SEK160-HN110AK02
SEK160

MOTOR FEEDBACK SYSTEMS

SICK
Sensor Intelligence.
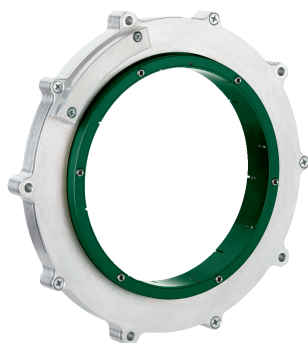
SEK160-HN110AK02 | SEK160
MOTOR FEEDBACK SYSTEMS

Ordering information

Type	Part no.
SEK160-HN110AK02	1038272

Other models and accessories → www.sick.com/SEK160

Illustration may differ

Detailed technical data

Safety-related parameters

$MTTF_D$ (mean time to dangerous failure)	147.7 years (EN ISO 13849) [1]

[1] This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 60°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Performance

Sine/cosine periods per revolution	128
Number of the absolute ascertainable revolutions	1
Total number of steps	4,096 via RS485
Measuring step	2.5 ″ For interpolation of the sine/cosine signals with, e. g., 12 bits
Integral non-linearity	± 72 ″, Error limits for evaluating sine/cosine period, typical values at nominal position ± 0.1 mm und +20 °C
Differential non-linearity	± 21 ″, Non-linearity within a sine/cosine period, typical values at nominal position ± 0.1 mm und +20 °C
Operating speed	≤ 1,500 min⁻¹, up to which the absolute position can be reliably produced
Latency	100 µs
Available memory area	1,792 Byte
System accuracy	± 57 ″

Interfaces

Type of code for the absolute value	Binary
Code sequence	Increasing, when turning the shaft For clockwise rotation, looking in direction "A" (see dimensional drawing), For clockwise shaft rotation, looking in direction "A" (see dimensional drawing)
Communication interface	HIPERFACE®

Electrical data

Connection type	Male connector, 8-pin
Supply voltage	7 V DC … 12 V DC
Recommended supply voltage	8 V DC
Current consumption	150 mA [1]

[1] Without load.

Mechanical data

Shaft version	Through hollow shaft
Shaft diameter	110 mm
Dimensions	See dimensional drawing
Weight	≤ 0.27 kg
Moment of inertia of the rotor	2,860 gcm²
Operating speed	3,000 min⁻¹
Angular acceleration	≤ 28,000 rad/s²
Permissible radial shaft movement	± 0.2 mm
Permissible axial shaft movement	± 0.5 mm [1]

[1] Relative to the installation position, as described in the assembly instructions (order nr. 8013609) and in the proposed customer fitting.
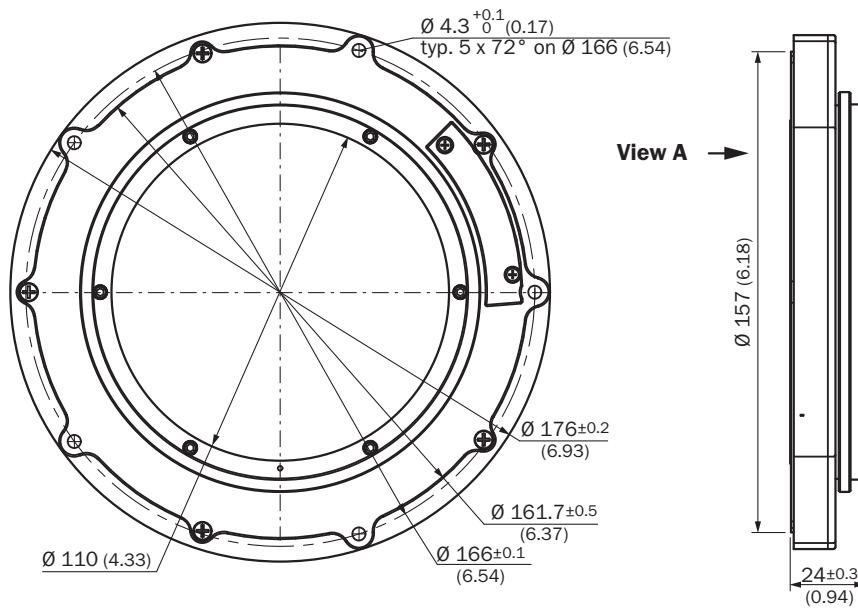
Ambient data

Operating temperature range	–30 °C ... +115 °C
Storage temperature range	–50 °C ... +125 °C, without package
Relative humidity/condensation	90 %, Condensation not permitted
Resistance to shocks	100 g, 10 ms (according to EN 60068-2-27)
Frequency range of resistance to vibrations	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
EMC	According to EN 61000-6-2 and EN 61000-6-3 [1]
Enclosure rating	IP40, with mating connector inserted and closed cover (IEC 60529)

