novotechnik
Siedle Group

NOVOTURN
Multiturn Sensor
Non-contacting

RSM-2800
SSI
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 ±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: 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 4x 2x 0.25 mm² (AWG 24), TPE, shielded / Connector M12x1, A-coded with cable L = 0.15 m

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
1: Ub = 24 VDC
2: Ub = 5 VDC

Interface parameters
41: SSI 16 bits, Gray code, rising output characteristic cw
42: SSI 16 bits, Gray code, rising output characteristic ccw
43: SSI 25 bits (18 bits data), Gray code, rising output characteristic cw
44: SSI 25 bits (18 bits data), Gray code, rising output characteristic ccw
45: SSI 16 bits, Binary code, rising output characteristic cw
46: SSI 16 bits, Binary code, rising output characteristic ccw
47: SSI 25 bits (18 bits data), Binary code, rising output characteristic cw
48: SSI 25 bits (18 bits data), Binary code, rising output characteristic ccw

Electrical connection
432: Cable, 8-pole, shielded, L = 1 m
436: Cable, 8-pole, shielded, L = 3 m
440: Cable, 8-pole, shielded, L = 5 m
450: Cable, 8-pole, shielded, L = 10 m
531: Connector M12x1, 8-pin, with cable, shielded, L = 0.15 m
Cable versions and assembled connectors on request

