

**NOVOTURN
Rotary Sensor
Non-contacting**

**RSM-2800
SPI**

Industrial



Special Features

- Non-contacting, magnetic
- Long life
- Measuring range 5040° or 5760° (14 or 16 turns)
- True-Power-On system: counts turns even when not powered. Patented non-volatile technology does not require gears or batteries
- Available with push-on coupling or marked shaft
- Easy mounting
- Protection class IP54 up to IP67
- Resolution up to 18 bits
- Linearity up to $\pm 0,03\%$
- Other configurations see separate data sheets

Applications

- Mechanical engineering
- Mobile machinery
- Driveline or steering systems
- Wire-actuated encoders
- Gate drives
- Motor sports

Multiturn sensors that use the GMR technology (giant magneto resistance), provide absolute position values, do not require any reference signals and need no power supply or buffer battery for detecting the revolutions. The fact that rotations are detected even unpowered and the sensor does not lose its position information during a power failure, makes the RSM-2800 with its diameter of only 28 mm an extremely compact real True-Power-On rotary sensor.

The sensor operates magnetically and thus contactless allowing an extremely long life.

The sensor is able to detect angular positions over up to 16 revolutions with a high resolution up to 18 bits.

Description

Material	Housing: high grade, temperature resistant plastic PPS-GF40/SF50 Shaft: stainless steel, X8CrNiS18-9 1.4305
Mounting	With 2 screws M4 and washers
Fastening torque of mounting	max. 180 Ncm
Bearing	Sintered bronze bushing
Electrical connection	Cable 5x 0.14 mm ² (AWG 26), PUR, shielded

Mechanical Data

Dimensions	See dimension drawing
Mechanical travel	360° continuous
Permitted shaft load static or dynamic	20 N (axial / radial)
Torque	0.15 Ncm (IP54), 0.5 Ncm (IP65), 1.0 Ncm (IP67)
Weight	approx. 50 g

Ordering Specifications

Ordering Specifications

Preferred types printed in bold

- Delivery time up to 25 pcs. within 10 working days EXW
- Best low-volume pricing

