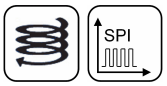
novotechnik
Siedle Group

NOVOTURN
Multi-turn Sensor
Non-contacting

RSM-2800
SPI
Industrial



CE

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 ±0,03 %
- Other configurations see separate data sheets

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

Multi-turn 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: SS X8CrNiS18-9 1.4305 / AISI 303
Mounting	With 2 screws M4 and washers
Fastening torque of mounting	max. 180 Ncm
Bearing	Sintered bronze bushing
Electrical connection	Cable 5x 0.14 mm² (AWG 26), PUR, shielded

Mechanical Data	
Dimensions	See dimension drawing
Mechanical travel	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 and assembled connectors on request

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

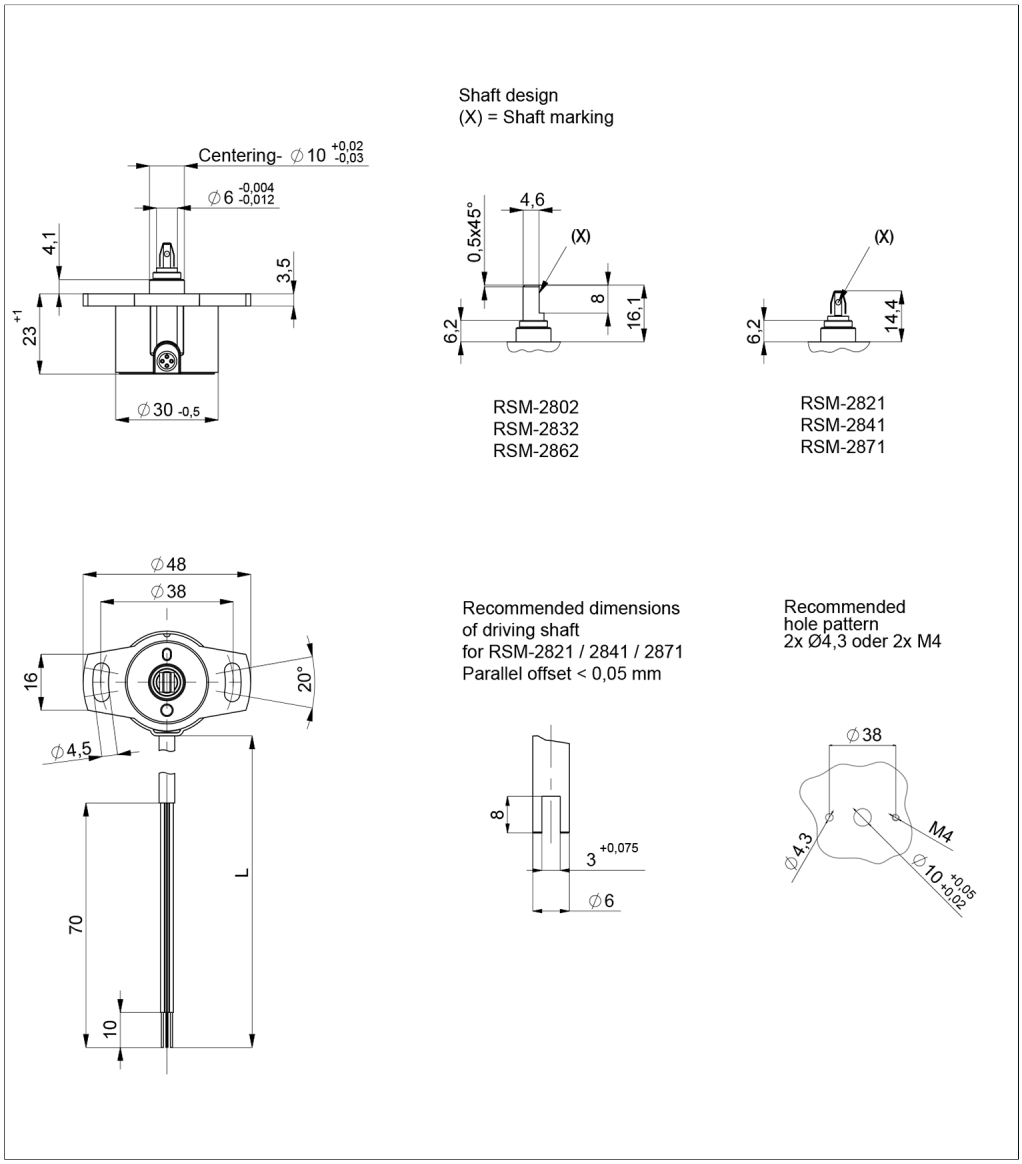
Number of turns for output characteristic
214: 14 turns = 5040°, measuring range controlled
216: 16 turns = 5760°, measuring range not controlled

