NATIONAL INSTRUMENTS™
FieldPoint™

FP-2000/2010/2015 FieldPoint Quick Start Guide

What You Need to Get Set Up

- Network module
- Mounting hardware (DIN rail or panel-mount accessory)
- Terminal base(s)
- I/O module(s)

- Power supply
- Accessories: Ethernet cable, screwdriver
- PC running Windows
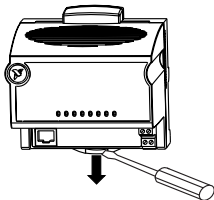- FieldPoint Software CD
- LabVIEW RT

1 *Install the Network Module*
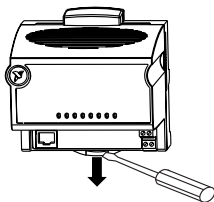
You can mount your modules on a DIN rail or to a panel.

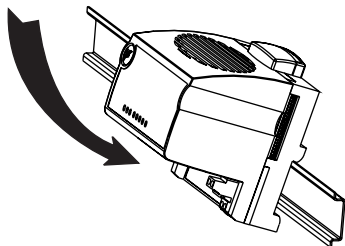| **DIN Rail Mount**	**Panel Mount**
A. Unlock rail clip.	A. Unlock rail clip.

DIN Rail Mount
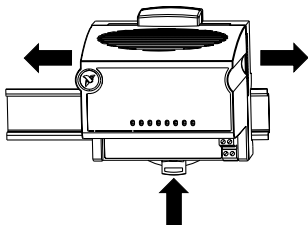
NOTE: Do not use spliced DIN rails. Use only a single DIN rail.

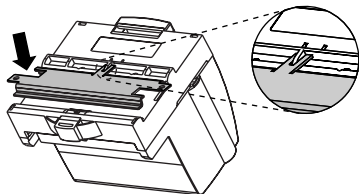B. Hook lip on back of module onto top of DIN rail, press down, and snap into place.
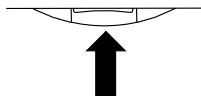

C. Slide module into position and lock rail clip.
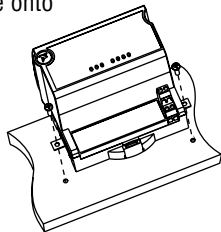

Panel Mount

B. Snap panel-mount accessory (which you can order separately) onto module.

C. Lock rail clip.

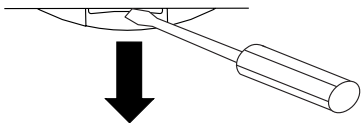D. Use template that came with accessory to drill pilot holes and mount module onto panel using accessory.
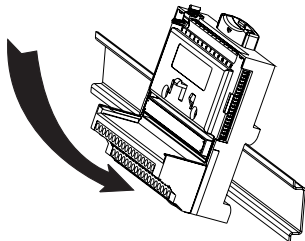
2 Install the Terminal Base(s)

⚠️ **CAUTION**: Terminal bases must be connected to the network module before you apply power to the module. Do *not* connect or disconnect terminal bases while power is applied to the network module.

DIN Rail Mount

A. Unlock rail clip.

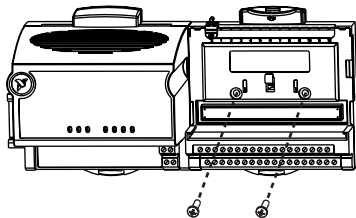

B. Press base onto rail.
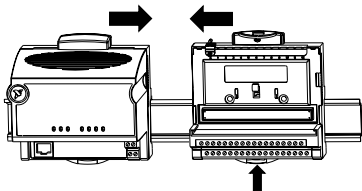

Panel Mount

A. Use template that came with accessory to drill pilot holes.

B. Connect terminal base to network module connector, being careful not to bend any connector pins.

C. Fasten terminal base to panel.

DIN Rail Mount

C. Slide into position and lock the rail clip. Be careful not to bend any pins.

D. Repeat for each terminal base, up to nine for each network module in most cases. You can use one or two extender cables (which you can order separately) if the FieldPoint bank is too long for the available space.

