DI-718Bx Data Logger

Stand-alone Data Logger Option Allows Data to be Saved to Removable SD Memory

Accepts 16 Fully Isolated DI-8B Plug-In Amplifiers

Sample Rates from 0.0017Hz up to 14,400Hz

DI-718Bx with the top hatch removed, eight DI-8B modules installed, and eight DI-8B modules sitting atop the instrument.

DATAQ Instruments' DI-718Bx Series Data Acquisition/Data Logger System is designed for general purpose and stand-alone data logging applications that require signal conditioning. DI-718Bx instruments may be purchased with or without stand-alone capability. Instruments without this option must remain tethered to a PC's Ethernet port (can be via a network) during data acquisition and use the PC's own program and memory to store acquired data. Instruments with the stand-alone data logging option feature a built-in socket that accepts standard Secure Digital (SD) memories to which acquired data may be stored. SD memories are the same commonly available mass storage devices used with digital cameras and MP3 players.

Compact and low cost DI-8B amplifiers may be plugged directly into the DI-718Bx and are the world's smallest fully functional isolated analog signal conditioners. Each DI-8B module protects, filters, amplifies, and isolates an input signal and provides an advanced signal conditioning solution for nearly any industrial measurement. The compact nature of both the DI-718Bx and DI-8B modules combine to form the smallest data logger/acquisition instrument in its class.

All DI-718Bx instruments are supplied with four removable 16-position screw terminal connectors to provide access to the built-in DI-8B module backplane. Instruments are housed in a small (9"L × 7.29"W × 1.52"H; 22.9L × 18.5W × 3.86H cm) enclosure consisting of an aluminum base, all-steel wraparound, aluminum end plates and removable top hatch.

Features

Make Industrial Measurements Through DI-8B Plug-in Signal Conditioning Modules

Each channel on the DI-718Bx accommodates one DI-8B module providing a single channel of isolated input protection, amplification, and filtering. DI-8B modules are plugged into a socketed backplane and are secured with a mounting screw. Each channel has 4 corresponding screw terminals for signal connections: channel+, channel-, excitation+, and excitation-. These terminals satisfy all transducer inputs and provide sensor excitation if necessary. Access to the DI-8B modules is through a removable top hatch.

Stand-alone Data Logger Operation

Use an SD Card to record and store data—up to 1GB. A FIFO memory configuration allows the DI-718Bx to record continuously using a circular buffer or record-until-full approach. A push button allows manual start/stop control over the recording process. A multi color LED shows instrument status (Record, Standby, Busy, Error).

Wide Range of Throughput Rates

Supports sample throughput rates from 0.0034 Hz up to 4800 Hz when acquiring data with a PC or from 0.0017 Hz (6.1 samples per hour) to up to 14400 Hz when recording to removable SD memory (stand-alone data loggers).

High Resolution

14-bit resolution analog to digital conversion provides a responsive instrument capable of registering changes as small as one part in 8,192 (±0.012% of the full scale measurement range).

Easy to Connect and Use

Installs in seconds. Simply connect to an accessible Ethernet port (an extra-cost USB to Ethernet converter is available). Connect power, then connect your signals to the provided screw terminal blocks (16 ports each). Stand-alone data loggers just require an SD card and power.

File Protection

When powered down unexpectedly, the DI-718Bx Stand-alone model retains all acquired data on its memory card.

Includes Software

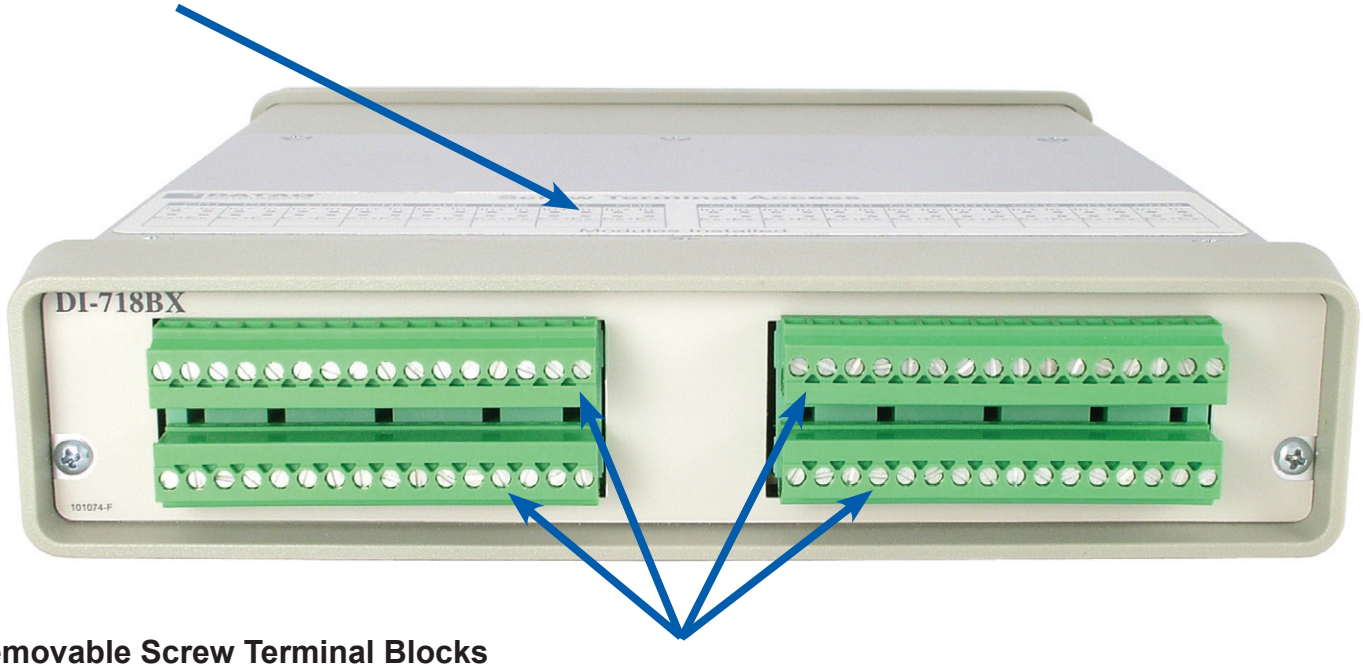
Be up and running minutes out of the box with WinDAQ software. Use WinDAQ/Lite Acquisition software (free) to record at rates up to 1000 Hz throughput. WinDAQ/ High Speed option allows you to record data as fast as the instrument will allow. Use WinDAQ Playback software (free) to review, measure, compare, and analyze waveform data during or after a recording session.

