**NATIONAL INSTRUMENTS**

# FP-1600

**FieldPoint 10/100 Ethernet Network Module**

Field**Point**™

These operating instructions describe the installation, features, and characteristics of the FP-1600. For more detailed information on using the network module, refer to the FP-1600 user manual.

## Features

The FP-1600 is a FieldPoint network module with the following features:

- Autonegotiating 10/100 Ethernet network interface
- Built-in high efficiency power supply powers I/O modules
- Network watchdog timer
- SnapShot capability and programmable power-up state
- –40 to +55 °C operation
- Connects to an Ethernet network using the TCP/IP protocol
- Supports up to nine I/O modules
- Runs on 11 to 30 VDC power

## Kit Contents and Optional Equipment

Your kit contains the following items:

- FP-1600 network module
- Accessories: protective connector cover, two DIN rail stops, Device Description diskette

You can order the following optional equipment from National Instruments:

- Panel mount accessory, part number 777609-01

- Terminal bases and I/O modules, complete list of terminal bases and I/O modules in the National Instruments online catalog at www.natinst.com

- Cables

- 24 VDC power supply

# Installation

⚠️ **Caution** To avoid damaging the FP-1600 and the terminal bases, make sure that power is not applied to the FP-1600 while you install or remove terminal bases.

Follow these steps to install the FP-1600:

1. Use a flat-bladed screwdriver to open the DIN rail clip to the unlocked position, as shown in Figure 1.
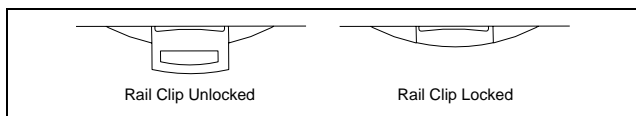


Rail Clip Unlocked        Rail Clip Locked

**Figure 1.** DIN Rail Clip

📝 **Note** Write down the serial number from the back of your FP-1600 before you mount your FP-1600. You will need this information when you configure the FP-1600.

2. Mount the FP-1600 onto a 35 mm DIN rail or onto a panel mount accessory.

   - Installing onto a DIN rail:

     a. Hook the lip on the rear of the FP-1600 onto the top of a 35 mm DIN rail and press the FP-1600 down onto the DIN rail, as shown in Figure 2.
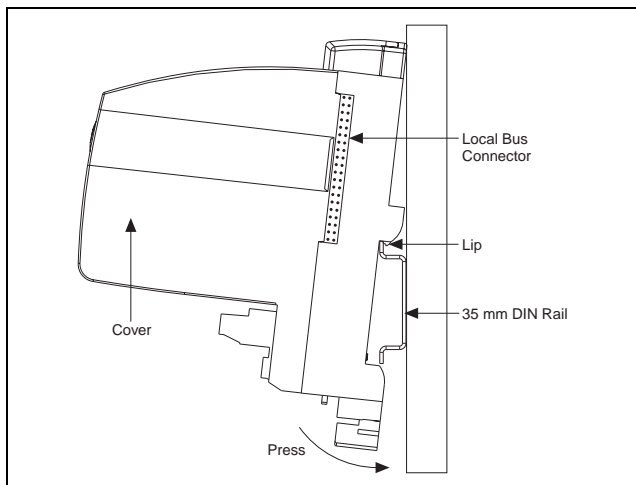
**Figure 2.** Mounting the FP-1600 onto a DIN Rail

b. Slide the FP-1600 to the desired position along the DIN rail.

c. Lock the FP-1600 to the DIN rail by pushing the rail clip to the locked position.

