

Motor Feedback Systems for servo motors

Compact

Motor-Line, optical / magnetic

Sendix S3674 (singleturn) / S3684 (multiturn)

RS485 + SinCos / BiSS + SinCos



The Sendix S36 encoder with optical singleturn and magnetic multiturn gear stands out with its combination of robustness and variants diversity with compact dimensions.

With a size of 36.5 x 37 mm, it features a tapered shaft or an 8 mm hub shaft. Its highly accurate optical electronics achieve a resolution of 19 bits. The incremental SinCos interface is available with 1024 or 2048 ppr.



RS485

BiSS
INTERFACE

SinCos



Temperature range



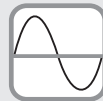
Shock / vibration resistant



Safety-Lock™



High shaft load capacity



SinCos



Short-circuit proof



Reverse polarity protection

Reliable and insensitive

- Robust construction for optimal functionality in the servo motor.
- Wide temperature range of -30...+120°C – designed specially for operation in servo motors.
- Special connector concept for fast and easy commissioning.

Performance-optimized

- Standard RS485 interface (Hiperface®¹) compatible) + SinCos for use in many standard servo motors.
- Highest performance thanks to max. 19-bit singleturn resolution and 1024 or 2048 ppr SinCos.
- Mechanically suitable for mounting on standard servo motors.

Order code

8.S36X4.XXX1.XXX.XXX
Type a b c d e f g h i²⁾

a Version

7 = singleturn

8 = multiturn (12 bit)

b Flange

1 = with stator coupling, ø 38 mm

2 = with stator coupling, ø 40.5 mm

3 = with stator coupling, ø 42 mm

4 = with stator coupling, ø 60 mm

c Shaft

1 = hub shaft, ø 8 mm

2 = tapered shaft, ø 8 mm

d Power supply

1 = 7 ... 30 V DC

2 = 5 V DC

e Type of connection

1 = PCB connector radial

f Digital interface

1 = BiSS

2 = RS485 (Hiperface®¹) compatible

g Incremental interface

1 = 1024 ppr SinCos

2 = 2048 ppr SinCos

h Resolution singleturn

12 = 12 bit

15 = 15 bit

16 = 16 bit

17 = 17 bit

19 = 19 bit

i Safety technology²⁾

FS2 = SIL2 / PLd

FS3 = SIL3 / PLe

Connection technology

Cordset, pre-assembled

PCB connector (female contacts), 10-pin single-ended, 0,5 m single wires

Order no.

8.0000.D111.0M50

1) Hiperface® is a registered trademark of Sick Stegmann GmbH.

2) Optional.

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| | | |
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|---|--|---------------------------------------|

Technical data

| Mechanical characteristics | |
|---|---|
| Maximum speed | 12000 min ⁻¹ (short-term) 9000 min ⁻¹ (continuous) |
| Starting torque at 20°C [68°F] | < 0.004 Nm |
| Load capacity of shaft | radial 40 N axial 20 N |
| Weight | approx. 0.1 kg [35.27 oz] |
| Protection acc. to EN 60529 | IP40 |
| Working temperature range | -30°C ... +120°C [-22°F ... +248°F] |
| Materials | shaft stainless steel flange aluminum housing zinc die-cast |
| Shock resistance acc. EN 60068-2-27 | 1000 m/s ² , 6 ms |
| Vibration resistance acc. EN 60068-2-6 | 500 m/s ² , 10 ... 2000 Hz |

| Electrical characteristics | |
|--|---|
| Power supply | 5 V DC (±5 %) or 7 ... 30 V DC |
| Current consumption (no load) | 5 V DC max. 75 mA 7 ... 30 V DC max. 90 mA |
| Reverse polarity protection of the power supply | yes |
| Short circuit proof outputs | yes ²⁾ |
| CE compliant acc. to | EMC guideline 2014/30/EU RoHS guideline 2011/65/EU |

| RS485 interface (Hiperface [®] 1) compatible) | |
|--|--|
| Output driver | RS485 transceiver type |
| Permissible load / channel | max. +/- 30 mA |
| Signal level | HIGH min. 2.4 V LOW at I _{Last} = 20 mA max. 0.4 V |
| Resolution singleturn | 12 ... 19 bit |
| Number of revolutions (multiturn) | 12 bit |
| Code | binary |

| BiSS interface | |
|--|--|
| Output driver | RS485 transceiver type |
| Permissible load / channel | max. +/- 30 mA |
| Signal level | HIGH min. 2.4 V LOW at I _{Last} = 20 mA max. 0.4 V |
| Resolution singleturn | 12 ... 19 bit |
| Number of revolutions (multiturn) | 12 bit |
| Code | binary |
| Clock rate BiSS | 50 kHz ... 10 MHz |
| Max. update rate | < 10 µs, depends on the clock rate and the data length |

| Incremental outputs SinCos (A/B) | |
|----------------------------------|---------------------------|
| Max. frequency -3dB | 400 kHz |
| Signal level | 1 V _{ss} (± 20%) |
| Short circuit proof | yes ²⁾ |
| Pulse rate | 1024 ppr 2048 ppr |

For variants with safety technology:

| Notes regarding "Functional Safety" | |
|---|--|
| These encoders are suitable for use in safety-related systems up to SIL2 or SIL3 acc. to EN 61800-5-2 and PLd or PLe to EN ISO 13849-1 in conjunction with controllers or evaluation units, which possess the necessary functionality. Additional functions can be found in the operating manual. | |

| Safety characteristics | |
|---|---|
| Classification | PLd / SIL2 or PLe / SIL3 |
| System structure | SIL2 2 channel (Cat. 3) SIL3 2 channel (Cat. 4) |
| PFH_d value³⁾ | SIL2 tbd SIL3 tbd |
| Mission time / Proof test interval | 20 years |
| Relevant standards | EN ISO 13849-1:2008; EN ISO 13849-2:2013; EN 61800-5-2:2007 |

| Achievable safety subfunctions | |
|--------------------------------|-------------------------|
| Safe Standstill | SS1, SS2, SOS |
| Safe Motion | SLS, SSR, SDI, SLA, SAR |
| Safe Monitoring | SSM |

Motor feedback systems

Preliminary data sheet

1) Hiperface[®] is a registered trademark of Sick Stegmann GmbH.
 2) Short circuit proof to 0 V or to output when power supply correctly applied..
 3) The specified value is based on a diagnostic coverage of 90 % (SIL2) / 99 % (SIL3), that must be achieved with an encoder evaluation unit. The encoder evaluation unit must meet at least the requirements for SIL2 / SIL3.

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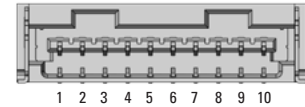
Terminal assignment

| Interface | Type of connection | Features | PCB connector (male contact), 10-pin | | | | | | | | | | |
|-----------|--------------------|---------------|--------------------------------------|-----|----|----|----|----|----|---|-----------|---|-----------|
| | | | Signal: | 0 V | +V | D+ | D- | C+ | C- | A | \bar{A} | B | \bar{B} |
| 1, 2 | 1 | SinCos, RS485 | Core color: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

- +V: Encoder power supply +V DC
- 0 V: Encoder power supply ground GND (0 V)
- D+, D-: Data signal
- C+, C-: Clock signal
- A, \bar{A} : Incremental output channel A (cosine)
- B, \bar{B} : Incremental output channel B (sine)

Top view of mating side, male contact base

Type of connection 1
Molex IllumiMate™ (male contact)
single row, 10-pin (104091-1020)



Dimensions will follow

1) Planned.