



Absolute encoders AFS/AFM60 SSI

AFM60A-BDAK262144



Model Name > [AFM60A-BDAK262144](#)
Part No. > [AFM60A-BDAK262144](#)



Illustration may differ

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



Performance

Max. number of steps per revolution:	262,144
Max. number of revolutions:	4,096
Resolution power:	262,144 x 4,096
Resolution:	18 bit x 12 bit
Error limits:	± 0.03 °
Repeatability (Ta not constant):	0.002 °
Measuring step deviation:	± 0.002 °
Measuring step:	0.014 °
Initialization time:	50 ms ¹⁾

¹⁾ Valid positional data can be read once this time has elapsed

Mechanical data

Mechanical interface:	Blind hollow shaft
Shaft diameter:	10 mm

Start up torque:	0.8 Ncm (20 °C)
Operating torque:	0.6 Ncm (20 °C)
Maximum operating speed:	6,000 /min ¹⁾
Moment of inertia of the rotor:	40 gcm ²
Bearing lifetime:	3.0 x 10 ⁹ revolutions
Max. angular acceleration:	500,000 rad/s ²
Permissible movement axial static/dynamic:	± 0.5 mm, ± 0.01 mm
Permissible movement radial static/dynamic:	± 0.3 mm, ± 0.05 mm

¹⁾ Self warming of 3.3 K per 1000 revolutions/min when applying note working temperature range

Electrical data

Power consumption:	0.5 W (without load)
Operating voltage range:	4.5 V DC ... 32 V DC
MTTFd: mean time to dangerous failure:	250 a (EN ISO 13849-1) 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 40°C, frequency of use 8760 h/a. All

electronic failures are considered hazardous. For more information, see document no. 8015532.

Interfaces

Electrical interface:	Cable, 8-pin, universal, 1.5 m ¹⁾
Interface signals:	Clock +, Clock -, Data +, Data- ²⁾
Clock frequency:	2 MHz
SET (electronic adjustment):	H-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)
CW/CCW (counting sequence when turning):	L-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)

¹⁾ The universal cable outlet is positioned in such a way, that it is possible to lay the cable in a radial or axial direction without kinking it ²⁾

Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3) ¹⁾
Enclosure rating:	IP 65 (according to IEC 60529), shaft side, IP 67 (according to IEC 60529)
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)
Working temperature range:	-30 °C ... 100 °C
Storage temperature range:	-40 °C ... 100 °C, without package
Resistance to shocks:	60 g (according to EN 60068-2-27)
Resistance to vibration:	20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

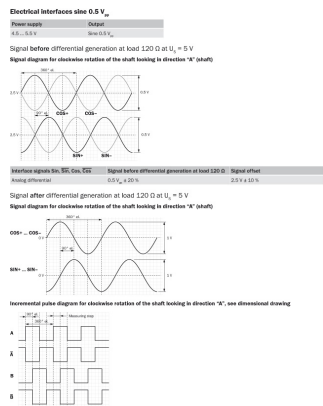
¹⁾

|1| Cable diameter = 5,6 mm
+/- 2 mm Bending radius = 30 mm



The graph shows the relationship between speed and steps per revolution. The y-axis, labeled 'Steps per revolution', ranges from 16384 to 262144. The x-axis, labeled 'Speed N [min⁻¹]', ranges from 0 to 12000. A blue curve starts at a high value for low speed and decreases as speed increases, approaching a horizontal asymptote.

Interfaces



SSI data format singlet

SSI data format multiplex

SSI data format multiplex

27 Bits

31 Bits

35 Bits

39 Bits

43 Bits

47 Bits

51 Bits

55 Bits

59 Bits

63 Bits

67 Bits

71 Bits

75 Bits

79 Bits

83 Bits

87 Bits

91 Bits

95 Bits

99 Bits

103 Bits

107 Bits

111 Bits

115 Bits

119 Bits

123 Bits

127 Bits

131 Bits

135 Bits

139 Bits

143 Bits

147 Bits

151 Bits

155 Bits

159 Bits

163 Bits

167 Bits

171 Bits

175 Bits

179 Bits

183 Bits

187 Bits

191 Bits

195 Bits

199 Bits

203 Bits

207 Bits

211 Bits

215 Bits

219 Bits

223 Bits

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243 Bits

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251 Bits

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303 Bits

307 Bits

311 Bits

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611 Bits

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619 Bits

623 Bits

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631 Bits

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951 Bits

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959 Bits

963 Bits

967 Bits

971 Bits

975 Bits

979 Bits

983 Bits

987 Bits

991 Bits

995 Bits

999 Bits

1003 Bits

1007 Bits

1011 Bits

1015 Bits

1019 Bits

1023 Bits

1027 Bits

1031 Bits

1035 Bits

1039 Bits

1043 Bits

1047 Bits

1051 Bits

1055 Bits

1059 Bits

1063 Bits

1067 Bits

1071 Bits

1075 Bits

1079 Bits

1083 Bits

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