

Datasheet

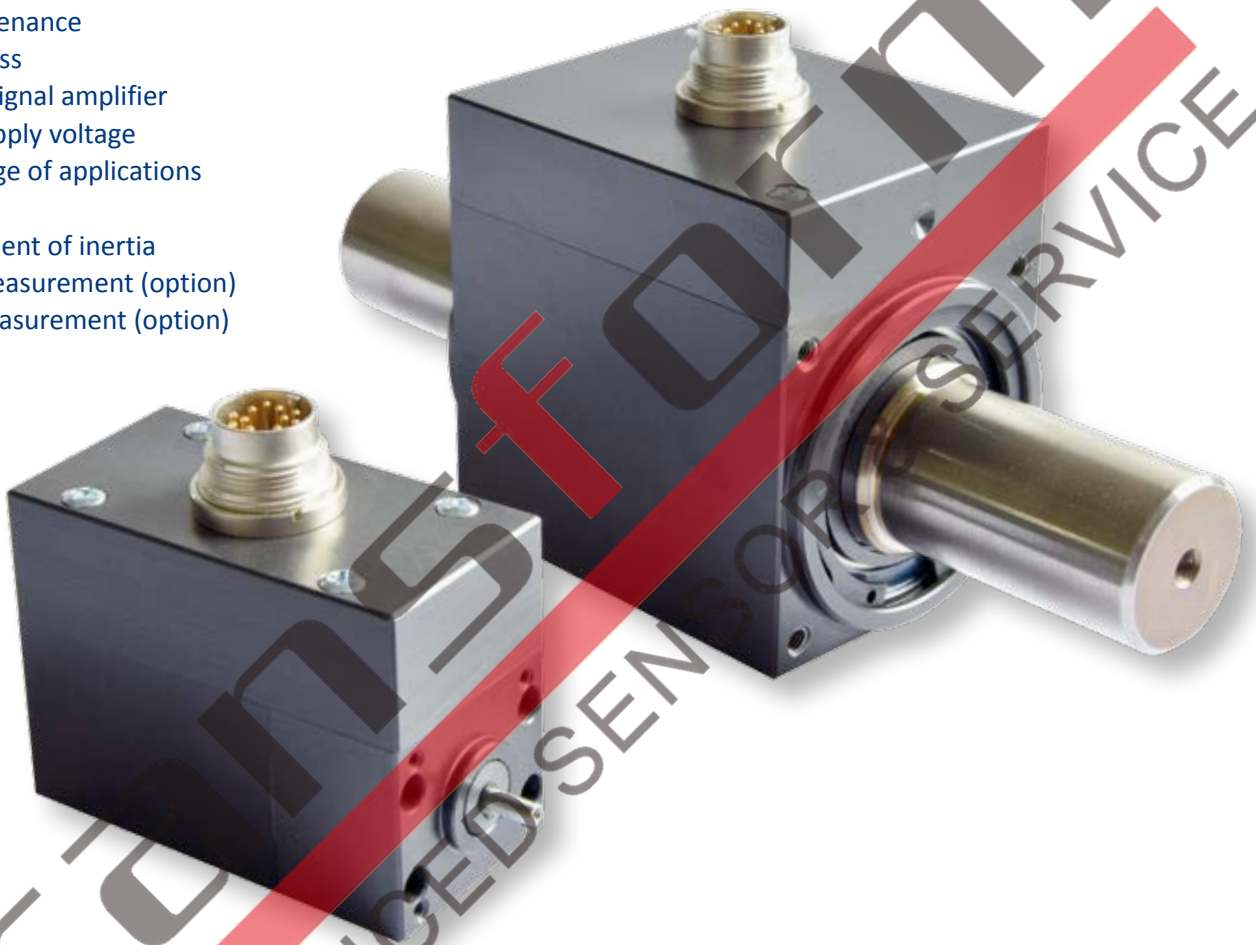
Torque Transducer

DRFL

Torque ranges from 0,02 to 20.000 Nm
with angle and speed measurement

Features DRFL

- no maintenance
- contactless
- integral signal amplifier
- single supply voltage
- wide range of applications
- compact
- low moment of inertia
- speed measurement (option)
- angle measurement (option)



Series DRFL torque transducers are suitable for lab and industrial applications because of their small size and multiple mounting options. As supply voltage and output signal are transmitted without contact, the device can operate continuously with low wear and no maintenance.

These transducers are also available with optional speed and angular measurement for a host of applications. The integrated signal amplifier is powered with 12 V DC and outputs an electrically isolated analog signal of 0 to ± 10 V. The standard version has smooth shaft ends without any keyways, several types are available with optional keyways (see table).

