ATi 2000 SERIES

Digital Radio Telemetry System

Advanced Telemetrics International

ROTATING TORSIONAL ACCELERATION MONITORING SYSTEM

INDUCTION or BATTERY POWERED

FEATURES

- No noisy, maintenance prone slip rings.
- Integral Accelerometers, no sensor connections.
- Transmits Sensor Signals via radio Transmitter to a Stationary Receiver.
- No Shaft Modifications Required.
- Clamp-on Collar houses Transmitter and Battery or Induction Power Converter. Contains embedded transmitting antenna.
- Immune to electromagnetic interference, dust, oil, moisture, etc.
- Superior RF Technology provides clean data that is free of drop-outs.

Model 2025i-FX Receiver, Model 2010i-AC Collar containing 2043DST 900MHz Transmitter, and Model 2032i-AC Dual Stationary Loop Antenna with IPS

Clamp-On, Telemetry-Coupled Vibration Collar Facilitates Quick Installation

The *ATi* ***Torsional Vibration Monitoring System*** transmits torsional acceleration data from a rotating shaft, **while the system is running**. The system consists of a rotating Collar with 2043DST Transmitter and a stationary Receiver. Available in multiple and single piece versions, the rotating Collars are available to clamp onto most any size shaft.

The Collar contains two embedded accelerometers mounted 180° apart. Prior to being transmitted to the Receiver by the Transmitter, the accelerometer outputs are processed by a proprietary circuit to cancel any gravitational effects. This special signal processing enables the system to make very high sensitivity measurements. Data is transmitted by an inductively coupled or digital RF signal.

Transmitter Power is supplied in one of three ways: non-rechargeable 9V battery, rechargeable Lithium battery pack, or ATi's inductive power system. Inductive power is delivered through a stationary loop antenna to a rotating antenna embedded in the Collar and is recommended for continuous, non-interrupted measurements or when there will not be convenient access to charge/replace batteries. The rotating loop antenna with Induction Power Converter or battery is embedded in the Model 2010i Collar Assembly.

The Receiver can be powered from 12 VDC or 110 VAC. Data is displayed to the user via a digital backlit LCD display. One filtered, analog output is provided for connection to the user's data acquisition system.

Each system comes complete with all required accessories including antennas, cables, and AC power adapter or DC power cord for the Receiver.

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Features and Specifications

SYSTEM

Data
- Digital RF ..... up to 6500 samples/sec
- Inductive (bandwidth)..... up to 6500 Hz

Integral Non-Linearity..... ± 0.10%
Repeatability..... ± 0.05%
Maximum Error ..... <0.25% Full Scale

RECEIVER

Power ..... 12VDC / 110VAC (Others Available)
Analog Output ..... 0-2, 5, 10; ±2, 5, 10 VDC
(0-20 and 4-20 mA Optional)
Display..... 3½ Digit Backlit LCD (Model 2025)
Multifunction Backlit LCD (Model 2125)
Output Ripple ..... < 2 mV
Size ..... 8.0"L x 5.0"W x 3.48"H
Induction Power ..... 500kHz (i & iR versions only)

MODEL 2030i INDUCTION POWER SUPPLY (IPS)

Power ..... Supplied by Receiver
Output..... 500 kHz Induction Power
Size ..... 6.29"L x 2.95"W x 2.25"H
(The IPS can be optionally located inside the Receiver or Stationary Loop Antenna base)

Model 2030i External Induction Power Supply (IPS)

Model 2025i-FX Receiver

Model 2011i-AC Stationary Loop Antenna

MODEL 2043DST MINIATURE DUAL SUMMING ACCELERATOR TRANSMITTER

Power..... 9V Battery, Rechargeable Lithium Battery Pack or Induction Power
Acceleration Limit..... 32,000g Static
(125g Dynamic, DC to 1 kHz)
Zero Drift ..... 0.02% / °C
Span Drift..... .0.02% / °C
Operating Temperature ..... -40 to 140°C (Inductive)
-40 to 80°C (9V), -20 to 80°C (Rechargeable)
Size ..... Various Sizes and Shapes Available
Excitation ..... 2mA constant current

System Options

External Remote Calibration Trigger Input

This option adds an input connector (BNC) to the rear panel of the Receiver. It accepts a 0-5 VDC signal from the user's data acquisition system to remotely trigger the Receiver. This causes it to enter the Calibration mode which is the same Calibration mode that is initiated from the Receiver's front panel. Automated Remote Calibration can then be performed as follows:

1. With no vibration signal being sensed by the collar, the data acquisition system adjusts the level of the torsional vibration signal (already read into the DAQ) so that it is zeroed.
2. Then with the sensor still at rest, the data acquisition system outputs a trigger to the Receiver causing it to enter Calibration mode.
3. After a very short settling period, the data acquisition system reads the receiver output and scales the torsional vibration signal (internal to the DAQ) so that it equals the calibration value for that channel. This value is listed on the calibration documentation that accompanies the system.
4. After about 15-20 seconds from the receipt of the external Calibration trigger, the Receiver will time out and revert back to normal data collection operation.

