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**STAMOSENS®
0160 DM**

The versatile
torque sensor for
every speed range

STAMOSENS® 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 **STAMOSENS 0160 DM** provides a large number of flexible application possibilities.

■ General

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

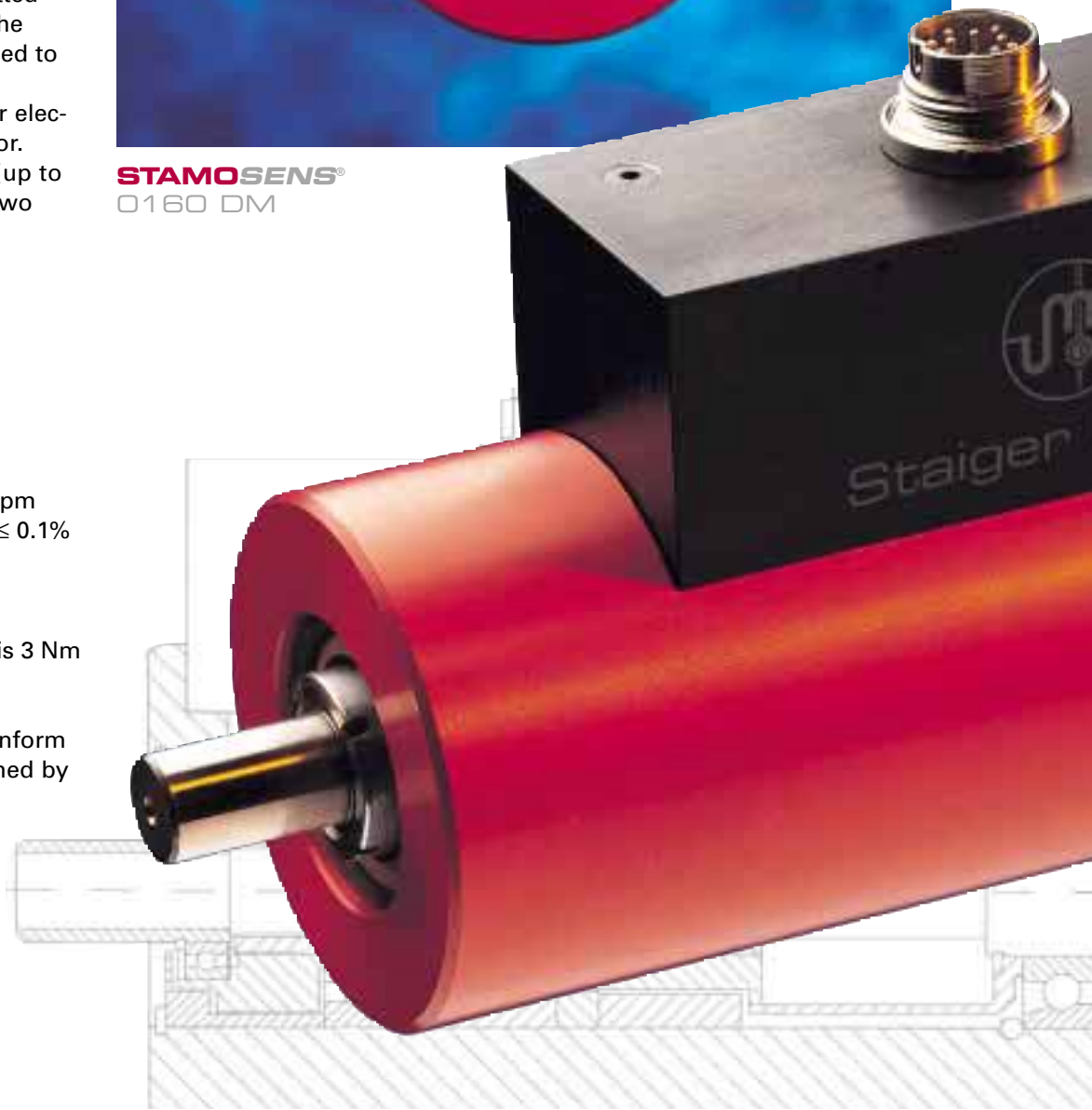
The torque signal is transmitted digitally without contact by the rotating shaft and transformed to an analog output signal. There is also a possibility for electrical calibration of the sensor. For different speed ranges (up to max. 50 000 rpm) there are two versions available.