- Installing onto a panel mount accessory, which you can order separately from National Instruments:

    a. Snap the panel mount accessory onto the module, as shown in Figure 3.
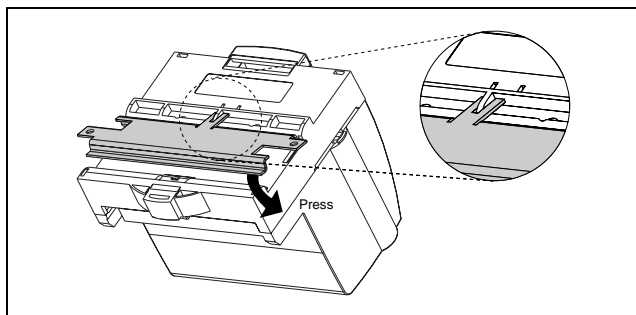


**Figure 3.** Mounting the FP-1600 onto a Panel Mount Accessory

b. Lock the panel mount accessory into place by pushing the rail clip to the locked position.

c. Mount the FP-1600 and panel mount accessory onto the desired surface. You can drill pilot holes using the directions in the *FieldPoint Network Module Panel Mount Accessory* installation guide.

3. Add terminal bases with their local bus connectors firmly mated to the FP-1600 local bus connector.

4. Place the protective cover over the local bus connector of the last terminal base in the bank. Figure 4 shows an installed FP-1600 network module on a DIN rail.
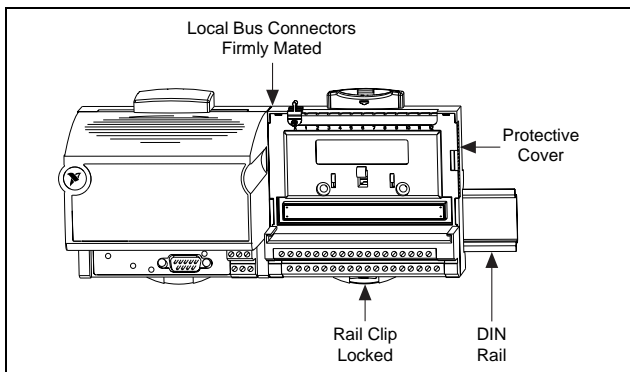


**Figure 4.** Installed Network Module

# Network Connection

Connect the FP-1600 to an Ethernet network using the RJ-45 Ethernet port on the FP-1600. Connect the RJ-45 Ethernet port of the FP-1600 to an Ethernet hub using a standard Category 5 Ethernet cable. You can also connect an FP-1600 directly to a computer using an Ethernet crossover cable. Do not use a cable longer than 100 m. Figure 5 shows the power and Ethernet connectors on the FP-1600.
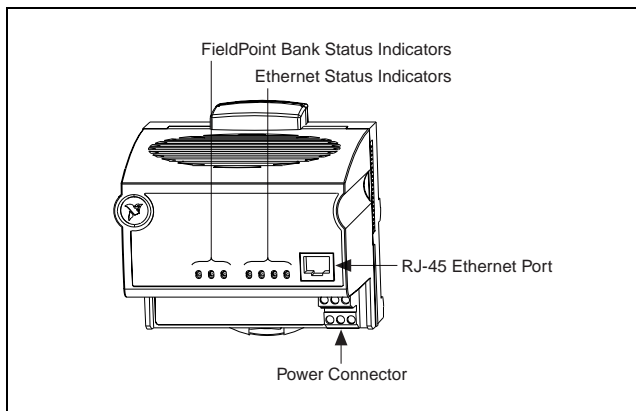
**Figure 5.** Power and Ethernet Connectors on the FP-1600

# Cabling

If you need to build your own cables, the following table shows the standard ethernet cable wiring connections for both normal and crossover cables.

**Table 1.** Ethernet Cable Wiring Connections

| Pin | Connector 1 | Connector 2 (Normal) | Connector 2 (Crossover) |
|-----|-------------|----------------------|-------------------------|
| 1 | white/orange | white/orange | white/green |
| 2 | orange/white | orange/white | green/white |
| 3 | white/green | white/green | white/orange |
| 4 | blue/white | blue/white | blue/white |
| 5 | white/blue | white/blue | white/blue |
| 6 | green/white | green/white | orange/white |
| 7 | white/brown | white/brown | white/brown |
| 8 | brown/white | brown/white | brown/white |

