

TECHNICAL DATA

TorqueTrak Sea Trial Kit

Torque and Power Testing System



Engine Power Validation Made Easy

The TorqueTrak Sea Trial kit provides everything needed to measure shaft torque, speed, and power on a vessel during sea trials. The all-in-one system is capable of measuring and recording data simultaneously for up to 2 shafts, at a rate of up to 2400 Hz for torsional vibration testing. Components are packaged in an easily transportable, robust, and compact case, allowing for easy set-up and transport of the system between jobs.

ROBUST

The hard carrying case houses all system components. Stationary components are integrated into the case and extra storage space is included for easy transport of accessory items. Includes retractable handle and wheels. Dimensions: 12"D x 18.5"W x 22.5"L

TORQUETRAK 10K TELEMETRY

Measure the torque on the shaft and transmit the torque signal to receivers integrated into the carrying case. A pair of TorqueTrak 10K's are included for simultaneous measurement of two shafts.

HIGH ACCURACY

The use of strain gage sensor and a 14-bit ADC ensure the most accurate measurements possible.

OPDAQ FIELD TEST 2

Logs the data from the TorqueTrak 10K units and speed pick-ups. Software automatically calculates power and outputs data in .csv/.xls format. USB data cable connection to user-supplied laptop.

MULTIPLEXING

A single receiver can work with up to two shaft transmitters, helping reduce install complexity and overall cost.

INTEGRATED RPM

Two channels of shaft speed measurement. Includes shaft magnets and a pair of rpm pickups on magnetically-mounted adjustable arms. Pick-ups include 30' (9 m) of cable that ties in directly to the Field Test 2 integrated in the carrying case.

LOW MAINTENANCE

Highly optimized electronics ensure minimal electricity consumption for the transmitters, with battery autonomy of up to 24 hours. Sleep mode is also available when the shaft is not turning, extending the battery life even longer. Battery replacements take minutes.



System Components



TT10K Transmitter

PRODUCT SPECIFICATIONS

TX10K-S STRAIN TRANSMITTER

Sensor Input	Full Bridge strain gage (4 active arms, 350 Ω standard; up to 1000 Ω acceptable)
Bridge Excitation	2.5 VDC, $\pm 0.1\%$
Sensor Range	User-selectable per chart below (chart based on gage factor = 2.0):

Transmitter Gain	Full Bridge 4 Active Arms (Torque or Bending)	Full Bridge 2.6 Active Arms (Tension or Compression)	1/4 Bridge 1 Active Arm (Single Gage)
16000	± 125 microstrain	± 192 microstrain	± 500 microstrain
8000	± 250 microstrain	± 385 microstrain	± 1000 microstrain
4000	± 500 microstrain	± 769 microstrain	± 2000 microstrain
2000	± 1000 microstrain	± 1538 microstrain	± 4000 microstrain
1000	± 2000 microstrain	± 3077 microstrain	± 8000 microstrain
500	± 4000 microstrain	± 6154 microstrain	± 16000 microstrain

Sensor & Power Connection	Screw terminal block
Transmitter Voltage	7 – 18 VDC (9 V battery typical)
Transmitter Current	Transmit: 40 mA nom, 50 mA max with 350 Ω bridge Standby: 4 mA nom, 5 mA max
Transmitter Battery Life	24 hours in Transmit mode (9 V lithium, 350 Ω bridge, 25°C (77°F))
Transmission Frequency	902-925 MHz
Transmit Distance	20 feet (6 m) or more
G-force Rating	3000 g's (steady state) for example 5700 RPM on a 4 inch (102 mm) diameter shaft
Operating Temperature	-30° to 85°C (-22° to 185°F)
Size and Weight (without Antenna)	1.00 in x 1.63 in x 2.50 in, 3 oz (25 mm x 41 mm x 64 mm, 85 grams)

RM10K REMOTE CONTROL (for setup of TX10K-S Strain Transmitter)

