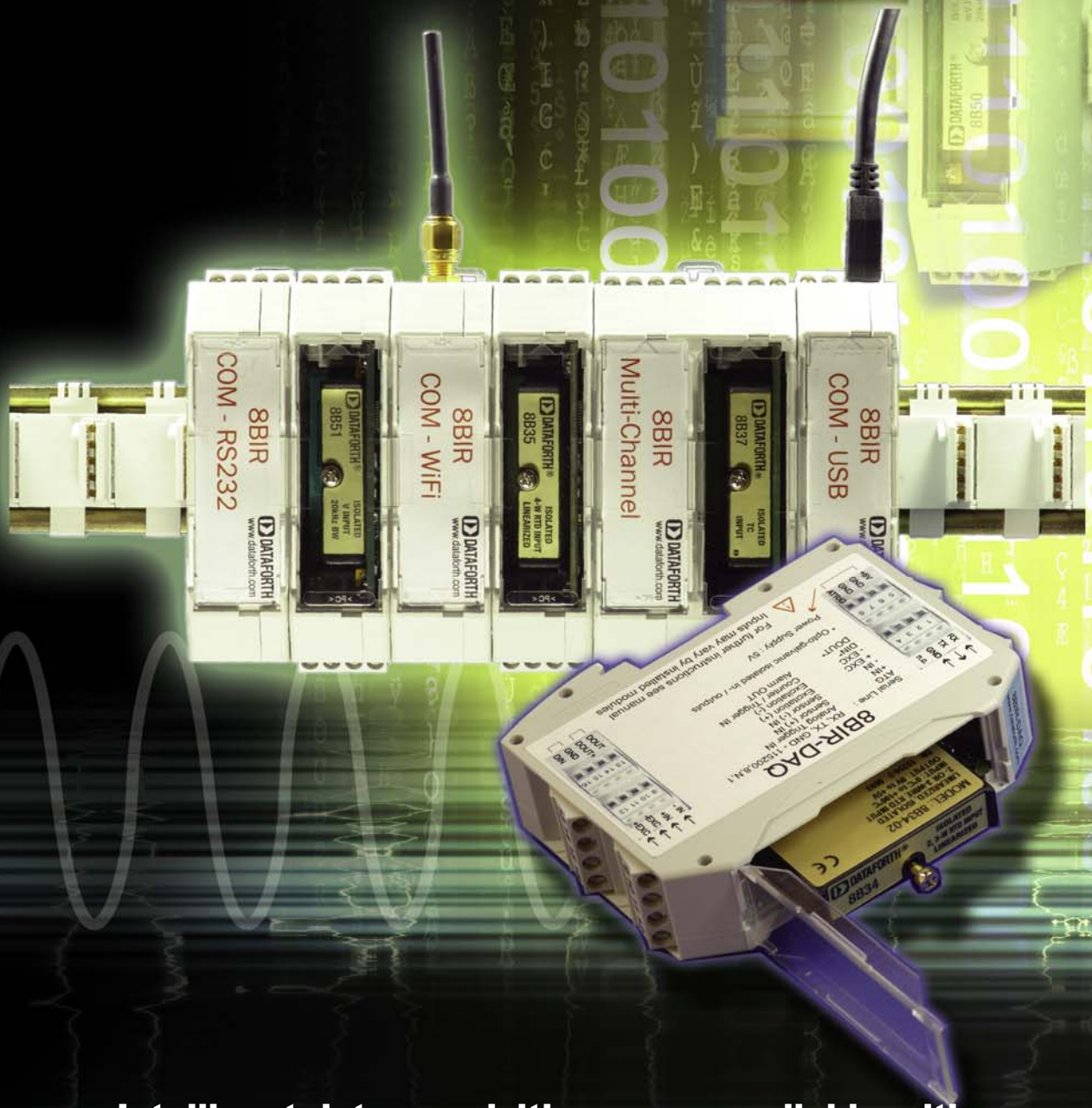


8BIR Intelligent Data Acquisition System DIN Rail Version



Intelligent data acquisition – now available with Dataforth 8B modules – combines industrial analog signal conditioning of sensor signals with state-of-the-art signal digitization.



8BIR Intelligent Data Acquisition System

DIN Rail Version

Intelligent data acquisition (DAQ) — available now with Dataforth's 8B modules — combines industrial analog signal conditioning of sensor signals with state-of-the-art signal digitization and interfaces easily to your network.

The 8BIR family of intelligent DAQ modules provides an easy to install multi-channel data acquisition system that operates in a self-organizing network of up to 250 channels.

