

12-Channel Analog to CAN Module

Model MUX-BC350-12

- 12 strain channels IN → 1 CAN/CAN FD signal OUT
- Output data up to 8 ksps (CAN FD) / 2 ksps (CAN 2.0)
- Stack up to 4 modules for synchronized 48 channel sampling
- Compact design for non-spinning and spinning applications
- Use with absolute quadrature encoders to output position and speed
- Software-configure each channel independently
- Integrated shunt resistors, software controlled
- Gain adjustable per channel, software controlled
- Integrated bridge completion resistors



Description

Michigan Scientific's *MUX-BC350-12* is a twelve channel signal conditioning and multiplexing module. Each of the six radial connectors can mate with two 3-wire hook-up quarter arm strain gauges. The *MUX-BC350-12* provides bridge completion, bridge excitation, signal conditioning, and digitization of the signals. The module has four output connections: two for power, and two for CAN/CAN FD. The output data is CAN 2.0 or CAN FD compatible. A shunt calibration can be initiated at power-up or initiated by user with the module's configuration software. Additionally, the software allows for independent channel configuration and data recording to a PC.

Slip Ring Configuration

MUX-BC350-12 paired with an S4 slip ring



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Specifications

PARAMETER	SPECIFICATION
Measurement Inputs	
Type of bridge and Connection	Quarter-arm, 3-wire
Input Voltage Range	+/- 36 mV
Dynamic Range	32:1 (62x - 1984x)
Zero Balancing	Software, up to input voltage range
Input Impedance	> 10 MΩ
Time Synchronization (max chan.-to-chan. skew)	5.5 μs
Data Out Rate (max per channel)	8000 sps
Data Out Resolution	16-bit
Hardware Input Filter	Low-pass, single-pole, approx. 5 kHz
Software Input Filter	Low-pass, FIR type, 40 to 1600 Hz, selectable
Frequency Response	
Bandwidth to -0.1 dB	500 Hz (@ 4 KSPS or 8 KSPS output rate)
Bandwidth to -3 dB	1.6 kHz (@ 4 KSPS or 8 KSPS output rate)
Measurement Deviation	
Offset (@ 25 °C), referred to input, max	50 μV
Offset Drift, referred to input, max	0.5 uV per °C
Gain Error (@ 25 °C), max	0.2%
Gain Drift Error, max	0.004% per °C
Noise	
0.1 Hz to 10 Hz, referred to input	Approx. 250nVpp
Density, referred to input	Approx. 12 nV per sqrt(Hz)
Excitation	
Bridge Excitation Volts	4.5 Vdc (ratiometric)
Amps (max per channel)	13 mA
Integrated Bridge Completion	
Completion Resistance	350 Ω
Completion Resistor Accuracy	0.01%, 2 ppm / °C
Integrated Shunt Verification	
Shunt Resistance	100 kΩ (up to 10 MΩ, emulated)
Shunt Resistor Accuracy	0.075% 15 ppm
CAN Interface	
Max Output Rate (with CAN FD, 4 Mbps)	8 ksps (12 channels)
Max Output Rate (with CAN 2.0)	2 ksps (12 channels)
CAN Bittate, fixed	1 Mbps
CAN FD Bittate, selectable	2 Mbps or 4 Mbps
Termination, fixed internal	2 kΩ
Galvanic Isolation	
Channel to CAN, Channel to Power	(No safety isolation for high voltage applications) 200 V
Power Requirement	
Minimum Volts	10 Vdc
Maximum Volts	20 Vdc
Power Consumption (@ 12 Vdc, no sensors)	Approx. 2 W typ.
LED Indicators	
Single Green	Power / status / synchronization

*preliminary specifications, subject to change

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 09-10-26
 Rev. A

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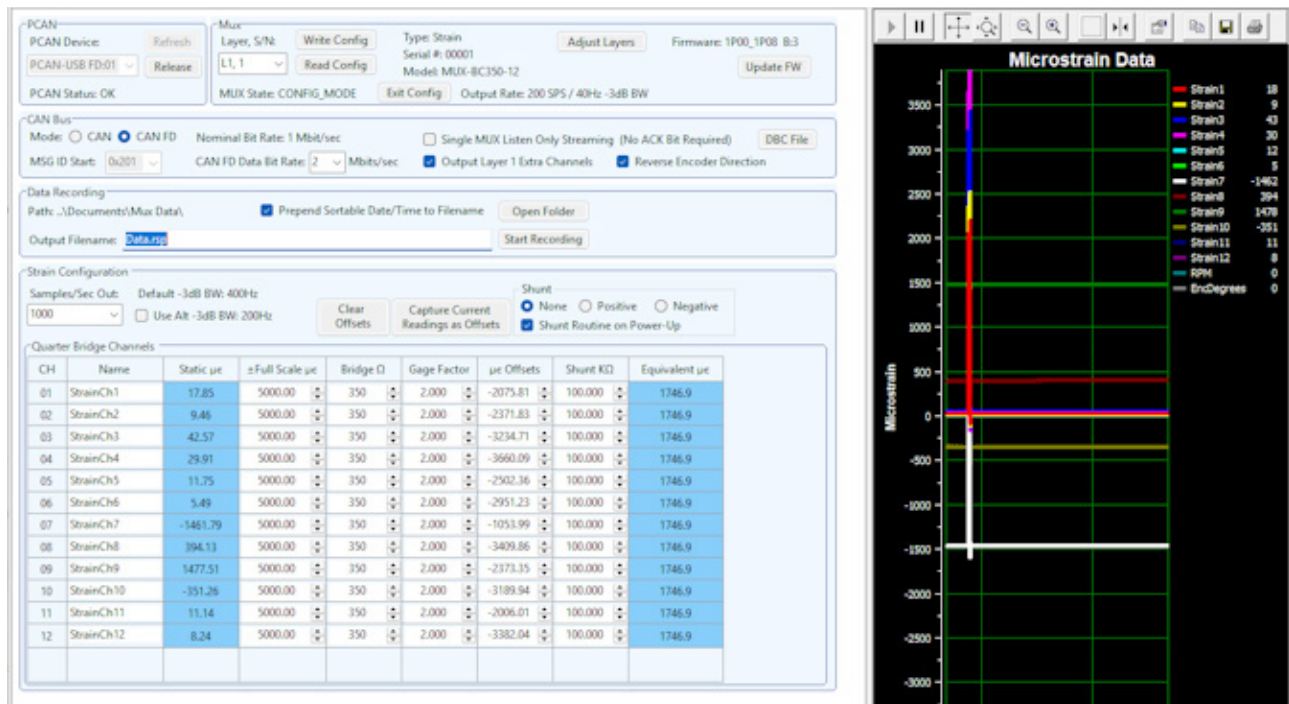
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12-Channel Analog to CAN Module

PARAMETER	SPECIFICATION
Housing	
Diameter	D = 86 mm (3.375 in)
Height	H = 25.4 mm (1 in)
Mass	Approx. 300 g
Protection class (w/ stacking connectors)	IP67
Connectors	
Metric Circular M8	6-pin, receptacle with sockets, code A
Interface Power/Data Cable Requirements	
Length, max	15 m (approx. 50 ft)
Impedance	100 Ω or 120 Ω
Conductor	26 AWG min
Operating Temperature Range	-40 °C to 85 °C (-40 °F to 185 °F)

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Configuration and Recording Application



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