

Model 9300

Clamp-on Rotary Torque Transducer System



DESCRIPTION

The Series 9300 Torsionometer is ideal for measuring torque on machinery where little down time can be afforded. The quick installation of the clamp-on collars with the pre-calibrated bending beam converts I/O shafts into instant torque transducers.

The 9300 Series are ideal for those applications involving repetitive testing of identical systems. The clamp-on 9300 Series uses a pre-calibrated bending beam which is clamped at each end by a counterbalanced collar around a heavy-wall or solid shaft to sense torque. Each installation uses one of a selection of bend-

ing beam lengths to generate the specific output to the on-board RF transmitter. The strain gage output is then coupled to the readout device or control loop via an RF telemetry package.

A variety of collars and bending beams are available to accommodate high torque ranges and shafts from 2.5 in to 15.4 in diameter. Running speeds are from 2500 RPM down to zero RPM.

The built-in transmitter can be environmentally sealed for harsh environments and high vibration.

FEATURES

- 0.15% non-linearity
- Ideal for short-term testing
- Converts any shaft into a torque transducer
- Variety of collars and bending beams for shaft diameter from 63,5 [2.5 in] to 391,16 [15.4 in]
- 2500 RPM down to zero RPM running speeds
- Suitable for harsh environments and high vibration

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PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Torque range	Varies on application; consult factory
Linearity	±0.15 % full scale
Non-repeatability	±0.05 % full scale
Frequency response	dc to 1000 Hz
Sensitivity (transmitter)	300 microstrain
Number of channels	1
Sampling rate	5 kHz
Receiver readout display type	3.5 digit 7 segment LED

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating (transmitter)	-9 °C to 75 °C [16 °F to 167 °F]
Temperature, operating (receiver/IPS/PSU)	4 °C to 60 °C [40 °F to 140 °F]
Temperature, compensated (transmitter)	0 °C to 75 °C [32 °F to 167 °F]
Temperature, compensated (receiver)	0 °C to 53 °C [32 °F to 127 °F]
Temperature effects, zero (max.)	±0.01 % full scale
Temperature effects, span (max.)	±0.005 % full scale
Static G force (rotating components)	100 G
RPM limits (rotating components)	See graph - depends on shaft diameter
Vibration (rotating components)	10 G to 1 kHz
Collar weight	Varies with shaft diameter
Electronics weight (not including cables)	Receiver and IPS 3,4 kg [7.5 lb]

ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Induction power source	160 kHz ±6 %
Cable length (IPS to receiver)	4,6 m [15 ft] ¹
Max. cable length (IPS to receiver)	30,48 m [100 ft]
Power supply voltage (receiver)	120/240 Vac user-selectable
Power consumption (receiver)	200 VA max.
RF operating frequency	Factory set, 16 MHz standard
RF modulation type	PWM
Signal strength indicator (receiver)	LED bar graph
Analog output (receiver)	±10 Vdc @ 1 mA max.
Output impedance (receiver)	< 1 Ohm
Electrical termination (receiver output)	BNC female
Mating connector (receiver output)	BNC male
Analog output filter cap. (receiver)	User selectable 1000 Hz; 500 Hz; 200 Hz; 100 Hz; 1 Hz

1. Consult factory for other cable lengths.

OPTION CODES

Range Code	Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMsensor-ship for updated listings.
Torque range	Varies on application; consult factory
Available frequencies	16 MHz
Environmental protection	62h. NEMA IPS
Receiver power supply	62v. dc (specify 12 Vdc or 24 Vdc)

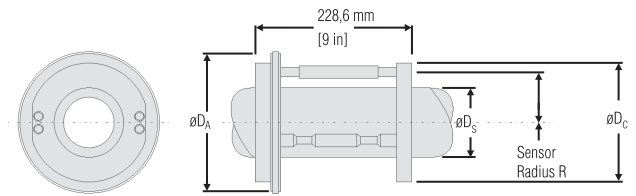
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MOUNTING DIMENSIONS

