

12-Channel Analog to CAN Module

Features

- Pair with Michigan Scientific slip rings for rotating applications
- Output data up to 8 ksps (CAN FD) / 2 ksps (CAN2.0)
- Stack up to 4 modules for synchronized 48 channel sampling
- Compact design for limited space applications
- Measure strain, temperature, acceleration, position, pressure
- Use with strain gauges, thermocouples, RTDs, accelerometers, string pots, hall-effect sensors
- Use with absolute quadrature encoders to output position and speed
- Software-configure each channel independently
- Sensor excitation for ratiometric sensors
- Integrated shunt calibration resistors
- Galvanic isolation



Michigan Scientific's 12-Channel Analog to CAN Modules are designed for high-channel-count measurement applications. These modules combine multiple sensor inputs into a single high-speed digital output, streamlining data acquisition for complex test environments such as rotating machinery and automotive components. Each module provides sensor excitation, conditioning, and digitization of signals, delivering data over a CAN 2.0 or CAN FD bus at rates up to 8 ksps. The modules feature software-controlled configuration, allowing independent channel setup, gain adjustment, and integrated shunt verification. Data can be recorded directly to a PC using the included configuration software.

When combined with Michigan Scientific slip rings and accessories, these modules provide a complete solution for synchronized, high-speed data acquisition in demanding test environments.

Standard Systems

MODEL	SYSTEM
MUX-BC350-12	Signal Conditioning Module with bridge completion circuit • Measure 12 quarter arm strain gauge sensors with output rate to 8 ksps • Integrated shunt resistors for sensor verification
MUX-FB-12	Signal Conditioning Module with input for full strain gauge bridge • Measure 12 full bridge strain gauge sensors with output rate to 8 ksps • Integrated shunt resistors for sensor calibration
MUX-TC-12	Signal Conditioning Module with input for thermocouple • Measure 12 thermocouples with output rate to 1 ksps • Measure K, J, or T type thermocouples • Integrated cold junction compensation and linearization
MUX-HL-12	Signal Conditioning Module with input for high level signal inputs • Measure 12 high-level sensors with output rate to 8 ksps • Sensor excitation provided for ratiometric sensors
MUX-RTD100-12	Signal Conditioning Module with input for PT100 RTDs • Measure 12 resistive temperature detectors with output rate to 8 ksps • Compatible with 100 ohm sensors



Use with Slip Rings for Rotating Applications

These modules can be used with any four circuit Michigan Scientific slip ring. If a synchronized encoder is desired, the module integrates seamlessly with Michigan Scientific's SR10AW/WFT slip ring, which includes a 1024-ppr encoder that is digitized and synchronized alongside the modules data stream. When paired with the MUX-ENC-ADA mounting base, the assembly forms a compact, robust package that delivers reliable digital data for demanding rotation test environments.



MUX-BC350-12 Specifications

Bridge Amplification	
Bridge Type	Quarter Arm Bridge (3 wire hook-up)
Channel Count	12 per module (stack up to 4 modules)
Bridge Excitation	4.5 V (ratiometric)
Strain Range	Configurable, up to $\pm 5000 \mu\epsilon$
Nominal Strain Gauge Resistance	350 Ω
Integrated Shunt Calibration	
Shunt Resistance	100 k Ω (other resistances emulated)
Shunt Accuracy	0.075 %
Output Type	
Max Output Rate (with CAN FD (4 Mb)	8 ksps (12 channels)
Max Output Rate (with CAN 2.0)	2 ksps (12 channels)
Frequency Response @ -3 dB	1.6 kHz (@ 4ksps or 8 ksps output rate)
Frequency Response @ -0.1 dB	500 Hz (@ 4ksps or 8 ksps output rate)
Noise Level	< 4 $\mu\text{Vp-p}$
Galvanic Isolation	
Channel to CAN	400 V
Channel to Power	400 V
Power Supply	
Voltage	10 Vdc to 36 Vdc
Power Consumption (@ 12 Vdc nominal)	2 W typ. (12 bridges powered)
Operating Temperature	
Dimensions (Diameter and Height)	86 mm (3.375 in) housing OD; 99 mm (3.875 in) diameter with connectors Height: 25.4 mm (1.00 in)

*preliminary specifications, subject to change