

WISER Model 8000

Instrument Grade Wireless Data Sensor

WIRELESS WITH AN EDGE

WISER 8000

The TECAT WISER Model 8000 dual strain measurement and monitoring system is a wireless data acquisition system for measuring two external strain channels at high data rates up to 8kHz. The small, light, power-efficient, and non-invasive design enables strain measurements in a wide range of applications. With dual external sensor inputs two strain gauge bridges can be measured by a single system, for example to measure both thrust and torque loads simultaneously. The Model 8000 has a long range data transmission of >1,000 meters with up to +/- 0.025% FSR sensitivity for remote measurements. After initial setup using the WISER software interface, the system can be wired directly to your DAQ system, for seamless data collection.





BENEFITS

- High RF output enables data acquisition in hardto-reach, remote areas and at long distances.
- Dual strain channels expands applications, including simultaneous torque and thrust measurements.
- Data rates as low as 0.125Hz and as high as 8kHz are paired with extremely low power consumption, to ensure optimal balance of data rate versus battery life, for both high performance and long-term testing.
- High accuracy enables development work on a wide range of applications.
- Non-invasive system can be removed, and does not alter the unit under test.



WISER comes in a rugged carrying case complete with all of the hardware, software, and cables needed to run the system.

- 1 Remote Transceiver
- 2 Base Transceiver
- 3 Antenna
- Rechargeable Li-Poly Battery
- 5 Car Power Adapter
- 6 AC Power Adapter
- 7 Micro-USB Cable
- B Remote Power Cable
- Strain Gauge Cable
- 10 USB drive containing • WISER Data Viewer Program • Driver for USB Base Unit

User's Manual PDF

Microsoft .NET 4.0 Framework Installer

WHICH SYSTEM IS RIGHT FOR YOU?

Specification	WISER 4000	WISER8000
Number External Channels	1	2
Data Rate (User Selectable)	250 Hz - 4000 Hz	0.125 Hz - 8000 Hz
RF Range	30 m	1000 m
Sensitivity	+/-0.1% FSR	+/- 0.025% FSR

THE ADDITIONAL CHANNELS AND EXPANDED CAPABILITIES of the Wiser 8000 open up New Applications, beyond those already serviced by the Wiser 4000.

MULTI-AXIS LOAD APPLICATIONS: With a single sensor, measure torque and axial, or two component bending load simultaneously, on any rotating shaft. This enables breaking all loads into component parts, for true insights into your application. APPLICATIONS

ACCESSORIES

The following optional accessories are available for use with the WISER system:

Additional Li-Poly Battery (400mAh or 850mAh) Antenna Extension Cable 4.5m (15ft) or 6.0m (20ft) Antenna Cable w/ Magnetic Mount 4.0m (13ft) 350Ω Full-Bridge Strain Gauge Remote enclosures, shown here: Red: Remote Top

White: Battery Top

FEATURES

TWO STRAIN CHANNELS: The WISER 8000 supports two strain channels, enabling direct, simultaneous measurement of both strain signatures and axial strains.

HIGH RF OUTPUT: The WISER 8000 has a range of 1,000 meters and enables data collection in hard-to access applications.

PROGRAMMABLE ANALOG OUTPUTS: Define the **13** eight analog output channels that you wish to collect through your DAQ system using the data viewer interface.

CHANNEL SELECTOR: Easily change RF channels using a rotary switch on the back of the base unit.

USER SELECTABLE DATA RATE: With data rates ranging from as low as 0.125Hz to as high as 8kHz, optimize the system for your application by selecting the required rate, while ensuring maximum battery life. With an 8kHz rate and the standard 400 mAh Li-Poly battery, users can expect uninterrupted testing for up to 25 hours, before needing to recharge the battery.

REMOTE DATA LOGGING WITH TRIGGERING: The remote transceiver is capable of storing up to 30k samples in order to capture high speed events without PC connectivity. Set triggering events to initiate data collection until the buffer is full. The data can then be downloaded once PC connectivity is available, for post event analysis.