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

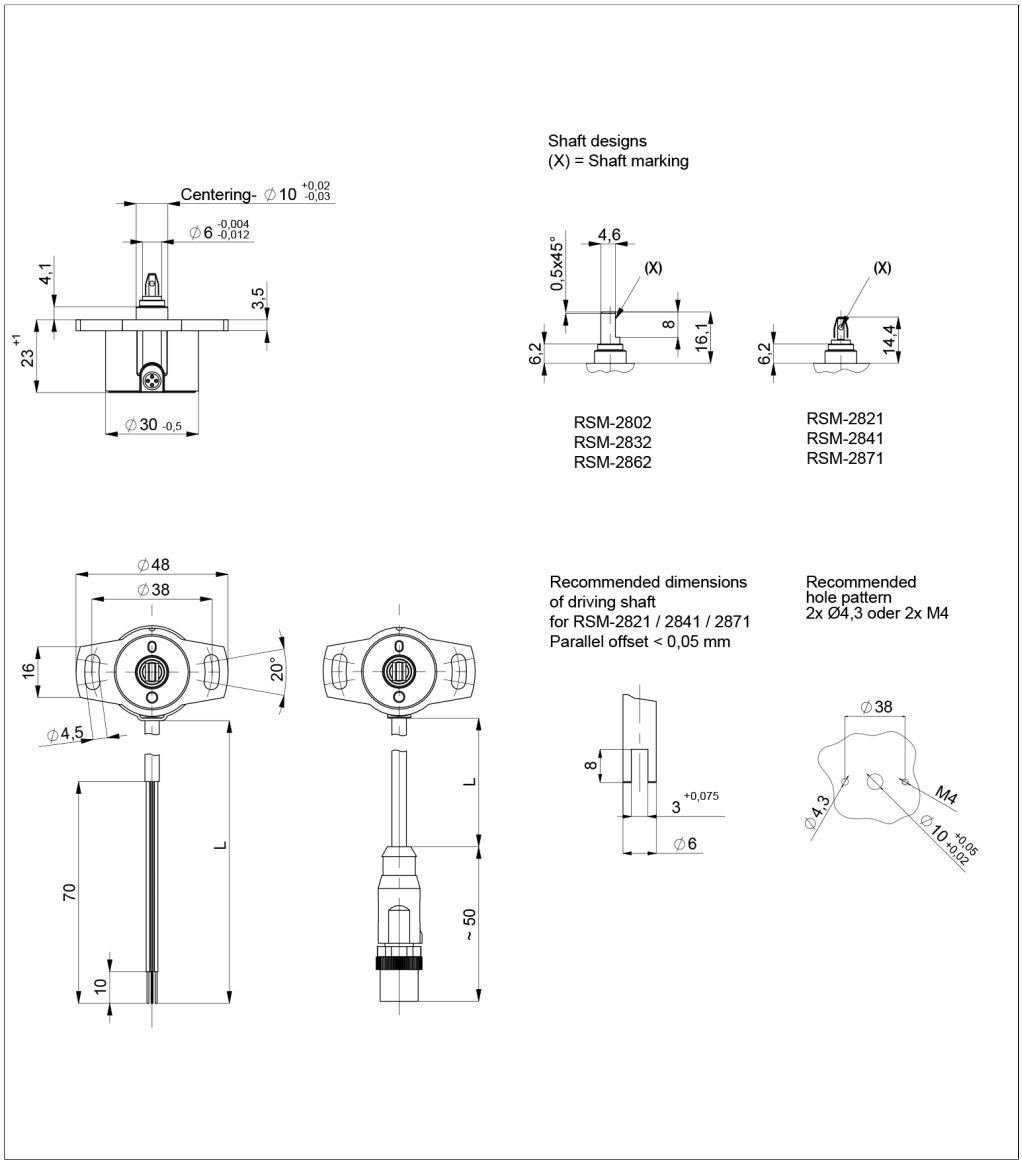
Series

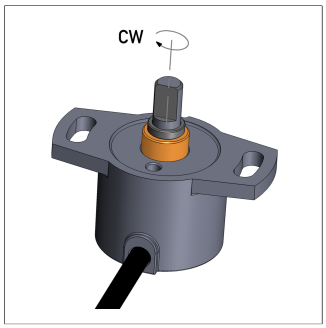
Mechanical version
2802: 6 mm shaft with flattening, IP54
2832: 6 mm shaft with flattening, IP65
2862: 6 mm shaft with flattening, IP67
2821: push-on coupling, IP54
2841: push-on coupling, IP65
2871: push-on coupling, IP67
Other shaft configurations on request

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/





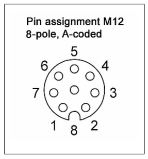
When the marking of the shaft is pointing towards the electrical outlet, the sensor output is located on an integer turn position.

Technical Data

Type	**RSM-28_ _-2_ _-14_-_ _ _**	**RSM-28_ _-2_ _-24_-_ _ _**
Measuring range	14 turns = 5040°, measuring range controlled 16 turns = 5760°, measuring range not controlled	
Protocol	SSI 16 and 25 bits	
Coding	Gray, Binary	
Inputs	RS-422 compatible, CLK lines via optocoupler galvanically isolated	
Monoflop time (tm)	20 ±1 µs	
Update rate (internal)	1 kHz	
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	24 VDC (10 ... 32 VDC)	5 VDC (4.5 ... 5.5 VDC)
Current consumption w/o load	typ. 10 mA	typ. 20 mA
Polarity protection	yes (supply lines and outputs)	
Short circuit protection	yes (vs. GND, max. 1 min)	yes (vs. GND and supply voltage, max. 10 min)
Ohmic load at outputs	≥ 120 Ω	
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 -25 ... +85°C (connector M12)	
Insensitivity to magnetic DC fields	< 15 mT	
Life	> 50 Mio. movements (mechanically)	
MTTF (IEC 60050)	173 years	179 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	

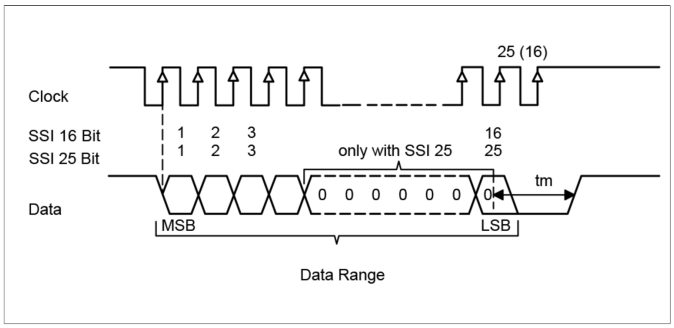
Connection Assignment

Signal	Cable code 4_ _	Connector code 5_ _
Supply voltage Ub	WH	Pin 1
GND	BN	Pin 2
CLK -	GN	Pin 3
CLK +	YE	Pin 4
Data -	GY	Pin 5
Data +	PK	Pin 6
Do not connect	BU	Pin 7
Do not connect	RD	Pin 8
	Connect cable shielding to GND	

