



# PointScan/104™

## 8-Channel (TC, mA, V, mV) Universal Analog Input Module



### Features

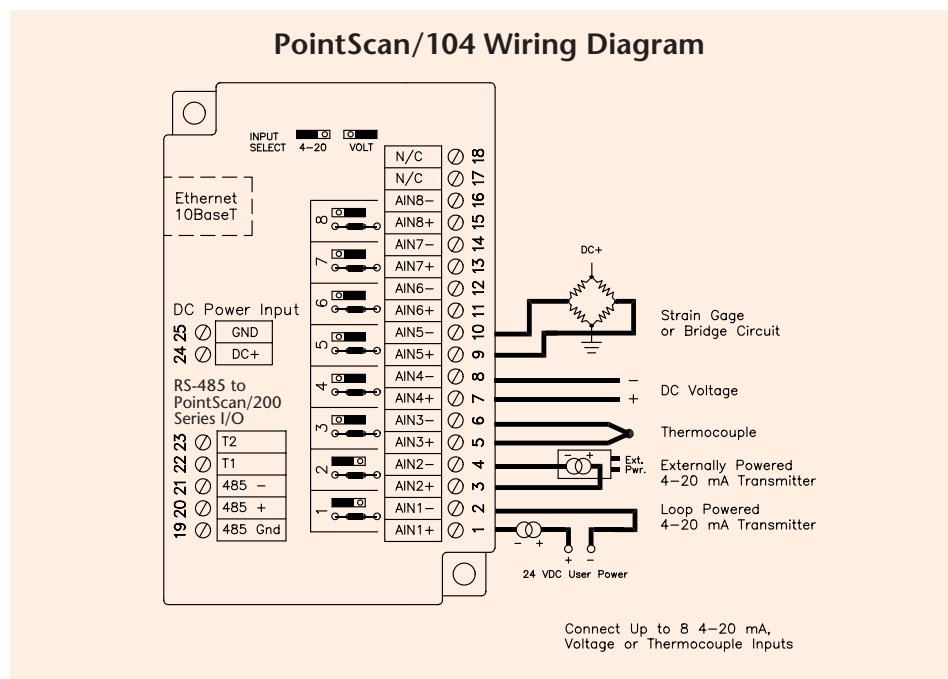
- 8 differential-ended analog inputs
- 16-bit Sigma-Delta with high-resolution and noise-rejection A/D converter
- Analog inputs software programmable per channel as TC, mA, V, mV
- Wide input voltage range from  $\pm 0.062V$  to  $\pm 10V$
- Measure type J, K, E, R, T, B, C, N, or S thermocouples
- Linearized and compensated values represented in °F or °C
- 4 to 20 mA floating inputs (off ground)
- $\pm 0.02\%$  full-scale accuracy @ 20°C
- 1200V common mode input voltage (input to ground)
- $\pm 25$  VDC common mode input voltage between two inputs
- Ethernet and RS-485 ports with 1200 Vrms isolation



Select a PointScan/104 when you need the flexibility to monitor low-level analog signals (including TC, mA, V, mV) with high accuracy

With a 16-bit Sigma-Delta A/D converter, differential inputs, filtering, and channel-to-channel isolation, the PointScan/104™ is ideally suited for low-level analog measurements. Automatic self-calibration insures highly-accurate thermocouple (TC), mA, V, or mV measurements will be made. The PointScan/104's ability to be programmed to measure different signal types makes it a highly-versatile module capable of addressing a wide range of applications. Like other PointScan/100 series I/O modules the PointScan/104 features an isolated Ethernet (10BaseT @ 10 Mbps) port, isolated RS-485 port, hot-swap module replacement, and plug-and-play operation.

**Low-Noise Measurement.** The eight differential analog inputs feature filtering to remove 50 Hz or 60 Hz noise, and the Sigma-Delta A/D converter further reduces unwanted noise. An ultra-stable voltage reference and built-in calibration also contribute to achieving maximum system accuracy. For TC-based measurements, the PointScan/104 features a cold-junction sensor in the terminal base for accurate cold-junction compensation and thermocouple inputs are linearized on-board and reported as °F, °C, or 0.1°C. Open-thermocouple detection reduces troubleshooting time and reduces maintenance cost.