Configuration Software is included for all stand-alone data loggers allowing a complete data acquisition configuration to be designed and downloaded to the DI-718Bx from any local or remote PC. Upload software is also provided to allow you to read data stored to SD memory over the DI-718Bx's Ethernet interface.

DATAQ Instruments, Inc. • 241 Springside Drive • Akron, Ohio 44333 • Tel: 330-668-1444 • Email: support@dataq.com • www.dataq.com

DI-718Bx Front Panel and Top Hatch

Removable Top Hatch
Remove the top hatch to install your DI-8B modules.



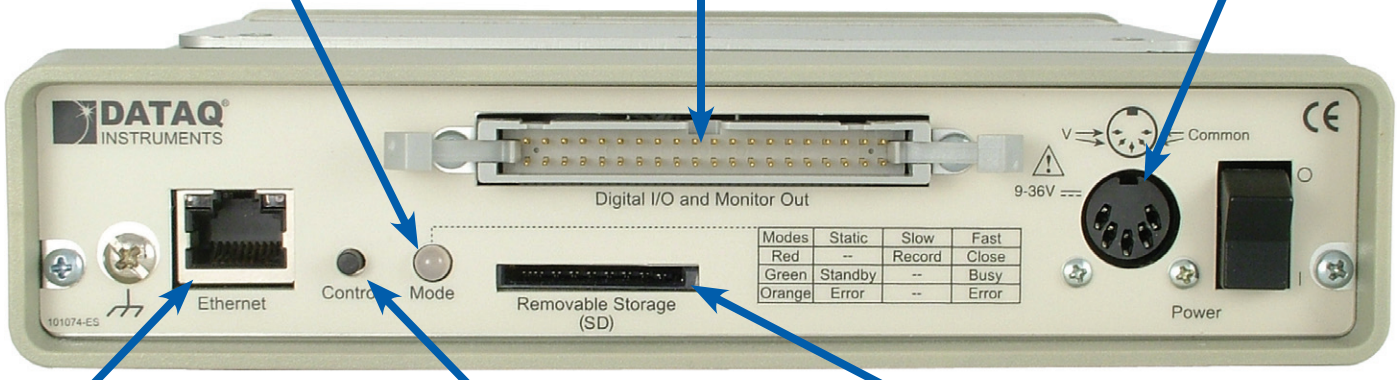
Removable Screw Terminal Blocks
Connect signal leads to these four removable screw terminal blocks. Channel+, Channel- , Excitation+, and Excitation- for each channel.

DI-718Bx Rear Panel

"Mode" LED
Tri-color LED indicates instrument status: Standby, Recording, Error.

Digital I/O and Monitor Out
Connect to 8 digital I/O ports using CABL-7 and the DI-705.

Power Jack
May be powered by the provided AC adaptor, or from any 9-36 VDC source. Consumes 2 watts.

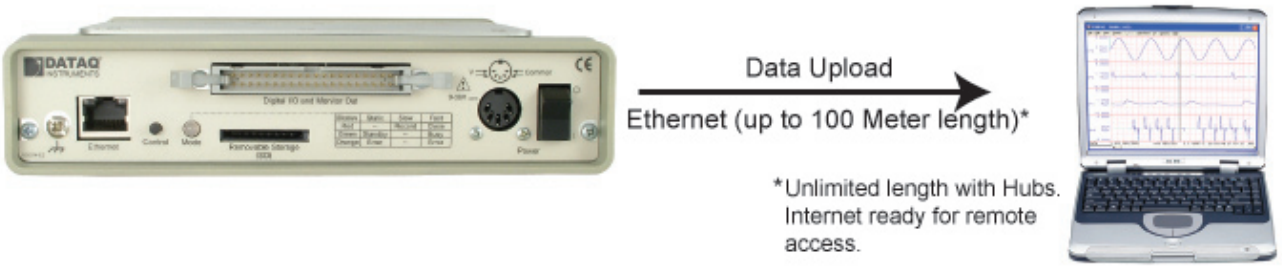


Interface
Connect with a CAT5 cable to any spot on your network. An optional external Ethernet to USB converter is available (part number 101014-EA).