E. Place protective cover on last base, and install rail locks at each end.
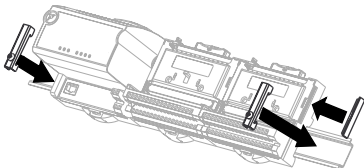
Panel Mount

D. Repeat for each terminal base, up to nine for each network module in most cases. You can use one or two extender cables (which you can order separately) if the FieldPoint bank is too long for the available space.
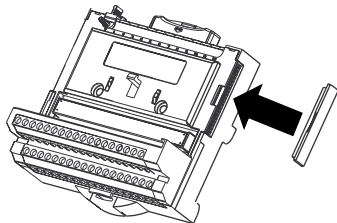
E. Place protective cover on last base.

3 *Install the I/O Module(s)*

It does not matter where you install each I/O module, except for these types of situations:

- If you plan to cascade power between any I/O modules using the V and C terminals, those modules should be grouped together.
- For more accurate measurements, you might want to locate any thermocouple modules away from heat sources, including network modules or relay modules, unless you are mounting them on an FP-TB-3.

A. Align slots on module with guide rails on base, and press onto base until terminal base latch locks the module in place.

B. Repeat for each I/O module.
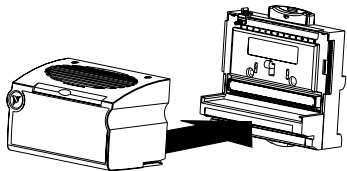
4 *Connect the Network Cables*

Connect the FP-2000/2010/2015 to an Ethernet network by connecting the RJ-45 Ethernet port of the FP-2000/2010/2015 to an Ethernet hub using a standard Category 5 Ethernet cable.

Straight-Through UTP Cable

Straight-Through UTP Cable
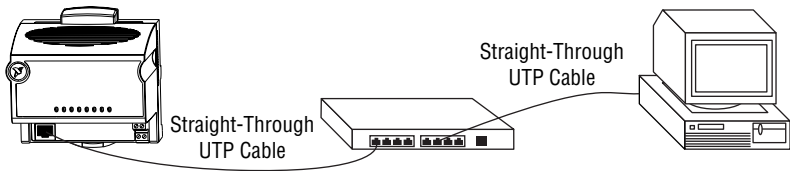
Optionally, you can connect an FP-2000/2010/2015 directly to a computer using an Ethernet crossover cable.
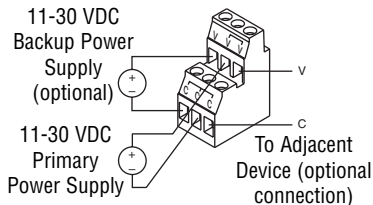

Cross-Over Cable
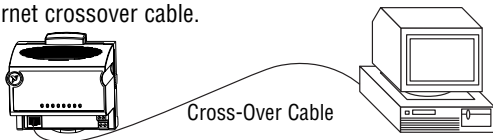
Do not use a cable longer than 100 m. If you are using a 100 Mbps Ethernet, National Instruments recommends using a Category 5 shielded twisted-pair Ethernet. If you need to build your own cable, refer to the *FP-2000/2010/ 2015 User Manual* specifications section for cabling details.

5 *Wire Power to the FieldPoint System*

A. Connect 11–30 VDC power supply leads to the center V and C terminals of the network module. If you want to verify that the power supply is sufficient for the modules and devices, refer to the *FP-2000/2010/2015 User Manual* for instructions on calculating power requirements.

B. Connect power to the FieldPoint modules that require external power for outputs (output modules, counter modules, PWM, PG, QUAD). Refer to the I/O module operating instructions for power requirement details. You

11-30 VDC Backup Power Supply (optional)

