

Analog Input Modules: RTD and Potentiometer

Interface to 3-Wire and 4-Wire Sensors

Description

Two MAQ20 resistance input modules are offered. One interfaces to 3-wire sensors and has 6 input channels; the other interfaces to 4-wire sensors and has 5 input channels. The 3-wire module interfaces to 3 types of sensors: 100Ω Pt and 120Ω Ni RTDs, and potentiometers; the 4-wire module interfaces to 100Ω Pt and 120Ω Ni RTDs. Precision, low magnitude current sources are used to minimize sensor self-heating and cancel lead resistance errors when using 3-wire sensors. All channels are individually configurable for sensor, range, alarms, and averaging to match the most demanding applications. High, Low, High-High and Low-Low alarms provide essential monitoring and warning functions to ensure optimum process flow and fail-safe applications. Hardware low-pass filtering in each channel provides rejection of 50 and 60Hz line frequencies. Field I/O connections are made through a pluggable terminal block with positions designated for the termination of wiring shields.

Input-to-bus isolation is a robust 1500Vrms and each individual channel is protected up to 240Vrms continuous overload in case of inadvertent wiring errors. Overloaded channels do not adversely affect other channels in the module, which preserves data integrity.

Channels in a module can be selectively enabled for scanning. All channels are enabled by default; however, non-used channels can be disabled to increase the sampling rate of enabled channels.

Input sensors and input ranges are selectable on a per-channel basis. One to three ranges are available depending on the input sensor. Over-range and under-range up to 2% beyond the specified input values is allowed. Sensor linearization is performed in the module, and accuracy is guaranteed to ±f.s.

► Features

- 6 Input Channels for 3-Wire Sensors
- 5 Input Channels for 4-Wire Sensors
- Interface to Pt100, Ni120 RTDs, and Potentiometers
- All Channels Individually Configurable for Sensor, Range, Alarms, Averaging
- 1500Vrms Input-to-Bus Isolation
- Each Channel Protected up to 240Vrms Continuous Overload
- Selective Enabling of Module Channels for Scanning

