Schlenker Ent. Ltd.

0160 DM

The versatile torque sensor for every speed range

Technical data

Mechanical specifications

Overload capacity . . . . . .1,3 x rated torque, 2 x rated torque with higher hysteresis
Rupture moment . . . . . .> 5 x rated torque
Alternating torque, max. . . . . .1,0 x rated torque
Balncing class . . . . . .Q= 6,3 for version „L“/ Q= 2,5 for version „H“
Bearing life . . . . . .20 000h, at n_{max} 10 000h
Protection class according to VDI 2060. . . . . .IP 40
Speed transducer . . . . . .60 pulses (M>30Nm)

Electrical measuring data

Nonlinearity . . . . . .< ± 0,1 % of full scale
Hysteresis . . . . . .< 0,1 % of full scale
Classification according to DIN 51 309 . . . . . .0.2 % (related to measured signal) up from 20 % of rated torque
Cutoff frequency . . . . . .1 kHz
Output voltage . . . . . .± 5,0 V at rated torque
Load resistance . . . . . .> 10 kΩ
Rated temperature range . . . . . .+ 10 °C...+60 °C
Operating temperature range . . . . . .0 °C...+70 °C
Shelf temperature range . . . . . .-25 °C...+80 °C
Temperature influence on zero . . . . . .< ± 0.05 % / 10 K
Temperature influence on sesitivity . . . . . .< ± 0.1% / 10 K
Torque control signal . . . . . .100 % ± 0,2 %
Calibration input (* shunt calibration *) . . . . . .„on“ > 3 V (max. 30 V) / „off“ < 1,5 V
Supply voltage . . . . . .16...30 VDC
Supply current . . . . . .200 mA

Example for order specification

(Rated torque 10Nm, version „L“, Art.No. 12844 and housing base „GU“, Art.No 3799)

Torque sensor: 0160/01 DM 10 L - 12844
Housing base: 0160/01 GU 10 - 3799

UMV 2000
Supply and evaluation instrument
for torque transducers
and force transducers

for more information
request
leaflet UMV 2000

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Schlenker Enterprises, Ltd.

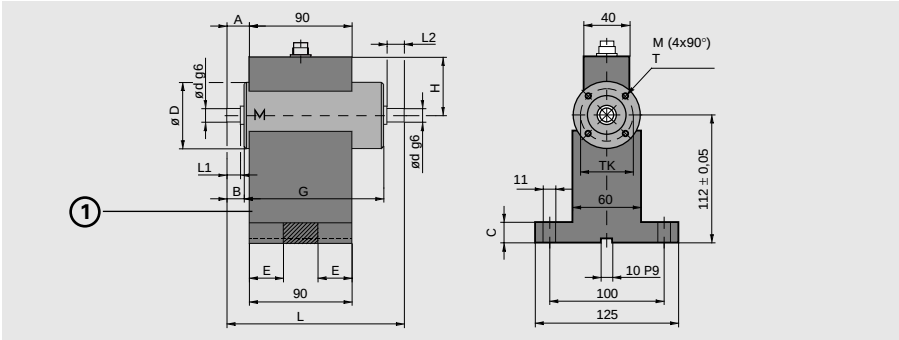
Dimensions

Size	1		2		3	4	5
Rated torque (Nm)	0,2 / 0,5	1,0	2 / 5	10 / 20	50 / 100	200 / 500 / 1000	2000 / 5000
L	160,5	159	163	166	180	267	418
L1	16	16	18	20	28	60	120
L2	16	16	18	20	28	61	120
Ø D	58	58	58	58	78	98	148
Ød g6	9	9	10	12	22	42[1)]	70[2)]
A	23,5	22	24	25	43,5	83,5	–
B	19	17,5	19,5	20,5	34	64,5	–
C	18		18		18	15	–
E	30		30		30	32	–
G	122		122		113	137	–
H	51		51		66	78	–
TK	46		46		64	87	132
M	M5		M5		M6	M6	M8
T	10 deep		10 deep		12 deep	12 deep	16 deep