11-30 VDC Primary Power Supply

V

C

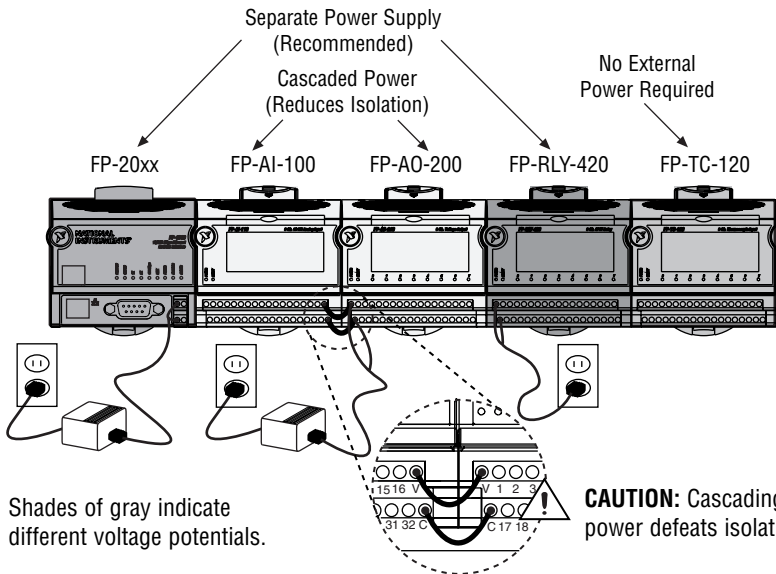To Adjacent Device (optional connection)

can power a module by connecting the V and C inputs on its terminal base to a separate power supply, connecting the V and C outputs of a neighboring

terminal base or network module, or using a combination of both methods. If you want to power field I/O devices from a terminal base, supply power to the terminal base, and then connect the terminal base V and C output terminals to the field device.

⚠️ **CAUTION:** Cascading power from neighboring bases or network modules defeats isolation between cascaded modules.

Separate Power Supply (Recommended)

Cascaded Power (Reduces Isolation)

No External Power Required

FP-20xx   FP-AI-100   FP-AO-200   FP-RLY-420   FP-TC-120

Shades of gray indicate different voltage potentials.

⚠️ **CAUTION:** Cascading power defeats isolation.

15 16 V   V 1 2 3
31 32 C   C 17 18

6 *Connect to Field Devices*

Use each I/O module's operating instructions, or the diagram under its removable label, to help you connect field devices.

NOTE: Either the self-powered sensor or the power supply should be floating (not tied to earth ground).

7 *Power Up Your FieldPoint System*

⚠️ **CAUTION:** Terminal bases must be connected to the FP-2000/2010/ 2015 before power is applied to the FP-2000/2010/2015.

Plug in each power supply to the FieldPoint bank. You should see the **POWER** and **STATUS** LEDs come on. After about 5 seconds, the **STATUS** LED begins flashing, one flash at a time. This indicates that the FP-2000/2010/2015 is ready to be configured. (If the **STATUS** LED turns off, and the **A, B, C,** and **D** LEDs come on, the FP-2000/2010/2015 has been configured and LabVIEW RT is starting up.) If the LEDs do not follow this sequence, refer to the *FP-2000/2010/2015 User Manual* troubleshooting appendix.
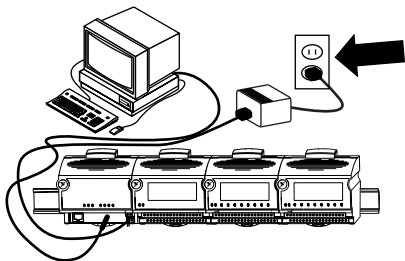
After the hardware is installed, you should verify communication, configure the modules, and configure power-up states and watchdog settings. If you are using National Instruments FieldPoint software for these tasks, continue to the following section.

8 *Install the FieldPoint Software*

A. Close all other applications. If you plan to install National Instruments development software such as Lookout, LabVIEW, or Measurement Studio, install them before you install the FieldPoint software.
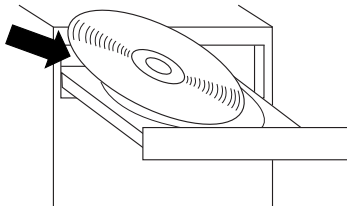
B. Insert the FieldPoint software CD and follow the onscreen instructions.

9 *Configure the FP-2000/2010/2015*

Refer to the *FP-2000/2010/2015 User Manual* for more information about configuration settings.