Induction Power Level Output

This feature adds an additional analog output (BNC connector) to the rear panel of the Receiver. Through this connector, an analog voltage representative of the telemetry collar's induction power level is made available to the user for manual or automated monitoring. This output can be used to automatically halt test or production operations and/or notify the operator should the induction power level fall outside of the acceptable range. Technical personnel would then determine the cause for the out of range condition. A 3-color LED is also added to the Receiver's front panel to visually indicate the collar's induction power level.

Red=voltage is low Green=voltage is good Orange=voltage is high

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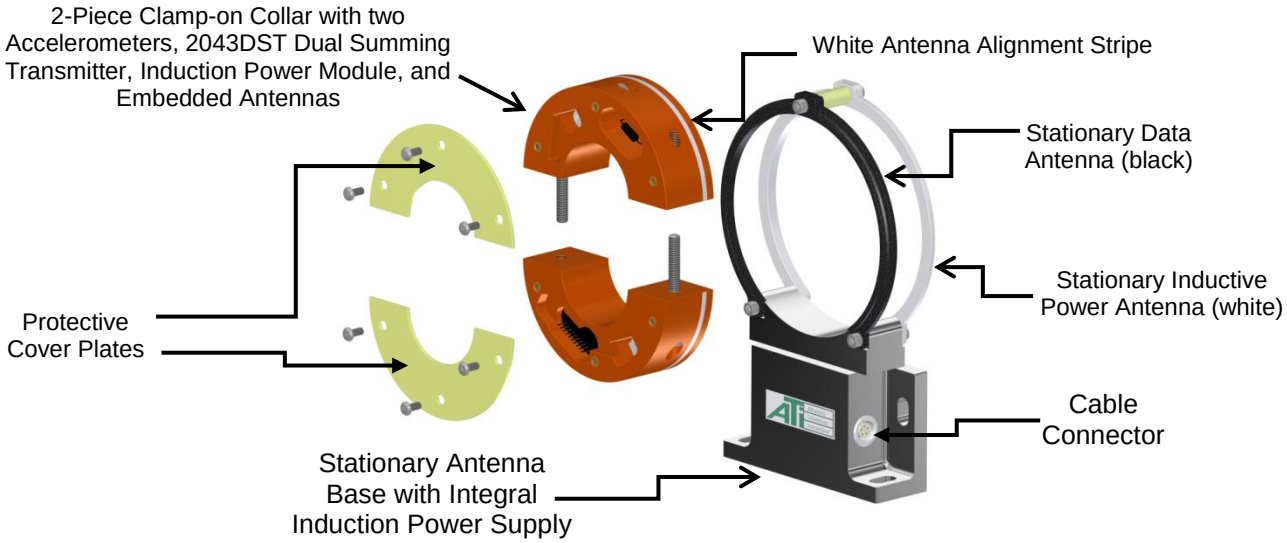
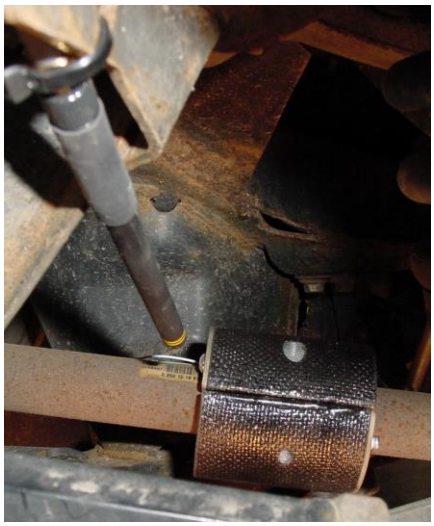


3D View of Torsional Vibration Telemetry Collar and Dual Stationary Loop Antenna with IPS

Applications

As shown in these photos, ATi's Torsional Vibration monitoring telemetry system can easily be installed on automotive half-shafts (drive shaft as well). The telemetry collar is built for your specific shaft requirements and can be powered by a non-rechargeable 9V battery, a rechargeable Lithium power pack (version shown), or with ATi's inductive power supply. The sensor's output can be scaled to your specifications.



