Features

- Capacities 0.5Nm – 5000Nm.
- Linearity ±0.2% RO.
- IP40 rating.
- Optional ±10V output.
- Optional square couplings.
- Optional speed/angle encoder.

Applications

- Test machines.
- Process control.

Description

The TQ-RT2 is a rotating torque transducer manufactured using a key slot design, suitable for measuring rotational torsion up to 4000rpm. The RT2 sensor body is produced from stainless steel with an aluminium housing. This transducer has been designed for the measurement of static and dynamic torque on rotating machines, test benches and automatic tightening systems.

The RT2 is available with optional square drives, speed/angle encoder and/or an amplified output of ±10V – see the TQ-RT2A on **Page 6**.

NOTE: Torque transducers are supplied calibrated in a single direction as standard, either clockwise or anti-clockwise. If calibration in both directions is required, please specify this on enquiring.

Typical Specification

PARAMETER	VALUE		UNITS
Capacities Range	0.5	2.5, 5, 10, 25, 50, 100, 250, 500, 1000, 3000, 5000	Nm
Rated Output	1	2	mV/V
Sensitivity Tolerance	0.2		±% of Rated Output
Linearity & Hysteresis	0.2		±% of Rated Output
Temperature Effect ON ZERO	0.02		±% of Rated Output/°C
Temperature Effect ON OUTPUT	0.02		±% of Rated Output/°C
Input Resistance NOMINAL LOAD	800±20		Ω
Output Resistance NOMINAL LOAD	700±5		Ω
Insulation Resistance	>2		GΩ
Zero Balance	≤0.5		±% of Rated Output
Excitation NOMINAL SUPPLY RANGE	1-15		Volts AC or DC
Excitation MAXIMUM SUPPLY	18		Volts AC or DC
Mechanical Limit SERVICE LOAD	100		% of Rated Output
Mechanical Limit SAFE OVERLOAD	150		% of Rated Output
Mechanical Limit ULTIMATE OVERLOAD	>300		% of Rated Output
Mechanical Limit SAFE DYNAMIC LOAD	75(5)		% of Rated Output
Nominal Speed	4000		rpm
Temperature Range OPERATING	-10 to +70		°C
Temperature Range STORAGE	-20 to +80		°C
Weight	~0.65 to 6		KG
Environmental Sealing	IP40		-
Electrical Connection	M12x1 male 5-pole connector and mating 3m cable		-

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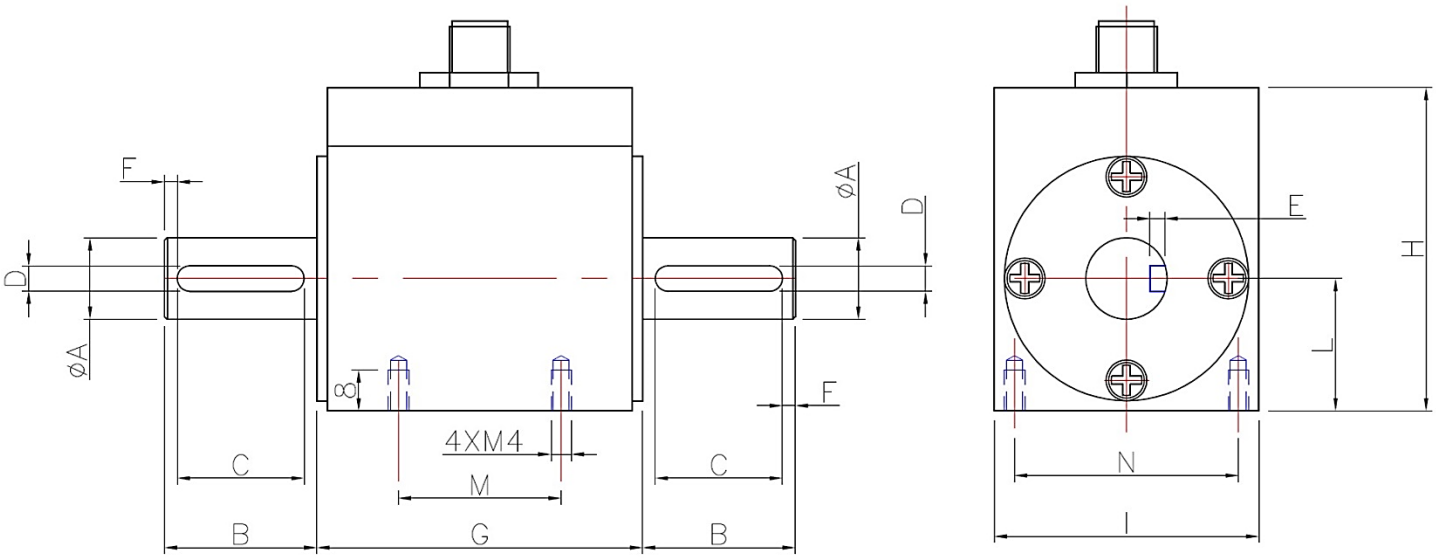
PARAMETER	VALUE	UNITS
Construction Material SENSOR	Stainless Steel	-
Construction Material CASE	Aluminium	-