Supply voltage Ub

2: 5 VDC

Interface parameters

81: SPI 16 bits, Binary code, rising output characteristic cw

82: SPI 16 bits, Binary code, rising output characteristic ccw

Electrical connection

302: Cable, 5-pole, shielded, L = 1 m

Cable versions and assembled connectors on request

R S M - 2 8 3 2 - 2 1 4 - 2 8 1 - 3 0 2

Series

Mechanical version

2802: 6 mm shaft with flattening, IP54

2832: 6 mm shaft with flattening, IP65

2862: 6 mm shaft with flattening, IP67

2821: push-on coupling, IP54

2841: push-on coupling, IP65

2871: push-on coupling, IP67

Other shaft configurations on request

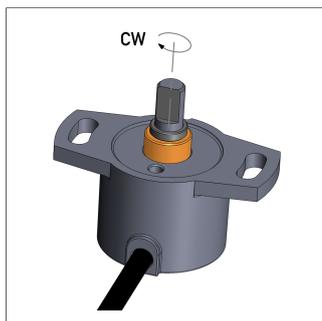
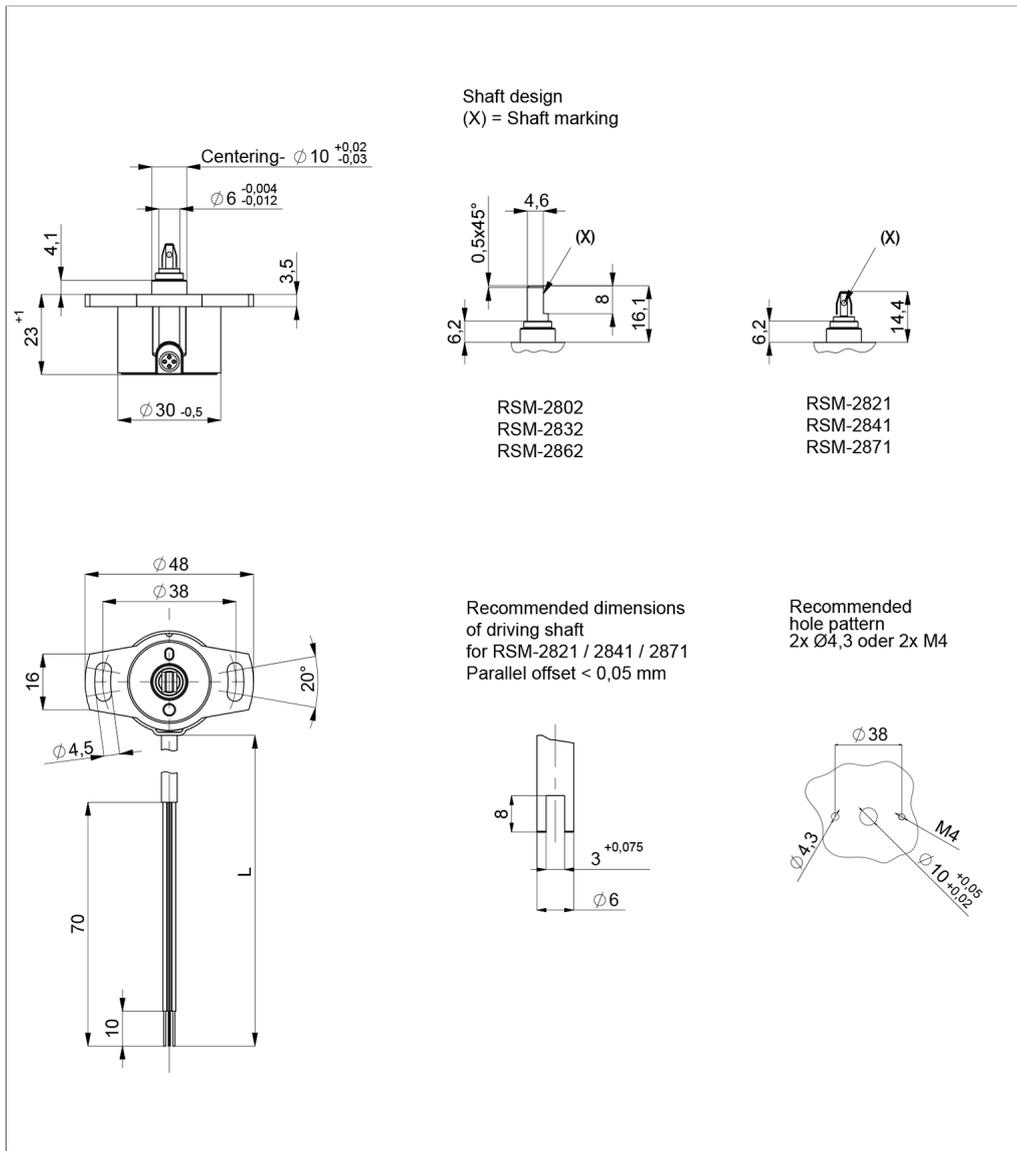
Number of turns for output characteristic

214: 14 turns = 5040°, measuring range controlled

216: 16 turns = 5760°, measuring range not controlled

Drawing

CAD data see
www.novotechnik.de/en/download/cad-data/



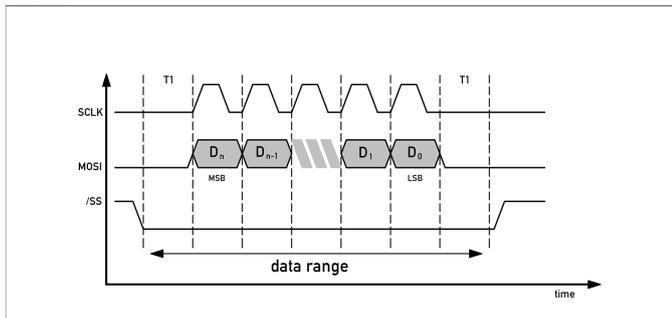
When the marking of the shaft is pointing towards the electrical outlet, the sensor output is located on an integer turn position.