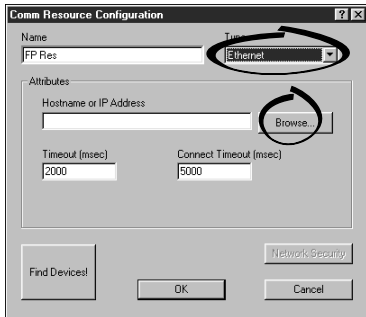A. Select **Start»Programs»National Instruments FieldPoint»FieldPoint Explorer**.

B. Click the + to expand the view.

C. Right-click the FieldPoint icon and select **Add a comm resource to this server**.
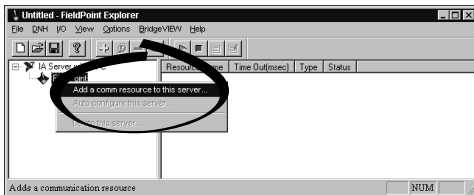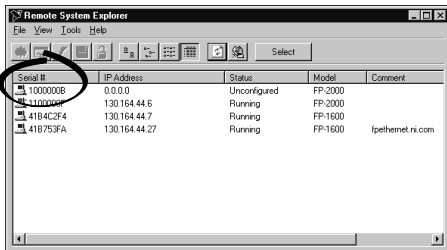
D. In the Comm Resource Configuration dialog box, select **Ethernet** as the **Type**.

E. Click **Browse** to launch Remote System Explorer.

F. Double-click the serial number of the FP-2000/2010/2015 to configure it.

G. On the **Network Settings** tab, enter
   values for the **IP address** and
   Subnet mask.

   • **IP address** is the address of
     the FP-2000/2010/2015 on the
     network.
   • **Subnet mask** is the code that one
     device uses to determine whether
     another device is on the same
     subnet (255.255.255.0 is the
     most common).
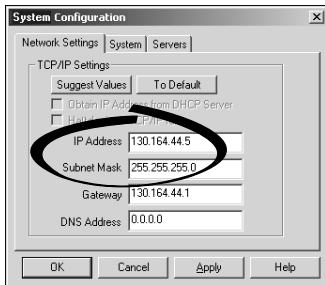
H. On the **System** tab, you can enter a
   comment to help you identify the
   FP-2000/2010/2015.
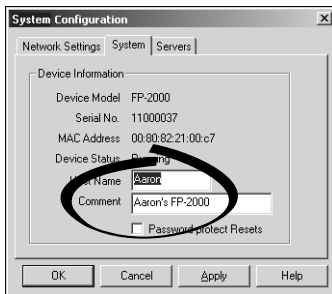
I. On the **Servers** tab, enter a value for the **Time Server**, which is the address of the host computer that runs the National Instruments Time Service (installed with Lookout 4.x, FieldPoint 2.x and 3.x, or LabVIEW DSC).

J. Click **OK** and click **Yes** when prompted to restart the FP-2000/2010/2015.

K. Highlight the FP-2000/2010/2015 and click the **Select** button.
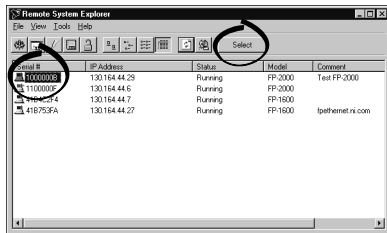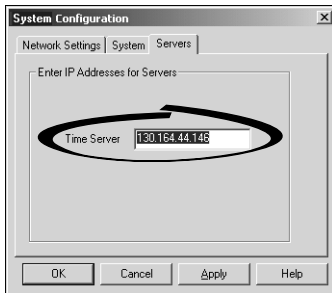
10 *Verify the Installation*

A. In the Comm Resource Configuration dialog box, click **Find Devices**.

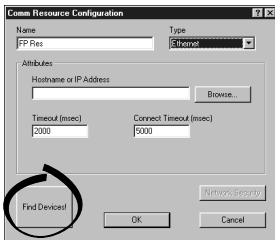B. Expand the **+FP Res** item on the left side of the Explorer window to see the devices and items found on the network.
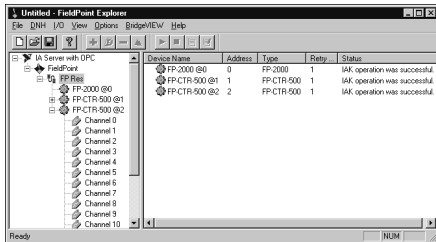
If your modules are not listed, check the cable and connections and make sure the modules are all powered on. If you still have problems, refer to the *FP-2000/2010/2015 User Manual* for troubleshooting information.