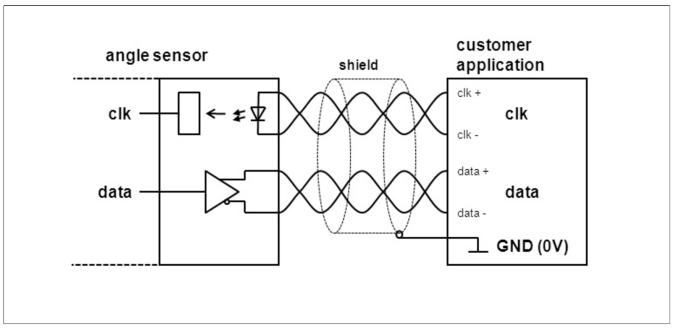


Technical Data
Output Characteristics

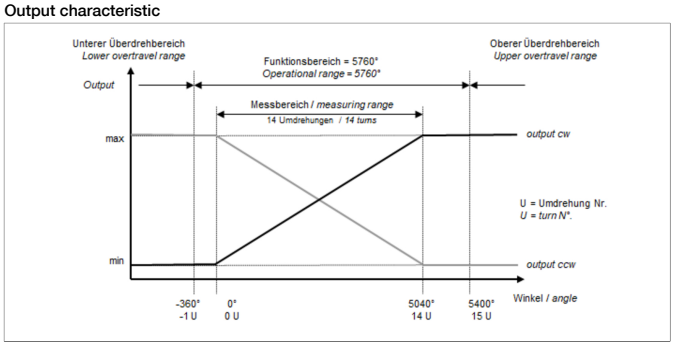
Protocol



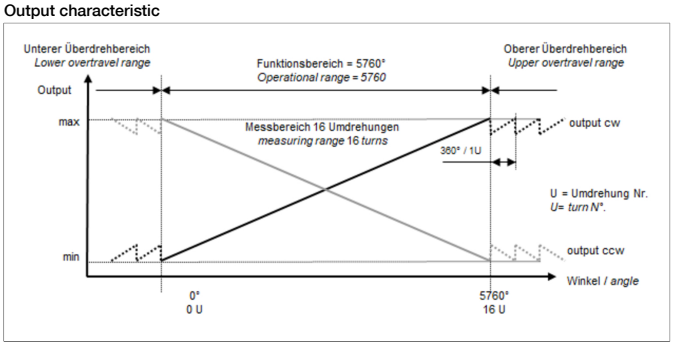
Connection



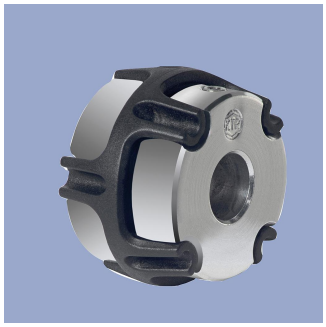
Output characteristic

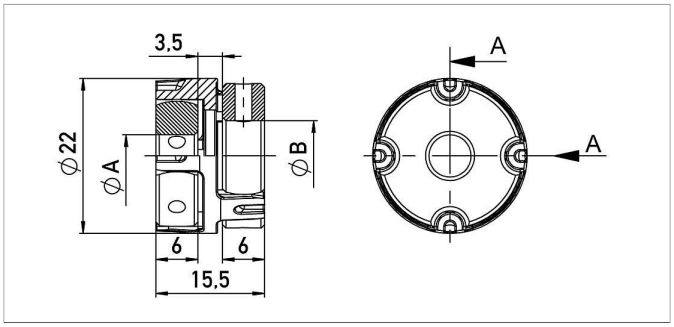


Output characteristic



Sensor Mounting

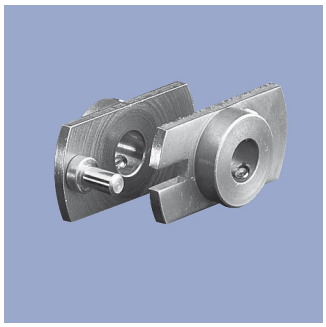


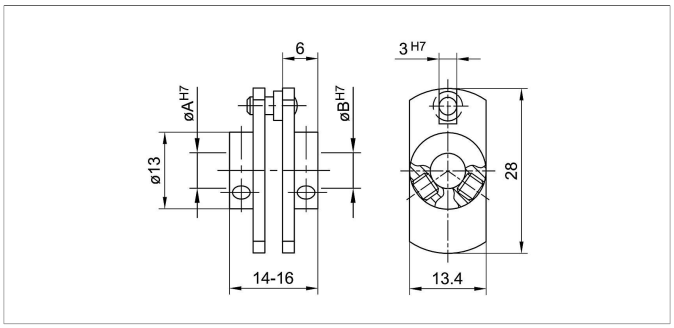


Z-106-G-_
Backlash-free, double cardanic shaft coupling for Ø6 mm to Ø6 mm, Ø6.35 mm or Ø10 mm, mounting via 2 threaded pins with internal hexagon

