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Find the *National Instruments FP-1000* at our website: *Click HERE*

RS-232 and RS-485 Serial Network Interfaces

NI FP-1000, NI FP-1001

- PC-based distributed I/O serial network interfaces
- Standard serial networking
  - RS-232 serial to a PC port
  - RS-485 for industrial multidrop applications
- Connects up to 25 FieldPoint banks to a serial bus
- Industrial-grade reliability
  - Automatic self-diagnostics
  - Isolated communication bus to I/O modules
  - Network watchdog timer
  - Configurable I/O powerup states

Operating Systems
- Windows 2000/NT/XP

Recommended Software
- LabVIEW
- LabVIEW Datalogging and Supervisory Control Module

Other Compatible Software
- LabWindows/CVI
- Measurement Studio
- Lookout
- VI Logger

Driver Software (included)
- Measurement & Automation Explorer
- OPC server (2.0 compliant)



Module	Serial Port Type	Repeater Port Type
FP-1000	RS-232	RS-485
FP-1001	RS-485	None

Overview and Applications

The National Instruments FP-1000 and FP-1001 network interfaces connect a node of up to nine FieldPoint I/O modules to a standard serial network. With standard RS-232 and multidrop RS-485 network capabilities, the NI FP-1000 and FP-1001 deliver a connection for FieldPoint that is easy to interface to a PC and easy to use.

The FP-100x manages communications between the host PC and the I/O modules over a local high-speed bus formed by FieldPoint terminal bases. The network interface module also provides diagnostic and autoconfiguration features to simplify installation, use, and maintenance.

Applications can easily communicate with the FP-100x to exchange data. The FP-100x serial interface can communicate with a [c]FP-20xx embedded controller or with a Windows computer running LabVIEW, LabWindows/CVI, Measurement Studio, Lookout, or your choice of OPC-client application software. Using standard Optomux commands, you can also communicate with the FP-100x from non-Windows platforms such as Mac OS and Linux. Using the FP-100x, you can rapidly build flexible, modular distributed measurement and automation systems.

Network Communications Interface

The FP-1000 includes a standard 9-pin RS-232 port and an isolated full-duplex RS-485 repeater port. With the RS-485 repeater port, your PC can communicate through an RS-232 port with an FP-1000 module and up to 24 FP-1001 modules.

The FP-1001 includes an optically isolated full-duplex RS-485 port. You can network up to 25 network modules together on a single RS-485 network.

System Configurations

A single FP-1000 or FP-1001 communication interface manages a node of up to nine FieldPoint bases and attached I/O modules. A node consists of a FieldPoint network interface module and any mix of analog and digital I/O modules. The network interface module and terminal bases snap together and mount as a unit on a DIN rail. The network interface module and terminal bases form a high-speed data bus for communication between the network module and the I/O modules. With modular terminal bases, it is easy to expand your FieldPoint system to meet changing application needs.

For more details on configuring a FieldPoint system, see page 532.

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RS-232 and RS-485 Serial Network Interfaces

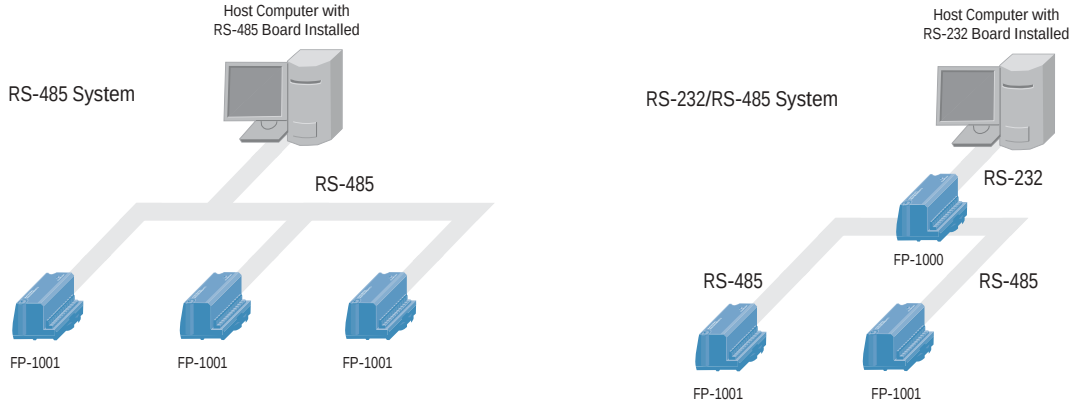


Figure 1. FieldPoint Serial Network System Configurations

Network Watchdog Timers

The FP-100x can detect and respond to network failures. If you enable the watchdog timer and the serial link becomes inactive or is lost, the network interface can automatically set the output channels to configured output states.