[1] The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the central earthing point of the motor controller via a cable screen. If other shielding concepts are used, users must perform their own tests.
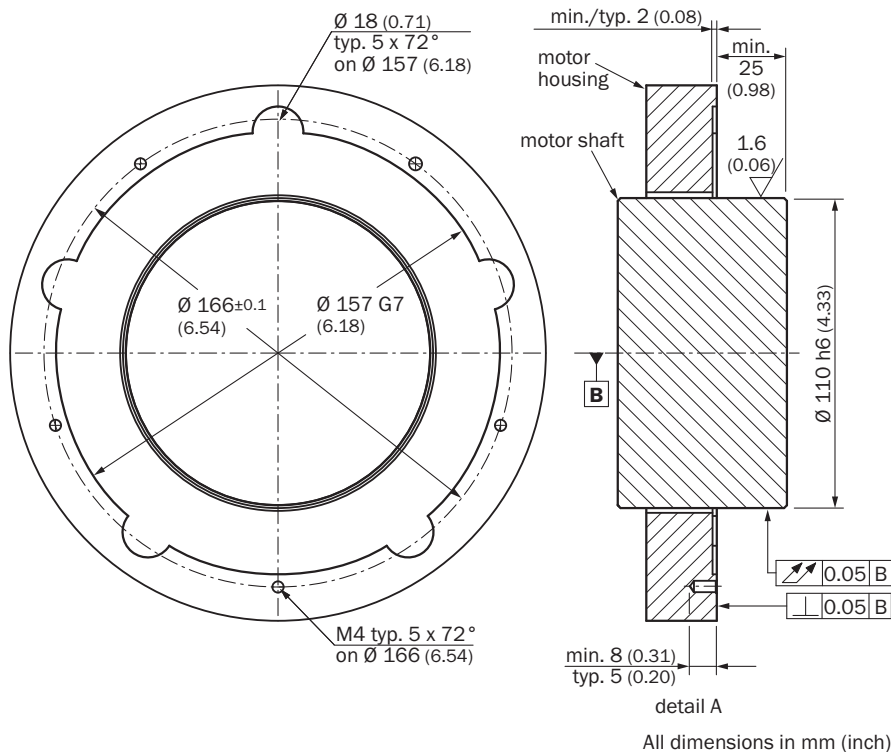
Classifications

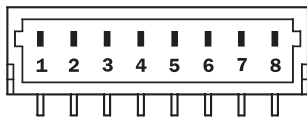|	
ECLASS 5.0	27270590
ECLASS 5.1.4	27270590
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270590
ECLASS 8.0	27270590
ECLASS 8.1	27270590
ECLASS 9.0	27270590
ECLASS 10.0	27273805
ECLASS 11.0	27273901
ECLASS 12.0	27273901
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))

Ø 4.3 $^{+0.1}_{0}$ (0.17)
typ. 5 x 72° on Ø 166 (6.54)

View A →

Ø 157 (6.18)

Ø 176±0.2 (6.93)

Ø 161.7±0.5 (6.37)

Ø 166±0.1 (6.54)

Ø 110 (4.33)

24±0.3 (0.94)

Attachment specifications

Ø 18 (0.71)
typ. 5 x 72°
on Ø 157 (6.18)

min./typ. 2 (0.08)

motor housing

motor shaft

min. 25 (0.98)

1.6 (0.06)

Ø 166±0.1 (6.54)

Ø 157 G7 (6.18)

Ø 110 h6 (4.33)

B

0.05 B

0.05 B

M4 typ. 5 x 72°
on Ø 166 (6.54)

min. 8 (0.31)
typ. 5 (0.20)

detail A

All dimensions in mm (inch)

PIN assignment

View of the plug-in face

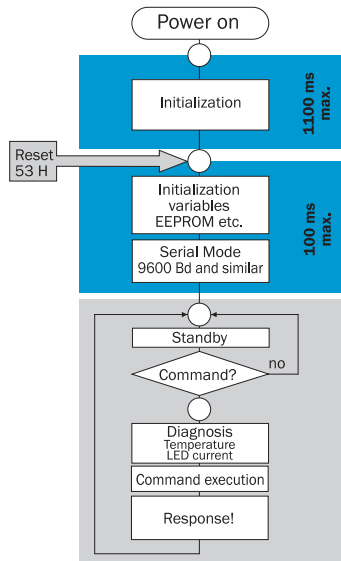| PIN	Signal	Wire colors (cable connection)	Explanation
1	U_S	Red	Supply voltage
2	+ SIN	White	Process data channel
3	REFSIN	Brown	Process data channel
4	+ COS	Pink	Process data channel
5	REFCOS	Black	Process data channel
6	GND	Blue	Ground connection
7	Data +	Gray or yellow	Parameter channel RS 485
8	Data -	Green or purple	Parameter channel RS 485
	The GND connection (0 V) of the supply voltage is not connected to the housing		

Diagrams

Signal diagram for clockwise shaft rotation, looking in direction "A" (see dimensional drawing) 1 period = 360° : 64/128/256
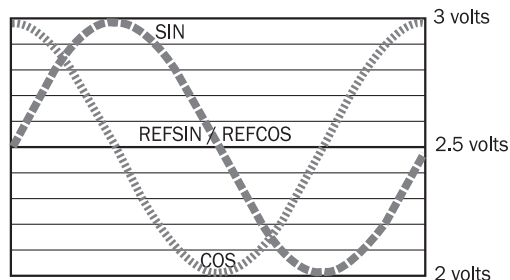
Signal specification of the process channel
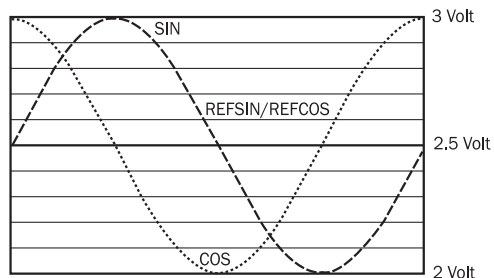
Signal diagram for clockwise rotation of the shaft looking in direction "A" (see dimensional drawing)1 period = 360 ° : 1024

Power on

Initialization

1100 ms max.

Reset
53 H

Initialization
variables
EEPROM etc.

Serial Mode
9600 Bd and similar

100 ms max.

Standby

Command? — no

Diagnosis
Temperature
LED current

Command execution

Response!

CAUTION:
No **RS485 communication**
is possible during the
phases highlighted in blue

After a software reset,
it will take approx. 150 ms
until the SIN/COS signals
reach an amplitude of
1 Vpp ± 20 %.

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

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