

FPA-1000-V2 Network Cards

FPE-1000-NE, FPE-1000-NF, and FPE-1000-NW



BOSCH

en Installation manual

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1 General Information

1.1 Safety



Danger!

Fire panels are life safety devices. Only trained personnel should install and program the panels!



Danger!

Any panel in a network can control all other panels in the network (for example, silencing an alarm or resetting the system). Access to networked panels should be restricted to properly trained personnel.



Danger!

Make sure all power is removed before making any electrical connections. Failure to do so may result in personal injury and/or damage to equipment.



Caution!

Static-sensitive components - ground yourself before handling

The mainboard and some modules contain static-sensitive components. Use a wrist strap connected to ground or touch ground to discharge static electricity from your body and continue to touch ground while unpacking or handling the mainboard and modules. Run a ground wire to the enclosure before installing the mainboard or modules into the enclosure.

Install, test and maintain the device according to these instructions, NFPA codes, local codes, and the authority having jurisdiction (AHJ). Failure to follow these instructions can result in failure of the device to operate properly. Bosch Security Systems, Inc. is not responsible for improperly installed, tested or maintained devices.

For detailed wire style requirements, see *NFPA 72 National Fire Alarm and Signaling Code*. For programming instructions, see the *FPA-1000 Installation and Operation Guide*.

1.2 Network card overview

The FPA-1000-V2 panels are advanced analog addressable control panels for small to large facilities. The panels are used in residential, commercial, or public buildings applications. Optional network cards allow the interconnection of multiple panels into a networked system. The network acts as a single panel for purposes of communication. In other words, an alarm signal received by any networked panel is communicated to all the panels in the network. Based on communication connection mode, there are three types of network cards available:

Card number	Description	Connection mode	Maximum distance
FPE-1000-NE	Ethernet network card Three Ethernet ports	CAT 5 minimum	328 ft. (100 m)
FPE-1000-NF	Fiber optic network card One Ethernet port Two fiber optic ports	CAT 5 minimum multi-mode fiber optic with LC connector, 50 µm/125 µm fiber size, 1300 nm (1270 to 1380 nm) wavelength	328 ft. (100 m) 10 db loss or 6560 ft. (2000 m)

Card number	Description	Connection mode	Maximum distance
FPE-1000-NW	Wired network card One Ethernet port Two wired ports	CAT 5 minimum 14 AWG to 18 AWG (ISO 2.5 mm ² to 0.75 mm ²) plain or twisted pair wire (shielded or unshielded)	328 ft. (100 m) 3280 ft. (1000 m)

Tab. 1.1: Network card types

2 Planning information

2.1 General considerations



Notice!

The FPA-1000's network (created by using our network cards) is a peer-to-peer network that is considered to be a signaling line circuit (SLC). As such, it cannot be interconnected to any other network. Such interconnection can result in the failure of the network panels to properly communicate with each other.

Before installing any panels to be used in a networked system, be careful to plan properly. Determine whether to use a Class X or Class B topology for the network connections (see *Connection*, page 9). The type of cards needed to connect a pair of panels depends on the intended interconnection method (Ethernet, fiber optic, or wire). Factors to consider when choosing an interconnection method include:

- Whether the networked panels are to be installed near each other or distributed over a wider area. An Ethernet connection has a maximum length of 328 ft. (100 m). A wired connection can be up to 10 times as long (3280 ft. [1000 m]). However, in a harsh electrical environment, shielded or twisted-pair wire or fiber optic cable can be necessary
- Whether any of the networked panels are to be in different buildings. Fiber optic cable is recommended for this application since it is less susceptible to electrical noise and is suitable for longer distances (up to 6560 ft. [2000 m])
- 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)

Before installing any devices to be connected to any networked panel, be careful to plan properly. 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)

2.2 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 configurable, as is Port 3 on the wired card (FPE-1000-NW).

