Networking Cards

FPE-1000-NE | -NF | -NW

BOSCH

en Installation Manual

1   Documentation Availability Note

For additional documentation including documents in languages other than English, see this CD (shipped with the FPA-1000 Fire Panel).
Para obtener documentación adicional, incluyendo los documentos en idiomas distintos del Inglés, vea este CD (incluido con la central de incendios FPA-1000).
Para obter documentação adicional incluindo documentos em outros idiomas além do Inglês, consulte este CD (fornecido com o Painel de Incêndio FPA-1000).
สำหรับเอกสารเพิ่มเติมรวมทั้งเอกสารในภาษาอื่นที่ไม่ใช่ภาษาอังกฤษให้ดูซีดีแผ่นนี้ (ที่มาพร้อมกับแผงไฟ FPA - 1000)

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1   Safety

1.1   General

> **DANGER!**
> Fire panels are Life safety devices. Only trained personnel should install and program these
> panels!
> Any panel in a network can control all other panels in the network (e.g. silencing an alarm or
> resetting the system). Access to panels should be restricted to properly trained personnel.

Use these instructions to install FPE-1000 Networking Cards in FPA-1000 Analog Addressable
Fire Panels.

1.   Install, test, and maintain the networking cards and the FPA-1000 panels according to
     these instructions, NFPA 72, local codes, and the Authority Having Jurisdiction (AHJ).
2.   Follow the procedures in this document to avoid personal injury and damage to the
     equipment. Failure to follow these procedures can cause improper operation of the fire
     panel and/or network. Bosch is not responsible for improperly installed, tested, or
     maintained devices.
3.   Failure to follow the mounting instructions in this document can damage the fire panel.

For detailed wiring style requirements and complete programming instructions, see the
FPA-1000 *Installation and Operation Guide*.

1.2   Disclaimer

> **NOTICE!**
> Bosch Security Systems, Inc. has tested and approved the FPA-1000 Analog Addressable Fire
> Panels and associated Netwotrking Cards including the system and card software. The system
> must only be operated with the software included in the product delivery or with authorized
> software upgrades (downloadable from the official Bosch homepage). Bosch cannot be held
> responsible if devices are operated with any modified software or software from other
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2   System Overview

The FPA-1000 Analog Addressable Fire Panels are advanced analog addressable control panels for small to large facilities in residential, commercial or public building applications. Optional networking cards allow multiple panels to be interconnected into a networked system. The network acts as if it were a single panel for purposes of communication. In other words, an alarm signal received by any panel in the network is communicated to all the panels in the network.

Based on communication connection mode, there are three types of networking cards available:

Type Number	Description	Connection Mode	Maximum Distance
FPE-1000-NE	**Ethernet Networking Card** – 3 Ethernet ports	CAT 5 minimum	328 ft (100 m)
FPE-1000-NF	**Fiber Optic Networking Card** – 1 Ethernet port – 2 fiber optic ports	CAT 5 minimum multi-mode fiber optic, LC connector,62.5 µm/125 µm fiber size, 1300 nm (1270 nm to 1380 nm) wavelength	328 ft (100 m) 10 dB loss or 6560 ft (2000 m)
FPE-1000-NW	**Wired Networking Card** – 1 Ethernet port – 2 wired ports	CAT 5 minimum 14 AWG (1.6 mm) to 18 AWG (1.02 mm), plain or twisted pair wire (shielded or unshielded)	328 ft (100 m) 3280 ft (1000 m)

Table 2.1   Networking Card Types

3   Planning

3.1   General considerations

If the panel is to be used in a networked system, be careful to plan properly before installing any panels. Check:

– whether the networked panels will be installed near each other or distributed over a wider area
– whether or not any of the networked panels will be in different buildings
– the types and numbers of Networking Cards needed
– interconnection requirements, including the maximum allowable cable lengths which depend on the intended interconnection method (Ethernet, fiber optic cable, or wire).

For each panel, be careful to plan properly before installing any devices. Check:

– the compatibility and number of devices to be connected
– the battery capacity needed
– the wiring requirements, including the maximum allowed cable length
– the installation requirements according to this Installation and Operation Guide,NFPA 72, Local Codes and the Authority Having Jurisdiction (AHJ).

3.2   Ground Fault Detection

Each networking card has a specific terminal or terminals that are Ground Fault Detection enabled. As indicated by the checked boxes in the following table, Port 1 on all three networking cards is ground fault enabled; as is Port 3 on the wired card (FPE-1000-NW).

Port	-NE		-NF		-NW	
1	☑	Ethernet IN	☑	Ethernet IN	☑	Wired IN
2	☐	Ethernet OUT	☐	Fiber IN	☐	Wired OUT
3	☐	Ethernet	☐	Fiber OUT	☑	Ethernet IN

Table 3.1   Network Port Identification

For Ground Fault Detection to work properly, one and only one end of a communication connection (cable) joining two networking cards must be Ground Fault Detection enabled. To facilitate this, the wired card (FPE-1000-NW) and the fiber optics card (FPE-1000-NF) each have a jumper located near the back of the Ethernet IN port (Port 1 on the wired card and Port 3 on the fiber optic card). This jumper allows Ground Fault Detection to be disabled for this port. Recommended communication connection practice is to come out of one card and in on the next. In cases where you are switching from a wired or fber optic card to a different type of card, you must use the Ethernet port which should be OUT not IN which is the default. Move the jumper on this card so that Ground Fault Detection is disabled at this end of the connection (making it an Ethernet OUT). Remove the jumper from both pins and replace it on only one pin so that it does not get misplaced in case Ground Fault Detection needs to be re-enabled later.

