

Instrumented Steering Wheel Systems



Ride and Handling, Legislative Testing, Steering System Development

RTM GmbH Model Z1 Instrumented Steering Wheel System is a telemetry based steering wheel developed for vehicles from a standard type steering wheel to deliver precise data measurements. The Model Z1 steering wheel with supplied adapters can be installed in the same position as the OEM steering wheel to provide similar ergonomic feel and driving dynamics. The unit is equipped with integrated sensors to measure angle, angular rate, and torque. The vehicle's active Electronic Stability Program (ESP) is fully supported and not compromised. Model Z1 units provide advanced integrated function keys, which include auto zero for both steering angle and steering torque, shunt calibration, and function lock. Four switches allow the unit multiple user-programmable controlling options. Equipped with an integrated inductive power supply, Model Z1 Instrumented Steering Wheel Systems provide continuous running and wireless operation.

The accompanying compact signal conditioning unit is designed for use in limited space. Measured signals are retrieved directly from the signal conditioner via electrically isolated connectors. An optional CAN interface, for integration with data acquisition systems, or a USB interface used with computers are available for additional data recording and analysis.



Model Z1 Instrumented Steering Wheel

FEATURES

- Highly accurate and reliable
- Fast, easy, and backlash free mounting
- Telemetry provides friction free wireless transmission
- Automated adjustment of all components
- Two ranges of each measurement available at all times (steering moment, angle and angular velocity)
- Inertial moment and weight comparable to OEM steering wheels
- Integrated wireless power supply
- Small compact display system
- All products are CE certified

APPLICATIONS

- Steering System Development
- Steering Component Testing
- Brake Pull Testing
- Ride and Handling
- Legislative Testing



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Instrumented Steering Wheel Systems			
	Z1 / Z3	Z5 / Z7	Z9
Torque Zx-1 Zx-2	±88.5, ±885 lbf-in : ±10, ±100 Nm, ±0.2 Nm ±88.5, ±1770 lbf-in : ±10, ±200 Nm, ±0.4 Nm	±88.5, ±885 lbf-in : ±10, ±100 Nm, ±0.2 Nm ±88.5, ±1770 lbf-in : ±10, ±200 Nm, ±0.4 Nm	±88.5, ±885 lbf-in : ±10, ±100 Nm, ±0.2 Nm ±88.5, ±1770 lbf-in : ±10, ±200 Nm, ±0.4 Nm
Angle (Range, Resolution)	±100°, ±0.05° : ±1000°, ±0.5°	±120°, ±0.06° : ±1200°, ±0.6°	±100°, ±0.05° : ±1000°, ±0.5°
Rate	±500°/s, ±0.5° : ±1000°/s, ±1.0°	±500°/s, ±0.5° : ±1000°/s, ±1.0°	±500°/s, ±0.5° : ±1000°/s, ±1.0° With CAN or USB output option only
Bandwidth ^[1]	800Hz, 4000Samples/sec	800Hz, 4000Samples/sec	800Hz, 4000Samples/sec
Acceleration (Range, Resolution) - Z3, Z7 only	±10,000°/s ² , ±100°/s ²	±10,000°/s ² , ±100°/s ²	Not Available
Vibration (Range, Resolution) - Z3, Z7 only	±5g, ±0.05g	±5g, ±0.05g	Not Available
Adjustments and Functions	Automatic zero adjustment of angle and torque. Shunt calibration of torque. From switches on steering wheel	Automatic zero adjustment of angle and torque. Shunt calibration of torque. From switches on steering wheel	Automatic zero adjustment of angle and torque. Shunt calibration of torque. From switches on control unit.
Special Functions	4 programmable key functions	Not Available	Not Available
Dimensions (O.D., Height w/o adapter) (Weight, Moment of inertia)	15 in., 5.83 in. : 380 mm, 148 mm 7.5 lbs., 99.1 lbm in ² : 3.4 kg, 290 kgcm ²	17.72 in., 6.89 in. : 450 mm, 175 mm 8.8 lbs., 109.4 lbm in ² : 3.4 kg, 290 kgcm ²	7.09 in., 1.97 in. : 180 mm, 50 mm 2.7 lbs., 5.5 lbm in ² : 1.2 kg, 16 kgcm ²
Operating Temperature (Optional extended range)	14 to +176 °F : -10 to +80 °C -22 to +176 °F : -30 to +80 °C	14 to +176 °F : -10 to +80 °C -22 to +176 °F : -30 to +80 °C	14 to +176 °F : -10 to +80 °C -22 to +176 °F : -30 to +80 °C
Control Unit			
Output Filter	800 Hz	800 Hz	800 Hz
Power Supply	9 to 32 VDC ~10 W	9 to 32 VDC ~10 W	9 to 32 VDC ~10 W
Dimensions	(L x W x H) 7.9 x 4.1 x 3.3 in : 200 x 105 x 85 mm	(L x W x H) 7.9 x 4.1 x 3.3 in : 200 x 105 x 85 mm	(L x W x H) 7.9 x 4.1 x 3.3 in : 200 x 105 x 85 mm
Weight	2.6 lb - 1.2 kg	2.6 lb - 1.2 kg	2.6 lb - 1.2 kg
Output of all signals are ±10 V unless otherwise specified. ^[1] Bandwidth of Acceleration and Vibration is 1 to 120Hz, 4000 Samples/sec.			

With over 25 years of experience in the telemetry field, RTM GmbH is a world leader of telemetry systems and offers superior products for automotive, aerospace, defense, wind energy, rail, ship, test bench, industrial and other testing and monitoring solutions.

In addition to the instrumented steering wheel systems, RTM produces various single and multi channel telemetry systems.

Specifications are subject to change without notice due to continuous product improvements.

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