Port	-NE		-NF		-NW	
1	<input checked="" type="checkbox"/>	Ethernet IN	<input checked="" type="checkbox"/>	Ethernet IN	<input checked="" type="checkbox"/>	Wired IN
2	<input type="checkbox"/>	Ethernet OUT	<input type="checkbox"/>	Fiber IN	<input type="checkbox"/>	Wired OUT
3	<input type="checkbox"/>	Ethernet	<input type="checkbox"/>	Fiber OUT	<input checked="" type="checkbox"/>	Ethernet IN

Table 2.2: 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 3 on the wired card and Port 1 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 fiber 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.

2.3 Port supervision

Each peer-to-peer connection to a networking card port used for panel-to-panel communication must be supervised. This supervision is selected during programming. For programming information, follow the panel programming instructions in the *FPA-1000Network Quick Installation Guide*, or see Menu Structure (6-PROGRAMMING, 8-NETWORKING) or Overview of the web user interface (Networking) in the *FPA-1000 Installation and Operation Guide*.

3 Installation

3.1 General considerations



Danger!

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



Caution!

Electrostatic Discharge - ground yourself

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 the 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.

3.2 Mounting

The main board allows for the installation of one networking card. See the following figure. To install the card:

- Position the networking card along the bottom of the mainboard keypad with the connections aligned with the slot
- Press down softly until the snap-fit hook locks into place ensuring that the connections seat into the slot properly

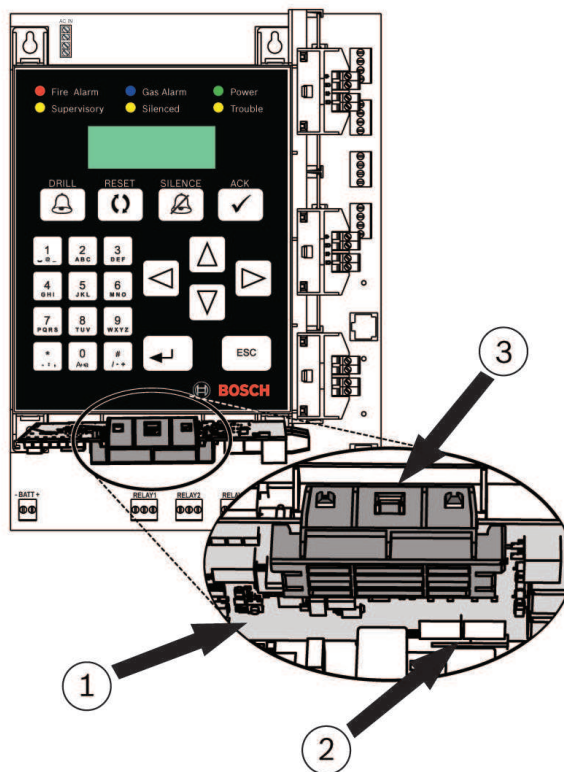


Figure 3.1: Mounting a Network Card

1	Network card	2	Connectors and slot
3	Snap-fit hook		

4 Connection

4.1 General considerations

**Notice!**

Before connecting panels into a network, each panel needs to be individually programmed and then added to the network.

For programming details, see the *FPA-1000 Installation and Operation Guide*.

**Notice!**

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

Power-limited and non-power-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 non-power-limited, so the cables for networking cards should not be run through the same knockout as the phone lines.

4.2 Interconnecting network cards

4.2.1 Class X/Class B connections

A network can be connected as Class X or Class B. The network circuit is supervised. Class X 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 fault in the wiring. For information on control panel signaling requirements for SLCs when a fault exists on the network, see *NFPA 72 National Fire Alarm and Signaling Code*.

**Notice!**

The network cards have built-in isolators automatically making the Class A loop connecting the networked panels into a Class X circuit.

On Class X circuits, no T-taps are allowed. For Class X connections, the return side of the circuit must be routed separately from the outgoing circuit and the return side must not share the same conduit or cable as the outgoing side of the circuit. For an example of a network, see the following figure.