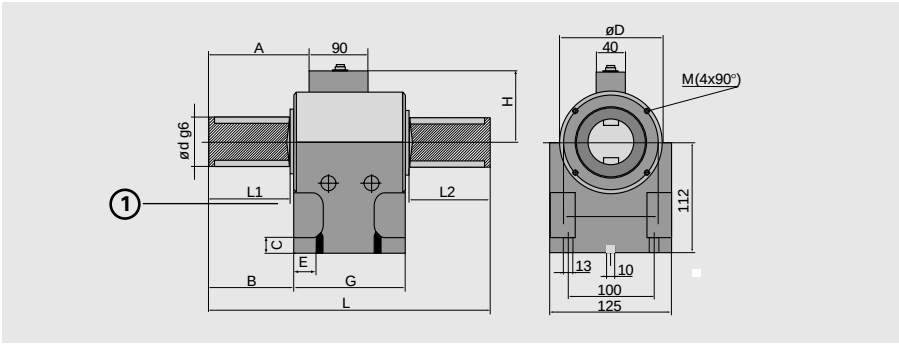
** All dimensions given in mm*

[1]) Both shaft ends with feather key slots (12 P9 x 50 / 2 x 180°) to DIN 6885, sheet 1
[2]) Both shaft ends with feather key slots (20 P9 x 110 / 2 x 180°) to DIN 6885, sheet 1

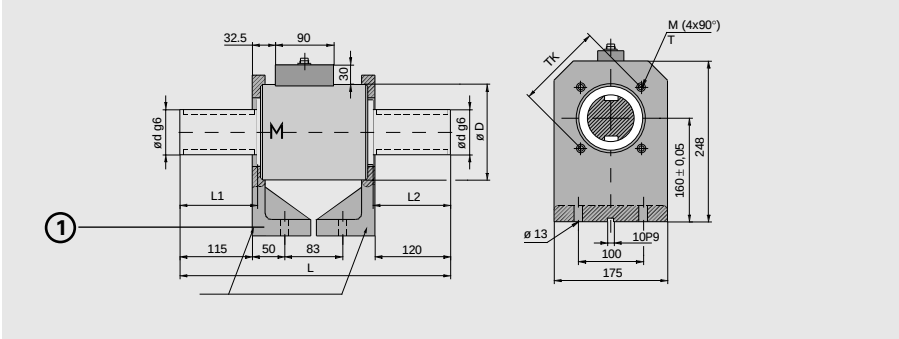
Sizes 1-3



Size 4



Size 5



1 = (Option) housing base „GU"
M = test side

Torque sensor 0160 DM

Introduction

The precise detection of torques at rotating drives and components is an important criterion of an effective product development and a safe quality control in production and assembly.

Therefore the torque sensor type **0160 DM** provides a large number of flexible application possibilities.

0160 DM

General

Torque sensors type 0160 DM use the strain gauge principle with absolutely **new and very accurate integrated measuring electronics.**

The torque signal is transmitted digitally without contact by the rotating shaft and transformed to an analog output signal.
There is also a possibility for electrical calibration of the sensor.
For different speed ranges (up to max. 50000 rpm) there are two versions available.

Special features

- Nominal torques between ± 0.2 Nm and 5000 Nm
- Speed range up to 50000 rpm
- High measuring accuracy, ≤ 0.1%
- Supply voltage + 24 V DC
- Analog output for torque
- TTL speed pulses output
- Overload protection Size 1 is 3 Nm
- CE - permission
- Calibrated
  The used standards are conform with the accuracy determined by the PTB and according to DIN/ISO 9000

Pin connection and description of built-in plug

Rated torque Nm	n_{max} „L“ rpm	Article No.	n_{max} „H“ rpm	Article No.	Springrate C Nm/rad	Moment of inertia J M/A kgcm²	Option „GU“ housing base Article No.
0,2	20 000	12823	50 000	12835	10	M 0,0005 / A 0,03	3799
0,5	20 000	12836	50 000	12837	10	M 0,0005 / A 0,03	3799
1,0	20 000	12838	50 000	12839	180	M 0,0005 / A 0,03	3799
2	20 000	12840	50 000	12841	250	M 0,003 / A 0,04	3799
5	20 000	12842	50 000	12843	450	M 0,003 / A 0,04	3799
10	20 000	12844	50 000	12845	520	M 0,003 / A 0,04	3799
20	20 000	12846	50 000	12847	580	M 0,0034 / A 0,04	3799
50	12 000	12849	30 000	12850	9100	M 0,11 / A 0,2	3801
100	12 000	12851	30 000	12852	13 500	M 0,11 / A 0,2	3801
200	8000	12853	20 000	12854	60 000	M 4,0 / A 4,0	3922
500	8000	12855	20 000	12856	100 000	M 4,0 / A 4,0	3922
1000	8000	12857	20 000	12858	135 000	M 4,0 / A 4,0	3922
2000	5000	12859	10 000	12860	520 000	M 46,0 / A 46,0	4020
5000	5000	12861	10 000	12862	720 000	M 46,0 / A 46,0	4020

