TMS 9000 Rotary Torque Measurement System

- **Digital telemetry**
- **Standard or custom set up**
- **Single or multi-channel**
- **Greater control**
- **More versatile**
- **Ranges to 200000 ft-lb**

How to order: *(Quick-ship range/option combinations available. See Web site.)*
Consult factory for ordering information.

Order codes

Consult factory for order information.

The TMS 9000 torque measurement system represents an advanced generation of rotary transformer sensors designed to operate entirely in the digital domain for enhanced accuracy and versatility. The TMS 9000 series physically integrates rotor electronics and telemetry into one element, with all set-up and output controlled through computer software. This digital wireless telemetry system supplies power to the rotating sensor, supports two-way communications and provides wide testing capabilities. More than a stand-alone sensor, the specially designed TMS 9000 is a complete torque measurement system, with standard analog, frequency and digital outputs. Fully software driven, the durable TMS 9000 utilizes a custom 16-bit digital wireless telemetry system, which maximizes resolution and frequency response while also being able to provide excitation power across the wireless gap. System set-up can be changed “on-the-fly” without affecting calibration.

Potential applications include transportation and automotive, manufacturing and production, aerospace and military, medical, design and engineering, testing and quality.

Specifications

Performance

Torque range	Varies on application; consult factory (up to 200000 lb-ft)
Nominal system accuracy	±0.05 % full scale
Frequency output	
Analog	10K Hz ± 5K Hz; 60K Hz ±20K Hz
Digital	RS-232
Resolution	0.01 % to 0.001 % full scale
Measurement frequency range	0 kHz to 3 kHz
Digital filter	0.1 kHz to 1 kHz
Maximum sampling rate	17.656 kHz sensor, 8834 Hz analog output (voltage only)

Environmental

Temperature, operating	-40 °C to 85 °C [-40 °F to 185 °F]
Temperature, compensated	-10 °C to 50 °C [14 °F to 122 °F]
Temperature effect, zero	±0.003 % full scale/°F
Temperature effect, span	±0.003 % full scale/°F

Electrical

Power supply (standard, non-isolated)	12 Vdc (nom)
Analog output voltage	± 10 Vdc, 2K ohm min.
Analog output current	4 mA to 20 mA
Load impedance	500 ohm max. (for current loop)

Electrical features

- **Rotor electronics module.** This is embedded in the sensor and receives and conditions the input signal before transmitting it to the SPM.
- **Signal processing module (SPM).** This device integrates two microprocessors to share data processing and communications. It recovers the signal from the rotor, provides scaling and filtering, and offers a variety of outputs, compatible with various data acquisition systems.

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Questions? Contact us at either 1-800-848-8364, +1 614-850-5000, or our Web site for customized options: (http://sensing.honeywell.com/TMsensor-help).

Specifications subject to change.

Mechanical sensor features

- No hoop antenna
- System error ±0.05 % full scale typ., ±0.1 % full scale max.
- Enhanced torsional stiffness
- Enhanced overload capability
- Low rotating inertia
- Variety of mating flange designs
- Custom designs available

Dynamics of the TMS 9000

The rotor electronics module is encapsulated to enhance protection against vibration, G Force and chemicals.

- The rotating antenna is comprised of an annular printed circuit board, peripherally or centrally mounted on the rotor.
- Four layer construction ensures enhanced strength with no exposed tracks in the outer region.
- IP65 caliper-style coupling module with die cast Aluminum casing. Provides power transmission and signal recovery with BNC connector for coaxial cable.

Signal processing module (SPM)

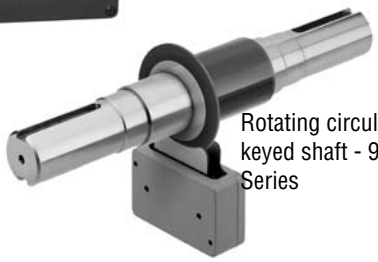
The SPM contains two separate microprocessors to share data processing and communications. Calibration is all digital, via RS-232 link, eliminating zero and span adjustments or dip switches. The durable unit has an external BNC connector for the RF coaxial cable, internal 2-part plug and socket connectors for output signals, digital communication and dc power. The SPM external housing also features a “SHUNT CAL” button and LEDs to indicate “Power ON”, “Rotor Active” and “SHUNT CAL Mode”. Because of these enhanced technologies, the end result is a true advancement in telemetry-based torque systems.

Mechanical mating configurations

TMS 9000 Series torque sensors perform well under tough conditions. For years, sensor operators in varied applications have acknowledged the enhanced accuracy, durability, and quality built into each sensor. TMS 9000 Series sensors can be tailored to specific applications for ever greater versatility with capacities up to 200000 lb-ft.

DIN drive shaft yokes - 9200 Series

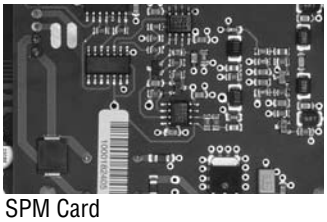
Integral coupling - 92005 Series



Rotating circular keyed shaft - 92120 Series

Software features

The toolkit software at the heart of the TMS 9000 system is designed to offer flexibility and adaptability. The software puts the operator fully in control and can be tailored to the test conditions required at the time. Standard or custom set ups can be saved to parameter files and recalled at any time. Input scaling and output scaling is independent, providing a wider application advantage.



SPM Card

Toolkit features

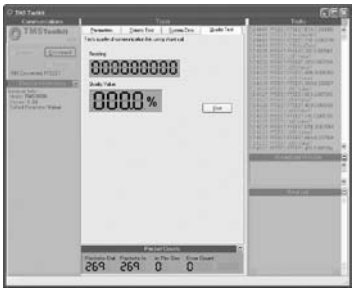
- Full software set-up
- No zero and span adjustments or dip switches
- Scalable output “on the fly”
- Up to nine-point linearization feature
- User-selectable digital filter feature
- Simple ASCII communications protocol

Additional features

- Custom designs available

Test communications

Parameters/system setup



Systems quality test

Systems zero/tare

CE Approved