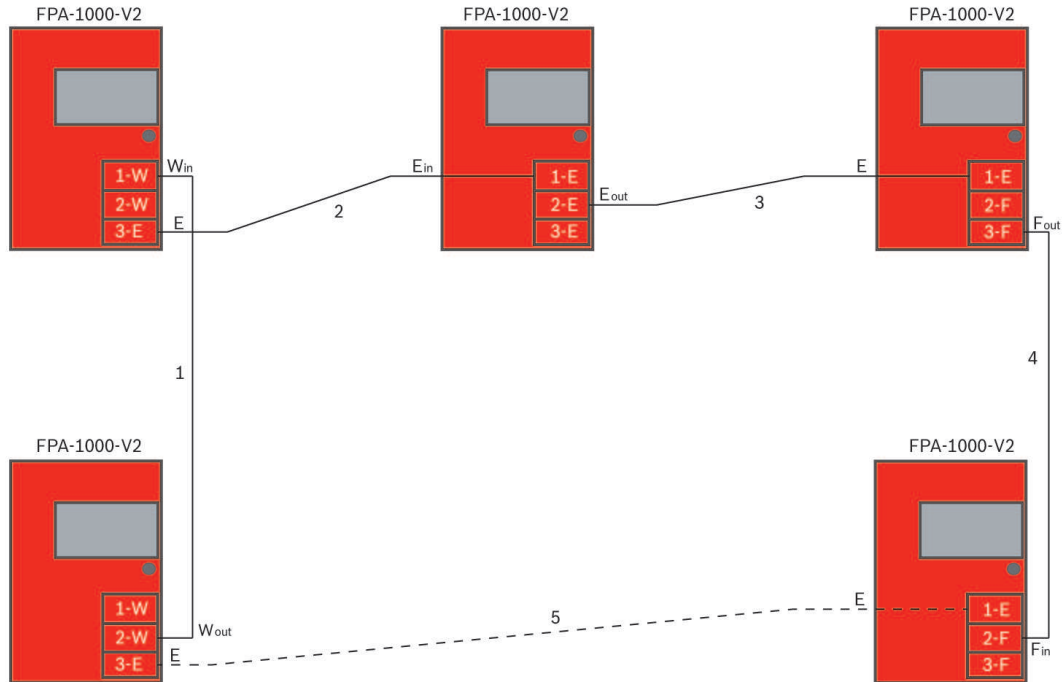


Figure 4.1: FPA-1000-V2 Network connections example

1	Wired connection from one FPE-1000-NW card to another	2	Ethernet connection from an FPE-1000-NW card to an FPE-1000-NE card
3	Ethernet connection from an FPE-1000-NE card to an FPE-1000-NF card	4	Fiber optic connection from one FPE-1000-NF card to another
5	Ethernet connection from an FPE-1000-NF card to an FPA-1000-NW card		
<p>Note: If any one connection (for example, connection 5 shown as a dotted line) between one panel and the next is not connected, the circuit is a Class B circuit. If all connections between panels are made, the circuit is Class X.</p>			

4.2.2

Connecting card to card



Notice!

Although there is an Ethernet port on the panel’s Mainboard, this port is reserved for programming and reporting and should not be used for peer-to-peer communications. Peer-to-peer communication connections should be made from one networking card to another.

To connect one network card to another, use the following procedure:



Caution!

Be sure to configure ground fault detection so that it is only present at one end of each connection.

1. Plug one end of the chosen interconnection cable into an appropriate port on the networking card installed in one of the two panels to be interconnected. Make a note of the port that is used for this connection.

2. Run the connector out of the panel enclosure to the next panel to be connected into the network.
3. Plug the end of the interconnection cable into the correct port on the networking card for this panel. Make a note of the port that is used for this connection.
4. Continue this process from panel to panel until all the panels to be included in the network are connected and all ports used are noted.

