Siedle Group

NOVOTURN Multi-turn Sensor Non-contacting

MC1-2800

CAN SAE J1939 **Mobile Applications**





Special Features

- Non-contacting, magnetic
- Long life
- Measuring range 15840° (44 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 16 bits per revolution
- Exceeds European E1 requirements
- 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 MC1-2800 with its diameter of only 30 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 44 revolutions with a high resolution up to 16 bits per revolution.

Description			
Material	Housing: high grade, temperature resistant plastic PPS-GF		
	Shaft: SS X8CrNiS18-9 1.4305 / AISI 303		
Mounting	With 2 screws M4 and washers		
Fastening torque of mounting	140 ± 40 Ncm		
Bearing	Sintered bronze bushing		
Electrical connection	Cable 2x 2x 0.34 mm ² (AWG 22), TPE, shielded / Connector M12x1, A-coded with cable L = 0.15 m		
Mechanical Data Dimensions	See dimension drawing		
Mechanical travel	Continuous		
Permitted shaft load	20 N (axial / radial)		
static or dynamic			
Torque	Typ. ≤ 3 Ncm		
	Depending on the environmental temperature and standstill time, the necessary force for the inital operating of the shaft may increase		
Weight (w/o connection)	approx. 50 g		



Ordering Specifications





Drawing



CAD data see www.novotechnik.de/en/download/caddata/



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



Technical Data

Туре	MC1-282J		
	CAN SAE J1939		
Measured variables	Position, speed, temperature and supply voltage		
Measuring range	44 turns = 15840°		
Measuring range speed	0 546 rpm		
Number of channels	1		
Protocol	CAN SAE J1939		
Programmable parameters	e.g. Preset, counting direction, resolution, baud rate, transmit mode, transmit cycle, source address		
Condition monitoring functions	Operating time, temperature, supply voltage		
Diagnosis	activated (in case of error, position signal is outside of the plausible signal range)		
Source Address	128 247 (dynamic address claiming)		
Transfer rate	250, 500 kBaud		
Signal propagation delay	< 0.3 ms		
Resolution position (across 360°)	16 bits		
Resolution speed	0.1%		
Linearity *	≤ ±1°		
Repeatability *	≤ ±0.1°		
Hysteresis *	≤ ±0.5°		
Temperature error	±0.36°		
Supply voltage Ub	12/24 VDC (8 32 VDC)		
Current consumption w/o load	≤ 60 mA		
Overvoltage protection	45 VDC (permanent)		
Polarity protection	yes (supply lines and outputs)		
Short circuit protection	yes (all outputs vs. GND and supply voltage)		
Insulation resistance (500 VDC)	≥10 ΜΩ		
Bus termination internal	w/o (internal load resistance 120 Ω on request)		
	*) For the MC1-2821/2841/2871 models with push-on coupling, the values may change (up to a factor of 2) due to the plastic deformation of the		
	coupling spring.		
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)		
Functional safety	If you need assistance in using our products in safety-related systems, please contact us		
MTTF (IEC 60050)	441 years		
Traceability	Serial number on type labeling: production batch of the sensor assembly and relevant sensor components		
Conformity/Approval	CE, UKCA see https://www.novotechnik.de/en/downloads/certificates/declarations-of-conformity-eu/uk		
	WEEE see https://www.novotechnik.de/en/downloads/certificates/eu-directive-weee/		
EMC Compatibility			
ISO 13766-1 Construction machinery			
ISO 14982 Agricult./forestry machines			
Emission/Immunity E1	E1 compliant		
EN 61000-4-2 ESD (contact/air discharge)	4 KV, 8 KV		
EN 61000-4-3 Electromagnetic fields (RFI)	30 V/m		
EN 61000-4-4 Fast transients (burst)	1 kV		
EN 61000-4-6 Cond. disturbances (HF fields)	10 V eff.		
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.

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Connection Assignment

Signal	Cable	Connector	
	code 2	code 5	
Supply voltage Ub	WH	Pin 2	
GND	BN	Pin 3	
CAN_H	YE	Pin 4	
CAN_L	GN	Pin 5	
CAN_SHLD	Shield	Pin 1	
	Connect cable shielding to protection earth (Industrial/CE) or GND (mobile applications)		





Sensor Mounting





Connector System M12





Connector System M12





Protection class IP67 DIN EN 60529





Very good Electromagnetic Compatibiliy (EMC) and shield systems

Very good resistance to oils, coolants and lubricants



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

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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