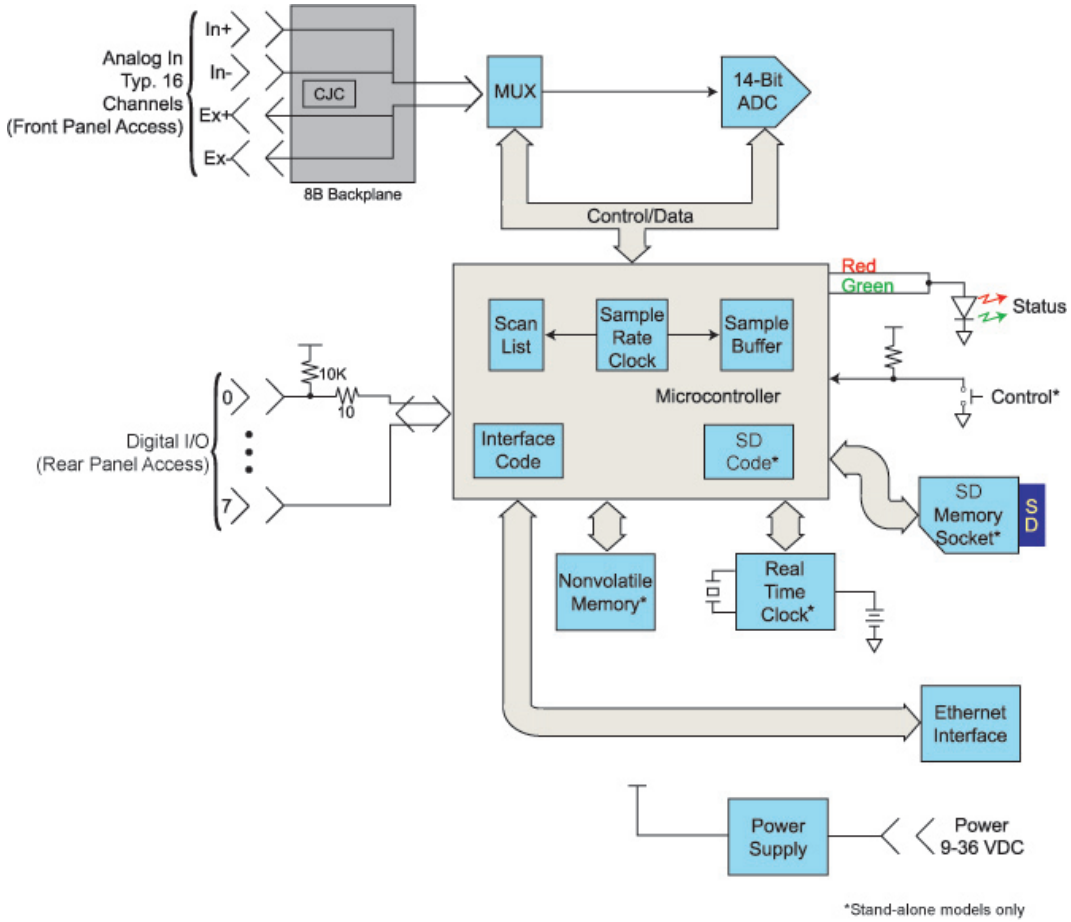
"Control" Push-button
Allows manual start/stop local control over the recording process and instrument configuration.

Removable Storage Slot
Accommodates standard and readily available multi-media memory cards for mass storage. These are the same memories used by consumer electronic devices like MP3 players and digital cameras. Accepts memory sizes from 16 MB to 1 GB.