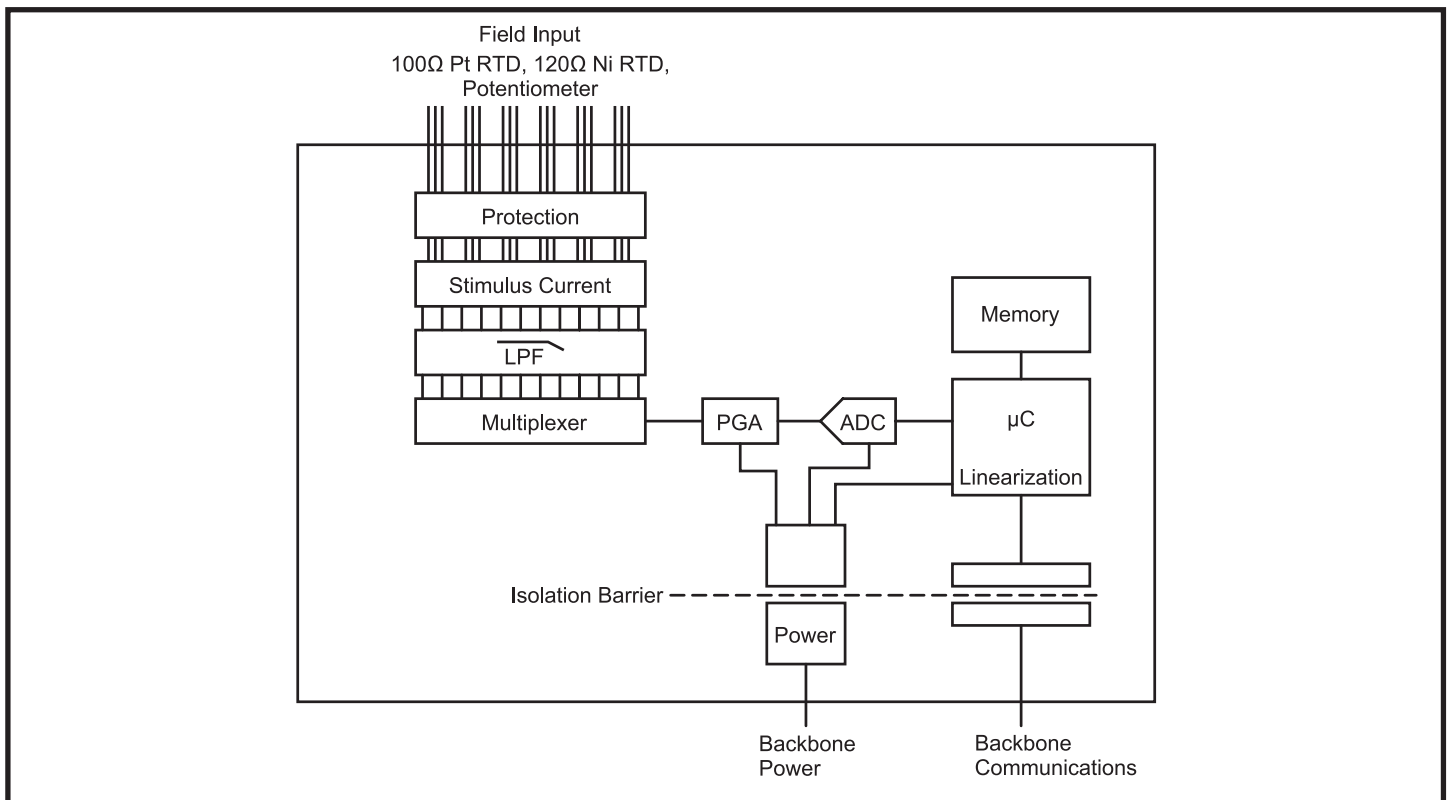


Figure 1: MAQ20-RTD31 RTD and Potentiometer Input Module Block Diagram

Specifications Typical* at T_A = +25°C and +24VDC system power

Module	Description
MAQ20-RTD31	6-channel, 3-wire Pt100, Ni120, Potentiometer Input 100Ω Pt a = 0.00385; -100°C to +850°C (Default) 100Ω Pt100 a = 0.00385; -200°C to +200°C Pt100 a = 0.00385; -100°C to +100°C Ni120 a = 0.00672; -80°C to +300°C Potentiometer 0Ω to 5kΩ
MAQ20-RTD41 [◇]	5-channel, 4-wire Pt100, Ni120 100Ω Pt a = 0.00385; -100°C to +850°C (Default) 100Ω Pt100 a = 0.00385; -200°C to +200°C Pt100 a = 0.00385; -100°C to +100°C Ni120 a = 0.00672; -80°C to +300°C
Per Channel Setup Input Protection Continuous Transient CMV Channel-to-Bus Channel-to-Channel Transient CMR NMR	Individually configurable for sensor, range, alarms, averaging 240Vrms max ANSI/IEEE C37.90.1 1500Vrms, 1 min ±3V peak ANSI/IEEE C37.90.1 100dB at 50/60Hz 20dB at 50/60Hz
Accuracy ⁽¹⁾ Conformity Resolution Stability Zero Span	±0.06% span ±0.035% span 0.012% span ±50ppm/°C ±35ppm/°C
Bandwidth, -3dB Scan Rate Alarms Open Input Response Power Supply Current	3Hz 200 Ch/s High / High-High / Low / Low-Low Upscale or Downscale, <5s, Flag Set 35mA
Dimensions (h)(w)(d)	4.51" x 0.60" x 3.26" (114.6mm x 15.3mm x 82.8mm)
Environmental Operating Temperature Storage Temperature Relative Humidity Emissions, EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT	-40°C to +85°C -40°C to +85°C 0 to 95% Noncondensing ISM Group 1 Class A ISM Group 1 Performance A ±0.5% Span Error Performance B
Certifications	Heavy Industrial CE, ATEX Pending UL Class I, Division 2, Groups A, B, C, D Pending

Model	Description
MAQ20-RTD31	Analog Input Module; RTD/Potentiometer, 3-Wire, Type Pt and Ni, 6-ch
MAQ20-RTD41 [◇]	Analog Input Module; RTD, 4-Wire, Type Pt and Ni, 5-ch

NOTES:

* Contact factory or your local Dataforth sales office for maximum values.

[◇] Preliminary at date of printing. Contact factory for availability.

(1) Includes conformity, hysteresis and repeatability.

For input connections and full details on module operation, refer to MA1044 – MAQ20 RTD-Potentiometer Input Module Hardware User Manual, available for download at: www.dataforth.com/maq20_download.aspx