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POWER CONNECTOR

CONNECTION

ANTENNA CONNECTION

WISER 8000 ELECTRONICS SPECIFICATIONS

Power		
Power Supply Remote Unit	3V DC to 6V DC, absolute maximum of 6V DC	
Power Supply Base Unit	12-24V DC Unregulated	
DC Sensor Driver	10 mA absolute maximum	
Lithium Battery	Standard: 3.7V Single Cell Li-Poly (400mAh) Option 1: 3.7V Single Cell Li-Poly (850mAh) Option 2: 3.7V Single Cell Li-Poly (1000mAh)	
Physical - Remote Unit		
Dimensions	36 mm x 23 mm x 4 mm (circuit board w/o mounting tabs and connectors) 45 mm x 23 mm x 6 mm (circuit board w/mounting tabs)	
Weight	6.5 g (remote transceiver with epoxy coating) 9.0 g (400 mAh li-poly battery)	
Communications		
Radio Frequency Transceiver Carrier	2.45 GHz direct sequence spread spectrum, license free worldwide (2.405 to 2.480 GHz) - 16 channels, radiated power @ 3.5dBm (2.2mW)	
RF Data Packet Standard	IEEE 802.15.4 capable, open communication architecture	
Range for RF Link	1,000m (3,281 ft) line-of-sight	
Base to Host Transfer	COMM Port via USB – up to 230400 baud; 8 data bits; no parity; 1 stop bit – open	
Base Unit	USB (mounts as COM port), 0-5V Analog Output Channels (2.5V nominal centered)	
Environmental		
Remote Operating Temp	-40°C to 85°C	
Electrical		
Sensor Input	Full Wheatstone bridge gauge 350 Ω resistance or higher	
Accelerometer Range	Standard: none Option 1: +/- 16G Option 2: +/- 400G	
Measurement Sensitivity	Typical +/- 0.04% FSR (digital output) Optimized +/- 0.025% FSR (digital output)*	
DC Bridge Excitation	Vg = +2.50V DC at 10 mA max (pulsed to sensors to conserve power)	
Calibration	2 Independent Shut Cal Legs (Signal +/- to Ground with 100k resistor) Signal Polarity (digitally reverse polarity) Signal Zero (digitally short inputs)	
Gain	User selectable: 1X; 2X; 4X; 8X; 16X	
Digital Offset	User selectable: ±100% full scale	
Differential Input Range	Input Range and Factory selectable to +/- 15mV, +/- 30mV, +/- 60mV	
Oversampling	1X, 2X, 4X, 8X, 16X, 32X	
A/D Converter	18-bit (transmitted data is 16-bit)	
Data Rate	User selectable: 0.125Hz - 8kHz	
Compatible Software	WISER Data Viewer or User Supplied (WDV Requires Windows 2000/XP/Vista/ Windows 7 or newer; .NET4.0; 512MB memory; 1Ghz processor or faster)	

*Example Configuration: Data Rate = 1000Hz, Oversampling = 32, Packet Size = 2

WISER APPLICATIONS

FLYWHEEL, FLEXPLATE, PULLY TORQUE

While many of these applications can be instrumented using our proven WISER 4000 system, the higher resolution and accuracy of the WISER 8000 makes it suitable for measurement of components that have very low strain fields.



PROPELLER THRUST

The system is shown here mounted to a prop extension. By measuring both the axial and torsional forces on a propeller, the efficiency of the prop can be continuously monitored. The WISER 8000 can be used to monitor propellers on propeller driven aircraft and boats, as well as on windmills.

STRUCTURE ANALYSIS involving bending,

tension, and compression of structural members.

- Top Fuel Dragster Frame
- Bridges
- Building Structures
- Airframes





THE WISEST FAMILY OF

WISER-1 STARTER MODEL

The shaft version of TECAT's proven WISER telemetry system is optimized for torque measurement on circular shafts including: Axle Shafts, Half Shafts, Prop Shafts/Drive Shafts, and similar. With a 2kHz data rate, the system offers excellent accuracy, for critical design and development data at a low cost. The system is pre-configured at the factory for plug-and-play ease and simplicity, and is upgradable to a WISER Model 4000 System. Connect with a TECAT representative to learn more about this starter model.

WISER MODEL 4000 SYSTEM

The 4000 model strain measurement and monitoring system is a wireless data acquisition system for taking measurements like live torque. It is small, light, power efficient, easy-to-use and non-invasive. The wireless system has the optional ability to measure 3-axis acceleration, pressure and temperature all within the same incredibly small footprint. Connect with a TECAT representative to learn more about this disruptive system.

WISER OEM PLATFORM

TECAT'S OEM Telemetry System is a sensor fusion platform designed from the ground up for integration into OEM products and is based on TECAT's proven WISER products. This system, consisting of a remote unit (the sensor fusion board), base unit (for output from the OEM product), and configuration software allowing the OEM to configure, calibrate, and display data from the system. Connect with a TECAT representative to learn more about this platforms capability.

WISER LC100 SYSTEM

The electronics for this system are designed for integration into artificial lift load cell applications. It is capable of achieving an ATEX Zone 0 Intrinsically Safe certification. In addition to the specifications this system also includes the capability to add the following:

- Second Analog output for voltage or current output
- Digital USB output

- Battery voltage monitoring
- Over the air (OTA) updating and user configurationDC power isolation of the base unit

- 3 Axis accelerometer
- Ambient temperature

Connect with a TECAT representative to learn more about this product.

WISER TC2-K SYSTEM

This wireless temperature measurement and monitoring system was designed specifically to tackle the challenges of continuous brake rotor and spindle bearing temperature measurements but can be customized to fit other applications. It is small, light, power efficient, easy-to-use and non-invasive. The wireless system has on-board channel amplification and on-board temperature referencing. The system uses 2 K-type thermocouples and offers highly accurate data over a wide temperature range. Connect with a TECAT representative to learn more about this temperature measurement product.



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