

RT 200 SERIES

REACTION TORQUE SENSORS

FEATURES

- Rated nominal torque 0.02N·m to 100N·m
- High accuracy up to 0.05 %
- Overload capacity up to 200 %
- High torsional stiffness
- Compact and robust design
- Protection class: IP42
- Special designs available upon request



Fig. 1: RT202 | Reaction Torque Sensor

DESCRIPTION

With its compact and maintenance-free design, MAGTROL RT200 Reaction Torque Sensor brings many appealing advantages to torque measurement applications. Based on strain-gauge technology, the RT200 Reaction Torque Sensor provides highly accurate torque measurement. The RT200 Reaction Torque Sensor has been designed to perform high precision static torque measurement with small dynamic

rotation (and limited angle) in both the clockwise and counterclockwise directions. The sensor measures reaction torque values using shaft connections in-line with the component under test. Main field applications include actuator, valve and fastener testing as well as torque control on watch making or medical devices, or any other applications requesting a torque measurement without complete rotation.

DIMENSIONS

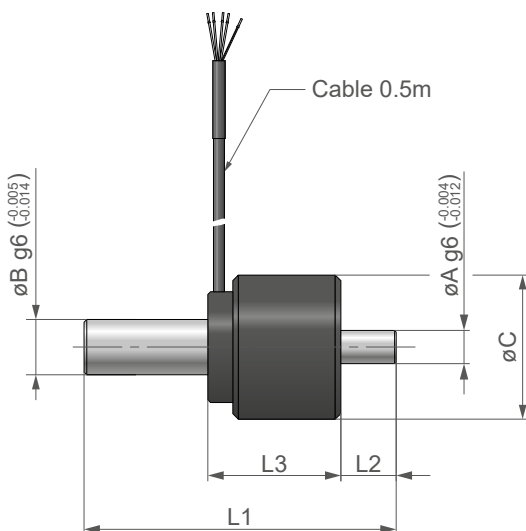


Fig. 2: RT200 Series | Dimensions

MODEL	TORQUE	ϕA	ϕB	ϕC	L1	L2	L3
	N·m	mm	mm	mm	mm	mm	mm
RT 299	0.02	6	6	26	44	10	24
RT 200	0.05				60.5		
RT 201	0.1				65.5		
RT 202	0.2	8	10	26	68.5	18	40
RT 203	0.5				90	25	
RT 204	1	10	20	36	110	35	40
RT 205	2				120	40	
RT 206	5	20	20	36	110	35	40
RT 207	10				120	40	
RT 209	20	20	20	36	110	35	40
RT 210	50				120	40	
RT 211	100 ^{a)}	20	20	36	110	35	40
					120	40	

a) Higher capacity on request

NOTE: 3D STEP files of most of our products are available on our website: www.magtrol.com ; other files are available on request.

SPECIFICATIONS

TORQUE RATINGS

MODEL	STATIC RATED TORQUE (RT)	COMBINED ERROR (Linearity + hysteresis)	BENDING MOMENT MAX	TORSIONAL STIFFNESS	PERMISSIBLE AXIAL LOAD	MATERIAL	TORQUE OUTPUT SIGNAL
	N·m	%	N·m	N·m / rad	N		mV / VDC
RT 299	0.02	0.2	0.02	3	55	Aluminum	0.5
RT 200	0.05		0.05	12	60		
RT 201	0.1		0.1	18	70		
RT 202	0.2		0.2	48	90		
RT 203	0.5		0.5	162	260		
RT 204	1	0.05	1	373	530	Stainless steel	1
RT 205	2		2	373	530		
RT 206	5		2.5	883	1000		
RT 207	10		5	1480	1500		
RT 209	20		10	5000	2600		
RT 210	50	0.1	25	14000	4700		
RT 211	100 ^{d)}		50	20000	7200		

TORQUE MEASUREMENT

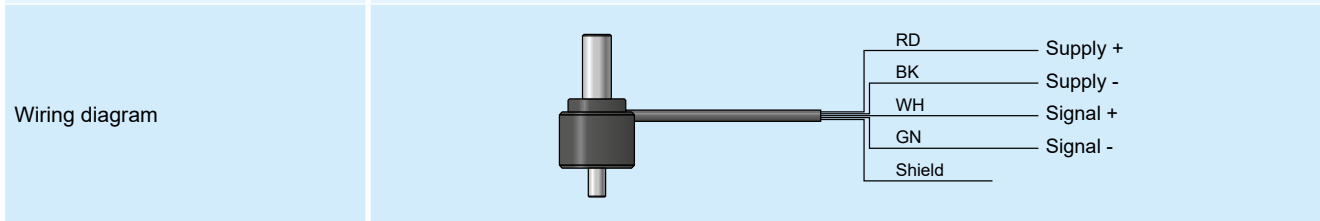
Overload capacity	200 % of RT
Max. static torque	300 % of RT