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

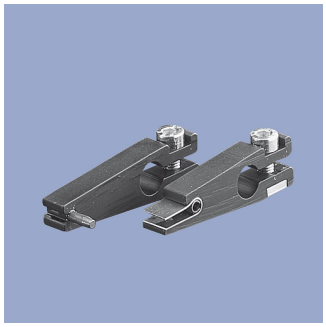


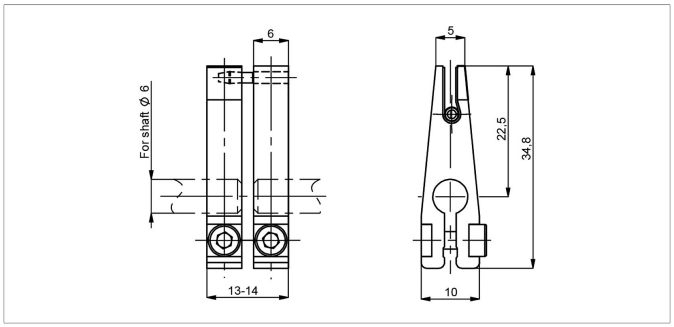


Z-104-G-6
Fork coupling with low backlash for Ø6 mm. Mounting with 2 cylinder head screws M3 with internal hexagon.
Angle screwdriver DIN 911 AF 1.5 included in delivery.

Material	SS, ground driving pin
Displacement	≤ 1 mm

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



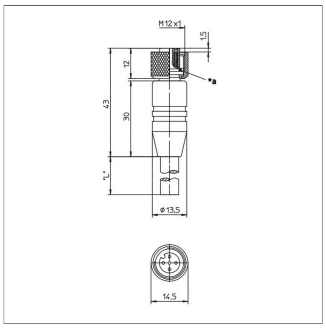


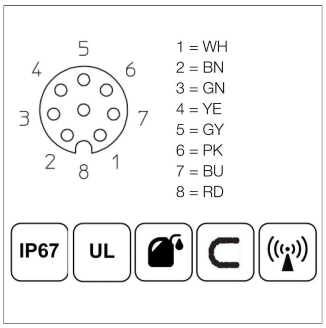
Z-105-G-6
Backlash-free fork coupling for Ø6 mm. Mounting with 1 cylinder head screw M3 with internal hexagon.
Angle screwdriver DIN 911 AF 2.5 included in delivery.

Material	Aluminium, anodized (black) Driving pin and spring hardened
Transferable torque	≤ 5 Ncm
Displacement	≤ 1 mm

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

Connector System M12





EEM-33-86/90/92

M12x1 Mating female connector, 8-pin, straight, A-coded, with molded cable, shielded, IP67, open ended

Plug housing	PA
Cable sheath	PUR, Ø = max. 8 mm, -25 ... +80°C (moved) -50 ... +80°C (fixed)
Lead wires	PP, 0.25 mm²

P/N	Type	Length
400005629	EEM-33-86	2 m
400005635	EEM-33-90	5 m
400005637	EEM-33-92	10 m

IP67 Protection class IP67 DIN EN 60529

IP68 Protection class IP68 DIN EN 60529

Very good Electromagnetic Compatibiliy (EMC) and shield systems

Very good resistance to oils, coolants and lubricants

Suited for applications in dragchains

UL UL - approved

CAN CAN-Bus

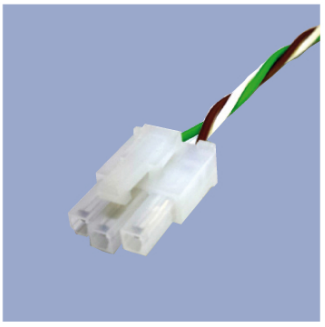
Connecting Options on request

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

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

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