Stand-alone Data Transport Methods



Block Diagram



*Stand-alone models only

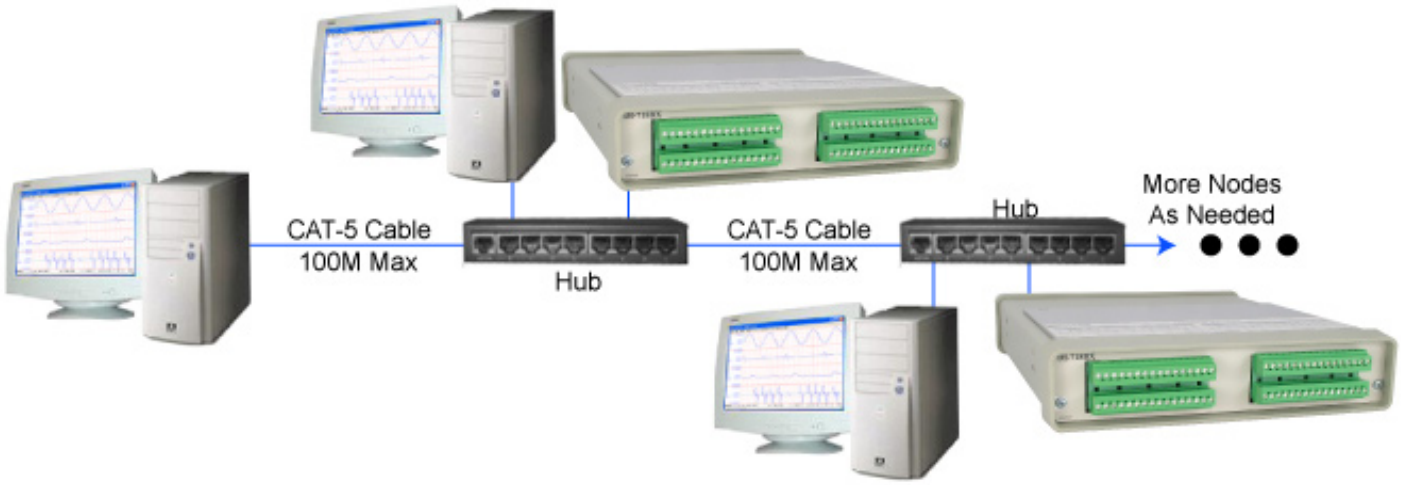
DI-718Bx Deployment Methods

Six Deployment Methods

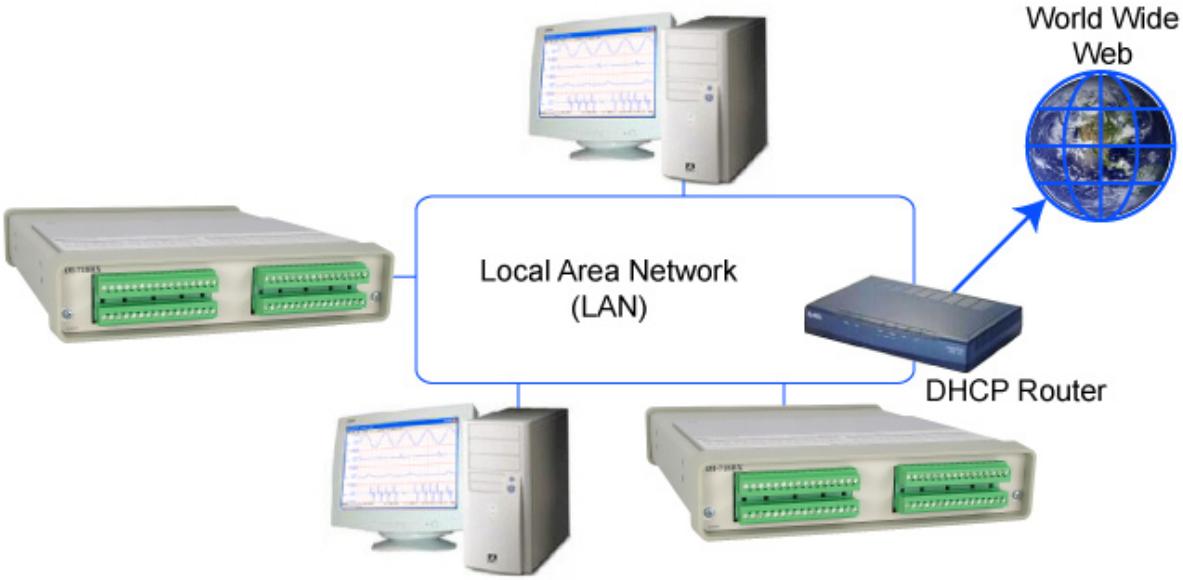
Ethernet Models add a new dimension to Data Acquisition applications allowing data accesss over a LAN to a PC on the other side of your facility or over the internet to a PC on the other side of the world. For more information view our application note on the internet at: http://www.dataq.com/applicat/articles/data_logger_ethernet02.htm.

Deployment #1 - One PC directly connected to one DI-718Bx with a crossover cable.

Deployment #2 - One or more PCs, one or more DI-718Bxs on a Dedicated Network.

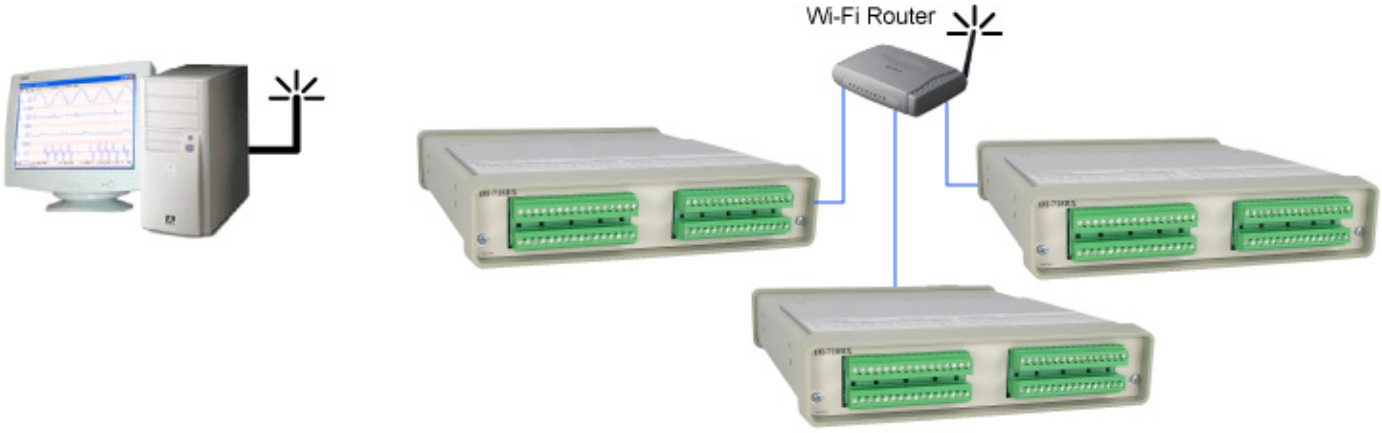


Deployment #3 - One or more PCs, one or more DI-718Bxs on a LAN.