4.3 Verifying network links

Before proceeding to Panel/network configuration, verify that the network link LEDs are showing proper connections. Verify the following LED states:

- The green Power LED for each installed card is ON when the networking card is properly installed in the panel and the panel has power
- For each port into which a connector is installed, the green Link LED is ON when a proper connection is detected between networking cards
- The yellow Activity LED for any of the three ports flashes when that port is communicating

For LED identification, see the following figure:

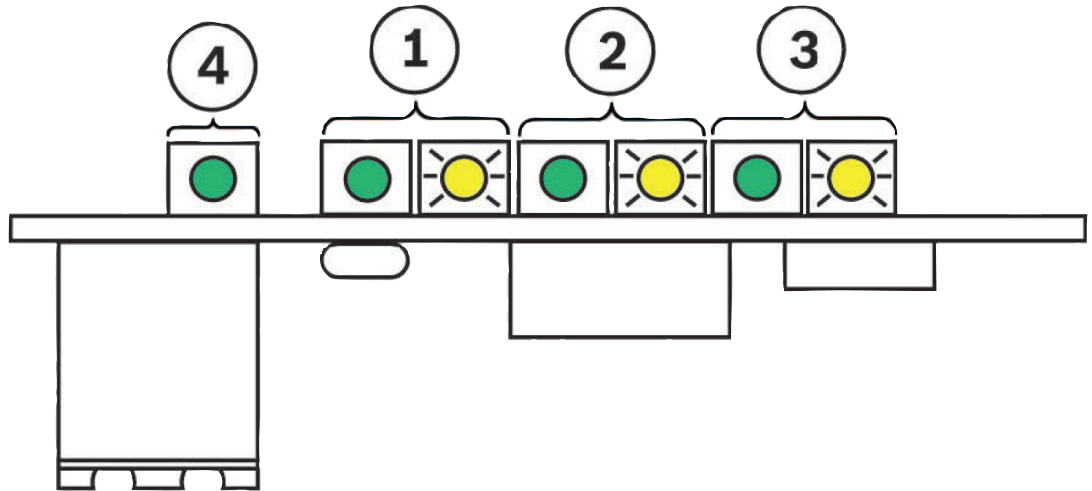


Figure 4.2: Network links - LED status

1	Port 1 LEDs, left LED green = link right LED yellow = data transmission	2	Port 2 LEDs, left LED green = link right LED yellow = data transmission
3	Port 3 LEDs, left LED green = link right LED yellow = data transmission	4	Power LED (green)

5 Panel/network configuration

**Notice!**

The following procedures assume that the system is being programmed for the first time. If this is not true and the system passcodes were previously reprogrammed, the default passcodes will no longer work. Use the passcodes currently programmed for your system.

**Notice!**

In order for the FPA-1000 panels to communicate throughout the network, each panel in the network needs a unique IP address and Panel ID. Throughout the network, Panel Gateways, Panel Subnet Masks, and Fire Network IDs must be all the same for each panel. When programming each panel it is a good idea to record the designators for future reference.

**Notice!**

In operation, a network with a peer-to-peer connector in an unsupervised port sends intermittent "missing panel" trouble reports. If this occurs, ensure that each port into which a connector is inserted is programmed as supervised.

Any ports not used for panel-to-panel communication must not be supervised as this could cause problems with other communications such as programming or reporting.