Shaft diameter increments		Sensor radius	Antenna diameter	Collar diameter
Lower diameter D_s mm [in] (ID)	Upper diameter D_s mm [in] (OD)	R mm [in]	D_A mm [in]	D_c mm [in]
63,5 [2.5]	87,37 [3.44]	60,96 [2.4]	177,8 [7.00]	149,35 [5.88]
87,37 [3.44]	112,77 [4.44]	73,66 [2.9]	203,2 [8.00]	174,75 [6.88]
112,77 [4.44]	138,17 [5.44]	86,36 [3.4]	228,6 [9.00]	200,15 [7.88]
138,17 [5.44]	163,57 [6.44]	99,06 [3.9]	254 [10.00]	225,55 [8.88]
163,57 [6.44]	188,97 [7.44]	111,76 [4.4]	279,4 [11.00]	250,95 [9.88]
188,97 [7.44]	214,37 [8.44]	124,46 [4.9]	304,8 [12.00]	276,35 [10.88]
214,37 [8.44]	239,77 [9.44]	137,16 [5.4]	330,2 [13.00]	301,75 [11.88]
239,77 [9.44]	265,17 [10.44]	149,86 [5.9]	355,6 [14.00]	327,15 [12.88]
265,17 [10.44]	290,57 [11.44]	162,56 [6.4]	381 [15.00]	352,55 [13.88]
290,57 [11.44]	315,97 [12.44]	175,26 [6.9]	406,4 [16.00]	377,92 [14.88]
315,97 [12.44]	341,37 [13.44]	187,96 [7.4]	431,8 [17.00]	403,35 [15.88]
341,37 [13.44]	366,77 [14.44]	200,66 [7.9]	457,2 [18.00]	428,75 [16.88]
366,77 [14.44]	392,17 [15.44]	213,36 [8.4]	482,6 [19.00]	454,15 [17.88]

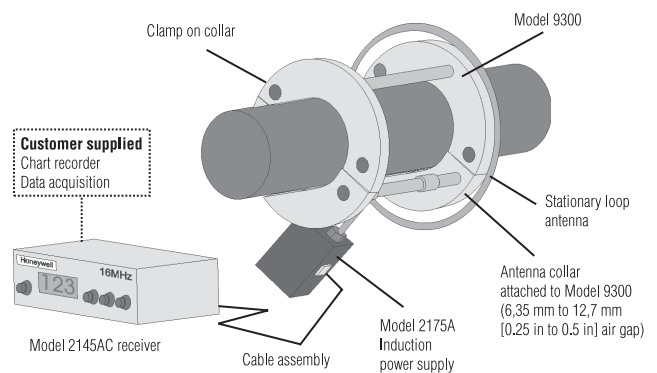
MECHANICAL SPECIFICATIONS

Characteristic	Measure
Dimensions (collar cross section)	Varies with shaft diameter
Dimensions (receiver) (L x W x H)	292,1 mm x 218,44 mm x 88,9 mm [11.5 in x 8.6 in x 3.5 in]
Dimensions (IPS) (L x W x H)	152,4 mm x 101,6 mm x 63,5 mm [6 in x 4 in x 2.5 in]
Rotational clearance (collar)	63,5 mm [2.5 in] all around
Shaft diameter limits (collar)	63,5 mm to 391,16 mm [2.5 in to 15.4 in]
Collar material	Phenolic, steel



For reference only

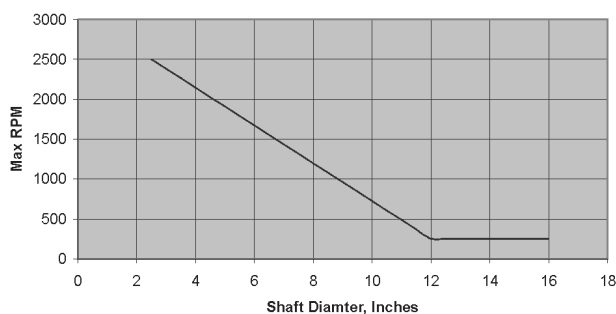
TYPICAL SYSTEM DIAGRAM



Electronics completion package: Part # 060-G834-03 includes Model 2145 ac receiver, Model 2175A induction power supply, 15 feet coaxial cable, and operating manual.

RPM LIMITS GRAPH²

Maximum RPM, 9300 Sensor Bar



2. Consult factory for higher RPM speeds.

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Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

WARNING **PERSONAL INJURY**

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING **MISUSE OF DOCUMENTATION**

- The information presented in this datasheet is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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