EAM300-S - SSI

Solid shaft with synchro flange

Magnetic single- or multiturn encoders 14 bit ST / 18 bit MT

Overview

- Encoder single- or multiturn / SSI
- Precise magnetic sensing
- Angular accuracy up to ±0.15°
- Resolution max. 32 bit (14 bit ST, 18 bit MT)
- High resistance to shock and vibrations
- High protection up to IP 67
- Radial or axial plug and cable connection

Technical data

Technical data - electrical ratings	
Voltage supply	4.5...30 VDC
Consumption typ.	60 mA (5 VDC, w/o load) 20 mA (24 VDC, w/o load)
Initializing time	≤ 170 ms after power on
Data currency	Typ. 2 µs (cyclic request)
Interface	SSI
Function	Multiturn Singleturn
Operating mode	Linear feedback shift register (on request)
Steps per revolution	≤16384 / 14 bit
Number of revolutions	≤262144 / 18 bit
Absolute accuracy	±0.15 ° (+20 ±15 °C) ±0.25 ° (-40...+85 °C)
Sensing method	Magnetic
Code	Gray or binary
Code sequence	CW: ascending values with clockwise sense of rotation; looking at flange
Inputs	SSI clock: Linereceiver RS422 Zero setting input Counting direction
Output stages	SSI data: Linedriver RS422
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3 (cable length <30 m, no connection to DC network) EN 61000-6-4
Diagnostic function	DATAVALID (on request)

Technical data - electrical ratings	
Approval	UL approval / E217823
Technical data - mechanical design	
Size (flange)	ø30 mm
Shaft type	ø5 x 12 mm solid shaft ø6 x 12 mm solid shaft ø8 x 12 mm solid shaft
Flange	Synchro flange
Protection EN 60529	IP 65 (without shaft seal) IP 67 (with shaft seal)
Operating speed	≤6000 rpm
Starting torque	≤0.75 Ncm (+20 °C, IP 65) ≤1.1 Ncm (+20 °C, IP 67)
Moment of inertia	0.98 gcm²
Admitted shaft load	≤10 N axial ≤10 N radial
Material	Housing: steel zinc-coated Flange: aluminium Shaft: stainless steel
Operating temperature	-40...+85 °C (see general information)
Relative humidity	95 %
Resistance	EN 60068-2-6 Vibration 30 g, 10-2000 Hz EN 60068-2-27 Shock 500 g, 1 ms
Weight approx.	150 g
Connection	Flange connector M12, 8-pin Cable 2 m

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General information

Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximates 6 K (standstill) and additionally for movement 1.5 K per 1000 rpm (IP 65) or 3.5 K per 1000 rpm (IP 67). Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

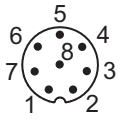
Terminal assignment

Cable
for connection reference **-L** and **-U**

Core colour	Signals	Description
brown	+Vs	Voltage supply
white	0 V	Voltage supply
green	Clock+	Clock signal
yellow	Clock-	Clock signal
grey	Data+	Data signal
pink	Data-	Data signal
blue	SET	Zero setting input
red	DIR	Counting direction input
Screen: connected to housing		
Cable data: 8 x 0.09 mm^2		

Flange connector M12, 8-pin
for connection reference **-A** and **-B**

Pin	Signals	Description
1	0 V	Voltage supply
2	+Vs	Voltage supply
3	Clock+	Clock signal
4	Clock-	Clock singal
5	Data+	Data signal
6	Data-	Data signal
7	SET	Zero setting input
8	DIR	Counting direction input
Screen: connected to housing		



Terminal significance

SET	Zero setting. Input for zero setting at any position. The zero setting operation is triggered by a high pulse and has to be in line with the selected direction of rotation (DIR). Impulse duration >100 ms. Connect to 0 V after zero setting for maximum interference immunity.
DIR	Counting direction input. The input is standard on high. For maximum interference immunity connect to +Vs respectively 0 V depending on counting direction. CW HIGH - CCW LOW (Version with DATAVALID does not include the counting directon input).