■ Special features

- Nominal torques between ± 0.2 Nm and 5000 Nm
 - Speed range up to 50 000 rpm
 - High measuring accuracy, $\leq 0.1\%$
 - 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



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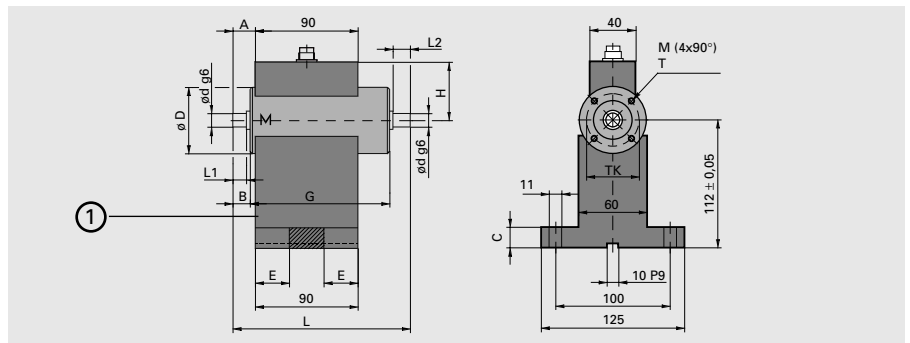
Dimensions

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	122
L2	16	16	18	20	28	61	122
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
housing base	3799		3799		3801	3922	4020

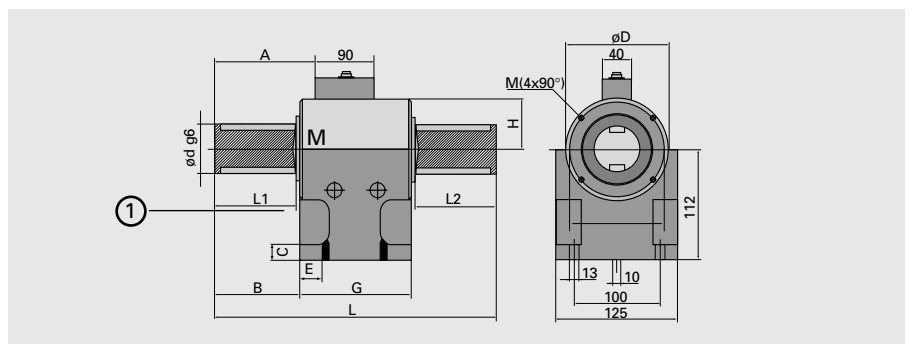
¹⁾ Both shaft ends with feather key slots (12 P9 x 50 / 2 x 180°) to DIN 6885, sheet 1
²⁾ Both shaft ends with feather key slots (20 P9 x 110 / 2 x 180°) to DIN 6885, sheet 1

