

## DI-720 For General Purpose Use

**DI-730 For Electric Motor/Generator Maintenance, and Troubleshooting in Mills, Locomotion, and DC Drive System Applications**

**Standard Printer Port, Optional USB or Ethernet Interface**

## 14-Bit Resolution



Top: DI-720  
Bottom: DI-730

The DI-720 Series and DI-730 Series are families of instruments that offer 14-bit resolution and 150-200kHz waveform recording capability. They communicate through your PC's parallel port or an optional Ethernet or USB interface.

Use the **DI-720** for general purpose applications where pre amplified signals are acquired. Examples are process monitoring, and many medical research applications.

Use the **DI-730** for wide dynamic range measurements, especially those involving AC or DC electric motors. Examples include paper, aluminum, and steel mills; high speed trains; and rail and seagoing locomotion. The high sample rate, exceptional isolation, and CMR characteristics of the DI-730 make it very well suited for maintenance and troubleshooting of DC drive systems. Other applications include RPM measurements from motor/generators, supply voltage and current measurements, and field current measurements from drive-roll, braking, and take-up motors. See pages 11 and 12 for Application Close ups.

The **Ethernet** communication option connects DI-720 and DI-730 Series products to any local area network (LAN). Direct Internet access is also possible. This patent-pending communication option uses standard CAT-5 cable to yield continuous data acquisition throughput rates up to 180kHz. Multiple DI-720/730 products (each equipped with an Ethernet interface) may be daisy-chained together to form an ad-hoc extended network of autonomous, yet fully synchronous data acquisition stations. Each station can sample at a different rate (up to 180kHz throughput) and still maintain full synchronization. Station separation can be as far as 100 meters.

## Features

### DI-730 Offers Isolation, Wide Dynamic Measurement Range

The 8-channel DI-730 Series features a measurement range of  $\pm 10\text{mV}$  to  $\pm 1000\text{VDC}$  (or peak AC) over six gain ranges with  $\pm 1000\text{V}$  channel-to-channel and input-to-output isolation. Replace entire racks of isolation amps, high and low voltage amps, and data acquisition subsystems with one, portable, lightweight instrument. Channel-to-channel isolation protects delicate control circuits, computer equipment, and personnel from high common mode voltages.

### DI-720 Offers Lowest Cost Per Channel of Any Competing Product

The DI-720 Series accepts 32 high-level or signal conditioned analog inputs in a single-ended mode or 16 inputs in a differential input mode. The high-level inputs are typically low impedance, preconditioned signals in the range of 1.25 to 10VFS. Channel expansion up to 240 channels is possible with expanders.

### Printer Port, USB, or Ethernet Interface

DI-720 and -730 instruments are available with printer port, Ethernet, and universal serial bus (USB) communication interfaces. All instruments have a 25-pin male printer port connector for EPP, bidirectional, or standard mode parallel port communication with your PC. Options add Ethernet communication capability with a RJ45 connector, or a USB port for universal serial bus communication. The optional communication interfaces sacrifice the standard PP mode and cannot be used concurrently with the printer port.

### Synchronized Distributed Ethernet Data Acquisition

Daisy chain multiple DI-720 and/or DI-730 Ethernet units for a fully synchronous distributed Ethernet data acquisition system. See pages 8-10 for more information.

### Burst Sampling A/D

Connect to DC or near DC signals like temperature, generator-based RPM, or other slow process variables. Sample rates well into the sub-Hertz range are possible. Use for high speed applications such as modulated DC drives and other AC waveform situations.

### High Resolution Capability

DI-720 and -730 instruments apply 14 bits of resolution to your measurement task. A special version of the DI-720 with full 16-bit accuracy is available. Contact DATAQ Instruments for details.

### Easy to Connect & Use

All instruments connect in seconds to your PC's parallel port, Ethernet connector, or USB port. See I/O options on page 4.

### WINDAQ Software Included

WINDAQ/Lite is free with the purchase of every instrument. WINDAQ/Lite is restricted to a maximum throughput of 240 Hz when recording to disk (when 2 or more channels are enabled). Increase record-to-disk rates with WINDAQ/PRO or WINDAQ/PRO+. Use WINDAQ Waveform Browser (free) to review, measure, compare, and analyze the waveform file after it has been recorded by WINDAQ acquisition software. See page 5 for a closer look at WINDAQ Software and other compatible software packages.

