
DATUM ELECTRONICS

M425 TORQUE TRANSDUCER

PRODUCT OVERVIEW





THE DATUM M425 TORQUE TRANSDUCER

The latest technology Datum Electronics Series M425 non-contact rotary Torque Transducers have been designed to fit with most applications and solutions requiring rotary torque measurement. The Torque Transducer fits in line with the drive train or test bed, using standard keyway shafts.

A non-contact transmission system provides data directly proportional to torque. In this variant it is supplied as a complete transducer with bearings to support the stator unit on the rotating shaft. It is suitable for most general test rig applications.

The M425 Torque Transducer utilises a strain gauged shaft for accurate and reliable torque measurement and a set of rotating on-shaft conditioning electronics. The digital signals are transmitted to the non-rotating part of the system or stator providing a reliable and highly accurate torque measurement solution.

The M425 has a torque measuring element design with an optimum length to maximise overall accuracy and give a high degree of tolerance to mounting offset.

The M425 also has a legacy mode so that it can be used as a direct replacement for the previous M420 Transducer.

M425 SYSTEM PERFORMANCE AND BENEFITS:

Ranges 0-5Nm up to 0-60,000Nm

High resolution torque sampling

High data rate

Accuracy and resolution options

Non-contact data transmission

Static and rotary torque measurement

Operational stability

Magnetic speed sensor - not effected by dirt

Simple to integrate

Robust construction

Sample rate selection 1-4000 samples per second

Low power consumption

SPECIFICATIONS

M425 PERFORMANCE INFORMATION

PERFORMANCE

Non-Linearity	+/-0.1% FSD
Non-Repeatability	+/-0.05% FSD
Noise-free Resolution	20 bit to 13.5 bit (dependent on sample rate)
Sample Rate	1 to 4000 samples per second
Output Baud Rate	9600 to 3Mbaud (see table 13)

RPM:

Size 1 & 2	60 pulses per rev
Size 3, 4, 5 & 6	30 pulses per rev

Transducer output interfaces:

Serial data via RS485	
RS232 (option)	

Transducer output data:

Torque	Shaft RPM	Shaft Temp.	Diagnostics
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POWER SUPPLY

Transducer	10-24Vdc 250mA
Transducer and Interface	15-24Vdc 400mA

ENVIRONMENT

Thermal Stability of Gain per 10°C	0.02%
Thermal Stability of Zero per 10°C	0.02%
Normal Specification Range	10 to 60°C
Operating Range	-10 to +70°C
Storage Range	-35 to +75°C
Environmental Protection	IP54 (see RS425 for IP67/68)
Electromagnetic Compatibility	EN61326-1:2006 (IEC61000-4), IEC60945)

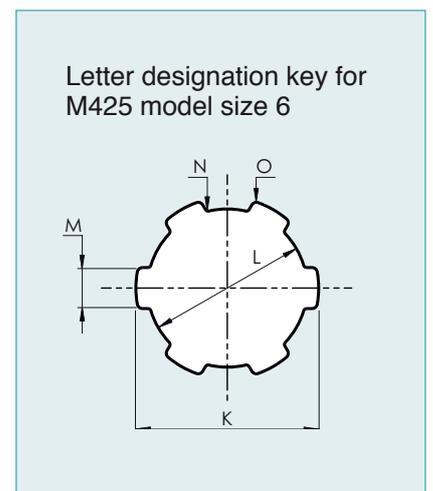
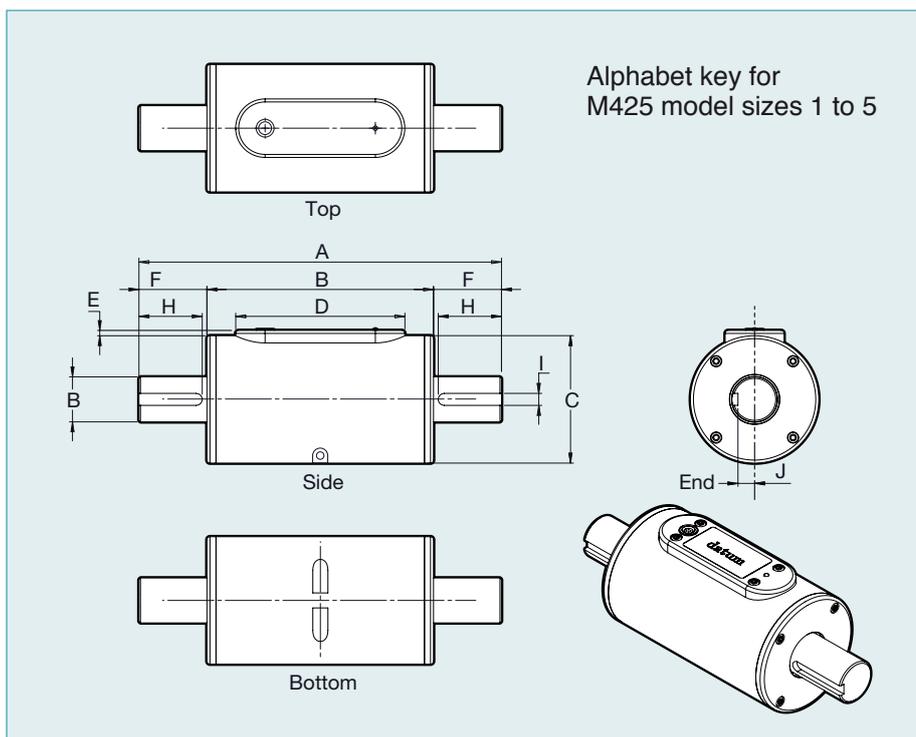
For signal output options including Ethernet, MODBUS, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/-5Vdc, 0-10Vdc or 0-5Vdc, refer to Document 1023 Datum Universal Transducer Interface.