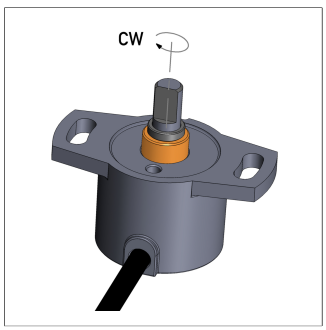
Series

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

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: ≤ ±0,036 %FS
	16 turns: ≤ ±0,031 %FS
Repeatability	≤ ±0.5°
Hysteresis	≤ ±1°
Temperature error	±0.1 %FS
Supply voltage Ub	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)
Max. clock rate	100 kHz
Insulation resistance (500 VDC)	≥ 10 MΩ
Environmental Data	
Max. operational speed	800 rpm
Vibration IEC 60068-2-6	20 g, 5 ... 2000 Hz, Amax = 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

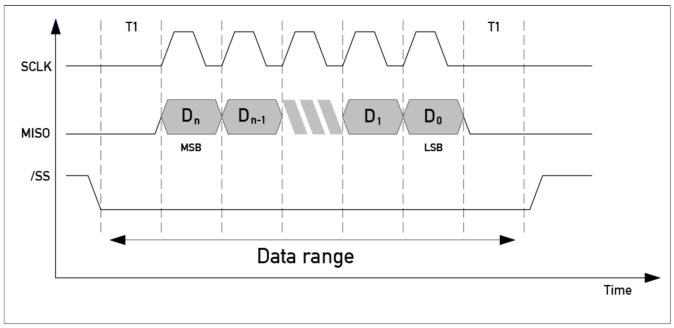
Important:
While operation, care should be taken not to rotate the sensor shaft below 0° or above 5760°. Refer to install guide.
FS = Full scale: Signal span according to electrical measuring range

Connection Assignment

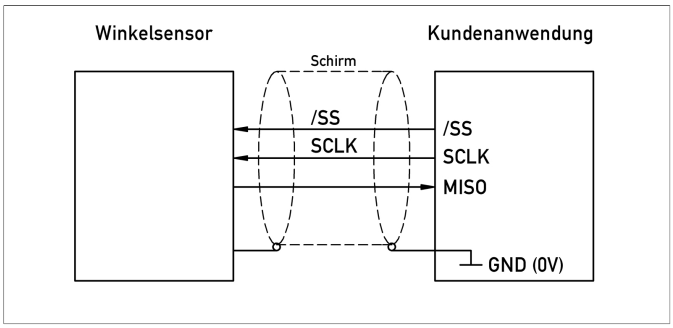
Signal	Cable code 3_ _
Supply voltage Ub	GN
GND	BN
MISO	YE
SCLK	GY
/SS (slave select)	WH
	Connect cable shielding to GND