## DI-720 and DI-730 Specifications

### Analog Inputs

<b>Number of Channels</b>	DI-720: 32SE/16DI (software selectable per channel) DI-730: 8 wide range and 16SE/8DI general purpose
<b>Input Type</b>	Bipolar
<b>Isolation (DI-730 only)</b>	±1000V input-to-output and channel-to-channel
<b>Analog Resolution</b>	14-bit, 1 part in 16,384
<b>Maximum normal mode voltage (V<sub>NM</sub>)</b>	DI-720: V <sub>NM</sub> + V <sub>CM</sub> < 30V Peak DI-730: 1500VDC or peak AC
<b>Maximum common mode voltage (V<sub>CM</sub>)</b>	DI-720: V <sub>NM</sub> + V <sub>CM</sub> < 30V Peak DI-730: 1000VDC or peak AC
<b>Sample Throughput Rate (Printer Port)</b>	Standard: 40,000 Hz max Bi-directional: 80,000 Hz max EPP: 200,000 Hz (DI-720) max or 150,000 Hz (DI-730) max
<b>Sample Throughput Rate (USB)</b>	DI-720: 200,000 Hz max DI-730: 150,000 Hz max
<b>Sample Throughput Rate (Ethernet)</b>	DI-720: 180,000 Hz max DI-730: 150,000 Hz max

#### Measurement Range Full Scale

DI-720 Series Instruments	
Gain Setting	Measurement Range
1	±10V
2	±5V
3	±2.5V
4	±1.25V

DI-730 Series Instruments (8 wide range channels)	
Gain Setting	Measurement Range
1	±1000V
10	±100V
100	±10V
1000	±1V
10000	±100mV
100000	±10mV

DI-730 Series Instruments (general purpose channels)	
Gain Setting	Measurement Range
1	±10V
2	±5V
3	±2.5V
4	±1.25V

<b>Common Mode Rejection</b>	DI-720: 80dB min @ A <sub>v</sub> =1 DI-730: 100dB min @ DC to 60Hz
<b>Accuracy</b>	±(0.25% of full scale range ±100µV)
<b>Channel-to-Channel Crosstalk</b>	-75dB @ 100kHz and 100Ω unbalance
<b>Input Impedance</b>	DI-720: 1MΩ resistor tied to GND on input channel DI-730: 10MΩ for all ranges
<b>Maximum jitter between synchronized units</b>	5 microseconds

### Interface Options

Standard, bi-directional, or EPP parallel port. Optional Ethernet or USB

### Analog Outputs

<b>Number of Channels</b>	DI-720: Two buffered analog outputs DI-730: One analog output
<b>Resolution</b>	12-bit, 1 part in 4096 @ 250kHz
<b>Output Voltage Range</b>	±10V
<b>Output Impedance</b>	10Ω
<b>Sample Throughput Rate</b>	40,000 standard; 80,000 bi-directional; 200,000 EPP Hz max (software selectable per channel)
<b>Output Offset Voltage</b>	1 bit max @ 1kHz sample rate
<b>Gain Error</b>	1 part in 16,384 @ 1kHz

### Digital I/O (DI-720 Only)

<b>Capacity</b>	8 each input and output
<b>Compatibility</b>	TTL-compatible
<b>Max source current</b>	0.4mA @ 2.4V
<b>Max sink current</b>	8mA @ 0.5V
<b>Digital termination</b>	4.7kΩ pull-up to +5VDC

### Input Scan List

240 elements

### Output Scan List

16 elements

### Triggering

<b>Pre-trigger length</b>	64,000 samples
<b>Post-trigger length</b>	64,000 samples
<b>Trigger channel</b>	any channel
<b>Trigger level hysteresis</b>	8-bit (256 counts)

### Intelligent Oversampling Modes

Signal averaging, maximum value, minimum value, last point, frequency, and RMS

### Physical/Environmental

<b>Dimensions</b>	7.29W × 9L × 1.52H inches
<b>Operating Temperature</b>	0 to 70°C
<b>Storage Temperature</b>	-55 to 150°C
<b>Humidity</b>	0 - 90% non condensing
<b>Weight</b>	DI-720: 3 lbs. DI-730: 5 lbs.

### Supported Software

ActiveX Controls; WINDAQ/Lite; WINDAQ/Pro; WINDAQ/Pro+; WINDAQ/XL; WINDAQ Waveform Browser

### Analog Input Connector Type

<b>DI-720</b>	37-pin male "D" connector
<b>DI-730</b>	safety banana socket - 1 pair per channel (wide range channels)

## Ordering Guide

Description	Order No.	Description	Order No.
32 channel waveform recording system featuring 14-bit measurement resolution, EPP support, up to 200kHz sampling rate, and a maximum measurement range of ±10VFS. Includes AC adapter, parallel communications cable, WINDAQ/Lite waveform recording software and WINDAQ Waveform Browser playback and analysis software.	<b>DI-720-P</b>	8 channel plus 16SE/8DI, high voltage waveform recording system featuring channel-to-channel isolation, 14-bit measurement resolution, EPP support, up to 150kHz sampling rate, and six measurement ranges from ±10mV to ±1000V full scale. Includes AC adapter, parallel communications cable, WINDAQ/Lite waveform recording software and WINDAQ Waveform Browser playback and analysis software.	<b>DI-730-P</b>
Same as DI-720-P, but with Ethernet communications option.	<b>DI-720-EN</b>	Same as DI-730-P, but with Ethernet communications option.	<b>DI-730-EN</b>
Same as DI-720-P, but with USB communications option.	<b>DI-720-USB</b>	Same as DI-730-P, but with USB communications option.	<b>DI-730-USB</b>

### Data Acquisition Product Links

(click on text to jump to page)

[Data Acquisition](#) | [Data Logger](#) | [Chart Recorder](#) | [Thermocouple](#) | [Oscilloscope](#)

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