ATi 2100/3100 SERIES

Digital Radio Telemetry System

Advanced Telemetrics International

Rechargeable Digital Telemetry System

Attaches to Shafts for Rotating Measurements

FEATURES

- Transmits Signals via Digital Radio Telemetry Link to a Stationary Receiver.
- No Shaft Modifications required.
- Single Piece or Split Transmitter Collars mount directly to Axles, Drive or Prop Shafts, or Rotating equipment.
- Collars available for most any shaft size.
- No Slip Rings or moving parts.
- Quick and easy user installation.
- Remote Shunt Calibration.
- Turn-key systems available. Send us a shaft and we will instrument it for you. NIST traceable documentation supplied.
- Multi-Channel Systems Available.

Model 2125B Portable Telemetry Receiver, Model 2110R Telemetry Collar (with Model 2140R Miniature Digital Strain Gage Transmitter) installed on automotive shaft

Telemetry System Converts Rotating Shafts into Sensors

***ATi*'s Rechargeable Digital Telemetry System** offers more performance and features while providing solutions to common shaft mounted obstacles. In addition to a high quality, real-time data link, simultaneous status/control signals provide instantaneous feedback of battery voltage and Transmitter module temperature while enabling remote on/off and shunt calibration. Battery powered RF transmitters eliminate the need for a stationary loop antenna simplifying the installation and providing up to 1m or more of range. Crystal tuned oscillators maintain solid data links with no frequency drift.

The 2140R Digital Miniature Strain Gage Transmitter can be connected directly to strain gages adhered to a shaft **converting it into a torque sensor**. Since the system is wireless, it can transmit shaft torque ***while the shaft is turning***. Often used as a testing tool to obtain real-time torque measurements from vehicle drivelines, the system can be installed on most any size shaft and is completely field installable by the end user.

The 2140R Series Digital Transmitters feature a contoured profile which reduces radial and axial clearances required for installation. Transmitters are available for any type of measurement. Transmitter operation is remotely controlled from the Receiver limiting the need to access setup switches or make DMM measurements.

The fiberglass composite 2110R Telemetry Collars house the transmitter and battery for easy installation. These collars require **only 0.65" (16.5mm) radial** and **2.5" (63.5mm) axial clearance** allowing them to be placed almost anywhere on the rotating shaft. Single or multi-piece collars transmit the signal to the stationary Receiver.

