

Drag Racing Driveshaft Monitoring

Torque data acquisition during performance testing.

Application: Drag Racing Driveshaft Monitoring

Torque data acquisition during performance testing (on-track Dynamometer style live data)

Industry: Automotive

Product: AT-5000 EasyApp

Parameters measured: Torque

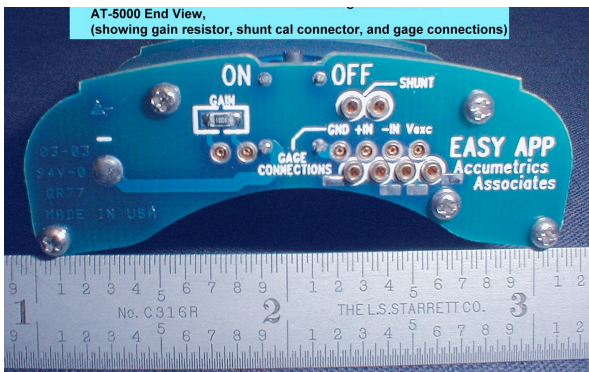
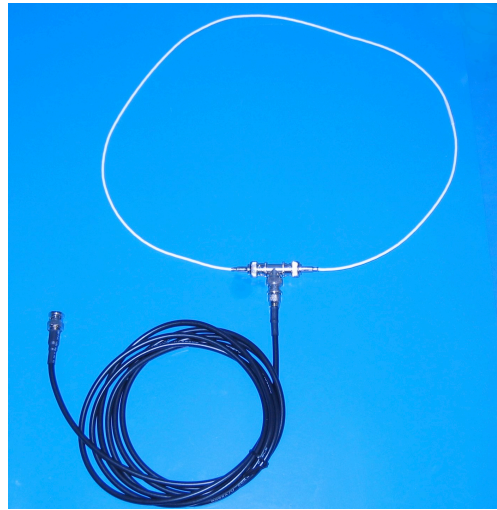
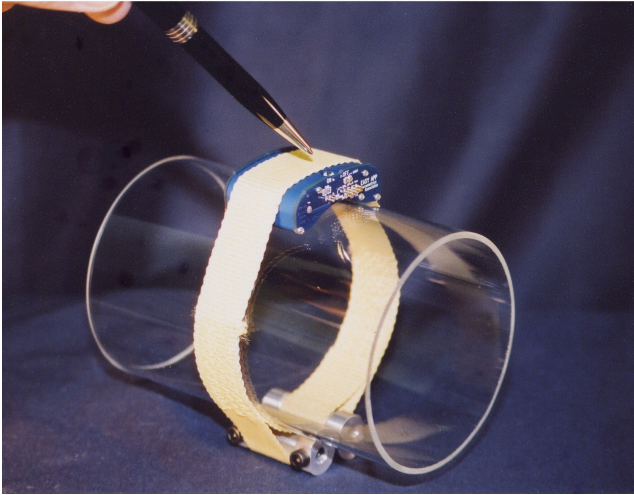
When a premier race car designer needed to feed live driveshaft torque measurements to his MoTec data acquisition system for a compact import modified drag car, the AT-5000 EasyApp was chosen. The needs for the system were:

- No dropouts (gaps in data) due to EMI interference
- No dropouts due to dead batteries
- No dropouts due to poor pickup loop
- Small package outline to fit in limited space
- Ruggedness; high G force capability
- Minimal hassle in applying and removing the unit

The AT-5000 EasyApp met all criteria. Employing digital telemetry to transmit signals to a nearby pickup (a stationary flexible loop pickup secured around the driveshaft), the system maintained excellent signal integrity, while providing long battery life (150 hours for 1000 ohm strain gages). The AT-5000 EasyApp is capable of more than 8000 G's of acceleration, and is secured by an aramid fiber strap that is stronger than steel. The system can deliver a sample rate of 11718 samples per second.

PCB's Load & Torque organization can install the strain gage and provide the calibration information (foot-pounds of torque vs. strain gage signal output). With this information, the torque value output from the Accumetrics' telemetry can be determined and input into a MoTec (used here) or similar data acquisition. (Note: the AT-5000's shunt calibration feature provides a convenient reproducible known torque value.)





AT-5000 End View,
(showing gain resistor, shunt cal connector, and gage connections)



- The top two pictures show an AT-5000 EasyApp mounted on a gearbox output yoke. The installed strain gage is visible under a yellow protective coating.
- The next picture illustrates the EasyApp mounting; note the tightening/counterbalancing yokes at the bottom of the picture.
- A cable-style Flexible Loop is shown to the right. This is installed with standard cable ties and body tape, typically. The loop size can be made for use with any size shaft, and larger loops can be tie-wrapped down to smaller sizes.
- The next picture shows a close-up of the ≥ 2 " size AT-5000 EasyApp (the drag race application used the 0.9" to 2" version).
- The bottom picture shows the AT-5000 Receiver (digital to analog 0 +/- 10V output device—this output the analog data to the MoTec inputs). Also shown in this picture is the torque telemetry potted module that is normally mounted within the EasyApp mounting system.

The AT-5000 can be supplied in component form for user mounting. Temperature transmitters and charge-style accelerometer adapters are also available. Two units can be used side-by-side (Channel A, and Channel B).



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