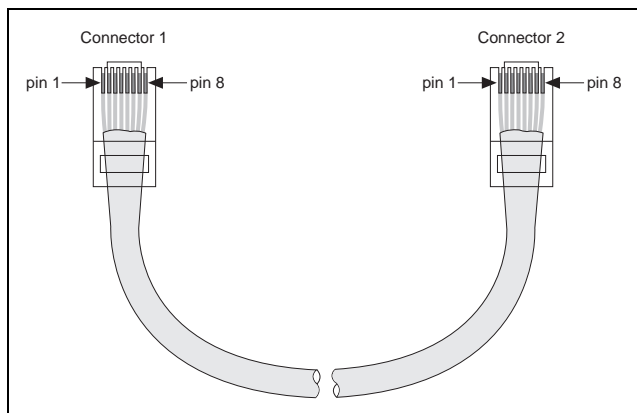Figure 6 shows the connector pinouts for FieldPoint Ethernet cables.



**Figure 6.** Ethernet Cable

# Powering the FP-1600

⚠ **Caution** Connect the FP-1600 to the terminal base before applying power to the FP-1600 to avoid damaging the FP-1600 or a terminal base.

Each FP-1600 on your network requires an 11–30 VDC power supply. The FP-1600 filters and regulates this supplied power and provides power for all the I/O modules in the bank. Therefore, you do not need to provide power separately to each FieldPoint I/O module in the bank. If your field I/O devices need to be powered separately, you can use the terminals provided on each terminal base for such power supply connections.

The power connector is a 6-pin screw terminal connector whose pinout is shown in Figure 7.
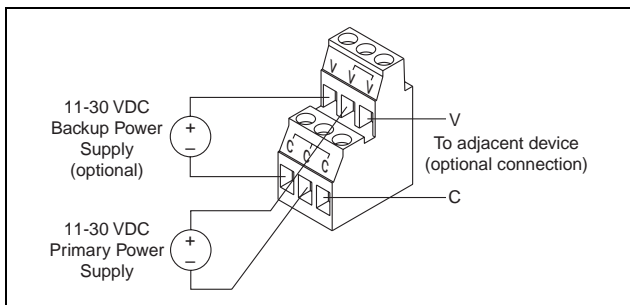
**Figure 7.** FP-1600 Power Connector Pinout

Connect the primary power supply to the center V and C pair. You can connect an optional backup power supply to the left V and C pair. The right V and C pair provides a convenient means of connecting power to the V and C terminals of a terminal base. Figure 7 shows this optional connection.

## Specifications

| | |
|---|---|
| Network interface | 10BaseT and 100BaseTX Ethernet |
| Compatibility | IEEE 802.3 |
| Communications rate | 10 Mbps, 100 Mbps, autonegotiated |
| Cabling distance | 100 m |
| Power supply range | 11 to 30 VDC |
| Power consumption | $7\ W + 1.15 * \sum(\text{I/O module power requirements})$ |
| Maximum terminal bases per bank | 9 |
| Maximum number of banks | determined by network topology |
| Operating temperature | –40 to +55 °C |
| Storage temperature | –55 to +85 °C |
| Relative humidity | 5% to 90% non-condensing |
| Weight | 250 g (8.7 oz.) |

## Compliance

Electrical safety ................................ designed to meet IEC 1010

EMI emissions/immunity................. CISPR 11

## CE Mark Compliance

This product meets applicable EU directive(s) as follows:

EMC directive

    Immunity ................................... EN 50082–1:1994

    Emissions ................................. EN 55011:1991 Group I
                                            Class A at 10 meters

## Mechanical Dimensions

Figure 8 shows the mechanical dimensions of the FP-1600.
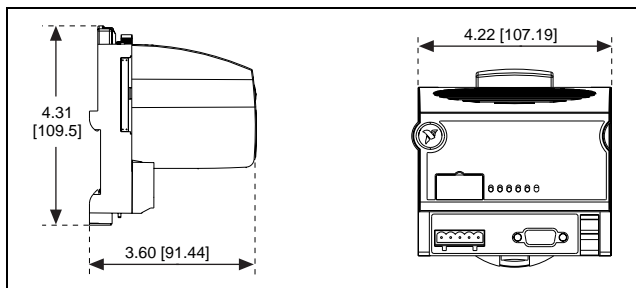Dimensions are given in inches [millimeters].



**Figure 8.** Mechanical Dimensions