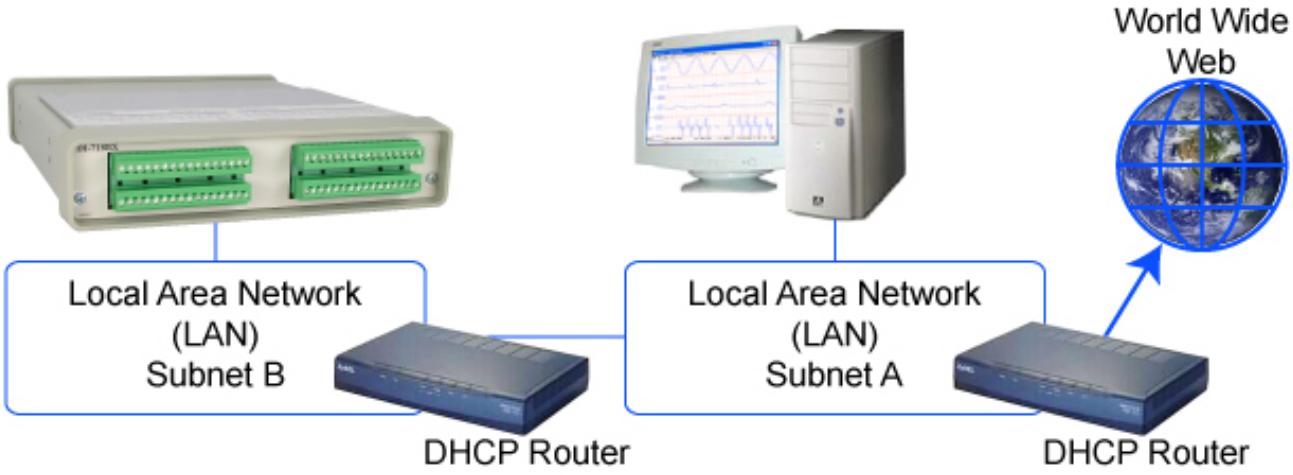


DI-718Bx Deployment Methods

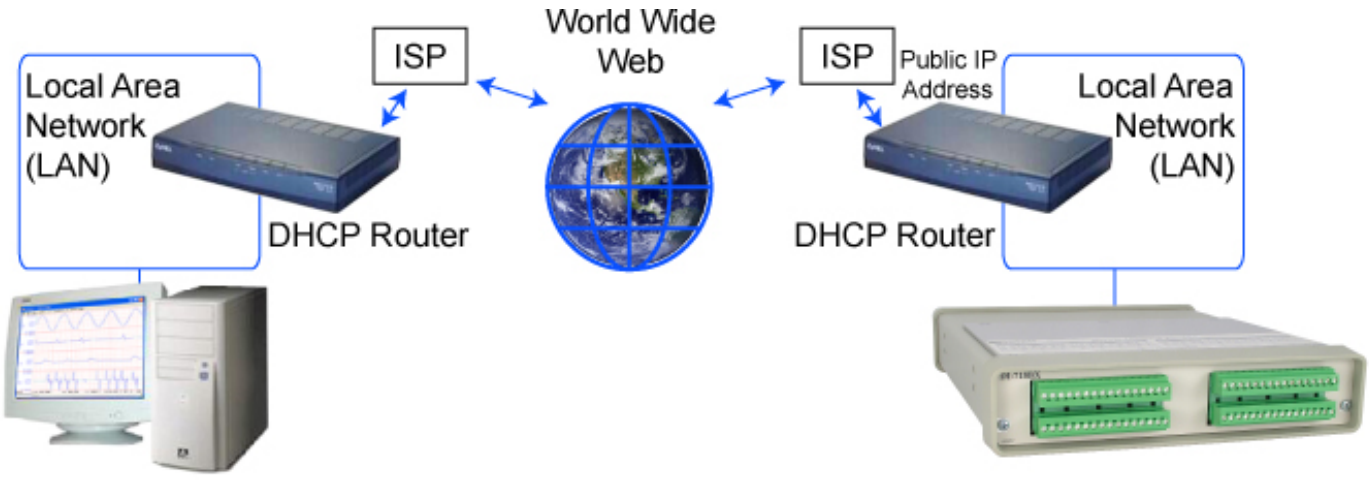
Deployment #4 - One or more PCs, one or more DI-718Bxs on a Wireless Network.



Deployment #5 - One or more PCs, one or more DI-718Bxs remotely to different LAN subnets.



Deployment #6 - One or more PCs, one or more DI-718Bxs remotely over the Internet.



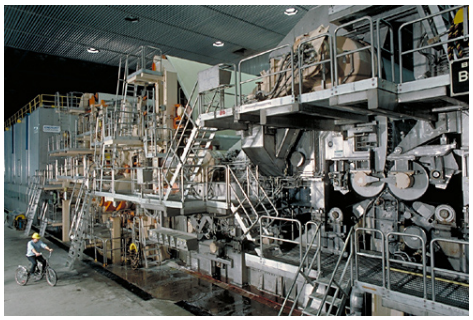
View the Ethernet Resource Page for application notes and demos on Ethernet Data Acquisition with DI-71X products. Go to http://www.dataq.com/applicat/ethernet.htm for more information.