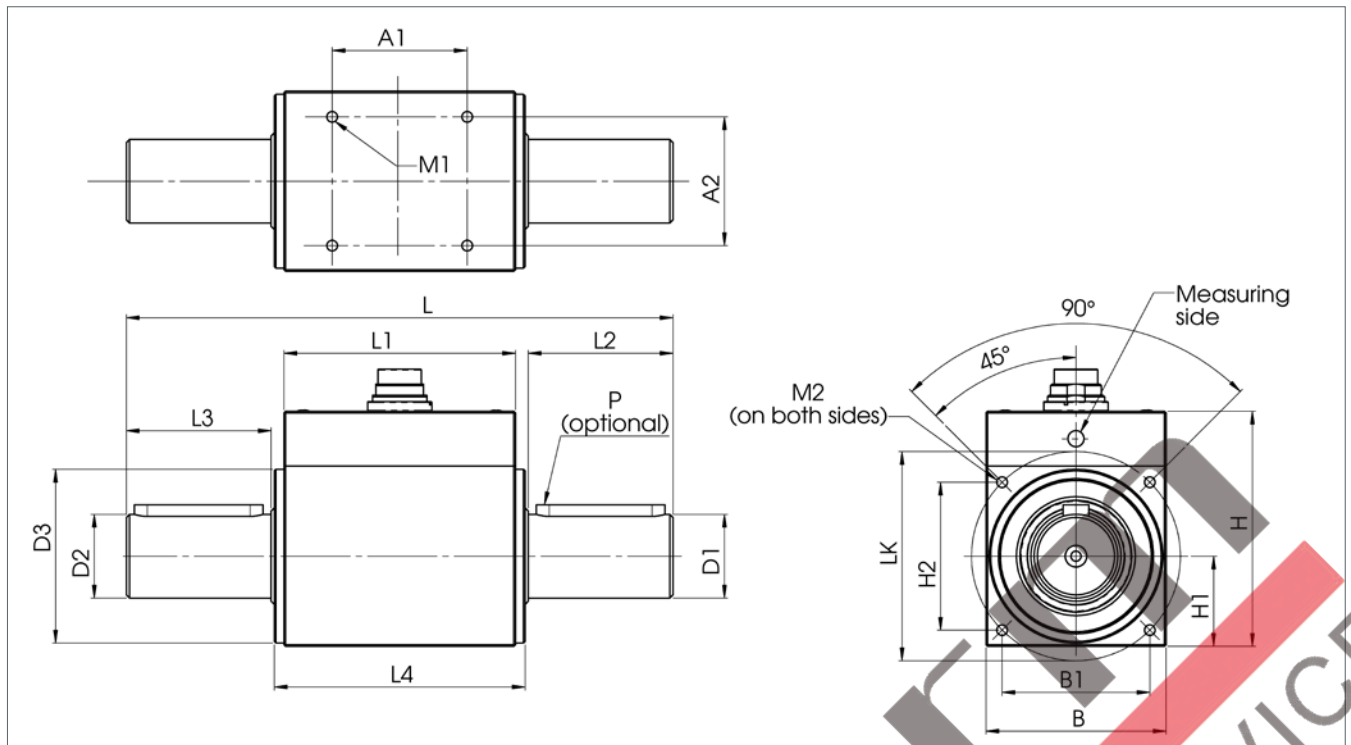
Technical Specifications DRFL

Supply voltage:	12 V DC \pm 10 %
Power consumption:	Approx. 160 mA
Rise time 10-90 %:	2 ms
Limit frequency -3 dB:	200 Hz (optional 1 kHz)
Voltage output:	0 to \pm 10 V
Internal resistance:	100 Ω
Ripple:	< 100 mV _{ss}
Nonlinearity (DRFL-I to DRFL-VIII):	< 0,1 % (DRFL: < 0,15 %)
Hysteresis (DRFL-I to DRFL-VIII):	< 0,1 % (DRFL: < 0,15 %)
Deviation at zero point:	$\leq \pm$ 100 mV
Max. measurement error (DRFL- I bis DRFL-VIII):	0,1 % (DRFL: 0,15 %); of full scale
Operating temperature:	0 - 60 °C
Compensated temperature range:	5 - 45 °C
Temperature error	
Zero point:	0,02 % / K
Sensitivity:	0,01 % / K
Mechanical overload:	100 %
Internal protection:	IP 40 DIN 40050
Connection:	12 pin.- Connector
EMC Immunity from interference (DIN EN 50082-2) *1	
Enclosure	Severity
HF line interference	
150 kHz - 80 MHz (AM)	10 V
ESD (Electrostatic discharge)	Air 8 kV / Contact 4 kV
Enclosure	
Electromagnetic field	
80 Mhz - 1000 MHz (AM)	10 V/m
150 kHz - 80 MHz (AM)	20 V/m
Leads - Connection Cable	
Burst (fast transients)	2 kV
*1 Severity/criterion: industrial environment; Cable length \leq 30 m. Application not outside buildings.	
Interference Emission (EN 55011)	
Disturbance Voltage (electromagnet. disturbance)	Class B (150 kHz - 30 MHz)
Radiated Emission (electromagnet. disturbance)	Class B (30 MHz - 1000 MHz)