3.3   Port supervision

Each peer-to-peer connection (cable) connected to a networking card port used for panel-to-panel communication must be supervised. This supervision is selected by programming. For programming information, follow the panel programming instructions in the *FPA-1000 Network Quick Installation Guide*, or see Keypad Operation and Programming, Programming or

Browser-based Operation and Programming, Networking in the FPA-1000 *Installation and Operation Guide.*

4   Installation

4.1   General considerations

CAUTION!
Electrostatic discharge!
Ground yourself using a wrist strap or take other suitable actions.
The FPA-1000 circuit boards have static-sensitive components that could become damaged.
Run the ground wire to the enclosure before handling these circuit boards. Touch ground
before unpacking and handling the circuit boards. This discharges any static electricity in your
body. Continue touching the enclosure while installing the circuit boards.

DANGER!
Before installing the networking card, remove all AC and battery power from the fire panel.

4.2   Mounting

The main board allows for the installation of one networking card.
1.   Position the networking card along the bottom of the mainboard keypad with the
       connections aligned with the slot.
2.   Press down softly until the snap-fit hook locks into place ensuring that the connections
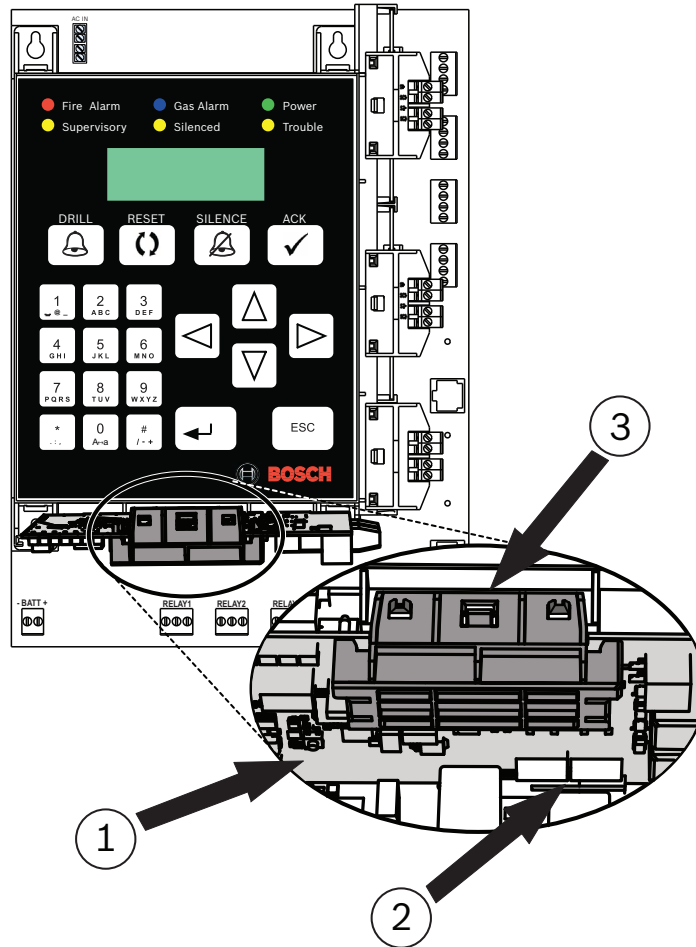   seat into the slot properly.

Figure 4.1 Mounting a Networking Card

1	Networking Card
2	Connectors and slot
3	Snap-fit hook

5   Connection

5.1   General considerations

NOTICE!
All wiring except the battery terminal and primary AC power is power-limited. Phone lines are also generally considered to be nonpower-limited.

Power-limited and nonpower-limited circuit wiring must remain separated in the cabinet by at least 0.25 in. (64 mm) and must enter and exit from the cabinet through different knockouts or conduits. Phone lines are generally considered to be nonpower-limited, so the cables for networking cards should not be run through the same knockout as the phone lines.

Avoid shielded or twisted-pair wire except for special applications where a reduced length of wiring (roughly 50%) is acceptable for tolerating a harsh electrical environment. Consider fiber optics for these applications.

A network group can be connected as Class A Style 7 or Class B Style 4. Class A configuration is recommended because this allows the panels in a network to communicate with each other, ensuring circuit operation in the event of a single break in the wiring.

The following table lists the trouble conditions that result when a fault exists on the network (SLC according to UL 864).