DI-718Bx Primary Customers

What you can measure

Both low and high-level signal acquisition for industrial monitoring and recording in maintenance and troubleshooting, as well as quality control applications to measure:

- Programmable logic controller (PLC) parameters.
- Voltage measurements in the range of millivolts to 10 volts.
- 4-20 mA process current loops.
- Transducer outputs at either millivolt or high levels for:
  - Force;
  - Temperature;
  - Pressure/vacuum;
  - Torque;
  - RPM/Speed;
  - Load;
  - Strain;
  - Distance;
  - Many more.



Where you can measure

Design qualification and maintenance and troubleshooting applications where various mechanical and/or electrical parameters as described above are to be measured. These include such applications as:

- In-vehicle automotive testing.
- Remote wireless radio monitoring for signal strength, power supply voltages, etc.
- Agricultural equipment testing.
- Electromechanical timing and amplitude measurements on presses and mills (paper, steel, tube).

Tethered to a PC...

Use a PC-tethered DI-718Bx anywhere it can remain connected to a laptop or desktop PC for long or short-term measurements. The Ethernet interface allows the PC to be used locally or remotely (up to 100 meters without hubs). Because PC-tethered versions must communicate constantly with the host without latencies, dedicated networks are recommended for PC-tethered versions.

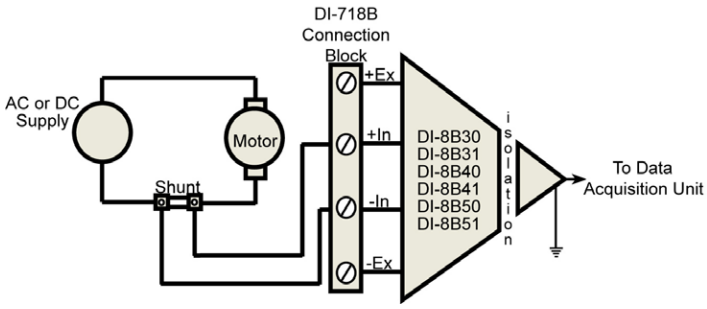
...or Stand-alone

DI-718Bx Stand-alone models can be used in all the same applications as PC-tethered versions, except data may also be stored locally to removable SD memory without a PC. Remote uploading of stored SD memory data can be achieved using the Ethernet interface from anywhere on a LAN, WAN, or the Internet. Stand-alone features are designed for those who:

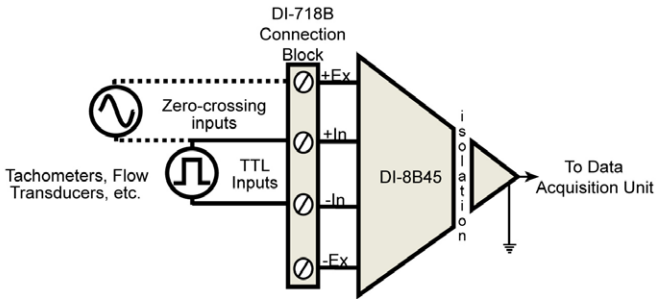
- Cannot locate a PC near the instrument for fear of theft or damage.
- Want easy and efficient access to remotely recorded information over their Ethernet LAN without leaving the comfort and security of their office.
- Want to record 24/7/365 as an aid to either process maintenance and troubleshooting, quality control, or design qualification without the added complexity and instability of a dedicated PC running Windows.
- Want remote, Ethernet- accessible data without the time and cost burden required to install a dedicated network.