5.1 Programming the panels for networking

5.1.1 By keypad

1. From the panel keypad, press the ENTER [↵] key and navigate to 6-PROGRAMMING (enter the level 3 passcode, default = 3333), 8-NETWORKING, 1-NETWORK CARD and select 1-Installed from the menu.
2. Press 1-YES to indicate the networking card is installed. Press the ESC key twice.
3. Press 2-NETWORK WIRING and select 1-CLASS A or 2-CLASS B. Press the ESC key twice.
4. Press 6-TIMERS AND SYSTEM, 2-SYSTEM and select 5-PANEL IP AND ID from the menu.
5. Press 1-PANEL IP ADDRESS.
6. Input and record a unique IP address (default = 192.168.1.30) for the panel. Press the ENTER key once.
7. Press 2-PANEL GATEWAY.
8. Input and record the same Gateway (default = 192.168.1.1) for each panel to be added to the network. Press the ENTER key once.
9. Press 3-PANEL SUBNET MASK.
10. Input and record the same Subnet Mask (default = 255.255.255.0) for each panel to be added to the network. Press the ENTER key once.
11. Press 4-PANEL ID.
12. Input and record a unique ID from 01 to 64 for the Panel ID. Press the ENTER key once.
13. Press 5-FIRE NETWORK ID.
14. Select and record the same Fire Network ID for each panel to be added to the network (the default, 01, can be used for each panel). Press the ENTER key to save the settings and then press the ESC key four times to return to the Main Menu.
15. Press 6-PROGRAMMING, 8-NETWORKING, 1-NETWORK CARD and select 2-PORT SUPERVISION from the menu.
16. For each port (1, 2, and 3), select 1-YES if there is a connector inserted into that port on that panel or 2-NO if that port is empty. Press the ESC key five times to escape from keypad programming.
17. Repeat steps 1 through 17 for each panel to be added to the network.

- When all panels to be included in the network have been individually programmed, add them to the network (see *Programming the network*, page 14).

5.1.2 By browser



Notice!

The browser-based configuration tool allows you to program individual panels through a computer connected to the panel's Ethernet port. Use a crossover cable if the computer is not auto-negotiating capable. Otherwise, use a straight CAT 5 cable or better for this connection.

- Using an internet browser, navigate to the first panel to be added to the network using the system default IP address (<http://192.168.1.30/>).
- Input the default user name (operator) and passcode (0000) and click OK.
- The Online Start Page opens. Click the LOGIN area in the upper left corner and input the default level 3 passcode (3333) and click OK to enable programming.
- In the left-hand column, click on Networking.
Under Panel Networking Settings next to Networking card installed, click on the box to add a checkmark.
Under Panel Networking Settings under Port Supervision, for any networking card ports (1, 2, or 3) that have a connector installed, click on the box by that port to add a checkmark.
Under Topology, click the circle next to Class A or Class B.
- In the left-hand column click on Site Data.
Under Banner, IP and ID, enter and record a unique Panel ID from 1 to 64 for the Panel ID.
Next to Panel IP Address, assign a unique panel IP address.
Next to Gateway, input and record the same Gateway (default = 192.168.1.1) for each panel to be added to the network.
Next to Netmask, input and record the same Subnet Mask (default = 255.255.255.0) for each panel to be added to the network.
Next to Fire network ID, enter and record the same Fire Network ID for each panel to be added to the network (the default, 01, can be used for each panel).
- Repeat steps 1 through 6 on each panel to be connected to the network.
- When all panels to be included in the network have been individually programmed, add them to the network (see *Programming the network*, page 14).

5.1.3 By off-line tool



Notice!

The off-line configuration tool (available at www.boschsecurity.com) allows you to create programs for individual panels for later uploading to the panel on-site.



Notice!

If you have already saved new configuration files, you can browse to any of the saved files and open it for editing.

- To access the off-line configuration tool:
Download the Off-line tool ZIP file from the Bosch website (www.boschsecurity.com)
Under the FPA-1000 software downloads.

Extract all the files from the Off-line_Tool.zip folder to your computer's home drive. Check that the security setting of the internet browser you are using is set to allow active content to run in files on your computer. Follow the instructions for your browser to check and, if needed, modify the setting.

Double-click the startpage.hta file to open the Start Page.

On the Start Page, click Browse. Double-click on the FPA-1000Default.xml file to select it, and then click Load Selected to load that file for editing.

2. In the left-hand column next to Networking, click on Configure.

Under Panel Networking Settings next to Networking card installed, click on the box to add a checkmark.

Under Panel Networking Settings under Port Supervision, for any networking card ports (1, 2, or 3) that have a connector installed, click on the box by that port to add a checkmark.

Under Topology, click the circle next to Class A or Class B.

3. In the left-hand column next to Site Data, click on Configure.

Under Banner, IP and ID, enter and record a unique Panel ID from 1 to 64 for the Panel ID.

Next to Panel IP Address, assign a unique panel IP address.