C. Select an input module and click the start monitoring button ▶ to view live data.

D. Select an output channel and click the write button ▤ to change outputs.

E. Select **File»Save**.

11 *Configure I/O Modules*

A. Right-click the device name in FieldPoint Explorer and select **Edit this Device**.

B. Click the **Channel Configuration** button to bring up the Channel Configuration dialog box.

C. Select the type of channel to show, then select the channel(s) that you want to change. To select more than one channel, uncheck the **One channel at a time** box.

NOTE: Configuration options are module dependent. The options shown here might not be available for your particular module. Refer to your I/O module operating instructions for details on configuration options.

D. Set the range and output values of the selected channel(s).

E. Set the attributes for the selected channel(s) by selecting the attribute and entering the desired value.

F. Send commands to the selected channel(s) by choosing a command and value and clicking **Send**.

G. Repeat this procedure for each channel or group of channels you want to configure.

H. Click the **OK** button when you are finished, or click the **Apply** button to save the changes and continue to configure channels. When you click **OK** or **Apply**, the changes are immediately sent to the device.

I. Select **File»Save** when you are done.

12 *Where to Go from Here*

After you get your hardware up and running, you might want to implement features such as power-up defaults, network watchdog settings, or security. Refer to the *FP-2000/2010/2015 User Manual* or online help for information about features, configuration, application development, and troubleshooting.

Specifications

Network
Network interface . . . . 10BaseT and 100BaseTX Ethernet
Compatibility. IEEE802.3
Communication rates . . . . 10 Mbps, 100 Mbps, auto-negotiated
Maximum cabling distance . . . . 100 m/segment
Maximum power to connected
terminal bases . . . . 9 W
Maximum number of banks. . . . . Determined by network topology

Memory
FP-2000 . . . . 16 MB nonvolatile
   16 MB DRAM
FP-2010 . . . . 32 MB nonvolatile
   32 MB DRAM
FP-2015 . . . . 512 MB nonvolatile
   32 MB DRAM
Typical system usage . . . . 5 MB nonvolatile
   8 MB DRAM

Power Requirement
Power supply range . . . . 11 to 30 VDC
Power consumption . . . . 4.5 W + 1.1 * Σ (I/O Module Consumption)

Physical Characteristics
Screw-terminal wiring . . . . 16–26 AWG copper conductor wire with 7 mm
   (0.28 in.) of insulation stripped from the end
Torque for screw terminals . . . . 0.5–0.6 N (m (4.4–5.3 lb (in.)
Weight . . . . 278 g (9.8 oz)

Environmental

FieldPoint modules are intended for indoor use only.

Operating temperature. . . . . –25 to 55 °C

Storage temperature . . . . –55 to 85 °C

Humidity. . . . . 10 to 90% RH, noncondensing

Maximum altitude . . . . 2,000 m

Pollution degree 2

Safety

The FP-20xx meets the requirements of the following standards for safety and electrical equipment for measurement, control, and laboratory use:

• IEC/EN 61010-1
• UL 3101-1, UL 3111-1, UL 3121
• CAN/CSA c22.2 no. 1010.1

Electromagnetic Compatibility

CE, C-Tick and FCC Part 15 (Class A) Compliant

Electrical emissions. . . . . EN 55011 Class A at 10 m FCC Part 15A above 1 GHz

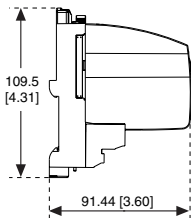Electrical immunity . . . . Evaluated to EN 61326: 1997/A1: 1998, Table 1

> **NOTE:** For full EMC compliance, you must operate this device with shielded cabling. In addition, all cover and filler panels must be installed. See the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, click **Declaration of Conformity** at ni.com/hardref.nsf/.

Mechanical Dimensions

Dimensions are given in millimeters [inches].

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