Power Supply Regulation

An 11 to 30 VDC supply powers the FP-100x. The network interface filters and regulates the power input, redistributing power to all I/O modules in the node via the backplane bus in the terminal bases.

For external power supply options, see FieldPoint Accessories, page 550.

Configurable Output States with Snapshot

With the Snapshot feature, you can easily define the default output states and I/O configurations for the entire FieldPoint bank after system power-up. The Snapshot command instructs the serial network interface to memorize the current settings of the I/O modules in the node, storing the information in nonvolatile storage on the FP-100x. After power-up, the FP-100x will initialize the I/O modules to the configurable output states you defined with Snapshot.

Easy Configuration Software

National Instruments Measurement & Automation Explorer (MAX) configuration software, included with your FieldPoint hardware, simplifies the use and integration of FieldPoint systems. With MAX, you configure the entire system, including network parameters, module and I/O settings, and named-channel items. MAX will search your Ethernet network and return configuration settings on all your FieldPoint nodes. MAX will also automatically detect the I/O modules on each bank so you can easily configure I/O parameters, such as input ranges, power-up output states, and watchdog states, using intuitive dialog windows. To get your system up and running quickly, from MAX you can also interactively test I/O modules and channels, viewing input data values and setting output values without writing any software code.

In addition to configuring hardware parameters, MAX also configures and manages named-channel items used your higher level programming software. From your application software package, such as LabVIEW, LabWindows/CVI, Measurement Studio, or Lookout, you simply address a named-channel item to access the I/O values.

For more details on configuring a FieldPoint system, see page 532.

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RS-232 and RS-485 Serial Network Interfaces



Figure 2. MAX provides quick setup for your FieldPoint network. For example, the Find Devices function searches the entire RS-232/RS-485 network for all FieldPoint devices.

Ordering Information

NI FP-1000 777517-00
NI FP-1001 777517-01

Recommended FieldPoint System Products

NI FP-TB-1 777519-01
NI PS-4 Power Supply 778586-90
NI Developer Suite Standard Control Edition 777905-03

BUY ONLINE!

*Visit **ni.com/info** and enter fp1000, and/or fp1001.*

Specifications

Network

Serial ports
- FP-1000 ..... 1 RS-232 port, 1 RS-485 repeater port
- FP-1001 ..... 1 RS-485 port

Baud rates ..... 300, 1200, 2400, 9600, 38400, 57600, 115200 (switch selectable)
Communication parameters ..... 1 start bit, 8 data bits, 1 stop bit, no parity
Integrity ..... Standard Optomux checksum
Maximum distance from host
- FP-1000 (RS-232) ..... 15 m (50 ft)
- FP-1001 (RS-485) ..... 1,200 m (4,000 ft)
- RS-485 isolation ..... 2,300 V_{rms} breakdown

Power Requirements

Power supply range ..... 11 to 30 VDC
Recommended power supply
- FP-1000/1001 with up to 5 I/O modules ..... 15 W (FP-PS-4 or equivalent)
- FP-1000/1001 with 6 to 9 I/O modules ..... 20 W

Power consumption ..... 1 W + 1.15 (I/O module power requirements)

Physical Characteristics

LED indicators
- POWER (green) ..... Valid power
- NETWORK (yellow) ..... Network traffic from host
- ACCESS (yellow) ..... Access of any module in local node
- STATUS (red) ..... Failure condition

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.)

Environmental

FieldPoint modules are intended for indoor use only. For outdoor use, they must be installed in a suitable sealed enclosure.

Operating temperature ..... -40 to 70 °C
Storage temperature ..... -55 to 85 °C
Relative humidity ..... 10 to 90%, noncondensing
Maximum altitude ..... 2,000 m; at higher altitudes the isolation voltage ratings must be lowered.
Pollution degree 2

Safety

The FP-1000/1001 is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- EN 61010-1, IEC 61010-1
- UL 3121-1, UL 61010C-1
- CAN/CSA C22.2 No. 1010.1

For UL and other safety certifications, refer to the product label or to ***ni.com***

Electromagnetic Compatibility

CE, C-Tick and FCC Part 15 (Class A) Compliant
Emissions ..... EN 55011 Class A at 10 m. FCC Part 15A above 1 GHz
Immunity ..... EN 61326: 1997 + A2: 2001, Table 1
For EMC compliance, operate this device with shielded cabling.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE Marking, as follows:
Low-Voltage Directive (safety) 73/23/EEC
Electromagnetic Compatibility
Directive (EMC) 89/336/EEC
Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit ***ni.com/hardref.nsf/*** and search by model number or product line.

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