**Field Replaceable Current Shunt (4 to 20 mA).** Each of the PointScan/104's eight input channels has a 100 Ohm precision shunt on its input creating a 2V signal when a full-scale 20 mA is applied. The placement of this shunt in the PointScan/104's terminal base maintains a continuous circuit, even if the (analog) module is removed. If an excessive voltage is applied to an input, shunts will blow to provide circuit protection, and they are socketed for easy field replacement.

**Open Loop Detection.** The PointScan/104's diagnostics are capable of detecting open instrumentation loops. On a per channel basis a unique low limit (below 4 mA) value can be defined that signals (to PC) a loss of current. Additionally, to correct for mis-wiring, if the polarity on a 4 to 20 mA input is reversed, the value is still properly reported.



# PointScan/104™

## Specifications & Ordering Information

**Network Isolation.** The PointScan/104 has a single Ethernet (10BaseT) port that is isolated from the PC by 1200 Vrms, and a single RS-485 port that is also isolated by 1200 Vrms. This isolation protects PCs from damage caused by high voltages and protects the system from ground loops. The result is more reliable measurements in high-voltage environments (see wiring diagram for details).

**Field I/O connection.** A high-density, screw-terminal base and only a single input terminal is required for each of the 16 analog inputs.

### Specifications

- Number of Channels: 8
- Lowest Voltage Range: ±0.062V
- Max Voltage Range: ±10V
- Auto-Polarity Current Range: 4 to 20 mA and 0 to 20 mA
- Thermocouple Types: J, K, E, R, T, B, C, N, S\*
- Thermocouple Accuracy: ±2°C
- Open/Shorted Thermocouple Indication
  - Upscale Burnout: 3200° or 32000°C, 3200° or 32000°F
  - Downscale Burnout: -3200° or -32000°C, -3200° or -32000°F
- A/D Resolution: 16 bits (0.003%)
- Full-Scale Accuracy @ 20°C: ±0.02%
- Input Span & Offset Adjustability: ±25%
- Span & Offset Temp. Coefficient: ±30 ppm per °C typical
- Voltage Range Input Impedance: 200K Ohms
- Current Range Input Impedance: 100 Ohms
- CMRR @ 50/60 Hz: 140 dB
- DMRR @ 50/60 Hz: 66 dB
- Common-Mode Input Voltage: ±25 VDC between two input terminals
- Common-Mode Input Voltage: 1200V between inputs and ground
- No Damage Input Voltage: ±50 VDC
- Fastest Scan Rate (8 Channels): 100 ms<sup>5</sup>

### Ethernet Communications

- Number of Ethernet I/O Nodes: 16,000
- Ethernet Port on Each Module: 10BaseT @ 10 Mbps
- Protocols Supported: TCP/IP, MODBUS ASCII/RTU
- Number of I/O per Node: 256
- Isolation (from Ethernet Port): 1200 Vrms 1 minute
- Required Supply Voltage: 10 to 30 VDC (1.6W typical)
- Operating Temperature Range: -30° to +70°C
- Storage Temperature Range: -40° to +85°C
- Humidity (Non-Condensing): 5 to 95%
- Flammability (Module Plastic): UL 94V-0 materials
- Electrical Safety: UL 508, CSA C22.2/14; EN61010-1 (IEC1010), CE
- EMI Emissions: FCC part 15, ICES-003, Class A; EN55022, CE
- EMC Immunity: EN50082-1 (IEC801-2, 3, 4) CE
- Surge Withstand: IEEE-472 (ANSI C37.90)
- Vibration: IEC68-2-6
- Hazardous Locations: UL 1604, CSA C22.2/213-M1987, (Class I, Div 2, Groups A, B, C, D), EN50021 (zone 2)

### Ordering Information

Description	Part No.
8-channel (TC, mA, V, mV) universal analog input module	PointScan/104
Optional hardcopy PointScan/100 series user's manual	1085-0901

For complete information on accessories and cables, visit  
[www.iotech.com/acc](http://www.iotech.com/acc)

### Related Products

Hardware	
PointScan/440	p. 265
PointScan/443	p. 268
Software	
KEPServerEX	p. 271
KEPServerEX Lite	p. 271

\* Thermocouple inputs are cold-junction compensated and reported as °F or °C