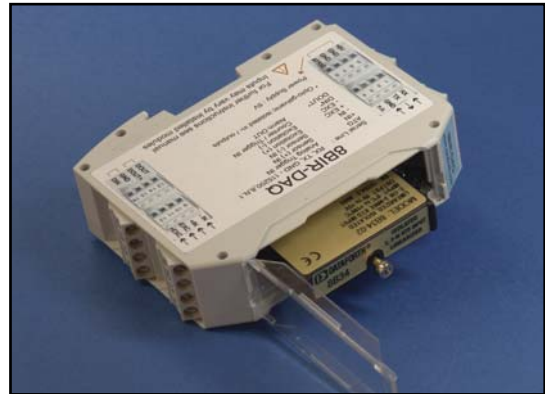
Proven Quality with Dataforth 8B Modules

The new DIN Rail 8BIR data acquisition modules work perfectly with Dataforth's existing and extensive line of miniature 8B modules. By joining the outstanding analog technology of the 8B modules with the leading edge analog-to-digital conversion of the 8BIR system, Dataforth ensures effective interface to the entire world of industrial sensors. There is no longer a need for an external PC with A/D cards, as the 8BIR offers all common industrial communication interfaces to the user's host processor or PC.

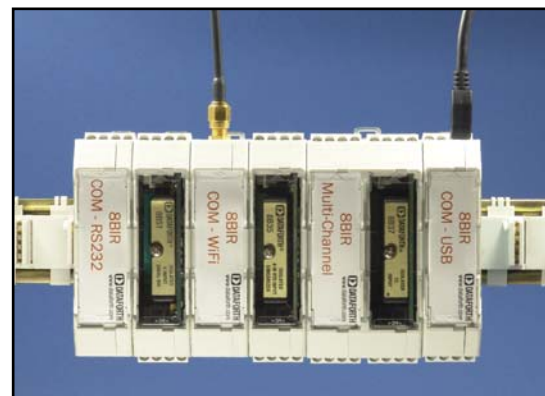
Users can quickly define any application by selecting the appropriate 8B modules. The intelligent bus system of the 8BIR system provides high flexibility for virtually every application, as well as the capability to easily configure high channel count systems.

Features:

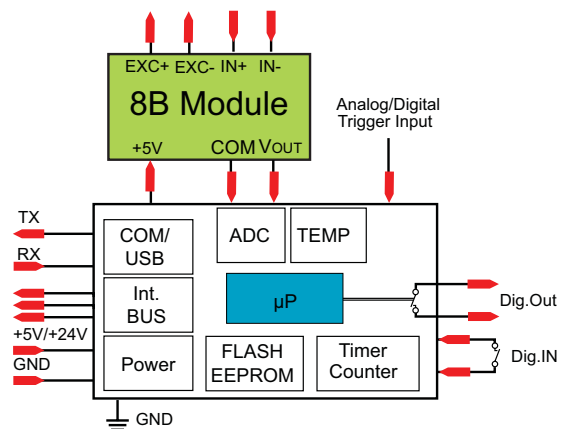
- True Distributed Signal Processing
- State-of-the-Art μ P Technology
- High-Speed A/D Conversion Per Channel
- Selectable Sample Rate Per Channel
- Multi-Channel Application
- Intelligent High-Speed Bus System
- All Common Industrial Communication Interfaces
- Direct Usage of Dataforth 8B Modules



Installation of 8B Module



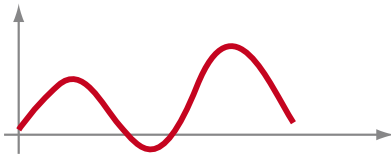
8BIR Mixed Configuration



8BIR-DAQ Module Block Diagram

A complete data acquisition system in a single module...

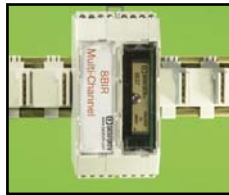
Analog Input/Output



The extensive analog offering of Dataforth 8B modules opens a broad line of signal conditioning solutions.

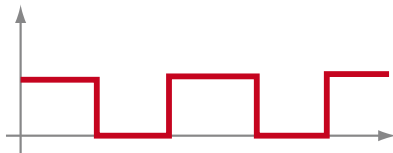
There are modules available for:

- Voltage and Current IN/OUT
- Thermocouple and RTD
- DC LVDT, Strain Gage
- Frequency, True RMS
- Potentiometer



All modules have true galvanic isolation of 1500Vrms; input ranges vary from $\pm 10\text{mV}$ up to $\pm 60\text{V}$. Other outstanding features of the 8B analog signal conditioners include high accuracy of 0.05% and very high signal-to-noise rejection achieved by using multiple-pole filters. An 8BIR multi-channel module is available to provide 4 or 8 channels of input to a single 8B module, thus reducing cost per channel.

Digital Input/Output



In addition to the wide selection of 8B analog signal conditioning modules, digital inputs and outputs are included. Each 8BIR provides one digital input and one digital output for monitoring applications and to provide digital status lines or alarm information.

