

Torque Transducer

Type DRFL-I to DRFL-VIII

with angle and speed detection

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APPLIED MEASUREMENTS LTD.

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Special features:

- no maintenance needed
- contactless
- build-in measurement amplifier
- single supply voltage
- wide application range
- small outline
- low moment of inertia
- speed detection (option)
- angle detection (option)

Description:

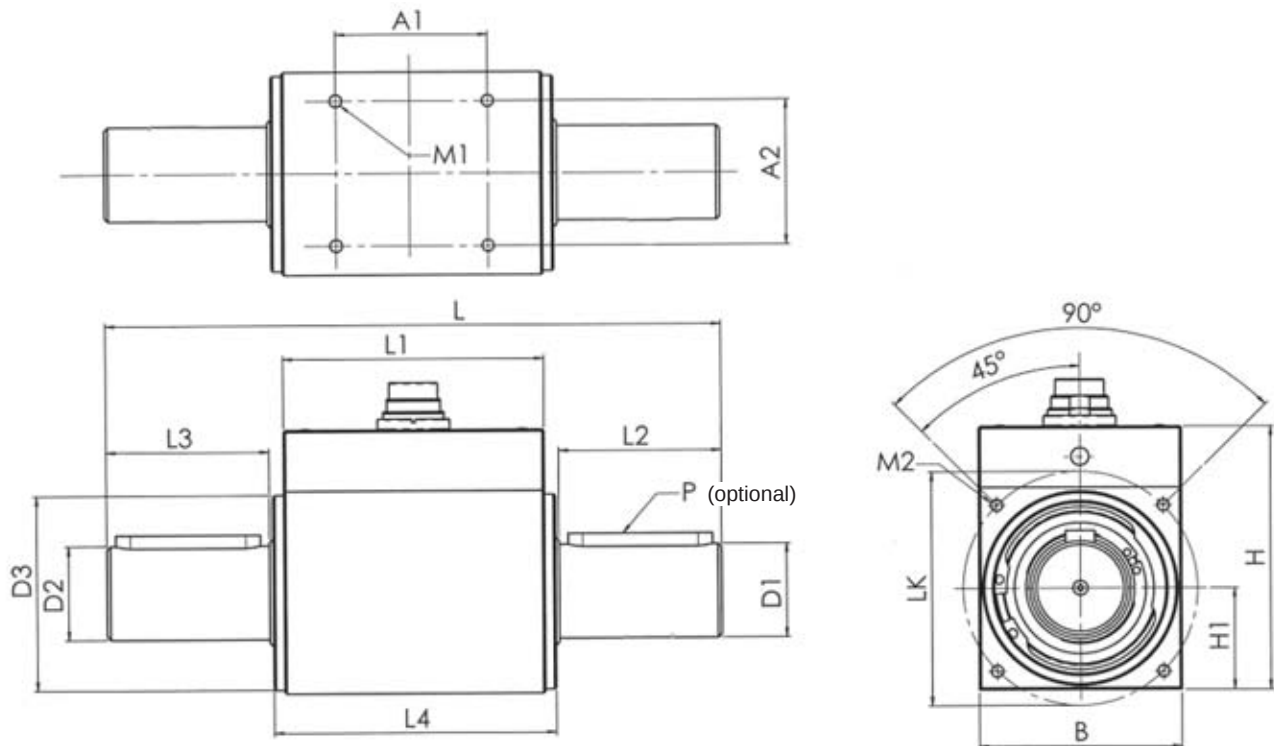
The torque transducers series DRFL are suitable for applications in laboratory as well as in industrial environment because of their compact outline and their multiple mounting options. The contactless transmission of supply voltage and measuring signal enables continuous operation with low wear out and no service.

For varying applications these transducers are available

also with optional speed or angle detection. The integrated measurement amplifier is supplied with 12V DC and outputs an analog signal of 0 to ± 10 V, which is galvanic isolated against supply voltage.

The standard version has smooth shaft ends without any keyways, several types are available with optional keyways (see table).