Outline Dimensions in millimetres



LOAD (Nm)	ORDERING CODE	ØA	B	C	D	E	KEYSLOT	F	G	H	I	L	M	N
0.5	MRT20NM5	16h6	30	25	5	3	UNI 6604 form A 5x5	2.5	64	63.5	52	26	32	44
2.5	MRT22NM5													
5	MRT25NM													
10	MRT210NM													
25	MRT225NM													
50	MRT250NM													
100	MRT2100NM	25h6	40	35	8	4	UNI 6604 form A 8x7							
250	MRT2250NM													
500	MRT2500NM													
1000	MRT21000NM	50h6	100	80	14	5.5	UNI 6604 form A 14x9	5	100	100	100	41	80	80
3000	MRT23000NM													
5000	MRT25000NM													

Accessories: Square Couplings

PROCESS COUPLING (Nm)	ACCORDING TO UNI ISO 1174-1	TOTAL LENGTH (mm)
25-50	■ 3/8” male - ☐ 3/8” female	89
100-250	■ 1/2” male - ☐ 1/2” female	94
500	■ 3/4” male - ■ 3/4” male	119

Accessories: Internal Incremental Encoder

PARAMETER	VALUE	UNITS
Output Line Driver	RS422 5V	-
Excitation MAXIMUM SUPPLY	5V	DC
Maximum Absorption NO LOAD APPLIED	10	mA

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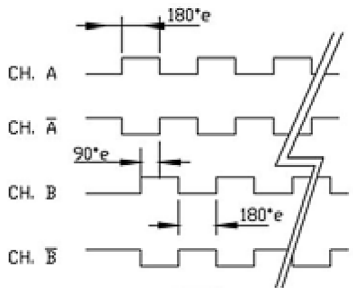
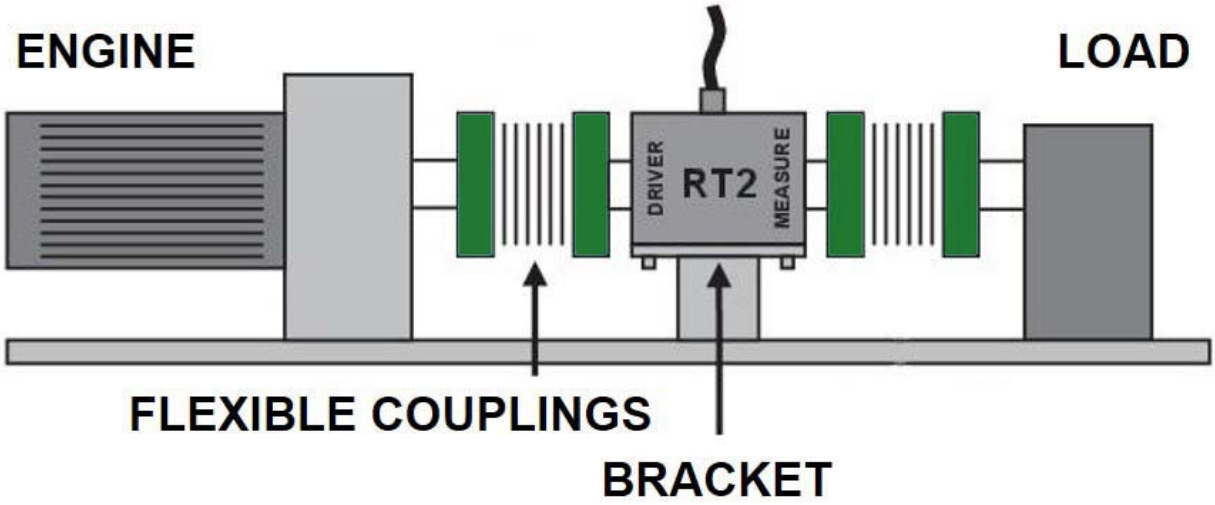
Electrical Connection	M12x1 male 12-pole connector and mating 2m cable	-