The opto-isolated input and output lines can be set to different conditions that are related to analog input signals, special counter values, or the module's internal temperature. Using the latch feature, the status of alarm conditions may be saved even if the status has changed.

Temperature

Temperature is involved in almost all measurements. Either the temperature is measured itself or the effects of temperature must be compensated.

The 8BIR line provides fully digital temperature-compensated A/D conversion. The module's internal temperature is measured to an accuracy of $\pm 0.5^\circ\text{C}$.

$^\circ\text{C}/^\circ\text{F}$



A/D Conversion

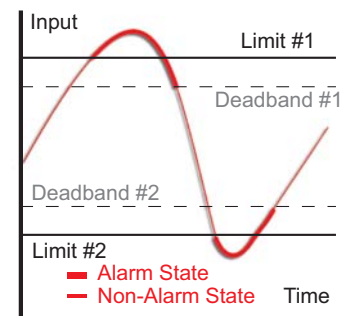
The maximum sample rate per channel is 4kHz. To suppress unwanted signal noise, a user-defined number of samples can be used for averaging; a min/max signal value is also provided.

Standard RS232/485 data transfer to the host is 115.2k baud. When using an optional communication module, data transfer rates can be up to 1M baud.

The 8BIR is configured through a standard USB port or RS232/485 communication line.

Trigger

Most data acquisition systems are organized with one central trigger option. The disadvantage of this is that one common trigger controls all channels. In contrast, the 8BIR product line has a sophisticated trigger feature for each channel.



In process or quality control systems, it is only necessary to sample data if an event goes outside defined limits. The flexible trigger options in the 8BIR provide most of the trigger functions found in more expensive data acquisition systems. Users can select between window and level triggering. The source for the trigger can be the signal itself, a counter value, an internal temperature reference, digital input, or another external analog signal.

To eliminate excessive data transfers, a module waiting for a trigger event generates only an "alive" signal to the host system.

Configuration

Using 8BIR Windows Configuration Software, it is very easy to configure a system of up to 250 modules. All parameters are stored in an EEPROM/Flash memory.

Channels can be defined into groups and configured together. The proprietary self-organizing network guarantees virtually effortless system setup. Interface to an 8BIR module can be made through the network or to individual modules via USB or RS232/485.

In a system of 8BIR modules, users simply choose one module for communication to the host PC and configure the system with 8BIR configuration software; all other 8BIR modules then recognize the chosen module as the master communication port.

... or a multi-channel data acquisition system with network communication

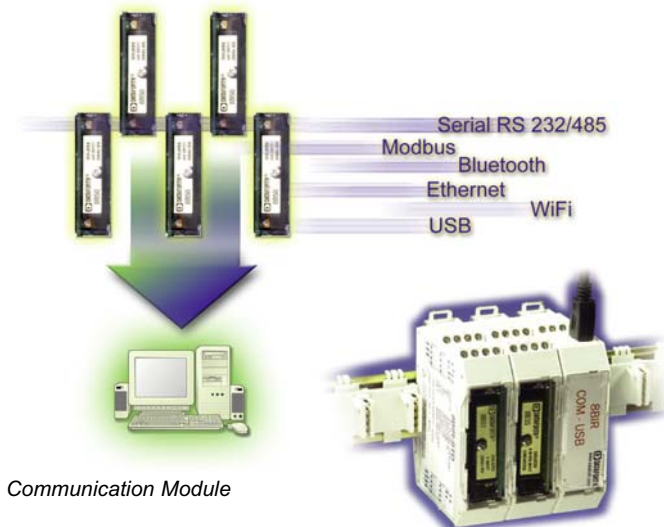
Module Connectivity

All connections between individual modules are made through a state-of-the-art bus architecture that provides data transfer rates up to 1Mbps. Power is connected to all modules through the same bus system.

This high-speed bus allows a system with a large number of channels to achieve extremely high data rates. There is no communication bottleneck to the host when accessing sampled data.

All inter-module communication is self-organized, and the user has direct access to every module at any time.

Additional modules are added to the network by simply snapping them onto the DIN Rail system.



