

Wireless Sensor Telemetry System

Series 460 Multi-Channel Digital Telemetry System

- Accepts one to eight channels of full strain gauge bridges or thermocouple based transducers
- 16-bit simultaneous sampling and digital transmission provides accurate error free data
- Integrated strain gage drivers with excitation and shunt mode for setup and verification of data
- Medium to short range operation
- Rugged environmentally sealed housing
- Powered by battery or induction power



Description

Michigan Scientific *Series M460 Digital Telemetry System* is designed for transmitting one to eight channels of strain gage bridges or thermocouple based transducer measurements. This system offers 16-bit resolution, simultaneous sampling of all channels, fully differential amplifiers for high common mode rejection, and anti-aliasing filters prior to digitization. Each individual strain gage driver features its own gain and shunt resistor values making system configuration flexible.

The system's multi-channel receiver is designed with RF diversity and error checking to prevent data loss and corruption due to reflections or shadowed transmissions from the transmitter. Output data is provided as high-level +/-10V analog on a rear connector for direct interface with most data acquisition systems, or the data can be captured in digital format for immediate display and collection via an Ethernet port to a PC. Analog output options include additional choices for data cutoff frequencies and adjustment of zero offset. Indication of transmitter and receiver status is provided by LED indicators on the receiver's front panel as well as analog output signals that can be monitored for quality of transmission, low power conditions, and shunt status at the transmitter.

Typical applications include measurements on rotating equipment and in situations where access by a wired sensor is not possible. The system's hardened design is intended for operation in hostile environments where vibration, extreme temperatures, high accelerations and contaminants are present. These features ensure successful data measurements using our newest technology. Please visit our website at www.michsci.com for a complete list of telemetry based measurement devices and accessories

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Rev. A

Wireless Sensor Telemetry System

Specifications

PARAMETER	SPECIFICATION
TRANSMITTER	
Data transmission method	2.4GHz carrier with FSK modulation
Analog channels	1 to 8 full strain gauge bridges or thermocouple
ADC resolution	16-bit, no missing codes
ADC sample rate	140,000 samples per second, simultaneous
Analog image rejection filter	3-pole Bessel; 2,000Hz@-3dB
Digital anti-aliasing filter (FIR)	fc=1,076Hz@-3dB; fc=1,201Hz@-100dB
Data Bandwidth	DC to 1000 Hz
Bridge drive excitation voltage	3.0VDC
Bridge amplifier input range	customer specified (mV/V)
Channel-to-channel skew	negligible (simultaneous sampling)
Operating temperature	-40°F to +257°F (-40°C to +125°C)
Power requirement	6VDC to 9VDC / 65mA
Dimensions (L x W x H)	2.0" x 1.0" x 0.20" (51mm x 25mm x 5.0mm) PCB only 2.3" x 1.3" x 0.30" (59mm x 33mm x 7.6mm) enclosed
Weight	0.35 Ounces (9.80 grams) PCB only 1.2 Ounces (34 grams) enclosed
RECEIVER	
Output at full scale	±10V
DAC output resolution	16-bit, resolving down to 0.305mV
DAC update rate	2,200 updates per second, simultaneous
Data filter cutoff selections (-3dB)	100Hz, 1.00kHz
Channel filter type	2-pole Bessel
Current output per channel	±35 mA
Operating temperature	-40°F to +158°F (-40°C to +70°C)
RF antenna connector (2)	reverse polarity SMA
Power requirement	9 to 36VDC / 500mA
Dimensions (L x W x H)	7.0" x 3.5" x 1.5" (180mm x 89mm x 38mm) non-induction 7.0" x 3.5" x 2.5" (180mm x 89mm x 64mm) with induction
SYSTEM GENERAL	
RF channels available	16
Total system delay	17ms

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