AFS60I-Q4AC262144

AFS/AFM60 SSI

ABSOLUTE ENCODERS

SICK
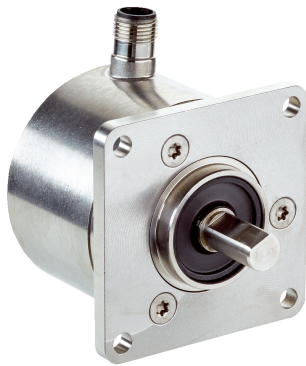Sensor Intelligence.

AFS60I-Q4AC262144 | AFS/AFM60 SSI
ABSOLUTE ENCODERS

Illustration may differ

Ordering information

Type	Part no.
AFS60I-Q4AC262144	1095902

Other models and accessories ➜ www.sick.com/AFS_AFM60_SSI

Detailed technical data

Performance

Number of steps per revolution (max. resolution)	262,144 (18 bit)
Measuring step deviation	± 0.002° pulses > 10,000
Error limits G	0.03° [1]
Repeatability standard deviation σ$_r$	0.002° [2]

[1] In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

[2] In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

Interfaces

Communication interface	SSI
Initialization time	50 ms [1]
Position forming time	< 1 µs
Code type	Gray
Code sequence parameter adjustable	CW/CCW (V/R)
Interface signals	Clock +, Clock -, Data +, Data -
Clock frequency	2 MHz [2]
Set (electronic adjustment)	H-active (L = 0 - 3 V, H = 4,0 - U$_s$ V)
CW/CCW (counting sequence when turning)	L-active (L = 0 - 1,5 V, H = 2,0 - Us V)

[1] Valid positional data can be read once this time has elapsed.

[2] SSI max. clock frequency 2 MHz, and min. LOW level (Clock+): 500 ns.

Electrical data

Connection type	Male connector, M12, 8-pin, radial
Supply voltage	4.5 ... 32 V DC

[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 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Power consumption	≤ 0.5 W (without load)
Reverse polarity protection	✓
MTTFd: mean time to dangerous failure	250 years (EN ISO 13849-1) [1]

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Mechanical data

Mechanical design	Solid shaft, Square flange
Shaft diameter	10 mm
Shaft length	19 mm
Weight	0.5 kg [1]
Shaft material	Stainless steel V2A
Flange material	Stainless steel V2A
Housing material	Stainless steel V2A
Start up torque	1 Ncm (+20 °C)
Operating torque	0.5 Ncm (+20 °C)
Permissible shaft loading	80 N (radial) 40 N (axial)
Operating speed	9,000 min^{-1} [2]
Moment of inertia of the rotor	6.2 gcm²
Bearing lifetime	3.0 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²

[1] Based on devices with male connector.

[2] Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 [1]
Enclosure rating	IP67, shaft side (IEC 60529) IP67, Housing side, male connector (IEC 60529) [2]
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–40 °C … +100 °C [3] –30 °C … +100 °C [4]
Storage temperature range	–40 °C … +100 °C, without package
Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	10 g, 10 Hz … 2,000 Hz (EN 60068-2-6)

[1] EMC according to the standards quoted is achieved if shielded cables are used.

[2] With mating connector fitted.

[3] Stationary position of the cable.

[4] Flexible position of the cable.

Classifications

eCl@ss 5.0	27270502
eCl@ss 5.1.4	27270502
eCl@ss 6.0	27270590

eCl@ss 6.2	27270590
eCl@ss 7.0	27270502
eCl@ss 8.0	27270502
eCl@ss 8.1	27270502
eCl@ss 9.0	27270502
eCl@ss 10.0	27270502
eCl@ss 11.0	27270502
eCl@ss 12.0	27270502
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

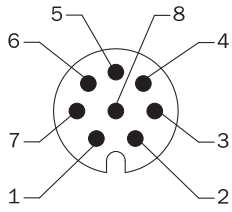## Dimensional drawing (Dimensions in mm (inch))

