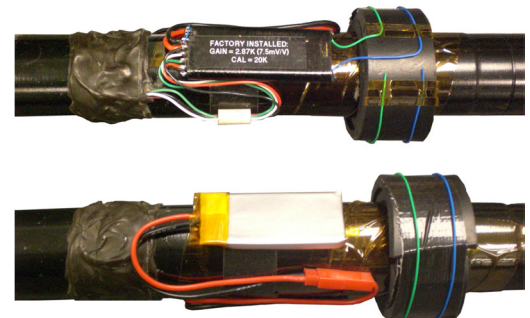


Low Power, Digital Telemetry System

Attaches to Shafts for Rotating Measurements

Features

- Transmits Torque Measurement via Digital Telemetry Link to a Stationary Receiver
- No Shaft Modifications required
- Transmitter Modules can be taped directly to most any size of Axle, Drive or Prop Shaft, or Rotating equipment
- Transmitter is potted in epoxy for extreme durability. Also contains a full metal shield around circuitry.
- Quick and easy user installation
- True Remote Shunt Calibration
- Low Power Transmitter can operate over one year on a single charge. Automatic Low Power Standby Mode conserves power while not in use
- Turn-key systems available. Send us a shaft and we will instrument it for you. NIST traceable documentation supplied.
- Multi-Channel Systems Available



Model 2125BLP Portable Telemetry Receiver and Model 2140LP Miniature Low Power Digital Strain Gage Transmitter installed in a split collar on an automotive half-shaft.

Telemetry System Converts Rotating Shafts into Sensors

ATi's Low Power Digital Telemetry System can operate one year or longer on a single battery pack, providing extreme flexibility in shaft torque measurement solutions. A high resolution data link incorporates infallible error checking that does not produce spikes or drop-outs in the signal. In addition to a high quality, digital data link, simultaneous status/control signals provide feedback of battery voltage and Transmitter module temperature while enabling Remote Shunt Calibration.

The 2140LP 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 LP Series Digital Transmitters measure only 0.285" thick, which enables installation on shafts with very little radial clearance.

Model 2125BLP Portable Telemetry Receiver and Model 2140LP Miniature Low Power Digital Strain Gage Transmitter installed in a split collar on an automotive half-shaft.



ATi 2100/3100 SERIES

Digital Radio Telemetry System



Battery power eliminates the need for an inductive power stationary loop antenna. This simplifies the installation and provides 1m or more of signal range.

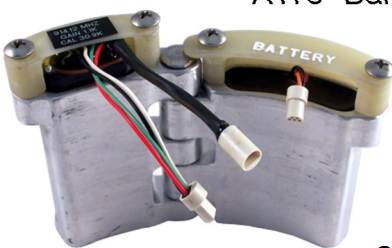
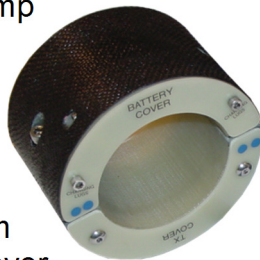


Model 2140LP Transmitter positioned onto shaft

For multiple channel applications, up to 16 Low Power 1-Channel Transmitters can be simultaneously operated on unique frequencies in close physical proximity to each other without causing interference.

The LP series Transmitters can be taped directly onto the rotating shaft or clamped to the shaft using one of our standard or custom collars or housings.

The 2-piece collars clamp directly onto the rotating shaft. Sizes can be provided for most any size of shaft. Collars can be adapted to smaller shafts using rubber shim kits. The collars and cover plates provide protection from debris.



ATi's Band-On housings are mounted to the rotating shaft using a Kevlar strap. Having straps of varying lengths on hand allows the system to be mounted onto just about any size of shaft

quickly. Protective cover plates are also included with the Band-on systems.

Whether it is for a temporary or long term application, the batteries and transmitter module can be taped directly to a shaft. In this configuration, the antenna wires are wrapped around a rubber spacer to separate them from the metal shaft.



Model 2140LP Transmitter with dual 4-cell AA battery packs shown after final layer of fusion tape has been applied.