Control Functions	Channel select; Gain/Range; Shunt Calibration 1 and 2; Power Standby
Transmit Type and Distance	Infrared; up to 10 feet (3 m). For use while shaft is stopped

RX10K RECEIVER

Voltage Output	± 10 VDC (field adjustable 0.25x to 4.0x) 5-way binding posts (banana jacks)
Digital Output Connection	RS-232 type DB9 connector (cable provided for PC COM port)
Receiver Power Input	12 VDC nom. (10 – 18 VDC acceptable), 300 mA max (110 VAC or 220 VAC adapter provided)
Operating Temperature	-20° to 70°C (-4° to 158°F)
Size and Weight	2.88 in x 5.75 in x 8.50 in, 2 lbs (73 mm x 146 mm x 216 mm, 1 kg)

TT10K SYSTEM

Resolution	14 bits
Gain Error ¹	$\pm 0.25\%$ Reading (max), 25°C ambient
Gain Temperature Coefficient ¹	$\pm 0.005\%$ Reading/°C (max), 0° to 50°C ambient
Offset Error ¹	$\pm 0.16\%$ FS (max), 25°C ambient
Offset Temperature Coefficient ¹	$\pm 0.004\%$ FS/°C (max), 0° to 50°C ambient
Frequency Response ²	0 – 500 Hz (-3 dB @ 500 Hz) Several low pass filter options
Delay ²	4.2 msec, typical
Sample Transmission Rate	2400 samples/sec

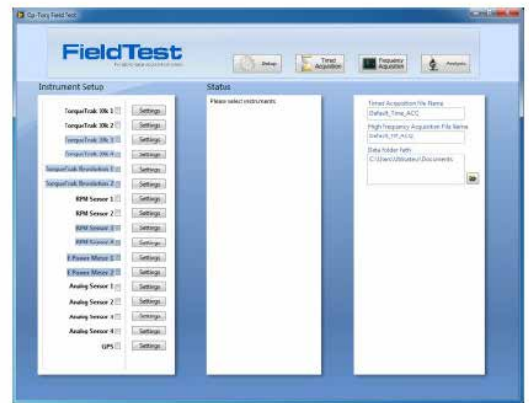
¹ TX10K Gain = 4000

² RX10K filter setting = 500 Hz

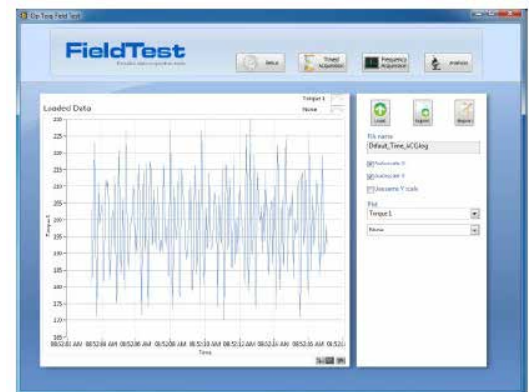
Specifications subject to change without notice.

Field Test

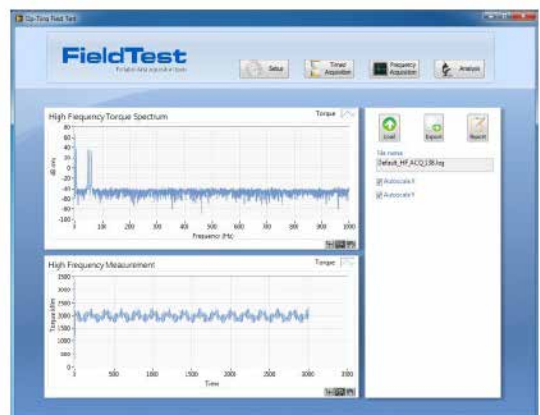
FIELD-TESTING SOFTWARE & MODULES



Easy Setup - Shows All Connected Instruments



Timed Acquisition - Collect Data Continuously 24/7



High Frequency - Collect TVA Data in Real Time