



MODEL AT-5000

BATTERY POWERED ROTOR TELEMETRY

- Easy application and installation
- Small size – typically requires only 0.7" to 0.9" (17.78 mm to 22.86 mm) radial shaft clearance
- 95 hours for 1000 ohm and 75 hours for 350 ohm strain gages, continuous use
- Digital telemetry
 - high data integrity and noise immunity
 - exceeds legacy FM telemetry and slip rings
- Two systems (Channel A and B) can be used side-by-side for multi-channel requirements
- Manual shunt calibration invoked at transmitter

TYPICAL APPLICATIONS

- Torque testing for half-shafts / propshafts and driveshafts
- Replacement of slip rings and in-line torque transducers
- Torsional strain testing
- RTD temperature measurement
- Voltage measurement

TRANSMIT TRUE TORQUE DATA

A revolutionary advance in miniature telemetry, the AT-5000 Series replaces slip rings and legacy FM telemetry, offering a perfect solution for applications requiring dependable data retrieval and easy installation.

The AT-5000 EasyApp utilizes a small battery powered transmitter mounted using an aramid fiber strap to directly measure, digitize, and transmit true torque data from rotating half-shafts, driveshafts, and rotors of all sizes and speeds. The system is also used for temperature, voltage, and acceleration sensing.

The AT-5000 EasyApp uses a long-life lithium battery to excite a strain gage and to power the AT-5000 telemetry electronics on the rotating shaft. The small signal resulting from torque applied to the shaft is amplified, anti-alias filtered, and digitized (typically at 11 718 samples per second). The digital data is reliably RF transmitted off the rotating shaft to a nearby pickup coil, which is connected to a receiver. The receiver converts the digital data to an analog voltage output (adjustable from 0 +/- 1.0 to +/- 10 volts). This DC to 1 kHz (or optionally higher) bandwidth voltage output can be fed directly to a data acquisition system, FFT analyzer, or an oscilloscope.

SPECIFICATIONS	
Transmitter Modules - Sampling Rate / Typical Bandwidth	
Channel A Transmitter	7812 samples per second; DC to 1.2 kHz frequency response; 4 MHz transmitter
Channel B Transmitter	11 718 samples per second; DC to 1.2 kHz frequency response (DC to 5 kHz available); 6 MHz transmitter frequency. (Channel A and B units can be co-located for 2-channel use.)
Transmitter Module ^[1]	
Non-linearity	<0.1% of full scale (typical)
Digital Resolution	12-bit (0.025% of full scale)
Gain Drift	100 PPM/°C typical, exclusive of external gain resistor
Offset Drift	0.7 μ V/°C typical (0 - 85 °C)
Bandwidth	DC to 1.2 kHz (up to 5 kHz bandwidth available; AC coupling also available)
Power	Typically <4 mA current draw from 3.6 V battery, excluding sensor excitation
Temperature	-40 to 185 °F (-40 to 85 °C) High Temperature option is available
Battery	
Battery Voltage	3.6-volt open circuit; 3.4 volts loaded. Low battery indication is transmitted to receiver at approximately 2.7 volts.
Bridge Excitation	2/3 length AA. Single use Lithium battery. Note: Non-rechargeable batteries. Do not store or use in applications with exposure to >302 °F (150 °C) temperatures.
Battery Life	95 hours for 1000-ohm and 75 hours for 350-ohm strain gages, continuous use
Receiver	
Power	12 volts nominal (9 to 18 VDC) Optional AC power supply 90-240 VAC, 12 VDC output
Output Range, Signals, and Adjustments	\pm 10 volts. Output gain can be adjusted to allow lower outputs (i.e. 5 volts). (RSSI) Received Signal Strength Indicator -2 to +4 volts (antenna signal strength). Zero adjust, Gain adjust, and Unipolar/ Bipolar output selection.
Dimensions (H x W x D)	NEMA style box: 3 x 6 x 4.25 in (76.20 x 152.40 x 107.45 mm)
Temperature	32 to 125 °F (0 to 50 °C)
Pickup Coil Choices	
Flexible Loop	24" (610 mm) ID includes 10 ft cable to receiver
Rigid Brass Loop	Rugged 1/4" brass loop. 1.25" x 1.61" x 2.94" phenolic base. Includes 10 ft cable to receiver.

[1] Specifications are provided for a 2.81 mV/V typical input

Transmitter Modules - Sensor Inputs	
Full Bridge Strain Gage	Including other bridge-style transducers, including pressure transducers, resistive accelerometers, load cells, torque transducers, etc.
Temperature	Type K thermocouple is standard. Standard range is -58 to -750 °F (-50 to 400 °C). RTD sensors can also be used; contact Accumetrics.
Voltage	0 to 100 mV; external voltage divider can be provided for high voltage measurement. Up to 2700 V measure with optional external dropping resistor

Housing Information



Transmitter for > 0.9 in (22.86 mm) Diameters	
Radial Height	0.78 in to 0.87 in (19.80 mm to 22.10 mm)
Axial Length	2.0 in (50.80 mm)
Weight	0.185 lb (0.085 kg)



Transmitter for > 2.0 in (50.8 mm) Diameters	
Radial Height	0.67 in to 0.76 in (17.00 mm to 19.30 mm)
Axial Length	2.0 in (50.80 mm)
Weight	0.152 lb (0.067 kg)



Transmitter for > 8.0 in (203.2 mm) Diameters	
Radial Height	1.0 in to 1.1 in max (25.40 mm to 27.95 mm)
Axial Length	2.0 in (50.80 mm)
Weight	0.233 lb (0.11 kg)



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