The antenna is mounted to the frame or other sturdy feature and points toward the telemetry collar.

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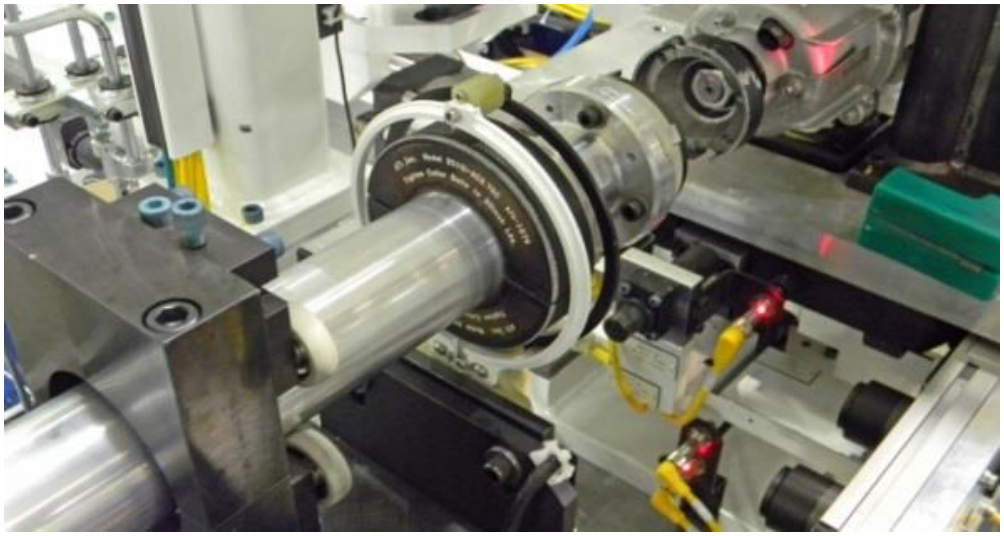

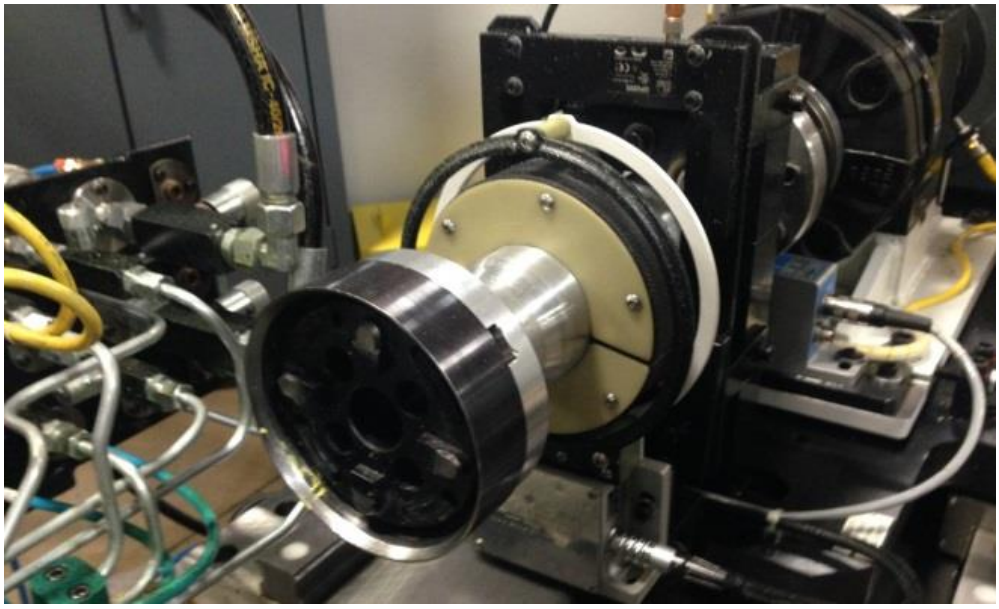

ATi's Torsional Vibration Telemetry systems shown installed on end-of-line production test stands.

ATi Serves Almost Every Industry Around the Globe!

While viewing this PDF document, click on these hyperlinks to go direct to ATi's associated website pages.

Solve your telemetry problems today. Have ATi build a standard or custom Telemetry System for your application.

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