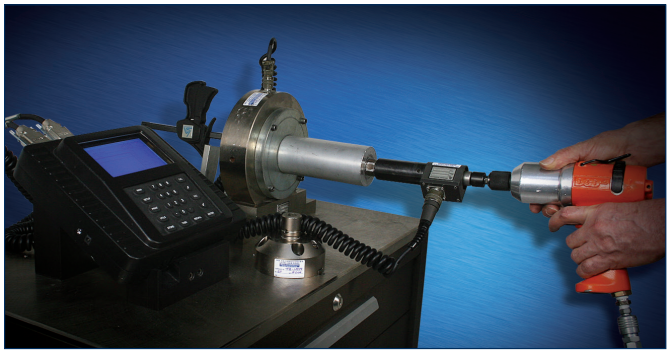
PCB PIEZOTRONICS
MTS SYSTEMS CORPORATION



SERIES **PC9000**

ROTARY TORQUE TRANSDUCERS

- Measure torque only or torque & angle
- Industrial-rated for power tool and fastener testing applications including pulse tools
- On-board auto ID technology simplifies sensor setup and calibration when used with RS Technologies digital instruments
- Industry-standard transducers compatible with all RS Technologies fastener, joint analysis, and tool certification equipment, and most conventional strain gage readout instrumentation
- 2 mV/V output with matched shunt calibration

TYPICAL APPLICATIONS

- Power Tool Calibration & Performance Verification
- Threaded Fastener Testing
- Bolted Joint Troubleshooting

KNOW YOUR TORQUE-ANGLE

PCB Load & Torque Division's RS Technologies Rotary Torque Transducers are widely used in the fastener assembly market to verify the performance of hand and power torque tools. The durable, strain gage-based transducers are fitted on the output drive of the hand or power tool and measure the torque applied by the tool to the fastener on an actual assembly. This measurement provides important information about tool shut off and can assist in establishing specifications for proper assembly.

Rotary torque transducers are also a key component of a threaded fastener torque tension testing machine. They are used to measure torque applied to a threaded fastener to help determine the torque-tension performance characteristics of the tested fastener. The data is also used in the calculation of friction coefficients in the underhead and threaded sections of the fastener. When equipped with an optional angle encoder, the rotary torque transducer can also measure the angle of fastener rotation which is an important indication of joint integrity. Torque-angle transducers can provide the data to draw torque vs. time or torque vs. angle plots that can help analyze problematic joints and determine appropriate tightening strategies.

Rotary torque transducers are available in capacities ranging from 32 ozf-in to 18,000 lbf-ft (0.23 to 25,000 Nm), and fit most popular drive sizes. PCB Load & Torque provides calibration services for this and other torque and force products at its A2LA Accredited Calibration Laboratory in Farmington Hills, Michigan.

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SPECIFICATIONS

Performance	
Torque	
Output at Rated Capacity	2 mV/V ≤ 0.25% FS
Shunt Calibration	Matched 2mV/V ≤ 0.25% with 43.575 kOhm Precision Resistor
Interchangeability	Matched for mV/V and Shunt Calibration ≤ 0.30% FS
Non-Linearity	≤ 0.25% FS
Hysteresis	≤ 0.25% FS
Excitation Voltage [1]	10 VDC
Bridge Resistance	350 Ohm
Compensated Temperature Range	+70 to +150 °F (+21 to +66 °C)
Operating Temperature Range	0 to +200 °F (-18 to +93 °C)
Connector	PT02H-12-10P
Angle	
Magnetic Encoder	¼", ⅜" and ½" Drive – 368 Poles, ¾" Drive – 544 Poles, 1" and 1-½" Drive – 720 Poles, 2-½" Drives – 900 Poles
Output	A-B Track 90 Degrees Phase Difference Flat Over Operating Speed Range
Counts Per Resolution (CPR), Resolution w/Quadrature	¼", ⅜", ½" Drive – 1472, ¼ Degree, ¾" Drive – 2176, ⅙ Degree, 1" and 1-½" Drive – 2880, ⅛ Degree, 2-½" Drive 3600, ⅒ Degree
Output Voltage	High 5.0 V, Low 0.5 V
Power Required	5 VDC @ 120 mA Maximum
Recommended Maximum RPM	
¼-inch Drive	5000
⅜-inch Drive	2500
½-inch Drive	2500
¾-inch Drive	2000
1-inch Drive	1000
1 ½-inch Drive	750
2 ½-inch Drive	500
Supplied Accessories	
Shunt Calibration Resistor, A2LA Accredited Calibration Certificate	
Notes	
[1] Calibrated at 10 VDC, usable 5 to 20 VDC or VAC RMS	