Technical Data

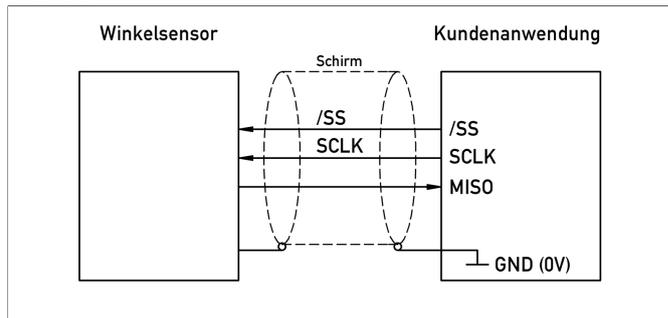
Type	RSM-28 _-2_ _-28 _- _-
Protocol	SPI
Coding	Binary
Level	TTL level (see manual Multiturn SPI Detail)
Update rate (internal)	1 kHz
Resolution	16 bits over the entire measuring range
Measuring range	14 turns = 5040°, measuring range controlled 16 turns = 5760°, measuring range not controlled
Absolute linearity	14 turns: $\leq \pm 0,036$ %FS 16 turns: $\leq \pm 0,031$ %FS
Repeatability	$\leq \pm 0,5^\circ$
Hysteresis	$\leq \pm 1^\circ$
Temperature error	$\pm 0,1$ %FS
Supply voltage U_b	5 VDC (4.5 ... 5.5 VDC)
Current consumption w/o load	typ. 25 mA
Polarity protection	yes (supply lines and outputs)
Short circuit protection	yes (vs. GND and supply voltage U_b)
Max. clock rate	100 kHz
Insulation resistance (500 VDC)	≥ 10 M Ω
Environmental Data	
Max. operational speed	800 rpm
Vibration IEC 60068-2-6	20 g, 5 ... 2000 Hz, $A_{max} = 0.75$ mm
Shock IEC 60068-2-27	50 g, 6 ms
Protection class DIN EN 60529	IP54 / IP65 / IP67
Operating temperature	-40 ... +85°C
Insensitivity to magnetic DC fields	< 15 mT
Life	> 50 Mio. movements (mechanically)
MTTF (IEC 60050)	193 years
EMC Compatibility	
EN 61000-4-2 ESD (contact/air discharge)	4 kV, 8 kV
EN 61000-4-3 Electromagnetic fields (RFI)	10 V/m
EN 61000-4-4 Fast transients (burst)	1 kV
EN 61000-4-6 Cond. disturbances (HF fields)	10 V eff.
EN 61000-4-8 Magnetic fields	30 A/m
EN 55016-2-3 Radiated disturbances	Industrial and residential area
Connection Assignment	
Signal	Cable code 3_ _
Supply voltage U_b	GN
GND	BN
MISO	YE
SCLK	GY
/SS (slave select)	WH
Connect cable shielding to GND	

Technical Data
Output
Characteristics

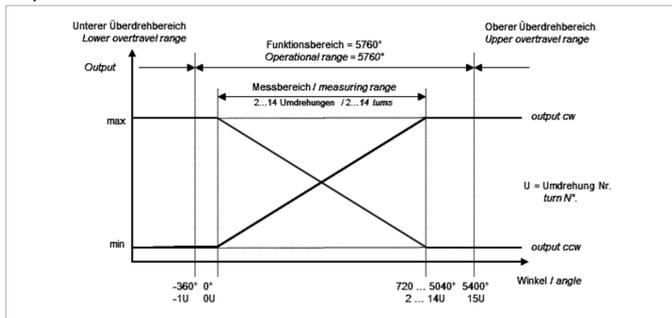
Protocol



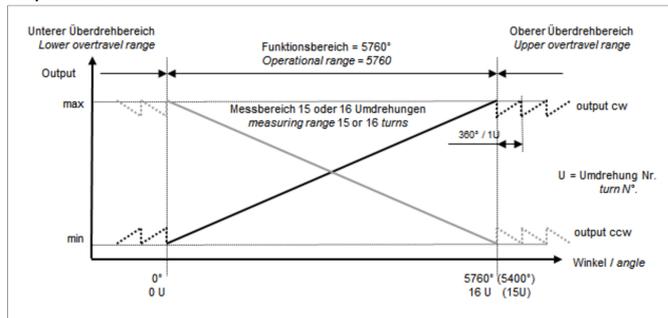
Connection



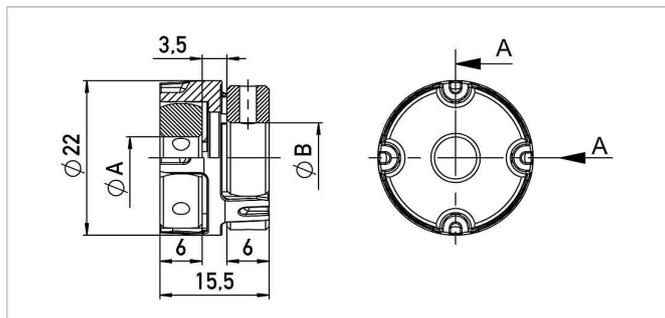
Output characteristic



Output characteristic



Sensor Mounting



Z-106-G_

Backlash-free, double cardanic shaft coupling for $\varnothing 6$ mm to $\varnothing 6$ mm, $\varnothing 6.35$ mm or $\varnothing 10$ mm, mounting via 2 threaded pins with internal hexagon