Type of Fault	Class B Style 4	Class A Style 7
Single Open	Trouble	Alarm, Trouble
Single Ground	Alarm, Trouble (ground)	Alarm, Trouble (ground)
Short	Trouble	Alarm, Trouble
Short and open	Trouble	Trouble
Short and ground	Trouble	Alarm, Trouble
Open and ground	Trouble	Alarm, Trouble
Communication loss	Trouble	Trouble
Trouble = The control panel will indicate a trouble condition for this type of fault. Alarm = The control panel must be able to process an alarm input signal in the presence of this type of fault.		

Table 5.1   Network Trouble Conditions

5.2   Class A connections

In a Class A loop, the FPE-1000-NW Wired Networking Card must be wired accoring to the following table:

Terminal		Specifications Class A Style 7
FPE-1000-NW	Wired OUT+/-	Terminals used for outgoing loop
	Wired IN+/-	Terminals used for return loop

Table 5.2   Specifications SLC Terminals Class A Style 7

Additional notes regarding Class A Style 7:

1.   No T-taps allowed on Class A Style 7 network wiring.
2.   The return side of the loop must be routed separately from the outgoing loop.
3.   The return side must not share the same conduit or cable as the outgoing side of the loop.
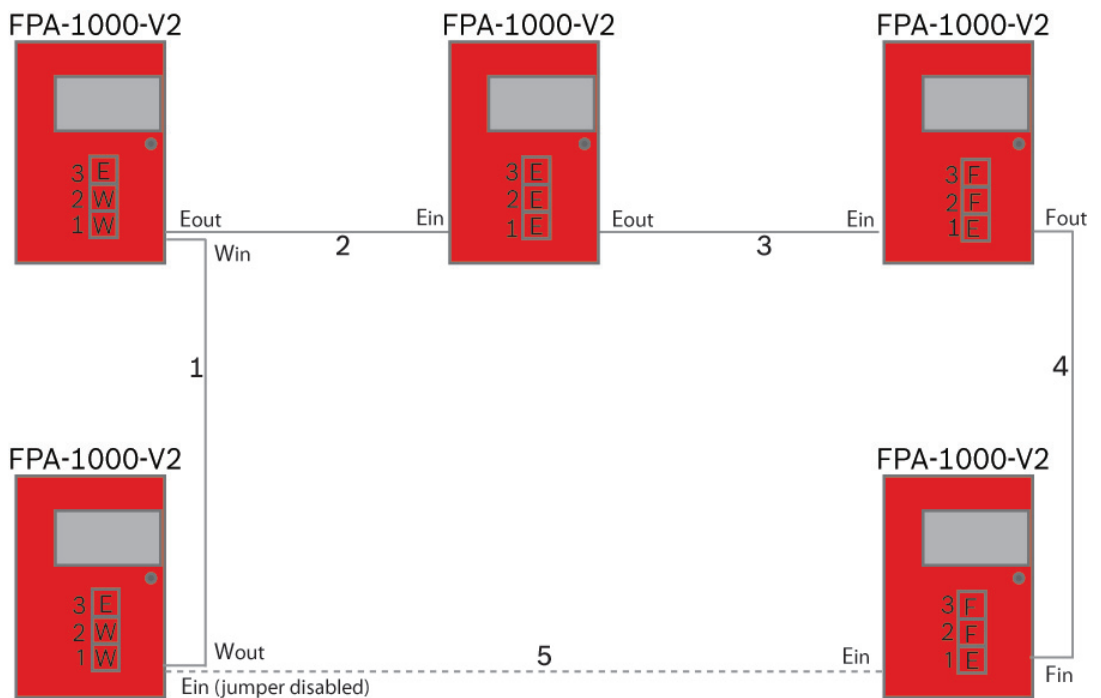4.   Refer to NFPA 72 for additional requirements of Class A circuits.

Figure 5.1   Network Connections Example

Legend	
1	Wire to Wire connection
2	Wire to Ethernet connection
3	Ethernet to Fiber Optic connection
4	Fiber Optic to Fiber Optic connection
5	Class A connection (Ethernet to Ethernet in this example)

NOTICE!

The network does not require an EOL resistor.

6   Technical Data

6.1   Common parameters of all three networking cards

6.1.1   Environmental

Environment:	Indoor, dry
Relative humidity:	5% to 93%, non-condensing
Temperature (operating):	0°C to +49°C (+32°F to +120°F)

6.1.2   Mechanical

Dimensions:	6.16 in. x 2.87 in. 1.20 in. (156.5 mm x 73 mm x 30.5 mm)
Weight:	3.13 oz (88.8 g)
Indicators	
Data communication:	Yellow LED, one per port
Link status:	Green LED, one per port
Power indication:	Green LED, one per board

6.2   FPE-1000-NE Ethernet Networking Card parameters

6.2.1   Electrical

Power supply:	+20 VDC to +28 VDC from panel
Power consumption:	120 mA maximum

6.3   FPE-1000-NF Fiber Optic Networking Card parameters

6.3.1   Electrical

Power supply:	+20 VDC to +28 VDC from panel
Power consumption:	200 mA maximum

6.4   FPE-1000-NW Wired Networking Card parameters

6.4.1   Electrical

Power supply:	+20 VDC to +28 VDC from panel
Power consumption:	310 mA maximum