TORQUE ONLY PERFORMANCE*

Model Number	Drive Size	Capacity
039030-50002	¼-inch Hex	32 ozf-in (0.2 Nm)
039030-50021	¼-inch Hex	20 lbf-in (2.3 Nm)
039025-50051	¼-inch Square	50 lbf-in (5.7 Nm)
039030-50101	¼-inch Hex	100 lbf-in (11.3 Nm)
039025-50101	¼-inch Square	100 lbf-in (11.3 Nm)
039037-50022	⅜-inch Square	200 lbf-in (22.6 Nm)
039037-50051	⅜-inch Square	50 lbf-ft (68 Nm)
039050-50101	½-inch Square	100 lbf-ft (136 Nm)
039050-51201	½-inch Square	148 lbf-ft (200 Nm)
039075-50301	¾-inch Square	300 lbf-ft (406 Nm)
039075-51501	¾-inch Square	369 lbf-ft (500 Nm)
039075-53601	¾-inch Square	600 lbf-ft (814 Nm)
039001-53102	1-inch Square	1000 lbf-ft (1356 Nm)
039001-01302	1-inch Square	2213 lbf-ft (3000 Nm)
039001-53033	1-inch Square	3000 lbf-ft (4068 Nm)

TORQUE-ANGLE PERFORMANCE*

Model Number	Drive Size	Capacity
039230-50002/B	¼-inch Hex	32 ozf-in (0.23 Nm)
039230-50021/B	¼-inch Hex	20 lbf-in (2.3 Nm)
039225-50051/B	¼-inch Square	50 lbf-in (5.7 Nm)
039230-50101/B	¼-inch Hex	100 lbf-in (11.3 Nm)
039225-50101/B	¼-inch Square	100 lbf-in (11.3 Nm)
039237-50022/B	⅜-inch Square	200 lbf-in (22.6 Nm)
039237-50051/B	⅜-inch Square	50 lbf-ft (68 Nm)
039250-50101/B	½-inch Square	100 lbf-ft (136 Nm)
039250-51201/B	½-inch Square	148 lbf-ft (200 Nm)
039275-50301/B	¾-inch Square	300 lbf-ft (406 Nm)
039275-51501/B	¾-inch Square	369 lbf-ft (500 Nm)
039275-53601/B	¾-inch Square	600 lbf-ft (814 Nm)
039201-53102/B	1-inch Square	1000 lbf-ft (1356 Nm)
039201-01302/B	1-inch Square	2213 lbf-ft (3000 Nm)
039201-53302/B	1-inch Square	3000 lbf-ft (4068 Nm)

*Options for 15, 10 000, and 24 000 Nm available on pcb.com

DIMENSIONS (IN.)

	¼ inch Hex	¼ inch Square	⅜ inch	½ inch	¾ inch	1 inch (1000 lbf-ft)	1 inch (2213 lbf-ft)	1 inch (3000 lbf-ft)	1-½ inch	2-½ inch
Overall Length	4.25	3.23	3.23	3.23	4.13	4.00	4.42	4.33	5.50	9.48
Housing Length	2.30	2.30	2.30	2.30	2.69	2.00	2.42	2.44	2.63	4.62
Housing Height	2.00	2.00	2.00	2.00	2.94	3.63	3.63	4.74	4.88	7.25
Housing Width	1.50	1.50	1.50	1.50	2.50	3.25	3.25	3.88	4.26	6.50
Male Drive Length	0.98	0.29	0.42	0.58	0.84	1.06	1.06	1.12	1.60	2.25

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PCB Piezotronics, Inc. is a designer and manufacturer of microphones, vibration, pressure, force, torque, load, and strain sensors, as well as the pioneer of ICP® technology used by design engineers and predictive maintenance professionals worldwide for test, measurement, monitoring, and control requirements in automotive, aerospace, industrial, R&D, military, educational, commercial, OEM applications, and more. With a worldwide customer support team, 24-hour SensorLine℠, and a global distribution network, PCB® is committed to Total Customer Satisfaction. Visit www.pcb.com for more information. PCB Piezotronics, Inc. is a wholly owned subsidiary of MTS Systems Corporation. Additional information on MTS can be found at www.mts.com.

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MTS SENSORS

MTS Sensors, a division of MTS Systems Corporation (NASDAQ: MTSC), vastly expanded its range of products and solutions after MTS acquired PCB Piezotronics, Inc. in July, 2016. PCB Piezotronics, Inc. is a wholly owned subsidiary of MTS Systems Corp.; IMI Sensors and Larson Davis are divisions of PCB Piezotronics, Inc.; Accumetrics, Inc. and The Modal Shop, Inc. are subsidiaries of PCB Piezotronics, Inc.