DI-8B Signal Conditioning Module Applications

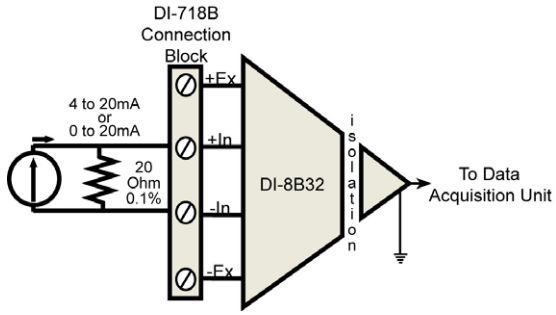
AC or DC Current Shunt



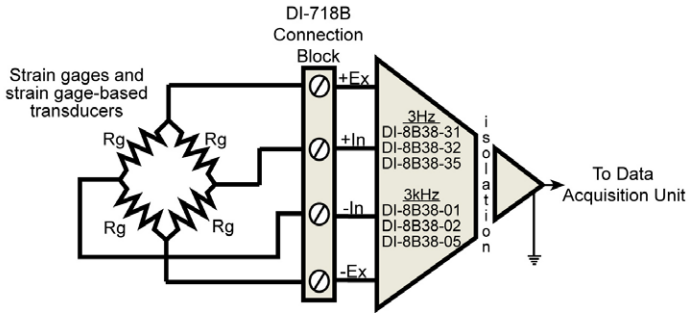
Frequency



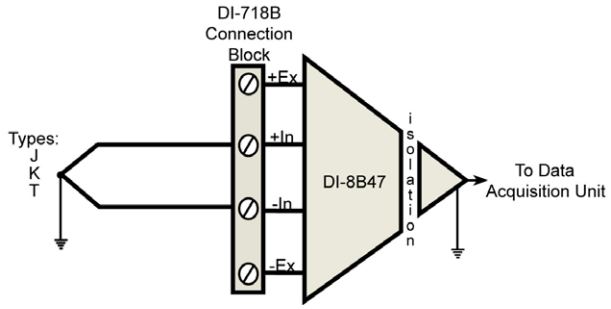
Process Current



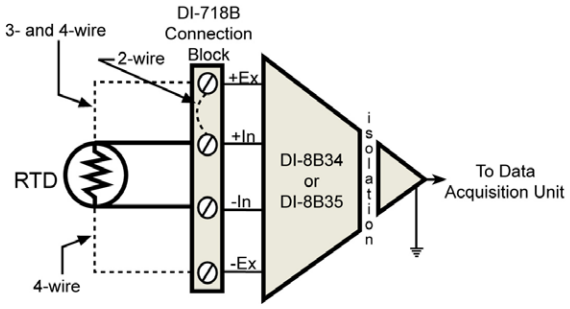
Full-Bridge Strain Gage



Floating Grounded TC



RTD



DI-8B Signal Conditioning Module Selection Guide

Each DI-8B module is a single channel, isolated analog input designed for a specific measurement. The modules filter, isolate, amplify, and convert input signals to a high-level analog signal suitable for A/D conversion. Over 50 modules address the full spectrum of industrial measurements.

Key Features

- Convenient, flexible, mix-and-match approach.
- Full isolation reduces noise and protects you and your equipment from large, common mode voltages.
- Small size 1.105" × 1.65" × 0.40".

Common Specifications

- 1000V Input-to-Ouput Isolation.
- 500V Channel-to-Channel Isolation.
- 240 VAC input protection.
- 160db common mode rejection.

Voltage Input Modules (3Hz BW)

MODEL NO.	Input Range
DI-8B30-01	±10mV
DI-8B30-02	±50mV
DI-8B30-03	±100mV
DI-8B31-01	±1V
DI-8B31-02	±5V
DI-8B31-03	±10V
DI-8B31-07	±20V
DI-8B31-09	±40V
DI-8B31-12	±60V

Current Input Modules (3Hz BW)

MODEL NO.	Input Range
DI-8B32-01	4 to 20mA
DI-8B32-02	0 to 20mA

Linearized 2- or 3-wire RTD Modules (3Hz BW)

MODEL NO.	Type	Input Range
DI-8B34-01	100Ω Pt	-100°C to +100°C (-148°F to +212°F)
DI-8B34-02	100Ω Pt	0°C to +100°C (+32°F to +212°F)
DI-8B34-03	100Ω Pt	0°C to +200°C (+32°F to +392°F)
DI-8B34-04	100Ω Pt	0°C to +600°C (+32°F to +1112°F)

Linearized 4-wire RTD Modules (1kHz BW)

MODEL NO.	Type	Input Range
DI-8B35-01	100Ω Pt	-100°C to +100°C (-148°F to +212°F)
DI-8B35-02	100Ω Pt	0°C to +100°C (+32°F to +212°F)
DI-8B35-03	100Ω Pt	0°C to +200°C (+32°F to +392°F)
DI-8B35-04	100Ω Pt	0°C to +600°C (+32°F to +1112°F)

Potentiometer Input Modules (3Hz BW)

MODEL NO.	Input Range
DI-8B36-01	0 to 100Ω
DI-8B36-02	0 to 500Ω
DI-8B36-03	0 to 1kΩ
DI-8B36-04	0 to 10kΩ

Strain Gage Input Modules

MODEL NO.	Type	Bandwidth	Input Range
DI-8B38-01	Full	3kHz	±10mV, 3mV/V 100 to 10k
DI-8B38-02	Full	3kHz	±30mV, 3mV/V 300 to 10k
DI-8B38-05	Full	3kHz	±20mV, 2mV/V 300 to 10k
DI-8B38-31	Full	3Hz	±10mV, 3mV/V 100 to 10k
DI-8B38-32	Full	3Hz	±30mV, 3mV/V 300 to 10k
DI-8B38-35	Full	3Hz	±20mV, 2mV/V 300 to 10k

Voltage Input Modules (1kHz BW)

MODEL NO.	Input Range
DI-8B40-01	±10mV
DI-8B40-02	±50mV
DI-8B40-03	±100mV
DI-8B41-01	±1V
DI-8B41-02	±5V
DI-8B41-03	±10V
DI-8B41-07	±20V
DI-8B41-09	±40V
DI-8B41-12	±60V

Current Input Modules (3Hz BW)

MODEL NO.	Input Range
DI-8B42-01	4 to 20mA
DI-8B42-02	4 to 20mA

Frequency Input Modules (3Hz BW)

MODEL NO.	Input Range
DI-8B45-01	0 to 500Hz
DI-8B45-02	0 to 1kHz
DI-8B45-03	0 to 3kHz
DI-8B45-04	0 to 5kHz
DI-8B45-05	0 to 10kHz
DI-8B45-06	0 to 25kHz
DI-8B45-07	0 to 50kHz
DI-8B45-08	0 to 100kHz

Linearized Thermocouple Input Modules (3Hz BW)