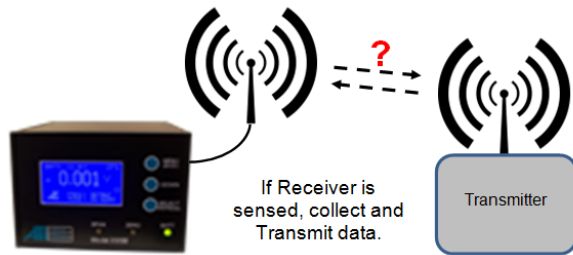
There are multiple battery choices available for powering the Low Power Digital Transmitters. Options include a 3.6V rechargeable lithium cell, rechargeable Lithium battery packs, or standard and high temperature (Tadiran) non-rechargeable batteries.

Depending on the battery/cell combination selected, a minimum of 100 hours of continuous data collection is expected. The use of larger capacity single cells or multiple cell battery packs can increase the run time of the Transmitter to over one year. Eight high temperature AA cells will power the Transmitter for over one year's worth of eight hour days.

To extend battery life, the Transmitter continuously checks for control signals from the Receiver. When it detects that the Receiver is turned off or is out of range, the Transmitter automatically goes into an ultra-low power Sleep mode conserving battery power. When in Sleep mode, it periodically wakes up to check for the presence of the Receiver's control signal. When this signal is sensed, the Transmitter fully powers up and resumes transmitting sensor data.

ATi 2100/3100 SERIES

Digital Radio Telemetry System

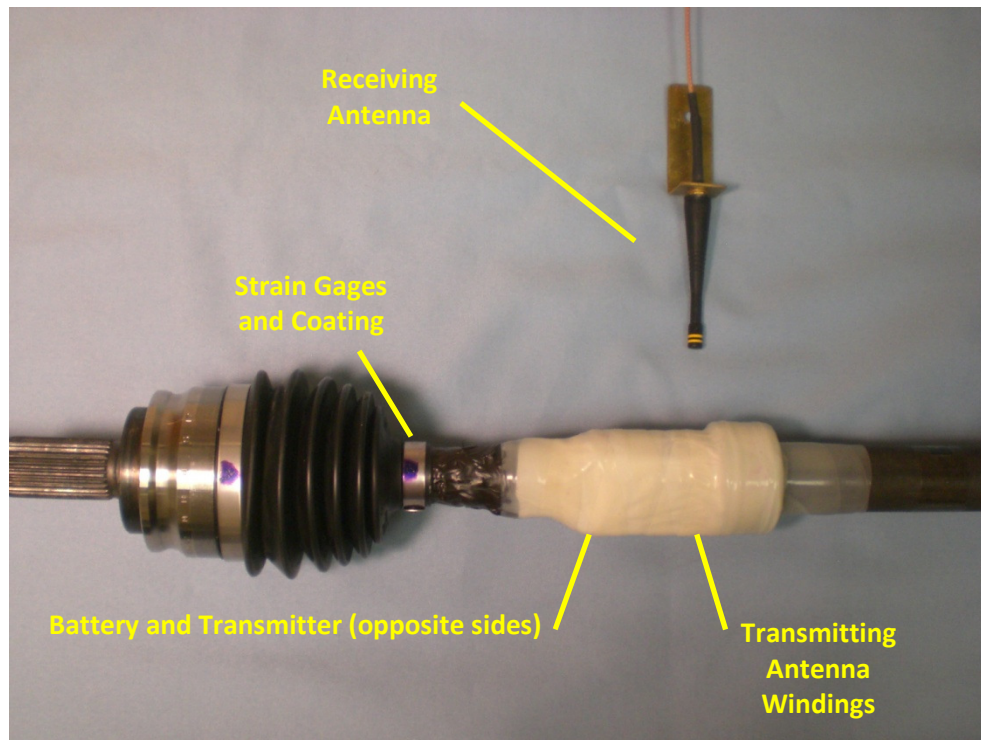


The Receiver features a multi-function, digital backlit display (LCD) and provides manual control of the adjustable sample rate, Remote Shunt Calibration and Low Pass Filter functions. It also displays the Transmitter status, battery voltage, Transmitter temperature and system operating frequency. The Receiver can be powered directly from 12 VDC or with the

included 110 VAC adapter; 220 VAC adapters also available.

This high sensitivity, high selectivity UHF Receiver assures low noise operation with superior off frequency rejection. Analog outputs can be formatted in ± 2 , ± 5 , or ± 10 V formats. Optional 4-20 mA and 0-20 mA current loop formats are also available.