ENVIRONMENT

Nominal temperature range	+20 °C ... +60 °C
Service temperature range	+10 °C ... +80 °C
Reference temperature	+23 °C
Temperature influence on zero	0.01 % / °C
Temperature influence on sensitivity	0.01 % / °C
Protection class	IP42

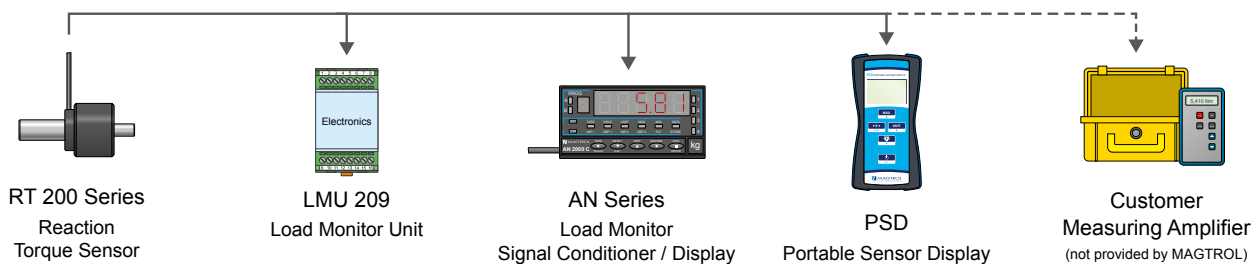
INPUT AND OUTPUT SIGNALS

Input resistance	1000 Ω
Insulation resistance	10 GΩ
Power supply	3.5... 12VDC (max. 15VDC)
Torque output signal ^{b,c)}	See "Torque rating" section above



- a) Data available on demand
- b) Each transducer is delivered with an acceptance test report, on which the exact individual accuracy is reported
- c) Suitable strain gauge amplifier options: LMU 209, LMU 212, AN1500 M
- d) Higher capacity on request

SYSTEM CONFIGURATION



SYSTEM OPTIONS AND ACCESSORIES

LMU 209 - LOAD MONITORING UNIT



Fig. 3: LMU 209 | Load Monitoring Unit (Polycarbonate housing for DIN-rail mount)

For dynamic measurement, MAGTROL recommends the LMU 209 Load Monitoring Unit, which offers a passband up to 3kHz, which allows the measurement of high dynamic torque peak.

The LMU 209 is a versatile strain gauge amplifier, designed for signal conditioning and interfacing low level signals to programmable logic

controllers (PLCs) or any control unit with analog inputs. The LMU 209 features both voltage and current-type outputs. Due to its integrated DIP-switches, the amplifier can be easily configured to the desired input ranges.

This modularized amplifier is available either in polycarbonate housing for DIN-rails mount or in aluminum housing for harsh applications. All wires are connected to screw terminals.

MIC SERIES - COUPLINGS



Fig. 4: MIC-6 | Single Element Coupling

Miniature couplings used in pairs are an ideal solution for assembly with RT200 Reaction Torque Sensors. As the reaction type sensors are generally mounted in suspended (floating) installation, single element coupling (1 degree of freedom) are to be used.

Magtrol provides a wide range of couplings suitable for torque measurement applications and can assist you in choosing the right coupling for your transducer.

AN SERIES - LOAD MONITOR DISPLAY WITH INTEGRATED SIGNAL CONDITIONER



Fig. 5: AN Series | Load Monitor Display with integrated signal conditioner

The AN Series Load Monitor is designed to process and display signals coming from various types of transducers (weight, load, pressure, torque, etc.) that use standard strain-gauge bridges.

The basic instrument is a soldered assembly composed of a main board, a tri-color programmable display and a power circuit. Standard features include the reading of the input variable as well as remote hold, reading and memorization of max and min values (peak / valley), tare and reset function.

PSD - PORTABLE SENSOR DISPLAY



Fig. 6: PSD | Portable Sensor Display

The PSD Portable Sensor Display from Magtrol is a very compact, light and easy to use device. This amplifier can process sensor strain gauge signals $\pm 0.3 \dots 5 \text{ mV/V}$. High measuring accuracy, paired with fast measuring rates allow an internal resolution of 22 bits at 2mV/V. It also stores the adjustment data, sensor designation and physical unit.

Functions, such as TARE, recall of min.-max. value,... are available during the measurement.

The device is powered by 3 AA batteries or via its USB Mini-B port. In order to increase its duration of use, the PSD integrates an automatic standby mode which is activated when the device is not used.

The PSD can be used with many sensors such as force sensors, load cells, torque sensors, anchor sensors or any other type of strain gauge transducers.

Further information on accessories are available in their specific data sheets. Please, visit our website: www.magtrol.com

ORDERING INFORMATION

ORDERING NUMBER	P/N 125 -	----	- 000 - 01X
299, 201, 202,... : Model number			

Example: RT201 Reaction Torque Sensor would be ordered as P/N 125-201-000-01X.