Mechanical Dimensions:



Type	DRFL-I		DRFL-I b	DRFL-II	DRFL-III	DRFL-VI	DRFL-VII	DRFL-VIII
Measurement range: [Nm]	0,05/0,1 0,2/0,5/ 1	2	1 / 2 / 5 / 10	5 / 10 / 20 30 / 50	50 / 100 / 150 200 / 300	500 / 1000 1300 / 1500	2000 / 3000 4000 / 5000	10000 / 15000 / 20000
Dimension:	Different measurement ranges on demand							
L [mm]	89	95	110	145	170	270	320	355
B [mm]	28		36	42	56	88	105	168
H [mm]	48,5		54	58	73	104	121	185
H1 [mm]	14		18	21	28	44	52,5	84
D1 g6 [mm]	ø8	ø8	ø10	ø15	ø26	ø45	ø70	ø110
D2 g6 [mm]	ø5	ø6	ø10	ø15	ø26	ø45	ø70	ø110
D3 -o,1 [mm]	ø27		ø32	ø38	ø54	ø80	---	---
LK ±0,1 [mm]	ø32		ø38	ø46	ø65	ø98	---	---
L1	62		68	79	72	84	95	121
L2	10	14	18	30	45	85	110	115
L3	11	14	18	30	45	85	110	115
L4	66		72	83	78	90	---	---
A1	40		56	60	42	46	75	91
A2	22		24	32	40	70	85	138
M1	M3 x 5 deep		M3 x 6 deep	M3 x 6 deep	M4 x 8 deep	M6 x 12 deep	M8 x 16 deep	M10 x 16 deep
M2	M3 x 6 deep		M3 x 6 deep	M3 x 6 deep	M4 x 8 deep	M6 x 12 deep	---	---
P (DIN 6885) (optional)	---		2 x A3 x 3 x 14	2 x A5 x 5 x 25	2 x A8 x 7 x 40	4 x A14 x 9 x 80	---	---
General tolerances DIN 2768 - m								
weight ca.: [g]	170		340	600	1300	4500	11500	33000
rev.max. [rpm]	37000		26000	19000	13500	7900	6300	4000

Ordering example: DRFL-III-100-A

Torque transducer range 100 Nm

DRFL-III-100-n

range 100 Nm, option speed detection

Available Accessories:

Measuring cable, supply and display unit, couplings

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Technical changes reserved

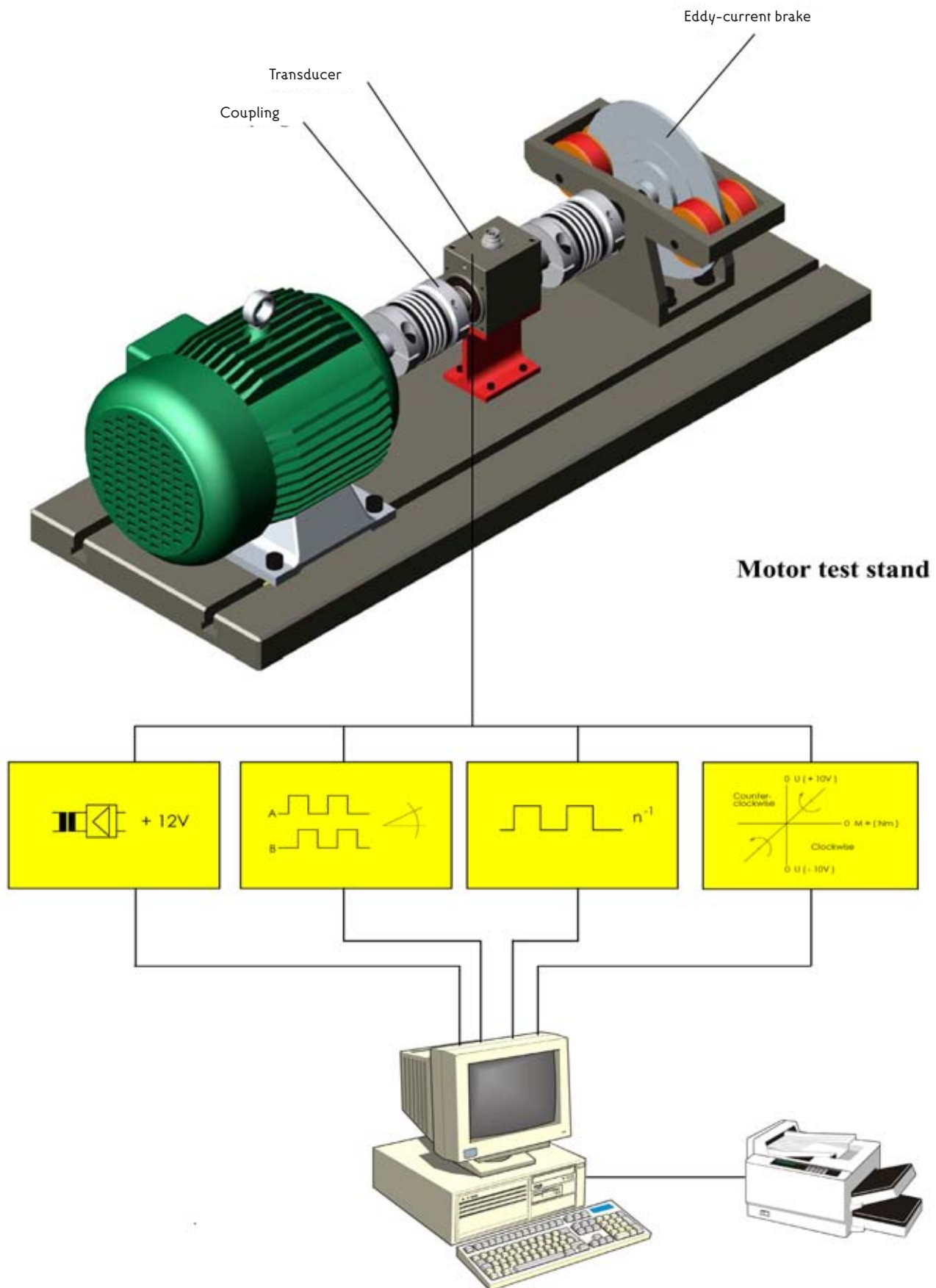
Technical Data:

Supply Voltage:	12V DC $\pm 10\%$	Option Speed:	(n)
Current Consumption:	approx. 160mA	rev. max:	up to 10 000 rpm *
Rise Time 10-90%:	2ms	Output:	Open- Collector
Limit Frequency -3dB:	200Hz (optional 1kHz)	Internal Pull Up:	10k Ω (5 V level)
Voltage Output:	0 to ± 10 V	External Pull Up:	24 V max / 20mA
Internal Resistance:	100 Ω	Pulses/rev.:	60
Ripple:	< 100mVss		
Nonlinearity:	< 0,1%	Option Angle:	(w)
Hysteresis:	< 0,1%	rev. max:	up to 3 000 rpm **
Maximum Measurement Fault:	0,1% (of full scale)	Output:	Open- Collector
Operating Temperature:	0-60°C	Internal Pull Up:	10k Ω (5 V level)
Compensated Temperature Range:	5-45°C	External Pull Up:	24 V max / 20mA
Temperature Fault			
Zero Point:	0,02%/K	Pulses/rev.:	360
Sensitivity:	0,01%/K	Resolution:	1°
Mechanical Overload:	100%	Phase shift:	Channel A 90° at right spin of propulsion side
Internal protection:	IP 40 DIN 40050		
Connection:	12 pin Connector		
		With suitable external wiring	* 37.000 min -1 ** 15.000 min -1 (or speed max.)

The values for axial load and radial load refer to the non-fixed case

Type	Measurement Range [Nm]	Spring Constant C [Nm/rad]	Mass Moment of Inertia J [g·cm ²]	Max Axial Load [N]	Max Radial Load [N]
DRFL-I	0,05	20	10	105	2
	0,1	35	10	140	3
	0,2	35	10	140	3
	0,5	45	10	160	4
	1	90	10	210	7
	2	135	10	210	13
DRFL-Ib	1	255	30	630	10
	2	255	30	630	10
	5	715	30	725	25
	10	1320	30	725	50
DRFL-II	5	960	100	1200	15
	10	2115	100	1300	30
	20	3955	100	1300	60
	30	5340	105	1300	100
	50	6700	105	1300	155
DRFL-III	50	17 x 10 ³	775	1800	125
	100	30 x 10 ³	785	1800	215
	150	45 x 10 ³	800	1800	340
	200	54 x 10 ³	810	1800	450
	300	67 x 10 ³	840	1800	650
DRFL-VI	500	260 x 10 ³	9835	4150	650
	1000	387 x 10 ³	10140	4150	1275
	1300	429 x 10 ³	10285	4150	1650
	1500	449 x 10 ³	10380	4150	1700
DRFL-VII	2000	1,45 x 10 ⁶	63 x 10 ³	4800	1950
	3000	1,85 x 10 ⁶	64 x 10 ³	4800	2930
	4000	2,10 x 10 ⁶	64 x 10 ³	4800	3880
	5000	2,30 x 10 ⁶	65 x 10 ³	4800	4000
DRFL-VIII	10000	8,20 x 10 ⁶	440 x 10 ³	11800	8895
	15000	10,45 x 10 ⁶	448 x 10 ³	11800	9830
	20000	11,80 x 10 ⁶	456 x 10 ³	11800	9830

Example of use:



Ordering example : DRFL-III-100-n

Torque transducer measurement range 100 Nm, option speed detection

Available Accessories:

Measuring cable, supply and display unit, couplings

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