Solid shaft, square flange
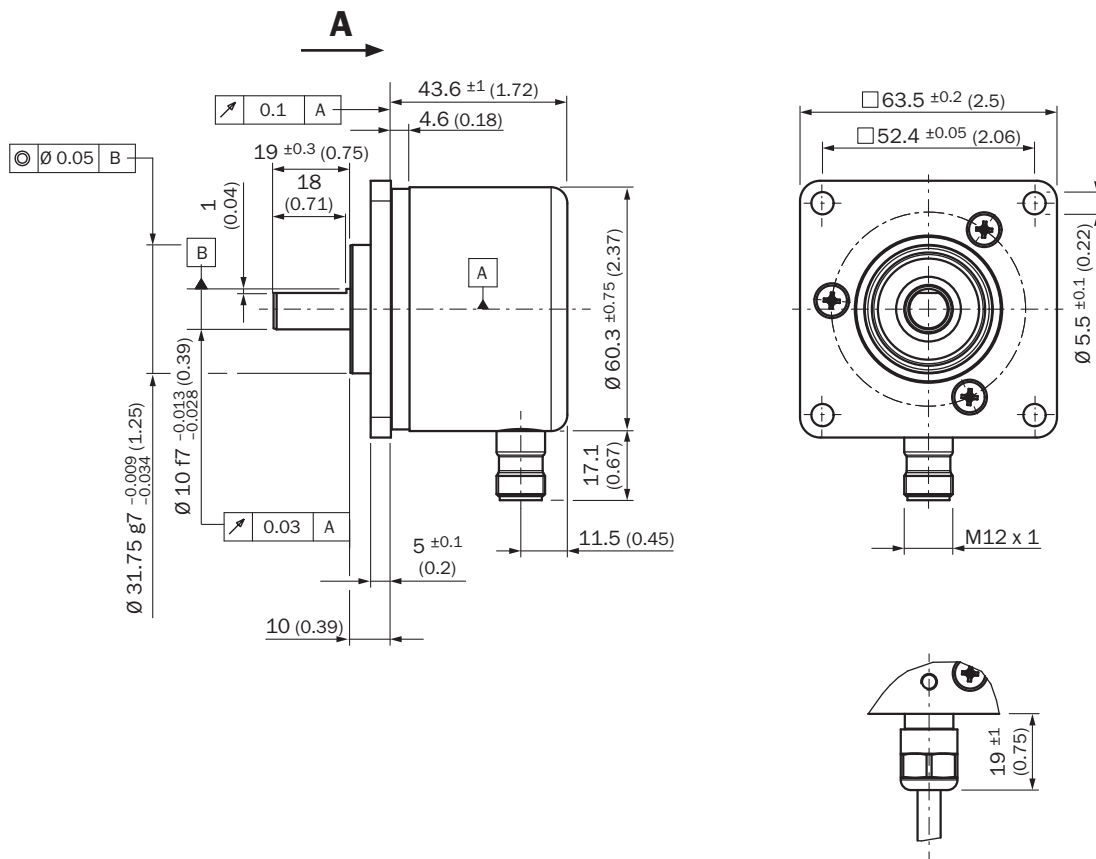
PIN assignment

M12 male connector, 8-pin and cable, 8-wire, SSI/Gray

```
    5 ----- 8
 6          4
 7          3
 1 ----- 2
```

View of M12 male device connector on encoder

PIN	Wire colors (cable connection)	Signal	Explanation
1	Brown	Data -	Interface signals
2	White	Data +	Interface signals
3	Black	V/R	Sequence in direction of rotation
4	Pink	SET	Electronic adjustment Interface signals
5	Yellow	Clock +	Interface signals
6	Purple	Clock -	Interface signals
7	Blue	GND	Ground connection
8	Red	U_S	Operating voltage
		Screen	Screen connected to housing on encoder side. Connected to ground on control side.

Diagrams

Speed consideration (n)

Steps per revolution vs Speed N [min⁻¹]
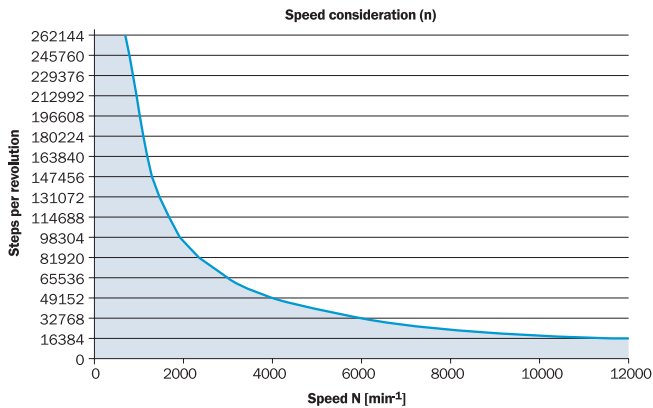
The maximum speed is also dependent on the shaft type.

SICK AT A GLANCE

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