for example, 192.168.1.252 or 192.168.1.251. The subnet mask is 255.255.255.0 in all instances. For the maximum number of LNET repeaters, refer to the latest of FireClass Express documentation. Set the IP address of the LNET repeaters in FireClass Express and avoid conflicts with Ethernet switch IP addresses.

6   To configure the fault relay to report multiple situations such as power supply faults or Ethernet port link faults, tick all the ports you want to monitor under "Port Link Down/Broken". Move DIP switch 1 to "ON" to monitor the power supply. Ensure you connect the fault contact to an isolated input on the FC-FI. Configure the input using FireClass Express.

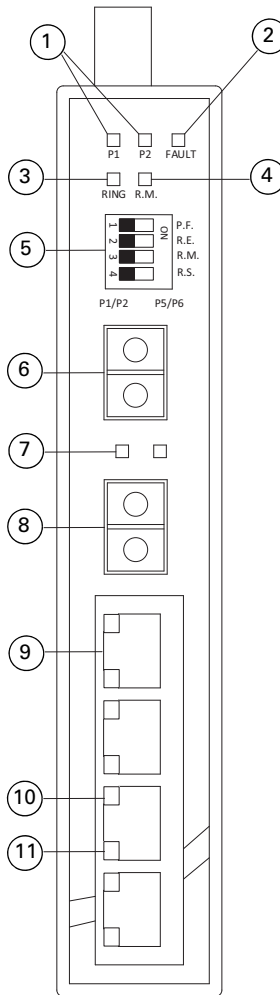7   To save to the Flash memory, click "Save Configuration" in the left column, and then click "Save".

Fig. 6: POS800/PCS800 Ethernet switch
1– LED for PWR1, LED for PWR2
2– LED for fault relay
3– LED for ring
4– LED for R.M. (ring master)
5– DIP switch setting:
　　P.F.: Power fault warning (ON for enable, OFF for
　　disable)
　　R.E.: Ring topology (ON for enable, OFF for
　　disable)

　　R.M.: Ring Master (ON for enable, OFF for
　　disable)
　　R.S.: Ring Select (P1/P2L Port 1 and Port 2, P5/P6:
　　Port 5 and Port 6)
6– 100 base fibre port on SFP (Port 6)
7– LED for SFP LINK/ACT
8– 100 base fibre port on SFP (Port 5)
9– 10/100Base-T(X) Ethernet ports
10–LED for Ethernet ports ACT status
11–LED for Ethernet ports LINK status

LED	Status	Description
P1	On	PWR 1 active
P2	On	PWR 2 active
R.M.	On	Ring master
Ring	Slow blinking	Ring enabled, topology problem
	On	Ring working normally
Fault	On	Fault relay active. Power failure or port failure
10/100Base-T(X) Fast Ethernet ports		
LNK/ACT	On	Port link up
	Blinking	Data transmitted
LINK	On	Link LED
100Base Fibre port on SFP		
LINK/ACT	On	Port link up
	Blinking	Data transmitted

Table 6: Ethernet switch LED status

Cable Examples

	Manufacturer	Type	Description
Tight buffered cables	Belden	GUMT202	2x50/125,OM2-fibre, multi-mode
	Belden	GUMT102	2x62.5/125,OM1-fibre, multi-mode
Loose tube cables (with jelly-filled loose tube)	Belden	GUSN202	2x50/125,OM2-fibre, multi-mode
	Belden	GUSN102	2x62.5/125,OM1-fibre, multi-mode

Table 7: Recommended cables for the POS800-M Ethernet switch

	Manufacturer	Type	Description
Tight buffered cables	Belden	GUMT802	2 x 9/125, G.652D, single mode
Loose tube cables (with jelly-filled loose tube)	Belden	GUSN802	2 x 9/125, G.652D, single mode

Table 8: Recommended cables for the POS800-S Ethernet switch

Table 9 shows recommended cables for fibre-optic modules which accept LC style connectors.

Pig tail type	MPN	Manufacturer	Length
OS2, tight buffered (single mode)	FTSLC900PS01	Belden	2 m
OM3, tight buffered (multi-mode)	FT3LC900PS01	Belden	2 m