Communication Module

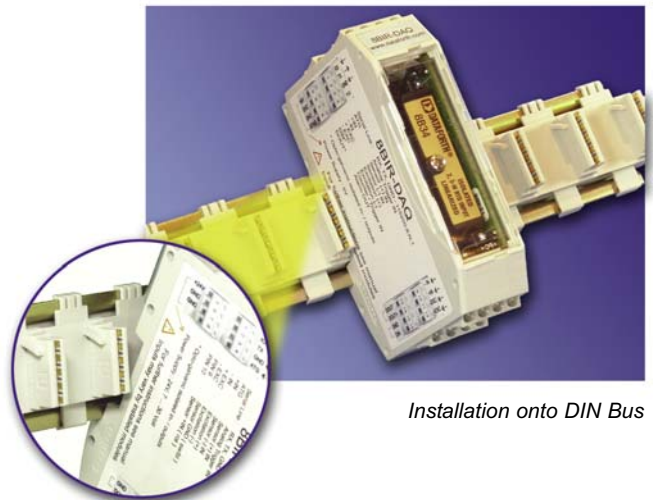
Every System Needs Power

In accordance with the 8BIR's straightforward development goals, the power supply architecture is as simple as possible.

A standard 5V connection can be made to one module, which then automatically connects the power lines of all other modules plugged into the DIN Rail bus system. For other supply voltages, wide-range smart power supply modules offer voltage inputs from 7VDC to 30VDC. To add additional power supplies, just snap the power module onto the DIN Rail system and connect the external power lines.



Power Supply Module



Installation onto DIN Bus

Supported Bus Systems

The modern industrial world thrives on network communication. Analysis of gathered data is most often done in a host system or PC; access to acquired data is easy and reliable.

The 8BIR intelligent modules provide all common industrial interfaces. For data rates up to 115.2k baud, a serial USB or RS232/485 connection is provided on each module. For higher data rates or different communication systems, special communication modules are offered.

Additional storage modules for Secure Digital or Compact Flash memory cards are planned. The host PC will read the data directly through the system network, or the memory card can be removed for reading at another location.

Wireless Connections

Modern connections are not only made by wire; the flexibility offered by wireless data communication is becoming increasingly popular, and wireless options will be available for the 8BIR product line.

Bluetooth and WiFi communication modules will be introduced first. Easy both to install and to use, these communication modules will provide a transparent data link to a single stand-alone module or to a network of modules. The configuration will not differ from wired connections.

An alternative wireless method could be a WiFi router with display. For example, a small monitor could be directly connected to a module with the parameters for display output configured through the standard 8BIR software configuration tool and stored in the EEPROM of the individual module.

For quality assurance or production control, a sensor signal, a counter value, or just a temperature could be shown on a wireless connected display.

Technical Features and Details

Dataforth 8B Modules

- $\pm 0.05\%$ Accuracy
- $\pm 0.02\%$ Linearity
- 1500Vrms Isolation
- 3- to 5-Pole Low-Pass Filter
- 120dB CMR
- Low-Drift with Ambient Temperature
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection from 30VAC to 240VAC
- -40°C to $+85^{\circ}\text{C}$ Operating Temperature
- CE Compliant
- CSA/FM Approvals Pending
- Designed for Class 1, Div 2 Applications
- Power Supply +5VDC $\pm 5\%$

Please see detailed technical product information for the individual modules of the 8B product line.

Additional Features:

- Scaling in Engineering Units
- Programmable Scaling
- Programmable Linearization
- Programmable Digital Filter
- Programmable Watchdog Timer to Indicate Module Error
- Trigger Programmable Per Module or Group of Modules
- Alarms Set as Momentary or Latching
- Digital Inputs and Outputs Connect to SS Relays
- Configurable Sample Rate Per Module or Group of Modules

Dataforth 8BIR Modules

Sampling Rate	$\leq 200\text{Hz}$ (optional $\leq 4\text{kHz}$ per ch max)
Max Channels	Up to 250 multi-drop modules per system, 250 chs
Accuracy	$< 0.2\%$ overall, digital temp compensation
Interfaces	USB, RS232/RS485; (Optional: WiFi, Bluetooth, Ethernet, Modbus)
Baud Rate	115.2k
Trigger	External/Internal analog and digital, single ch or simultaneous triggering (based on another ch, sensed signal, or set in memory)
	Rising or falling edge
	Window trigger (within or out of window)
	Trigger on count (32-bit 10kHz counter)
	Temperature value (internal $\pm 0.5^{\circ}\text{C}$ ref)
Output	Raw data, max/min, average, counter values, temperature
Temp Range	-40°C to $+85^{\circ}\text{C}$
Housing	DIN Rail (70mm x 90mm x 22 mm, 2.76" x 3.54" x .87")
Power	8BIR Modules, +5VDC, or +24VDC 8BIR-SPM Power Module, 7VDC to 30VDC



**Dataforth Corporation—High Performance Industrial Signal Conditioning,
Data Acquisition, and Data Communication Products Since 1984**



The Dataforth Quality Management System is ISO9001:2000 Registered

Call 800-444-7644 for more information or visit our website www.dataforth.com.



Dataforth Corporation
3331 E. Hemisphere Loop, Tucson, AZ 85706 • techinfo@dataforth.com • Fax: 520/741-0762 • Tel: 520/741-1404

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