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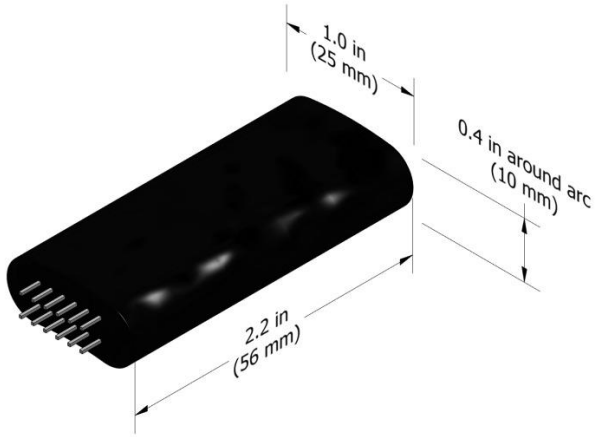
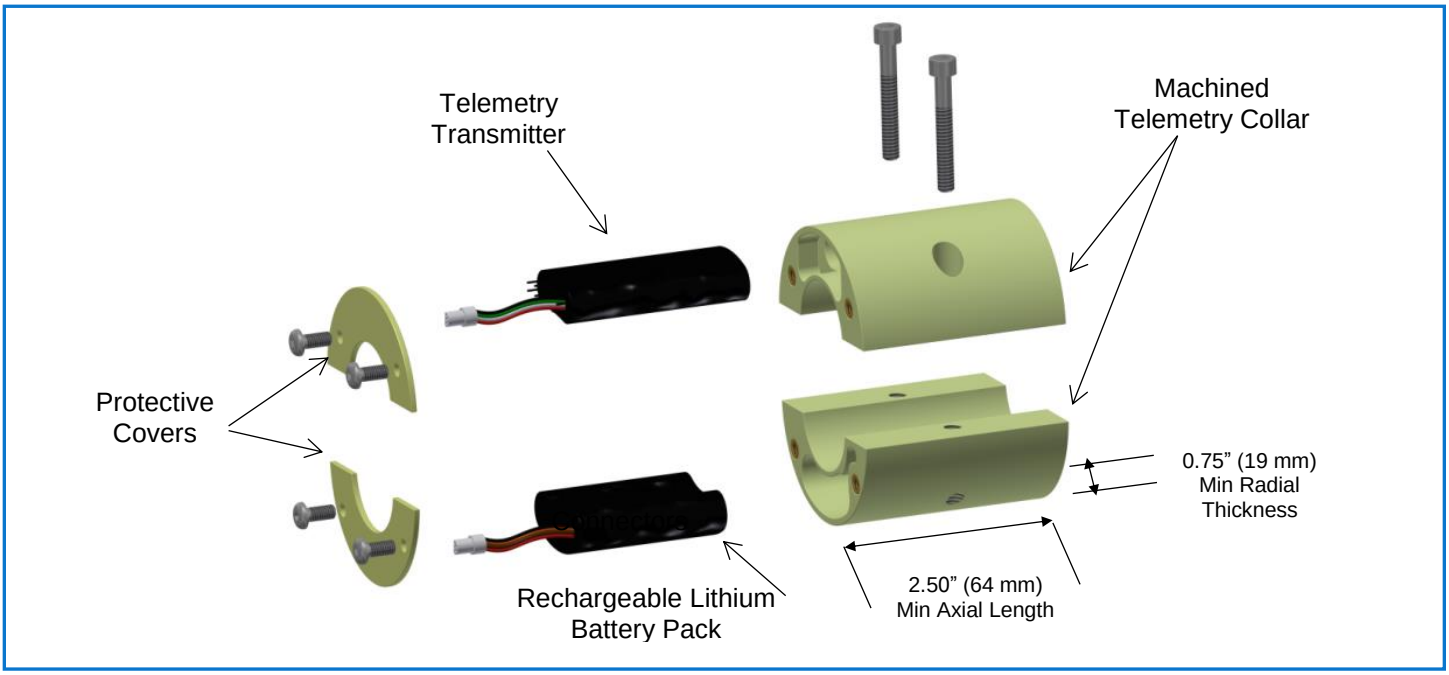
Rechargeable battery systems are available with two versions of Digital Receiver; Models 2125B and 3125B. Both versions feature a programmable, multi-function, digital backlit display. The Transmitter (On/Sleep) and ±Remote Shunt Calibration modes are manually selected from the menu based display. The Receiver can be powered direct from 12 VDC or with the included 110 VAC adapter. Dual super-heterodyne Receivers assure low noise operation with superior off frequency rejection. Frequencies can be staggered for simultaneous operation of multiple systems in close proximity without interference.

The 2125B Receiver utilizes one or more single channel 2100 Series Transmitters. The 3125B Receiver works with ATi's 3100 Series Transmitters that multiplex the sensor signals over one telemetry channel.

A rechargeable Lithium battery pack supplies power to the Transmitter for about 12 hours of continuous run-time. The included spare battery pack and Intelligent Charger/Balancer assures that power is always available. Features like the Remote On/Sleep and Auto On/Off can greatly increase the battery life.

Shown below is a 3D exploded view of the Rechargeable Battery based Telemetry Collar assembly. The Collar is available as a split two-piece collar (shown below) or as a single piece collar. It can be built for just about any size shaft. In some applications, Collars can fit multiple size shafts through the use of rubber shim kits. The minimum axial length and radial thickness and transmitter dimensions are as shown below.





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Features and Specifications

SYSTEM

1 Channel..... 6400 samples/sec
2 Channels..... 3200 samples/sec/ch
4 Channels..... 1600 samples/sec/ch
Resolution..... 14 Bits
Other configurations (number of channels, sample rates and resolutions) are available
Integral Non-Linearity..... ± 0.10%
Repeatability ..... ± 0.025%
Maximum Error ..... < 0.15% Full Scale

RECEIVER: Models 2125B & 3125B

Power..... 12 VDC and 110 VAC
Output . 0-2, 0-5, 0-10 VDC; ± 2, 5, 10 VDC
(0-20 and 4-20 mA Optional)
Analog Output..... Filtered
Display .... Multi-function Digital Backlit LCD
Output Ripple: ..... < 2 mV
Transmitter Single or Multiple 1-Channel (2125)
Multiplexed (3125)
Size ..... 8.0"L x 5.0"W x 3.48"H

MINIATURE TRANSMITTER COLLARS

Requires only 0.65" (16.5mm) radial and 2.5" (63.5mm) axial clearance!