All dimensions given in mm

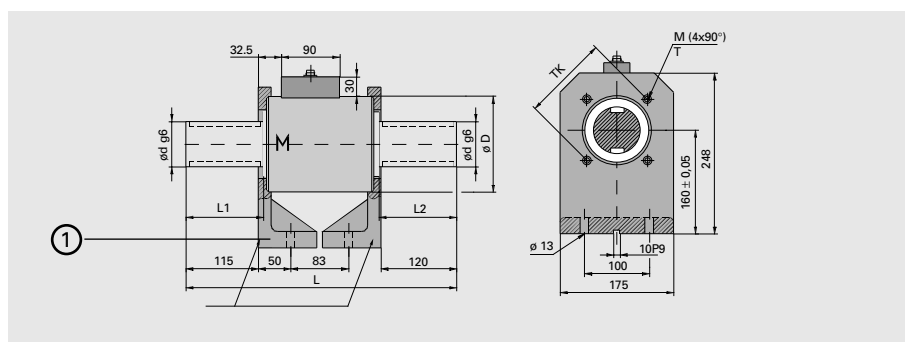
Sizes 1-3



Size 4



Size 5



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



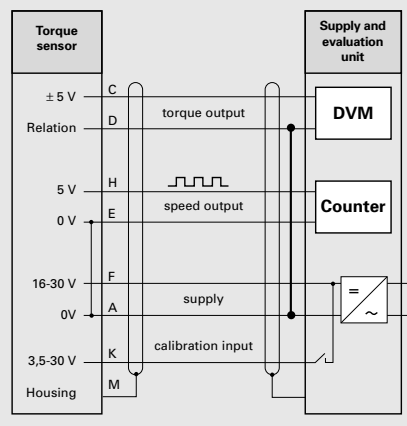
Pin connection and description of built-in plug

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 kgcm ²	Option „GU“ housing base Article No.
0,2	20 000	12823	50 000	12835	18	M 0,0015 / A 0,14	3799
0,5	20 000	12836	50 000	12837	18	M 0,0015 / A 0,14	3799
1,0	20 000	12838	50 000	12839	180	M 0,0054 / A 0,16	3799
2	20 000	12840	50 000	12841	250	M 0,006 / A 0,17	3799
5	20 000	12842	50 000	12843	450	M 0,006 / A 0,17	3799
10	20 000	12844	50 000	12845	520	M 0,008 / A 0,19	3799
20	20 000	12846	50 000	12847	580	M 0,008 / A 0,19	3799
50	12 000	12849	30 000	12850	9100	M 0,54 / A 1,16	3801
100	12 000	12851	30 000	12852	13 500	M 0,54 / A 1,16	3801
200	8000	12853	20 000	12854	60 000	M 4,0 / A 8,3	3922
500	8000	12855	20 000	12856	100 000	M 4,2 / A 8,3	3922
1000	8000	12857	20 000	12858	135 000	M 4,2 / A 8,3	3922
2000	5000	12859	10 000	12860	520 000	M 61 / A 85	4020
5000	5000	12861	10 000	12862	720 000	M 61 / A 85	4020