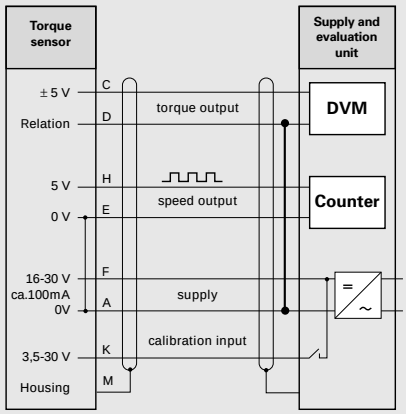
Note: M = test side / A = drive side

Accessories:
Connection cable:
Article-Nr. 7203

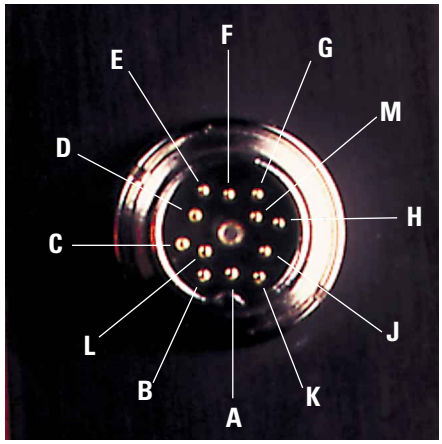
Mating plug:
Article-Nr. 703

Supply and Evaluation unit:
see data sheet 4160

Pin connection



Top view built-in plug



Function	Pin		Description
Supply	A	GND	relating to $+U_b$
	B	NC	
Torque output	C	U_a	±5V for rated torque to >2kΩ +5V for calibration result R_i=10Ω, output short circuit protected to GND
Torque output	D	GND	relating to U_a
Supply	E	GND	relating to Cal-/speed output
Supply	F	$+U_b$	+16V...+30V, 100 mA
	G	NC	
Speed pulses	H	N	60 pulses / turn
	J	NC	open collector output
Electric calibration	K	Kal	OFF: 0V...2V ON: 3,5V...30V Input resistance.: 10kΩ
	L	NC	
Shield	M	⏚	in sensor to housing

Limit values for dynamical load

Size	Rated torque Nm	Mass kg	Speed rpm	Test side			Drive side		
				max. Mass coupling kg	Transverse force in N	Thrustforce in N	max. Mass coupling kg	Transverse force in N	Thrustforce in N
1	0,2	0,8	20 000	0,07	10	50	0,25	100	50
	0,5			0,2	25	50	0,25	150	50
	1,0			0,2	50	50	0,25	200	50
2	2	1,4	20 000	0,2	100	50	0,25	200	50
	5			0,2	200	50	0,25	200	50
	10			0,2	200	50	0,25	200	50
	20			0,2	200	50	0,25	200	50
3	50	2,0	12 000	2,2	200	100	3,0	400	800
	100			3,0	400	200	3,0	800	800
4	200	5,0	8 000	3,5	400	200	10	2 000	2 000
	500			7	1 000	500	10	2 000	2 000
	1 000			10	2 000	1 000	10	2 000	2 000
5	2 000	18	5 000	40	4 000	2 000	40	10 000	10 000
	5 000			80	10 000	5 000	80	10 000	10 000
1	0,2	0,9	50 000	0,011	10	50	0,2	100	50
	0,5			0,34	25	50	0,2	150	50
	1,0			0,060	50	50	0,2	200	50
2	2	1,5	50 000	0,080	100	50	0,2	200	50
	5			0,10	200	50	0,2	200	50
	10			0,15	200	50	0,2	200	50
	20			0,20	200	50	0,2	200	50
3	50	2,1	30 000	0,38	200	100	2,5	200	100
	100			0,50	200	100	3,0	200	100
4	200	5,1	20 000	0,60	400	200	4	400	200
	500			1,2	400	200	4	400	200
	1 000			2,2	400	200	4	400	200
5	2 000	18	10 000	10	4 000	2 000	40	4 000	2 000
	5 000			25	4 000	2 000	80	4 000	2 000

Function principle