Power . Rechargeable Lithium Battery Pack
Zero Drift ..... 0.02% / °C
Span Drift ..... 0.02% / °C
Operating Temperature Range -20 to 80 °C
(with standard battery pack)

ATi Transmitter Model Numbering Format				
31 4 2 B – 4/J				
Series	**TX Type**	**Sensor Type**	**Power**	**Special** (separate by "/")
21=Single Channel 31=Multiplexed	4=Rotating 5=Point to Point	0=Strain Gage* 1=Voltage* 2=Thermocouple 3=Accelerometer* 5=RTD*	B = Primary Battery *** R = Rechargeable Battery ** I = Inductive	2,4,8 = Channel Count (31xx only) J,K,T = Thermocouple Type R = RMS Voltage
Standard Sensor Excitations: Types 0, 1, 5 (1.9 VDC), Type 3 (1 mA) Custom values are available.				

Additional Features

*** Remote Calibration:** Pressing a button on the Receiver's front panel places the Transmitter in CAL mode for approximately 15 seconds.
Strain Sensors - A shunt calibration resistor is connected to one leg of the bridge simulating a known load. (Sensor types 0, 1, 3 and 5 only)
Voltage Output Sensors - Sensor output voltage is replaced by a reference voltage to simulate the load.
Accelerometer/Current Output Sensors - A known constant current source is substituted for the current output sensor.

**** Remote On/Sleep:** Allows the user to manually place the transmitter collar in an ultra-low power sleep mode which greatly increases battery life. This feature is manually controlled via the receiver's front panel display and pushbuttons. (Battery powered transmitters only.)

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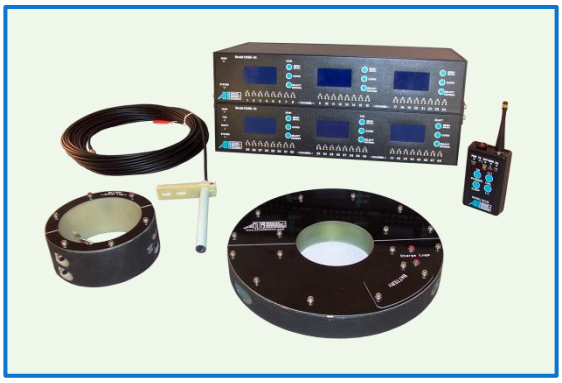
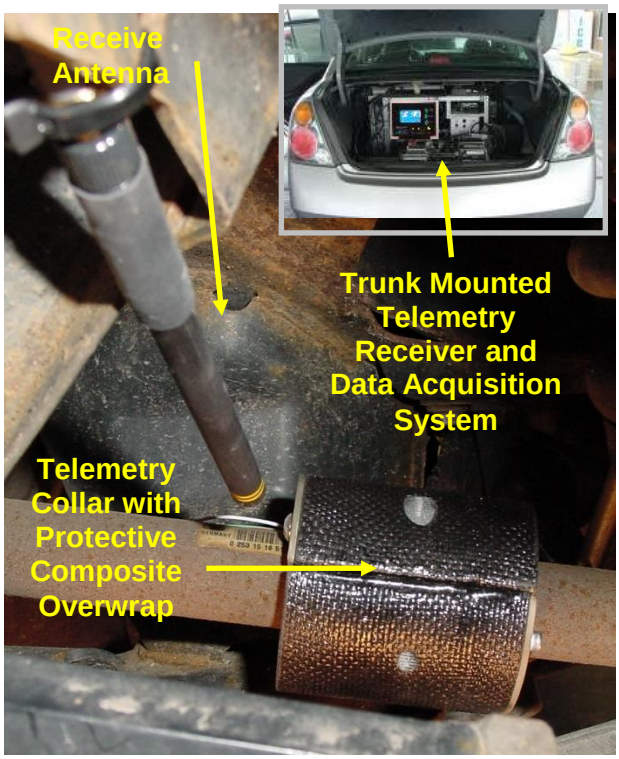
Channel configurations can be as simple or advanced as needed to meet the customer's telemetry requirements. Basic single-channel, single-collar systems can be used in a limitless variety of applications. Custom multi-channel, multi-collar systems are available when multiple sensor measurements are required; such as with 4-wheel drive vehicles or for advanced aviation testing.