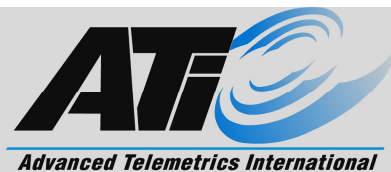
The 2125BLP Receiver communicates with one or more single channel 2100LP Series Transmitters. The included Charger (if applicable) and spare battery assures that power is always available.



ATi Low Power System Installed on an Automotive Half-Shaft System

ATi 2100/3100 SERIES

Digital Radio Telemetry System



Features and Specifications

Adjustable sample rate....400 to 2083 samples/sec
 (Multi-channel configurations are available using multiple single-channel transmitters)

Resolution 14 Bits
 Integral Non-Linearity $\pm 0.10\%$
 Repeatability..... $\pm 0.025\%$
 Maximum Error..... $< 0.15\%$ Full Scale

RECEIVER: Model 2125BLP

Power 12 VDC and 110/220 VAC
 Output Format 0-2, 0-5, 0-10 VDC; $\pm 2, 5, 10$ VDC
 (0-20 and 4-20 mA Optional)
 Output Filter.....low pass, 5-pole
 Display Multi-function Digital Backlit LCD
 Output Ripple: < 2 mV
 Transmitter Single or Multiple 1-Channel
 Size6.0"L x 5.0"W x 3.5"H
 Output/Status OptionsSee below



Two-piece collars and band-on housings for mounting



LOW POWER MINIATURE TRANSMITTERS

Power3.6V Lithium cell, rechargeable and non-rechargeable batteries, high temp Tadiran
 Size ..2.35"L x 0.80"W x 0.30" H (including pins)
 Zero Drift 0.02% / °C
 Span Drift 0.02% / °C
 Operating Temperature Range (battery dependent)
 -20 to 80°C (rechargeable Li-Po), -55 to 150°C (Non Rechargeable Lithium)



Additional Features

- * **Remote Calibration:** Activating this feature temporarily engages a precision shunt calibration resistor across the strain bridge. Transmitter in CAL mode for approximately 15 sec.
 - Strain Sensors** - A shunt calibration resistor is connected to the strain gage to simulate a known load.
 - Voltage Output Sensors** - Sensor output voltage is replaced by a reference voltage to simulate the load.
 - Accelerometer/Current Output Sensors** - A constant current source is substituted for the sensor output.
- ** **Auto On/Sleep:** When the Receiver is turned off or out of range the Transmitter automatically goes into an ultra-low power Sleep state to conserve battery life. When the Receiver is powered up, the Transmitter resumes active data collection and transmission.
 - A visual **Elapsed Time-On** battery indicator that is viewable through the front panel menu system. This keeps track of the amount of on-time for the current battery pack. This timer is manually reset by the user whenever a non-rechargeable battery pack is replaced or a rechargeable battery pack is charged.

Receiver Output/Status Option - The 2125LP Receiver is available with an optional package of outputs and status data. This option includes the following features:

- An analog output that is proportional to the **Transmitter Temperature**
- An analog output that is proportional to the **Battery Voltage**
- A logic output to indicate when data is **valid**

ATi 2100/3100 SERIES

Digital Radio Telemetry System



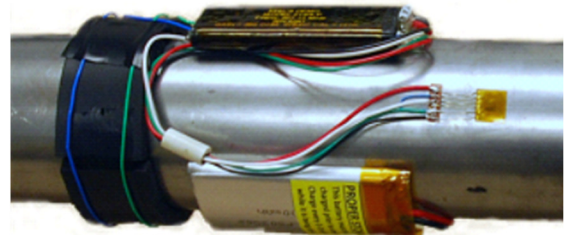
Applications

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

The optional Receiver output/status features allow the user to effectively collect data while verifying the validity of the data link in real-time. Although the battery pack can be sized for hundreds or even thousands of hours of continuous data collection, the Battery Voltage and On-Time features allow the operator to ensure that there is ample battery life prior to beginning a data collection session.



Single-Channel System with Split Collar



1-Channel Transmitter and Battery

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

ATi can provide Turn-key systems!

Send us your shaft. We will instrument it, install the telemetry components, calibrate the system, and ship it back to you complete with a NIST traceable Certificate of Calibration.