MODEL NO.	Type	Input Range
DI-8B47J-01	J	0°C to +760°C (+32°F to +1400°F)
DI-8B47J-02	J	-100°C to +300°C (-148°F to +572°F)
DI-8B47J-03	J	0°C to +500°C (+32°F to +932°F)
DI-8B47J-12	J	-100°C to +760°C (-148°F to +1400°F)
DI-8B47K-04	K	0°C to +1000°C (+32°F to +1832°F)
DI-8B47K-05	K	0°C to +500°C (+32°F to +932°F)
DI-8B47K-13	K	-100°C to +1350°C (-148°F to +2462°F)
DI-8B47K-14	K	0°C to +1200°C (+32°F to +2192°F)
DI-8B47T-06	T	-100°C to +400°C (-148°F to +752°F)
DI-8B47T-07	T	0°C to +200°C (+32°F to +392°F)

Voltage Input Modules (20kHz BW)

MODEL NO.	Input Range
DI-8B50-01	±20mV
DI-8B50-02	±50mV
DI-8B50-03	±100mV
DI-8B51-01	±1V
DI-8B51-02	±5V
DI-8B51-03	±10V
DI-8B51-07	±20V
DI-8B51-09	±40V
DI-8B51-12	±60V

DI-718Bx Specifications

Analog Inputs

Number of Channels:	16 configured for signal conditioned inputs
Channel Configuration:	Defined by DI-8B Module
Measurement Range:	Defined by DI-8B Module
Accuracy:	±.05%FSR ±50µV + 8B module + CJC error (test conditions: 1 channel; 100 S/s; averaging mode)
Resolution:	±1 part in 8,192
Input Impedance:	Defined by DI-8B Module
Input offset voltage:	Defined by DI-8B Module
Channel-to-channel crosstalk rejection:	-75db @ 100Ω unbalance
Offset temperature coefficient:	0.25µV/°C
Digital filtering:	Standard: Conditional over-sampling Stand-alone: None
CJC Error:	±1.5°C plus 8B Module
Gain:	1, 2, 4, 8 (software selectable per channel)

Isolation (via DI-8B Modules)

Input-to-Output:	1000VDC/Peak AC
Channel-to-Channel:	500VDC/Peak AC

A/D Characteristics

Type:	Successive approximation
Resolution:	14-bit
Monotonicity:	±2 LSB
Conversion Time:	69.4µs

Scanning Characteristics

Max. throughput sample rate:	Standard: 4,800 Hz Stand-alone: 14,400 Hz (assumes SD memory latencies of 80 milliseconds or less)
Min. throughput sample rate:	Standard: 0.0034 Hz Stand-alone: 0.0017 Hz
Max. scan list size:	18 entries
Sample buffer size:	2kb

Controls (Stand-alone models)

Single push-button:	Provides manual control over Record and Standby

Calibration

Calibration cycle:	One year

Digital I/O

Bits:	8 bi-directional ports
Input voltage levels:	Min. required "1" 2V; Max allowed "0" 0.8V

Ethernet Interface (optional Ethernet to USB converter available)

Type:	10/100Base-T
Connector:	RJ-45
Protocol:	TCP/IP
Server Type:	DHCP or Fixed IP

Removable Memory (Stand-alone models)

Type:	SD (Recommended: Lexar Professional 133X)
Capacity:	16MB to 1GB

Real Time Clock (Stand-alone models)

Type:	Date, hour, minute, second
Resolution:	1 second
Accuracy:	20 ppm

Transfer Rate to PC

Real Time:	up to 4,800 samples per second
From Memory Card:	up to 3,000 samples per second

General

Panel indicators:	Mode LED
Panel Controls:	Control push button (Stand-alone models)
Panel Slots:	Accepts MMC/SD-type flash memory
Input connectors:	Four, removable sixteen position terminal blocks
Operating Environment:	0°C to 70°C
Enclosure:	Aluminum base with steel wrap-around. Removable aluminum top hatch for 8B module installation.
Dimensions:	7.29W × 9L × 1.52H in. 18.52W × 22.86L × 3.86H cm.
Weight:	2 lbs. 10 oz. (1.19 kg) + DI-8B modules
Power Requirements:	9 to 36 VDC, 2.5 watts + 8B modules

Indicators

Stand-alone models:	Three-color LED indicating Record, Standby, and Error conditions
Standard models:	Power LED

Ordering Guide

Description	Order No.	Description	Order No.
DI-718Bx Ethernet Instrument Low cost, portable, Ethernet data logger featuring throughput rates up to 4800 Hz, and sixteen DI-8B Module inputs.	DI-718Bx-E	**DI-718Bx-S Ethernet Stand-alone Instrument** Low cost, portable, Ethernet data logger featuring throughput rates up to 14400 Hz, sixteen DI-8B Module inputs and stand-alone capability.	DI-718Bx-ES
WinDaq/HS-718B High-Speed WinDaq Acquisition software for DI-718B Instruments.	WinDaq/HS-718B	**SD Card Reader** Reads Secure Digital (SD) and MultiMedia Card (MMC) Memories. For use with Stand-alone models.	101014-CR
SD Card Lexar Professional 133X 1 Gigabyte Secure Digital Flash Memory.	101014-1G	**USB to Ethernet Converter** Converter that allows you to connect your DI-718Bx to a USB port. Manufacturer varies. Adds an external network card to your PC through the USB port.	101014-EA

DATAQ® INSTRUMENTS

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Data Acquisition Product Links

(click on text to jump to page)

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