

Electromagnetic angle encoder with redundant CANopen interface Model: TBN58-SA16384RR2C3S2N01



- Contactless, wear-free magnetic sensor system
- Housing diameter 58 mm
- Resolution 2 x 16384 steps/360° (2 x 14 Bit) in binary code
- Interface 2 x CANopen in accordance with CiA DS406, completely autarkic design as Bus 1 and Bus 2
- Sturdy mechanical design, high vibration and shock-resistance
- Working temperature range - 40 °C to + 85 °C
- Protection grade IP 69K (housing)

Configuration and function

Recording of the angle position with two magnetic sensors and signal processing, including generation of the digital output signals, completely autarkic designed.

Sturdy aluminium housing - stainless steel shaft, shaft diameter 10f7 with flat area (9 - 0.1 mm), RS bearing with Nilos ring - housing potted for IP 69K degree of protection - electrical connection via 2 sensor connectors (M12 connector, 5-pin) for Bus 1 and Bus 2. One hex rotary coding switch for adjusting the address under the blind plug.

Interface according to the following specifications

CiA DS301	CANopen Application Layer and Communication Profile, Version 4.1
CiA DS305	CANopen - Layer Setting Services and Protocol (LSS)
CiA DS406	CANopen - Device Profile for Encoders, Version 4.0.1

Electrical data

- Sensor system: 2 x ASICs with magnetic sensors
 - Operating voltage range: + 9 VDC to + 36 VDC
 - Power consumption: < 1W
 - Resolution: 16384 steps / 360° - (14 Bit)
 - Absolute accuracy: $\leq \pm 0,05 \%$
 - Synchronisation of the systems: $\leq \pm 1^\circ$
 - Output code: Binary
 - Code sense: CW
 - CAN-Interface: according to ISO/DIS 11898
 - Address setting: Hex rotary coding switch for Bus 1 and Bus 2, via SDO / LSS
 - Terminating resistance: to be implemented separately
 - Max. transmission length: 200 m*
- * No galvanic isolation between supply voltage and Bus lines (see also CiA DS301).

Electrical Data

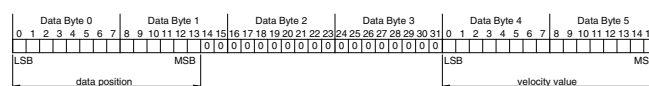
- Short-circuit protection: yes
- Reverse-polarity protection: yes (power supply)

CANopen Features

- NMT Master: no
- NMT-Slave: yes
- Maximum Boot up: no
- Minimum Boot up: yes
- COB ID Distribution: Default, SDO
- Node ID Distribution: via switches or Index 2000 and LSS
- No of PDOs: 2 Tx / Node
- PDO-Modes: sync, async, cyclic, acyclic
- Variables PDO-Mapping: no
- Emergency Message: yes
- Heartbeat: yes
- No. of SDOs: 1 Rx / 1 Tx
- Device Profile: CiA DSP 406 Version 4.0.1

The profile details are described in detail in the user manual NOC 13100.

Data format PDO1/2 for Bus 1 and Bus 2



Electromagnetic angle encoder

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Mechanical data, Ambient data. Schematic diagram

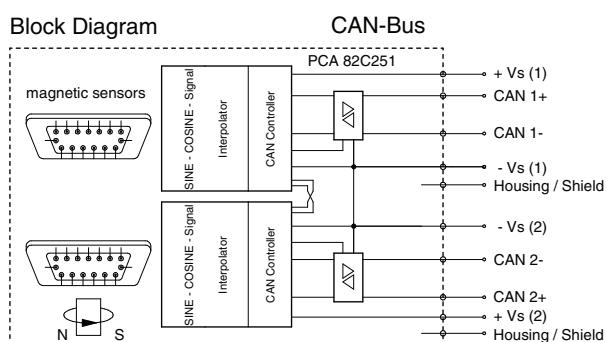
Mechanical data

- Operating speed: 1.000 min⁻¹ max.
- Angular acceleration: 10⁵ rad/s² max.
- Moment of inertia (rotor): 20 gcm²
- Operating torque: ≤ 8 Ncm (at a speed of 500 rpm)
- Starting torque: ≤ 4 Ncm
- Permissible shaft load: 50 N axial / radial
- Bearing service life: ≥ 10⁹ rotations
- Mass: approx. 0,37 kg

Ambient data

- Working temperature range: - 40 °C to + 85 °C
- Storage temperature range: - 20 °C to + 60 °C
(due to packaging)
- Resistance:
 - To shock: 1000 m/s²; 11 ms
DIN EN 60068-2-27
 - To vibration: 500 m/s² ; 10 ... 2000 Hz
DIN EN 60068-2-6
- EMV standards:
 - EN 61000-4-2 (ESD)
 - EN 61000-4-4 (Burst)
 - EN 61000-6-4 (Emission)
- E1 type examination: certified
- Magnetic field: with 1 mT fault < 0,1 %
- Protection grade: Potted housing IP 69K
(DIN EN 60529)
shaft IP67

Schematic diagram



Electromagnetic angle encoder

TBN58-SA16384RR2C3S2N01

Order identification

TBN	58 -	S	A	16384	R	R2	C3	S2	N	01
										01
										Electrical and mechanical versions* Output signal: N CANopen-Interface Electrical connection: S2 2 x device connector M12, 5-pole, Pin (Note: Autarkic sensors 1 and 2) CANopen-Interface-Version: C3 Standard CANopen C3, Profile version 4.0.2 Redundant design: R2 Redundant design, autarkic sensors Output code: R Binary Resolution: 16384 Steps/ revolution - 14 Bit Housing material: A Aluminium - 3.2315 Flange and shaft: S Synchro flange, shaft Ø 12 mm Design form: 58 Design form Ø 58 Model: TBN Monotour rotary encoder with CANopen-Interface

* According to the data sheet, the basic version are indicated by the number 01. Deviations are indicated by a version number and are documented at the factory.

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Allocation of the rotary coding switch

Allocation of the rotary coding switch for adjusting the address

The default node ID value is 0x1 for Bus 1 and 0x2 for Bus 2 (see object 2000hex). Different addresses can be configured using the rotary coding switch.
(see table below).

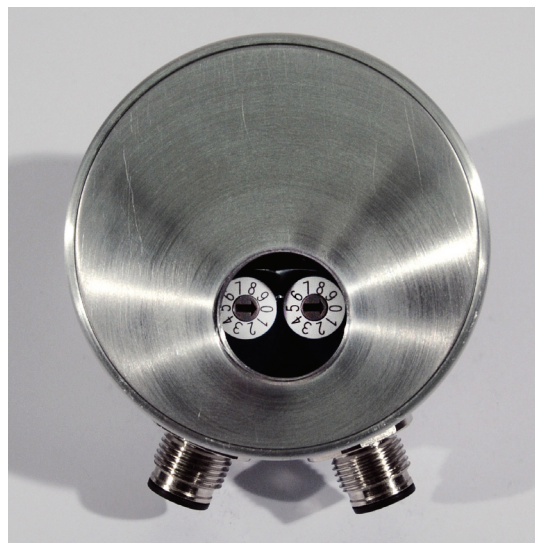


Table - allocation of the node ID including installation position in relation to the rotary coding switches

rotary coding switches	Node-IDs Bus 1	Node-IDs Bus 2
0	0x1	0x2
1	0x3	0x4
2	0x5	0x6
3	0x7	0x8
4	0x9	0xA
5	0xB	0xC
6	0xD	0xE
7	0xF	0x10
8	0x11	0x12
9	0x13	0x14

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Drawing (Dimensions in mm)

