



Absolute encoders AFS/AFM60 SSI

AFS60A-BBAC262144

Model Name > [AFS60A-BBAC262144](#)
Part No. > [1062673](#)

At a glance

- High-resolution absolute encoders with up to 30 bits (AFM60) or up to 18 bits (AFS60)
- Face mount flange, servo flange, blind or through hollow shaft
- SSI, SSI + Incremental or SSI + Sin/Cos interface
- Programmable resolution and offset (dependent on type)
- Connection system: M12, M23 connector or cable outlet
- Enclosure rating: IP 67 (housing), IP 65 (shaft)
- Operating temperature: -30 °C to +100 °C (depends on type)

Your benefits

- Programmability of the encoders means less storage, greater machine availability and easy installation
- Precise positioning due to high resolutions
- Large selection of mechanical interfaces and electrical contacting possibilities: Suitable for all applications
- Suitable for applications with limited space requirements (extremely short installation depth of 30 mm)
- Very good rotation accuracy due to increased bearing distance
- One programming tool and software with automatic encoder detection for AFS60/AFM60/DFS60



Electrical data

MTTFd: mean time to dangerous failure:	250 a (EN ISO 13849-1) ¹⁾
Reverse polarity protection:	0

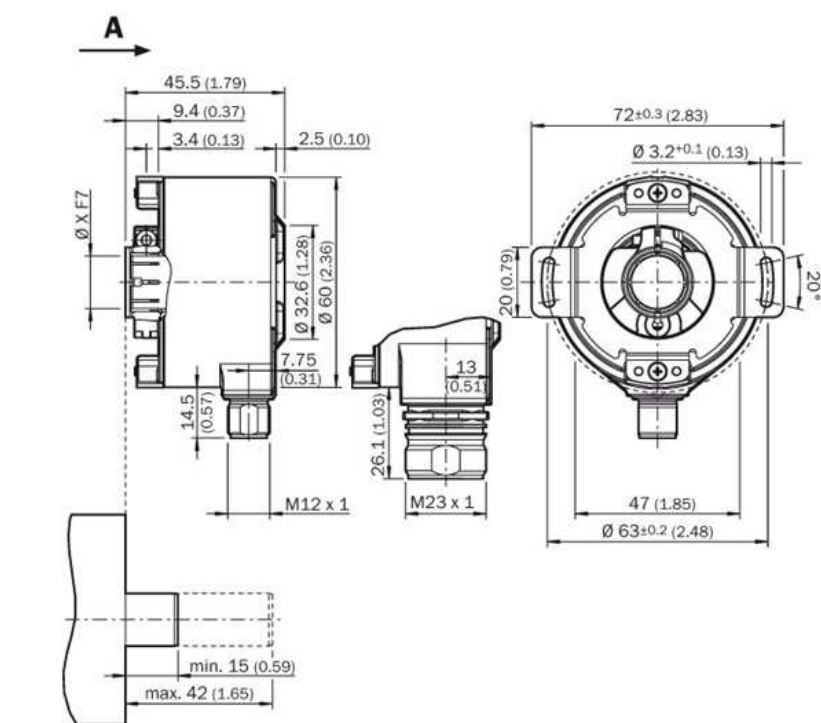
¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive.

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.

Dimensional drawing



PIN assignment

Pin	Color wires	Signal SSI	Explanation
1	Brown	Data-	Interface signals
2	White	Data+	Interface signals
3	Black	CW/CCW	Counting sequence when turning
4	Pink	SET	Electronic adjustment
5	Yellow	Clock+	Interface signals
6	Lilac	Clock-	Interface signals
7	Blue	GND	Ground connection
8	Red	+U _S	Supply voltage
		Screen	Screen on the encoder side connected to the housing. On the control side connected to earth.

SSI data format singleturn

Bit 1-13: Position Bits

- LSB: Least significant Bit
- MSB: Most significant Bit

Bit 19-21: Error Bits

- ERRDIG: Failure message about speed. If this failure occurs during the position building procedure it will be indicated by the ERRDIG-Bit.
- ERRSI: Light source monitoring failure.
- ERRSYNC: Contamination of the disc or scanning system. During the determination of the position, an error has occurred since the last SSI transmission. The error bit will be deleted during the next data transmission.

The evaluation of the error bits has to be realized in the PLC.
The provided error bits don't have to be used by the PLC compulsorily.

Example
If the resolution of the absolute encoder is set on 13 bits, 16 bits are provided by the encoder: 13 data bits and 3 error bits. If the PLC is not able to evaluate the error bits, the PLC has to be set on a resolution of 13 bits. Then the error bits have to be masked out by the PLC.

SSI data format multiturn

30 Bits

Bit 1-12: Position Bits multiturn
Bit 13-30: Position Bits singleturn
Bit 31-33: Error Bits

27 Bits

Bit 1-12: Position Bits multiturn
Bit 13-27: Position Bits singleturn
Bit 28-30: Error Bits

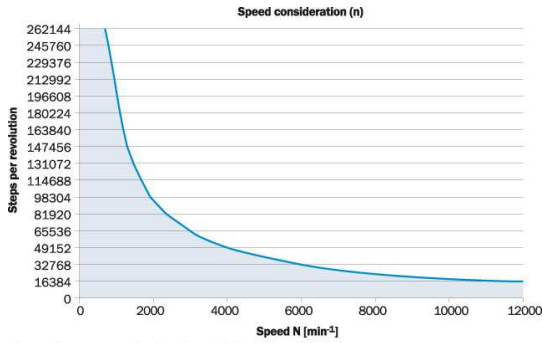
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The evaluation of the error bits has to be realized in the PLC.
The provided error bits don't have to be used by the PLC compulsorily. The multiturn resolution is fixed on 12 bits.

Example
If the resolution of the absolute encoder is set on 27 bits, 30 bits are provided by the encoder: 27 data bits and 3 error bits. If the PLC is not able to evaluate the error bits, the PLC has to be set on a resolution of 27 bits. Then the error bits have to be masked out by the PLC.

Drehzahlbetrachtung



The maximum speed is also dependent on the shaft type.

Signalausgänge

SSI data format singleturn

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Interfaces

Electrical interfaces size 0.5 V_{CC}

Power supply	Output
A+, 5.5 V	5Vcc 0.5 V _{CC}

Signal before differential generation at load 120 Ω at U_{CC} = 5 V
Signal diagram for absolute relation of the shaft looking in direction "A" (shaft)

Direction signals A+, B+, C+, D+ Signal before differential generation at load 120 Ω - Signal after
Timing differential 0.5 V_{CC} ± 10 % 2.0 V ± 10 %

Signal after differential generation at load 120 Ω at U_{CC} = 5 V
Signal diagram for absolute relation of the shaft looking in direction "A" (shaft)

Incremental pulse diagram for absolute relation of the shaft looking in direction "A", see dimensional drawing

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