MODEL AT-5000 EASYAPP

BATTERY POWERED ROTOR TELEMETRY

- Easy application and installation
- Small size – typically requires only 3 in (76.2 mm) radial envelope
- 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 off of rotating shafts 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

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<th>Channel</th>
<th>Transmitter</th>
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<tr>
<td>Channel A</td>
<td>7812 samples per second; DC to 1.2 kHz frequency response; 4 MHz transmitter</td>
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<tr>
<td>Channel B</td>
<td>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.)</td>
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### Transmitter Module

- **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 μV/°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 ºF (0 to 50 ºC)

### 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 ºF (150 ºC) 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**: ±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 ºC)

### 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 Chain 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) |