Next to Gateway, input and record the same Gateway (default = 192.168.1.1) for each panel to be added to the network.

Next to Netmask, input and record the same Subnet Mask (default = 255.255.255.0) for each panel to be added to the network.

Next to Fire network ID, enter and record the same Fire Network ID for each panel to be added to the network (the default, 01, can be used for each panel).

4. At the top of the window, click OK to record your changes.
5. In the text box next to Browse, change the filename to whatever you want it to be and click on Save to save the configuration to your home drive.
6. Repeat steps 1 through 5 for each panel to be connected to the network.
7. When all panels to be included in the network have been individually programmed, add them to the network (see *Programming the network*, page 14).

5.2 Programming the network

5.2.1 By keypad

1. From the panel keypad, press the ENTER [↵] key and navigate to 6-PROGRAMMING (enter the level 3 passcode, default = 3333), 8-NETWORKING, 3-PANEL MANAGEMENT.
2. Select 1-ADD A PANEL.
3. Enter a Panel ID for one of the panels to be networked and press the ENTER key.
4. Repeat step 3 until all panels have been added.
5. Press the ESC key five times to escape from keypad programming and return to the Main Menu. The panel automatically resets and the programmed networking information is automatically sent network wide.

5.2.2 By browser



Notice!

If the computer is not auto-negotiating capable, use a crossover cable. Otherwise, use a straight CAT 5 cable or better.

1. Connect a computer to the panel's Ethernet port.

2. Using an internet browser, enter the IP address of one of the panels to be added to the network (http://"enter IP address here"/) to navigate to that panel.
3. Input the default username (operator) and passcode (0000) and click OK.
4. The Online Start Page opens. Click the LOGIN area in the upper left corner and input the default level 3 passcode (3333) and click OK to enable programming.
5. In the left-hand column, click on Networking.
Under Panel List, enter the IP address of a panel to be added to the network.
Click Add
6. Repeat step 5 for each panel on the network.
7. At the upper left of the window, click on either Logoff or Implement configuration. The display prompts that changes to the configuration have been made and asks if you want to logoff or implement the changes. Choosing Yes to logoff or implement the changes saves the new configuration and initiates a system reset. During the reset, the new configuration information is sent to all panels on the network.

5.2.3

By off-line tool

**Notice!**

If the computer is not auto-negotiating capable, use a crossover cable. Otherwise, use a straight CAT 5 cable or better.

1. Connect a computer to the panel's Ethernet port.
2. Using an internet browser, enter the IP address of one of the panels to be added to the network (http://"enter IP address here"/) to navigate to that panel.
3. Input the default username (operator) and passcode (0000) and click OK.
4. The Online Start Page opens. Click the LOGIN area in the upper left corner and input the default level 3 passcode (3333) and click OK to enable programming.
5. Under Configuration:
Click the checkbox next to Upload configuration (PC_> FPA-1000).
Click Browse, navigate to your computer's home drive, and click on the configuration file that you prepared for the panel to which you are connected.
When the path displays in the textbox next to Browse, click Upload.
6. When the display indicates, the upload is completed, disconnect your computer from the panel.
7. Repeat the process for each panel on the network.

6 Technical data

Environmental

Environment*	Indoor, dry
Relative humidity*	5% to 93%, non-condensing
Temperature, operating*	0°C to +49°C (+32°F to +120°F)
* Applies to all three network card types	

Electrical

Power supply*	+20 VDC to +28 VDC from panel
Current	
FPE-1000-NE	120 mA maximum
FPE-1000-NF	200 mA maximum
FPE-1000-NW	310 mA maximum
* Applies to all three network card types	

Mechanical

Dimensions*	6.16 in. x 2.87 in. x 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
* Applies to all three network card types	

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Bosch Security Systems, Inc.

130 Perinton Parkway
Fairport, NY 14450
USA

www.boschsecurity.com

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Bosch Sicherheitssysteme GmbH

Robert-Bosch-Ring 5
85630 Grasbrunn
Germany