RATING (Nm)	DESCRIPTION	
0.5 - 500	3520 pulses per revolution. Maximum speed measured 3400rpm.	
1000 - 5000	8000 pulses per revolution. Maximum speed measured 3000rpm.	

Applications



The RT2 measures CLOCKWISE torque with a POSITIVE output in tension or ANTICLOCKWISE torque with NEGATIVE output in tension.

For a correctly operational system it is necessary to prepare:

- 2x shaft couplings with a bellow or disk pack to suit the nominal torque and rotating speed (max 4000 rpm).
- 1x adjustable support that allows you to align the RT2 with the two junction shafts (tolerance ±0.1mm) during the installation phase.
- The manufacturer suggests using double-jointed shaft couplings from MAYR GmbH - https://www.mayr.com/en. The purchasing codes for the recommended couplings can be found in the table below.

RT2 RATING (Nm)	MAYR ORDERING CODE	BORE HUB Ø
0.5, 2.5, 5, 10	0/932.333	16h6
25	6/951.441	
50	10/951.441	
100	16/953.001	25h6
250	25/953.001	
500	40/953.001	
1000	64/953.001	50h6
3000	300/951.001	
5000	500/951.001	

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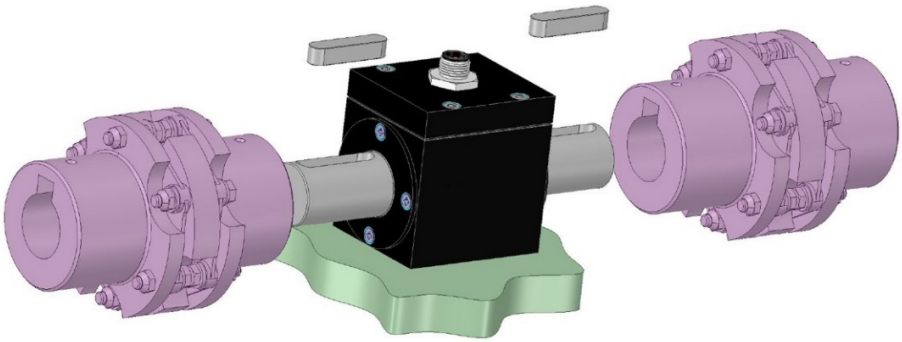
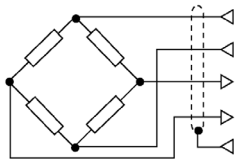
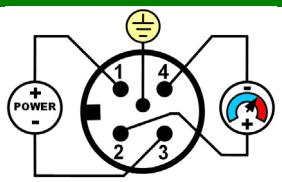
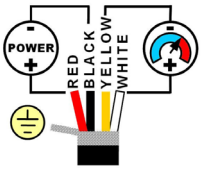


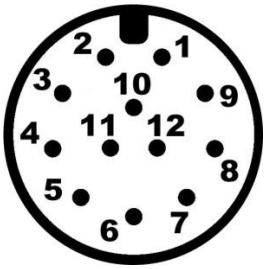
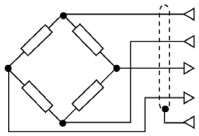
The assembly of the couplings to the RT2 must be done whilst disconnected from the machine (system) with the transducer only connected to a display, thus verifying in real time that no unwanted torque, bending or tension are generated which may overload the transducer.