Technical Data
Output Characteristics

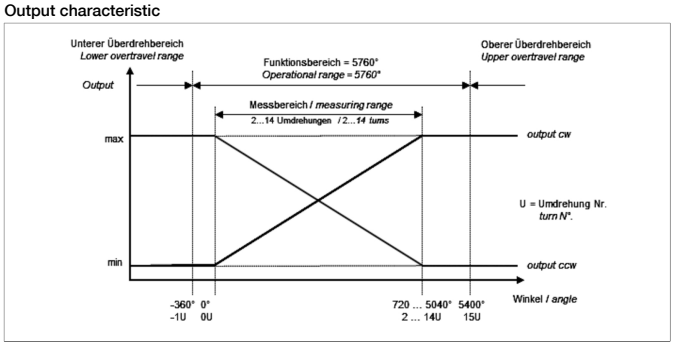
Protocol



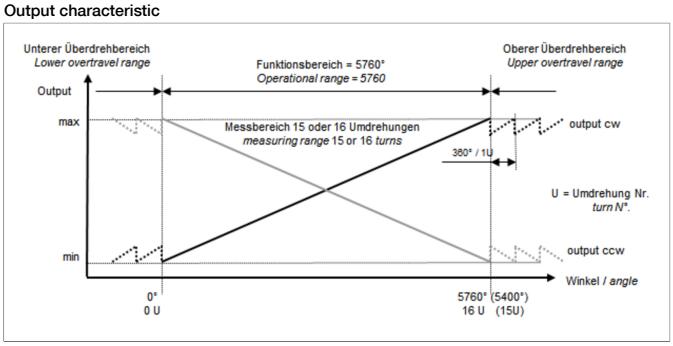
Connection



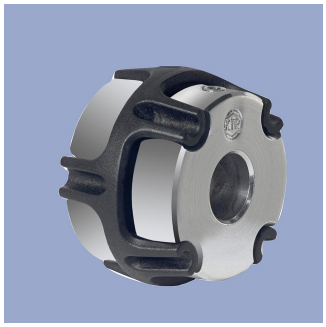
Output characteristic

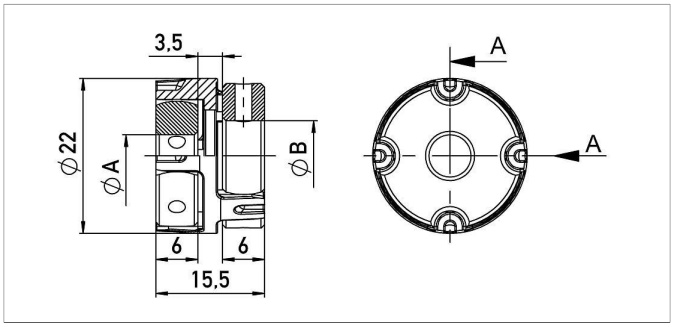


Output characteristic



Sensor Mounting

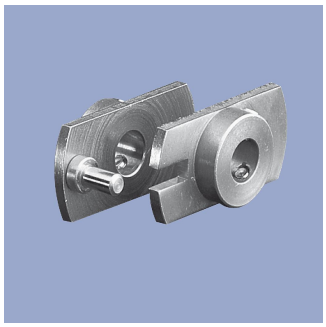


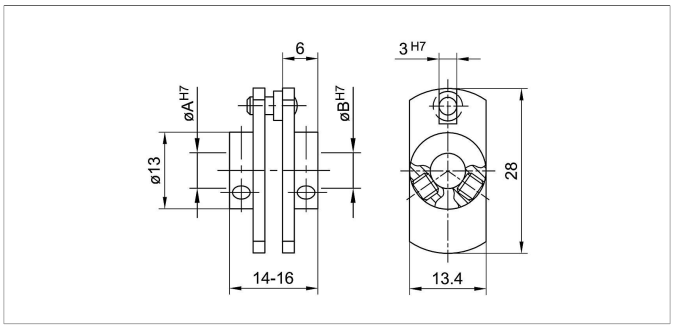


Z-106-G-_
Backlash-free, double cardanic shaft coupling for Ø6 mm to Ø6 mm, Ø6.35 mm or Ø10 mm, mounting via 2 threaded pins with internal hexagon

Material	Aluminium, PEEK
Operating temp.	-40 ... +160°C
Transferable torque	≤ 1 Nm
Displacement	rad. ≤ 0.1 mm, angl. ≤ 0.45°

P/N	Type	ØA / ØB [mm]
400103910	Z-106-G-6	6 / 6
400103912	Z-106-G-6,35	6 / 6.35
400103913	Z-106-G-10	6 / 10

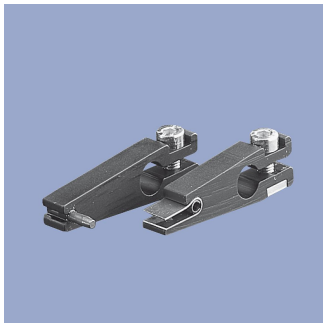


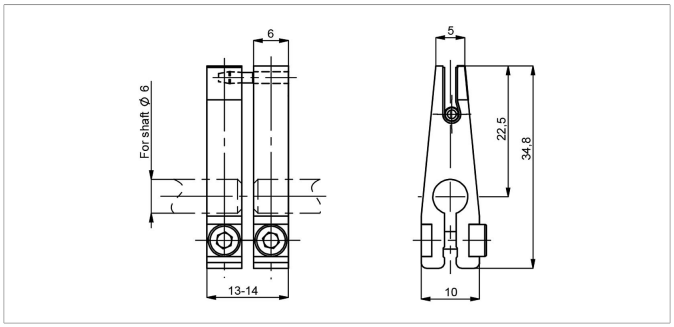


Z-104-G-6
Fork coupling with low backlash for Ø6 mm. Mounting with 2 cylinder head screws M3 with internal hexagon.
Angle screwdriver DIN 911 AF 1.5 included in delivery.

Material	SS, ground driving pin
Displacement	≤ 1 mm

P/N	Type	ØA / ØB [mm]
400005690	Z-104-G-6	6 / 6





Z-105-G-6
Backlash-free fork coupling for Ø6 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 torque	≤ 5 Ncm
Displacement	≤ 1 mm

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

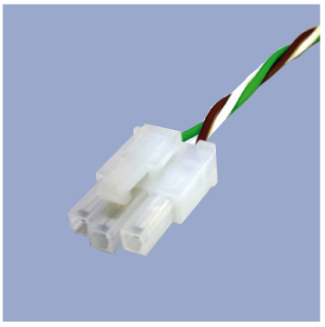
Connecting Options on request

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

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



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

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