

E-series Optical Rotary Torque Transducer



The E-series Optical Rotary Torque Transducer provides an ideal means for precise dynamic measurement of rotary and static torque. Standard ranges cover 0-10mN.m to 0-10,000N.m in six frame sizes. Comparable ranges in metric and imperial calibration are standard (see table). An extensively developed measurement principle is used, in which the intensity of light beams is modulated by the applied torque. Light intensity is measured by means of photovoltaic detectors, and the electrical output is used to provide precise indication of the torque transmitted by the shaft.

The use of this technique results in a transducer having fast mechanical and electrical response, low inertia, and complete freedom from brushes or complex electronics. The absence of brush gear allows high speed operation with a continuous rating of up to 20,000 RPM standard, and 35,000 RPM high speed on the smaller sizes (see table). Sealed bearings are also available. The torque shaft is of low compliance – torsion deflection being approximately $\frac{1}{2}^\circ$ on the smaller sizes, and approximately $\frac{1}{4}^\circ$ on the larger units, at full-scale deflection. The lamps providing the light source are substantially under-rated to ensure long life and high stability, the light intensity being automatically controlled by a monitor cell within the transducer body.

This transducer is fully compatible with a series of interface modules which enables either stand alone operation or/and display and storage of data on a standard PC under Windows 3.11 or 95. See data sheets on E201 and E202 for further information.

Each transducer in the family contains an embedded non-volatile memory chip storing data on parameters, calibration etc., which is passed to the E201 or E202 and then as an option to a host PC running TorqView® software under Windows®

RPM Pick-off Option

An optical RPM pick-off is optional on all transducers in the range. External dimensions of the transducers are not affected.

IP65 Sealing Option

Transducers can be supplied with sealing to IP65. Specify on order.

Cable Length Option

The transducer is supplied with a standard 2-metre transducer lead. However, some applications require longer lead lengths. For up to 20 metres, a standard or heavy-duty extension lead of the required length may be used. Between 20 metres and a maximum of 120 metres, a cable amplifier will be required. This amplifier box is fitted close to the transducer. An extension lead of required length can then be used. Longer lengths are available on request.

Accuracy:	±1% of FSD; ±0.5% to order.
Operating Temperature Range:	0 to 50°C standard.
Input power:	Supplied by the E201/2 unit. Also back-ward compatible with earlier D series readouts.
VIDS Resolution:	See data sheet for E202.
Bearings:	Deep groove shielded standard, high speed, or sealed to order.
Polarity	of output signal changes in accordance with direction of applied torque.
Linearity:	Within 0.5% of span.
Hysteresis:	< 0.1% of FSD.
Transducer Bandwidth:	10 kHz; 50 kHz to special order.
'Zero' Temperature coefficient:	Better than 0.1% per °C.
'Span' Temperature coefficient:	0.03% per °C.
Overload capacity:	300%.



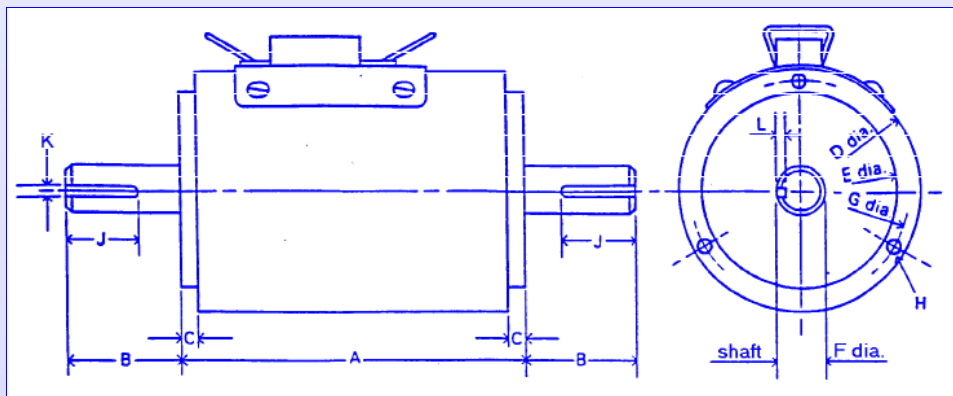
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Mechanical parameters

Standard Ranges: (Larger sizes and non-standard ranges to order)

E200ORT/ 1S 2S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	S.I. units	F.P.S units	M.K.S. units
1S	0-10 mN.m	0-1 ozf.in	0-100 gf.cm
2S	0-20 mN.m	0-2 ozf.in	0-200 gf.cm
1	0-50 mN.m	0-5 ozf.in	0-500 gf.cm
2	0-100 mN.m	0-10 ozf.in	0-1 kgf.cm
3	0-200 mN.m	0-20 ozf.in	0-2 kgf.cm
4	0-500 mN.m	0-50 ozf.in	0-5 kgf.cm
5		0-100 ozf.in	
6	0-1 N.m	0-10 lbf.in	0-10 kgf.cm
7	0-2 N.m	0-20 lbf.in	0-20 kgf.cm
8	0-5 N.m	0-50 lbf.in	0-50 kgf.cm
9	0-10 N.m	0-100 lbf.in	0-100 kgf.cm
10	0-20 N.m	0-200 lbf.in	0-200 kgf.cm
11	0-50 N.m	0-500 lbf.in	0-500 kgf.cm
12	0-100 N.m	0-1000 lbf.in	0-10 kgf.m
13	0-200 N.m	0-100 lbf.ft	0-20 kgf.m
14	0-500 N.m	0-200 lbf.ft	0-50 kgf.m
15		0-500 lbf.ft	
16	0-1000 N.m	0-1000 lbf.ft	0-100 kgf.m
17	0-2000 N.m	0-2000 lbf.ft	0-200 kgf.m
18	0-5000 N.m	0-5000 lbf.ft	0-500 kgf.m
19	0-10000 N.m		



Nominal dimensions (mm)

Dimension→	A	B	C	D	E	F	G	H	depth	J	K	L
1-6	75	25.4	1.52	62	50	6.35	56	M3	5	19.05	Flat	0.183
7-10	105	38	1.52	62	50	12.7	56	M3	6.35	30	3.96	1.98
11,12	130.2	60	1.52	62	50	20	56	M3	11	53	6	3.5
13,14	135	60	4	88	70	30	80	M4	12.7	54	10	5
15,16	165	90	4	100	82	45	91	M4	21	75	14	5.5
17,18	265	62.5	10	150	130	75	139	M5	25.4	Spline on shaft		

Shaft ends: Spline, keyway or flat available to order