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SPECIFICATIONS

M425 mass, dimensions (mm), shaft stiffness and load parameters

M425 model size	A	B	C	D	E	F	G	H	I	J	Rated load (Nm)	Rated load (Lbft)	Standard max RPM
Size 1 - A	184	130	66	112	3.5	27	15	22.5	5	4.3	10	7.4	0-10000
Size 1 - B	184	130	66	112	3.5	27	15	22.5	5	4.3	20	14.8	0-10000
Size 1 - C	184	130	66	112	3.5	27	15	22.5	5	4.3	50	36.9	0-10000
Size 1 - D	184	130	66	112	3.5	27	15	22.5	5	4.3	100	73.8	0-10000
Size 2 - A	240	150	85	112	3.5	45	30	44	8	11	250	184	0-8000
Size 2 - B	240	150	85	112	3.5	45	30	44	8	11	500	369	0-8000
Size 3 - A	315	150	110	112	5.5	82.5	50	78.5	12	20	1000	738	0-6000
Size 3 - B	315	150	110	112	5.5	82.5	50	78.5	12	20	2000	1475.1	0-6000
Size 4 - A	425	200	135	112	5.5	112.5	75	78.5	20	30	5000	3687.9	0-3500
Size 4 - B	425	200	135	112	5.5	112.5	75	78.5	20	30	10000	7375.7	0-3500
Size 5 - A	416	173.7	170	112	5.5	121	110	116	32	44	15000	11064	0-2000
Size 5 - B	416	173.7	170	112	5.5	121	110	116	32	44	20000	14751	0-2000
Size 5 - C	416	173.7	170	112	5.5	121	110	116	32	44	25000	18439	0-2000
Size 5 - D	416	173.7	170	112	5.5	121	110	116	32	44	30000	22127	0-2000
M425 model size	A	B	C	D	E	F	K	L	M	N & O	Rated load (Nm)	Rated load (Lbft)	Standard max RPM
Size 6 - A	416	155	228.6	112	5.5	101.6	152.4	137	38	N = 0.5 - 1, O = 1.1 - 1.3	40000	29503	0-1500
Size 6 - B	416	155	228.6	112	5.5	101.6	152.4	137	38	N = 0.5 - 1, O = 1.1 - 1.3	60000	44254	0-1500



3D models and STEP files are available from Datum Electronics to assist project planning. Please contact Datum Electronics for more information.

ALTERNATE CONNECTION OPTIONS

The M425 is compatible with a variety of other universal interfaces or indicators by correct cable and PIN configuration. This allows direct connection to their user software and customers own software. See page 7 of the M425 handbook for a guide to wiring connector configuration.

The M425 will also accept configuration commands to enable connection to legacy Datum Electronics interfaces and indicators. When set in compatibility mode the M425 can be used with Torque Log Software, the Datum Electronics type 300 and Type 370 Indicators and the Type 400150 USB / analogue or 400152 USB interfaces.



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