Speed Option (n)	
max rev.:	up to 10.000 min ⁻¹ *2
Output:	open-collector
Internal pull up:	10 k Ω (5 V level)
External pull up:	24 V max / 20 mA
Pulses/rev.:	60
*2 With suitable external wiring 37.000 min ⁻¹ (or max. speed)	

Angle Option (w)	
max rev.:	up to 3000 min ⁻¹ *3
Output:	open-collector
Internal pull up:	10 k Ω (5 V level)
External pull up:	24 V max / 20 mA
Pulses/rev.:	2 x 360
Resolution:	1°
Phase shift:	Channel A 90° leading at right spin of propulsion side
*3 With suitable external wiring 15.000 min ⁻¹ (or max. speed)	

Mechanical Dimensions DRFL

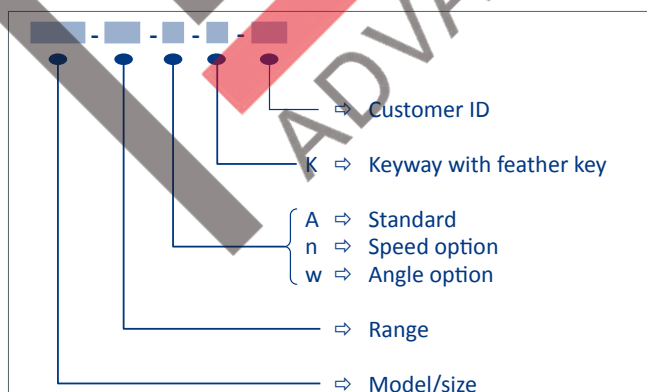


Model	DRFL	DRFL-I	DRFL-Ib	DRFL-II	DRFL-III	DRFL-VI	DRFL-VII	DRFL-VIII	
Torque	0,02	0,05	2	1	5	50	500	2000	10.000
Ranges:	0,05	0,1		2	10	100	1000	3000	15.000
(Nm)	0,1	0,2		5	20	150	1300	4000	20.000
		0,5		10	30	200	1500	5000	
		1		50	300				
Dimensions: (other ranges upon request; General tolerances DIN 2768-m)									
L (mm)	82	89	95	110	145	170	270	320	355
B (mm)	32	28		36	42	56	88	105	168
B1 (mm)	24	(→ LK)		(→ LK)	(→ LK)	(→ LK)	(→ LK)	(→ LK)	--
H (mm)	47	48,5		54	58	73	104	121	185
H1 (mm)	14	14		18	21	28	44	52,5	84
H2 (mm)	22	(→ LK)		(→ LK)	(→ LK)	(→ LK)	(→ LK)	(→ LK)	--
Ø D1 g6 (mm)	3	8	8	10	15	26	45	70	110
Ø D2 g6 (mm)	3	5	6	10	15	26	45	70	110
Ø D3-0,1 (mm)	15	27		32	38	54	80	--	--
Ø LK ± 0,1 (mm)	(→ B1/H2)	32		38	46	65	98	--	--
L1	63	62		68	79	72	84	95	121
L2	7,5	10	14	18	30	45	85	110	115
L3	7,5	11	14	18	30	45	85	110	115
L4	67	66		72	83	78	90	--	--
A1	50	40		56	60	42	46	75	91
A2	24	22		24	32	40	70	85	138
M1	M2,5 x 5 deep	M3 x 5 deep		M3 x 6 deep	M3 x 6 deep	M4 x 8 deep	M6 x 12 deep	M8 x 16 deep	M10x16 deep
M2	M2,5 x 5 deep	M3 x 6 deep		M3 x 6 deep	M3 x 6 deep	M4 x 8 deep	M6 x 12 deep	--	--
P (DIN 6885) optional	--	--		2xA3x3x14	2xA5x5x25	2xA8x7x40	4xA14x9x80	4xA20x12x100	--
Weight ca. (g)	200	170		340	600	1300	4500	11.500	33.000
n max (1/min)	20.000	37.000		26.000	19.000	13.500	7900	6300	4000

Sizes DRFL

Model	Torque range (Nm)	Spring constant C (Nm/rad)	Mass moment of inertia J (g x cm ²)	Rated axial load (N)	Rated radial load (N)
DRFL	0,02	16	7	35	30
	0,05	16	7	35	30
	0,1	16	7	35	30
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	9935	4150	650
	1000	387 x 10 ³	10.140	4150	1275
	1300	429 x 10 ³	10.285	4150	1650
	1500	449 x 10 ³	10.380	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	10.000	8,20 x 10 ⁶	440 x 10 ³	11.800	8895
	15.000	10,45 x 10 ⁶	448 x 10 ³	11.800	9830
	20.000	11,80 x 10 ⁶	546 x 10 ³	11.800	9830

Ordering code system



Available Accessories

- Supply and display unit
- Cables
- Couplings