Basic Single-Channel, Single-Collar System



Custom 46-Channel, Multiple-Collar System

Applications



Telemetry Collar Mounted to Automotive Half Shaft with Receiver Antenna (Trunk Mounted ATi Receiver and Data Acquisition System)

Before Testing

After Testing

These "before" and "after" photos show the ruggedness of ATi's telemetry systems. Despite the telemetry collar being subjected to extreme environmental conditions, the ATi system continues to provide reliable data. The collar (highlighted by red circle) is covered with so much road mud it is barely discernible.

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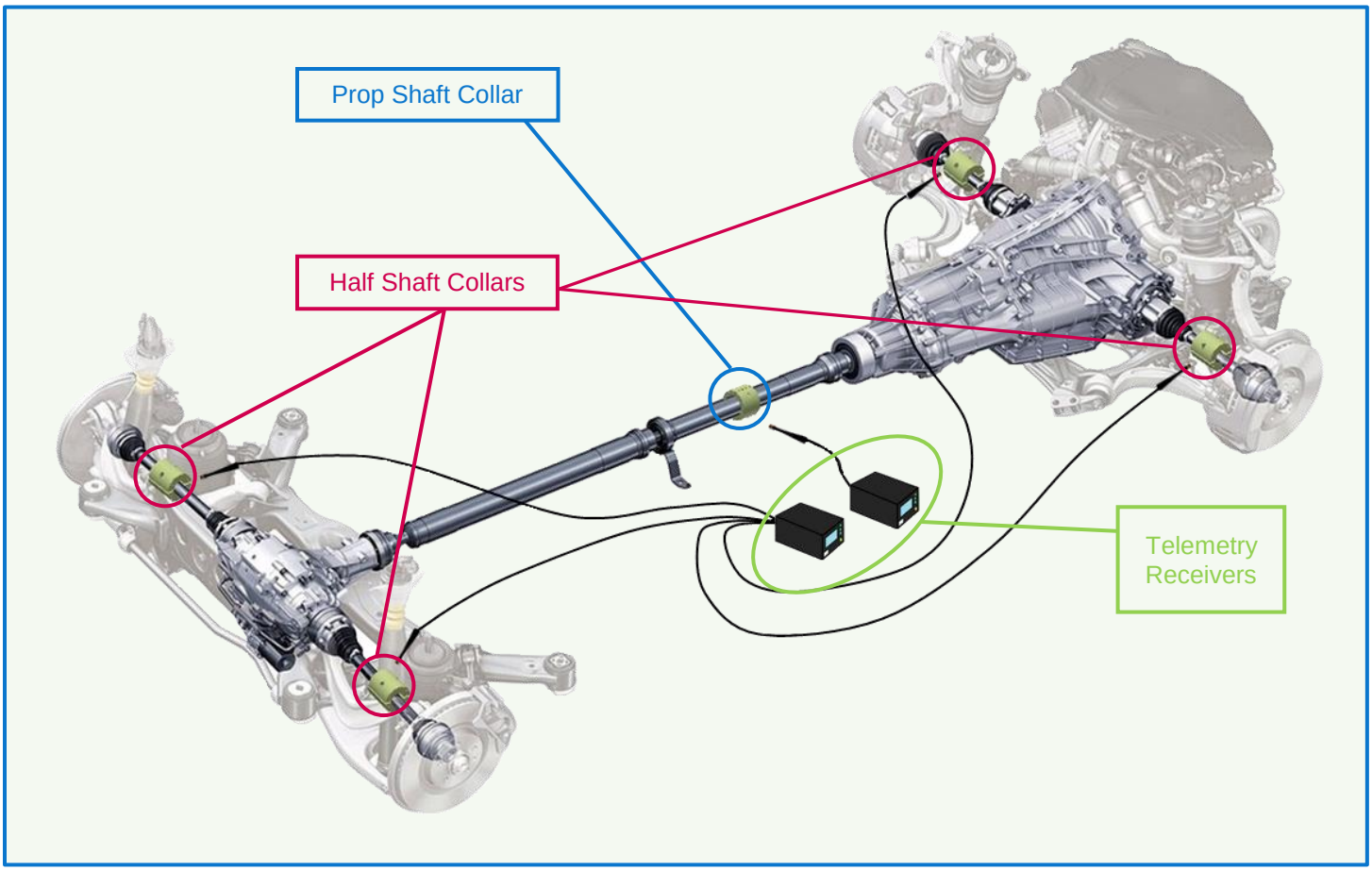

Automobile Drivetrain outfitted with four Half Shaft Collars with a Four-Channel Receiver and one Prop-shaft Telemetry Collar with a Single-Channel Receiver

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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