Material Aluminium, PEEK

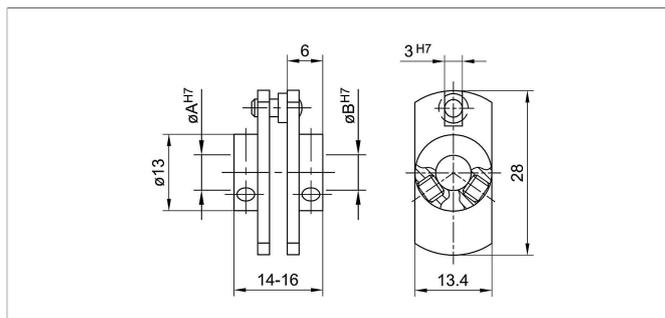
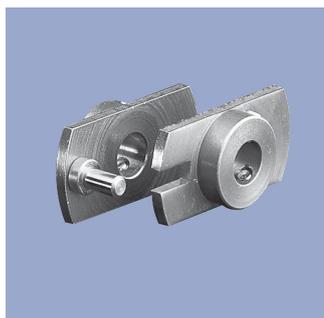
Operating temp. $-40 \dots +160^\circ\text{C}$

Transferable ≤ 1 Nm

torque

Displacement rad. ≤ 0.1 mm, angl. $\leq 0.45^\circ$

P/N	Type	$\varnothing A / \varnothing B$ [mm]
400103910	Z-106-G-6	6 / 6
400103912	Z-106-G-6,35	6 / 6.35
400103913	Z-106-G-10	6 / 10



Z-104-G-6

Fork coupling with low backlash for $\varnothing 6$ mm.

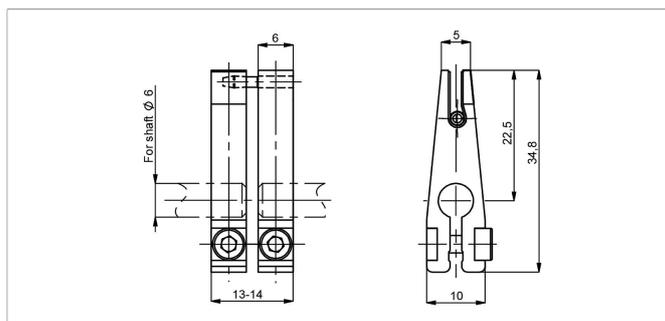
Mounting with 2 cylinder head screws M3 with internal hexagon.

Angle screwdriver DIN 911 AF 1.5 included in delivery.

Material Stainless Steel, driving pin polished

Displacement ≤ 1 mm

P/N	Type	$\varnothing A / \varnothing B$ [mm]
400005690	Z-104-G-6	6 / 6



Z-105-G-6

Backlash-free fork coupling for $\varnothing 6$ mm. Mounting with 1 cylinder head screw M3 with internal hexagon.

Angle screwdriver DIN 911 AF 2.5 included in delivery.

Material Aluminium, anodized (black)
Driving pin and spring hardened

Transferable ≤ 5 Ncm

torque

Displacement ≤ 1 mm

P/N	Type
400005691	Z-105-G-6

Connecting Options on request



- M12 connector**
- Customized lengths
 - 3-, 4-, 6- and 8-pole versions
 - Protection class IP68
 - Ordering codes of standard versions see ordering specifications



- Molex Mini Fit jr.**
- Customized length and lead wires
 - 3-, 4- and 6-pole versions
 - On request



- Tyco AMP Super Seal**
- Pin- and bushing housing
 - Customized lengths
 - 3-, 4- and 6-pole versions
 - Protection class IP67
 - On request



- Molex Mini Fit jr.**
- Customized length and lead wires
 - 3-, 4- and 6-pole versions
 - On request



- Deutsch DTM 04**
- Pin- and bushing housing
 - Customized lengths
 - 3-, 4- and 6-pole versions
 - Protection class IP67
 - On request



- ITT Cannon Sure Seal connector**
- Customized lengths
 - 3-, 4- and 6-pole versions
 - Protection class IP67
 - On request

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