Table 9: Recommended pig-tails

Cable Type	Min. Category
STP	5e

Table 10: Recommended metallic cables for POS800 and PCS800 Ethernet switches

Switch 1

Switch 2   Switch 3
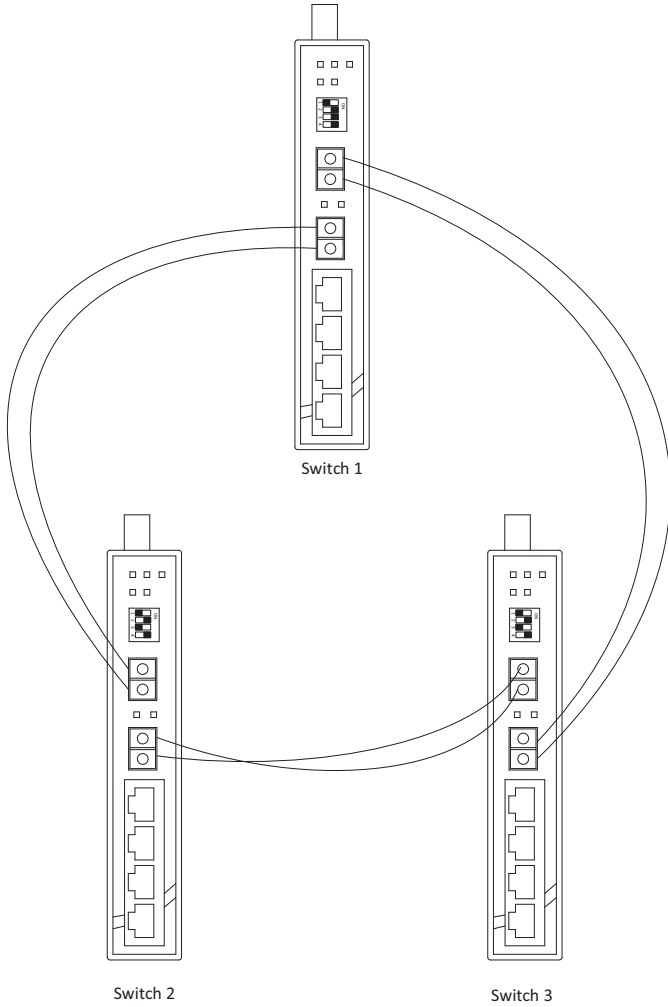
Fig. 7: Example of Ethernet switches configured in a ring topology

TO ADDITIONAL REPEATERS

FC-FI

Panel GUI

GUI
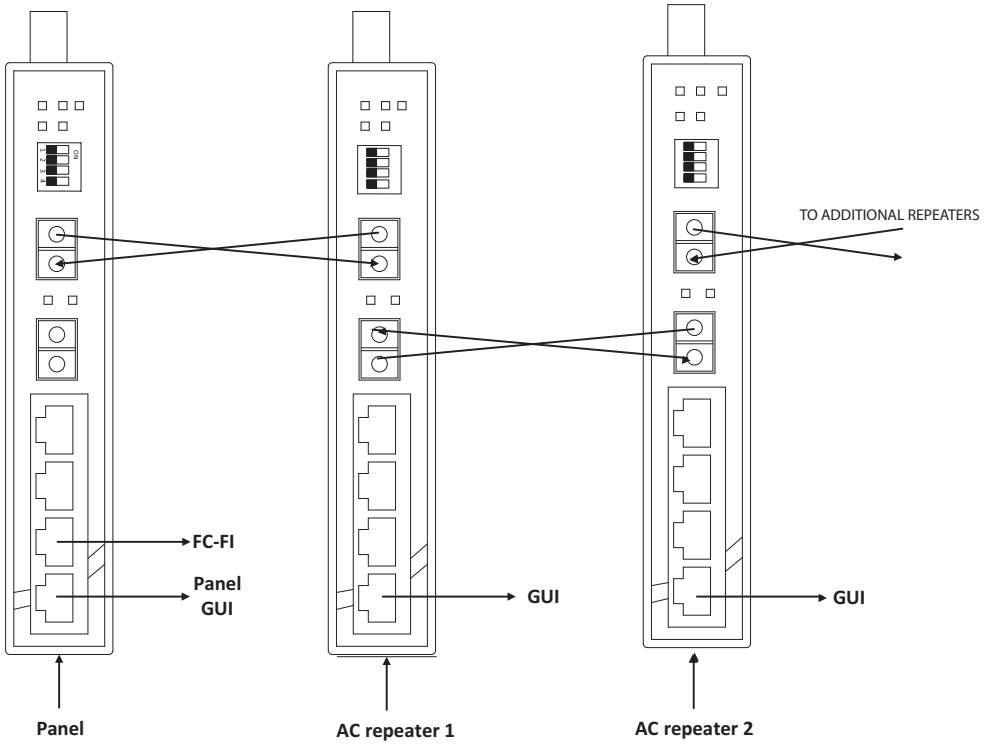
GUI

Panel

AC repeater 1

AC repeater 2

Fig. 8: Wiring example - single optical connection

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