Mount the RT2 with its couplings on the support, align the system along its own axis and connect the system. Even in this phase, care must be taken that the measure showed on the display does not exceed the nominal torque rating of the transducer.

WARNING: *Avoid accidental overloading that may irreparably damage the TQ-RT2.*
WARNING: *Protect the cable from contact with high tension cables, inverters, generators and/or solenoid valves.*

Wiring Details

mV/V OUTPUT	M12x1 MALE CONNECTOR	CABLE
		

M12 CONNECTOR	mV/V OUTPUT	PIN OUT	OUTPUT	CABLE
		1	EXCITATION +	RED
		2	OUTPUT +	ORANGE
		3	EXCITATION -	BLACK
		4	OUTPUT -	BROWN
	ENCODER			
		5	B-	YELLOW
		6	B+	GREEN
		7	A-	BLUE
		8	A+	GREY
		9	+5VDC	WHITE-YELLOW
		10	GND	WHITE-BLACK
		11	SHIELD	SHIELD

Shielded PVC cable with moulded M12 connector 5 poles. ⏚ = Shield connected to the body of the transducer.

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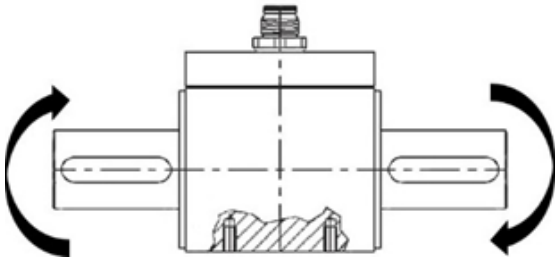
Loading Mode



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Description

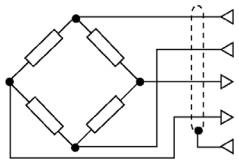
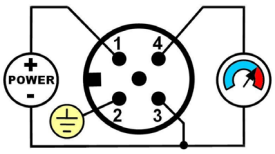
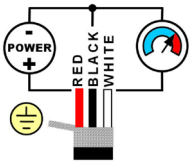
The TQ-RT2A is of the same design as the standard TQ-RT2 rotating torque transducer, this version also features a built-in amplifier to offer ±10V output. The specification and ordering codes, where different to the standard RT2 transducer can be found below.

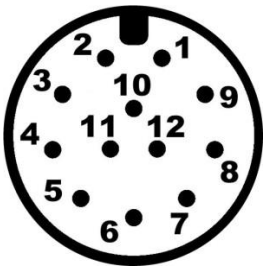
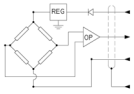
The ordering codes for the RT2A are similar to those for the standard model shown on **Page 2**, except they should start with "MRT2A…". For example, "MRT2A0NM5" is the 0.5Nm version of the TQ-RT2A.

Typical Specification

PARAMETER	VALUE		UNITS
Capacities Range	0.5	2.5, 5, 10, 25, 50, 100, 250, 500, 1000, 3000, 5000	Nm
Rated Output	±10		V
Sensitivity Tolerance	0.2		±% of Rated Output
Excitation NOMINAL SUPPLY RANGE	15-24		Volts AC or DC
Excitation MAXIMUM SUPPLY	28		Volts AC or DC
Maximum Absorption NO LOAD APPLIED	30		mA
Loading Resistance	3		KΩ
Response Frequency	1-5		kHz

Wiring Details

±10V OUTPUT	M12x1 MALE CONNECTOR	CABLE
		

M12 CONNECTOR	±10V OUTPUT	PIN OUT	OUTPUT	CABLE
		1	POWER +	RED
		3	GND	BLACK
		4	OUTPUT +	BROWN
	ENCODER			
		5	B-	YELLOW
		6	B+	GREEN
		7	A-	BLUE
		8	A+	GREY
		9	+5VDC	WHITE-YELLOW
		10	GND	WHITE-BLACK
		11	SHIELD	SHIELD

Shielded PVC cable with moulded M12 connector 12 poles. ⏚ = Shield connected to the body of the transducer.

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