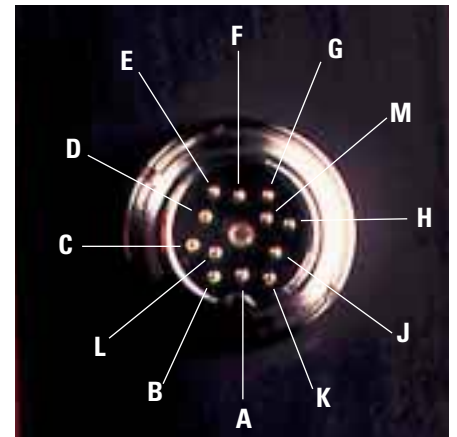
Note: M = test side / A = drive side



Pin connection



Top view built-in plug



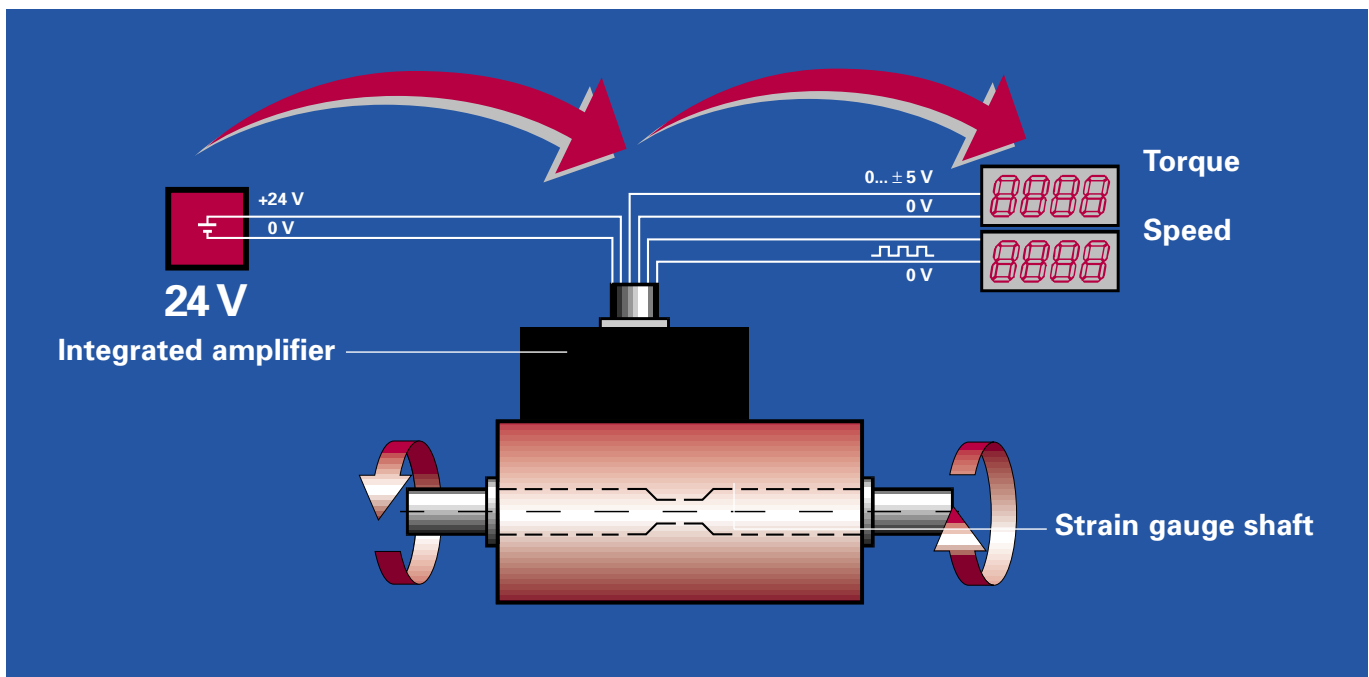
Accessories:
Mating plug:
 female connector 12-pole,
 article No. 703
 (Binder type:
 99-2030-02-12 or
 constructed in an
 identical fashion);
Measuring cable,
 article No. 7203;
**Supply and
 evaluation unit**
 VA 3600 see data
 sheet 4160,
 article No. 4588

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
	D	GND relating to U _a
Supply	E	GND relating to Cal-/speed output
Supply	F	+U _b +16V...+30V, 200 mA
	G	NC
Speed pulses	H	N 60 pulses / turn
	J	NC open collector output
Electric calibration activates precise 5V output on pin	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	Testside			Antriebsseite			
				max. Mass coupling kg	Transverse force in N	Thrustforce in N	max. Mass coupling kg	Transverse force in N	Thrustforce in N	
L	1	0,8	20 000	0,2	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	1,4	20 000	2	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	2,0	12 000	50	2,2	200	100	3,0	400	800
				100	3,0	400	200	3,0	800	800
	4	5,0	8 000	200	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	18	5 000	2 000	40	4 000	2 000	40	10 000	10 000
				5 000	80	10 000	5 000	80	10 000	10 000
	H	1	0,9	50 000	0,2	0,011	10	50	0,2	100
0,5					0,34	25	50	0,2	150	50
1,0					0,060	50	50	0,2	200	50
2		1,5	50 000	2	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		2,1	30 000	50	0,38	200	100	2,5	200	100
				100	0,50	200	100	3,0	200	100
4		5,1	20 000	200	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		18	10 000	2 000	10	4 000	2 000	40	4 000	2 000
				5 000	25	4 000	2 000	80	4 000	2 000

Function principle



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
Balancing 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

Linearity	<0,1% of full scale
Hysteresis	<0,1% of full scale
Classification typical	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% / 10K
Temperature influence on sensitivity	0.1% / 10K
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

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