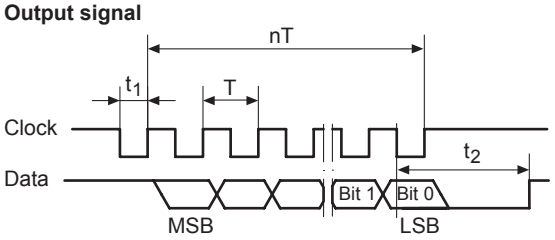
Trigger level

Control inputs	**Input circuit**
Maximal	0...+Vs
Input level Low	<1 V
Input level High	>2.1 V

Applies to standard cable lengths up to 2 m, for longer cables the voltage drop must be taken into account.

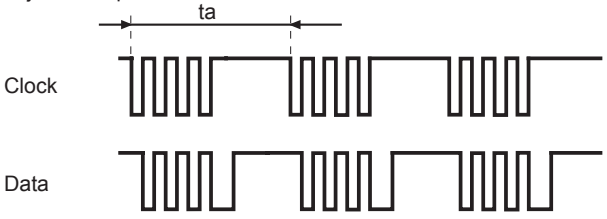
Data transfer

Output signal



T = 0.5...10 µs	t_1 = 0.25...5 µs
t_2 = 20 ±2 µs	f max. = 2 MHz

Data acquisition time ta
Following timing of the SSI Masters is the requirement for a data refresh rate of typ. 2 µs. If this is not fulfilled the data refresh rate is <50 µs.
ta <5000 µs
ta jitter <±2 µs



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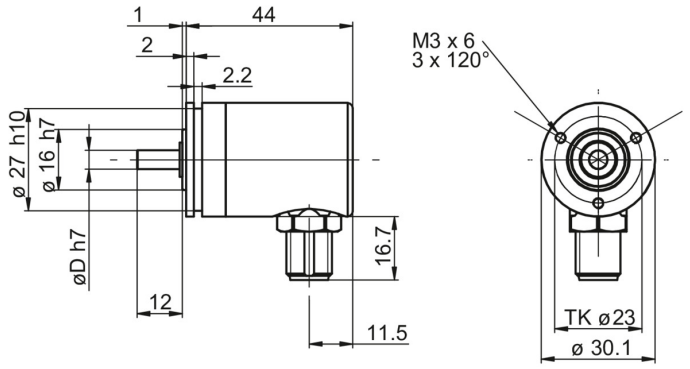
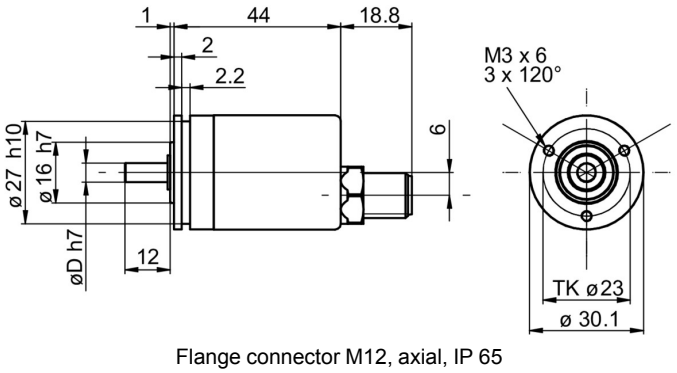
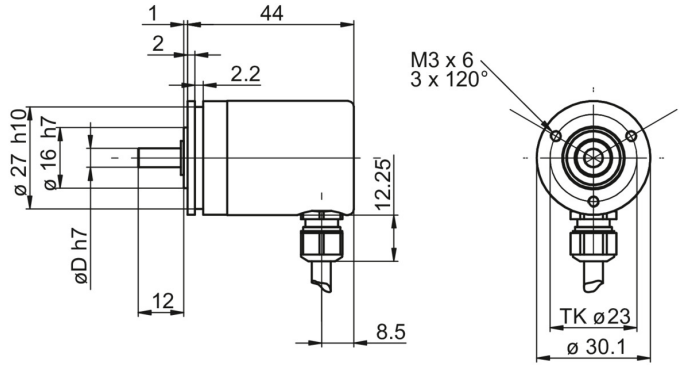
Dimensions



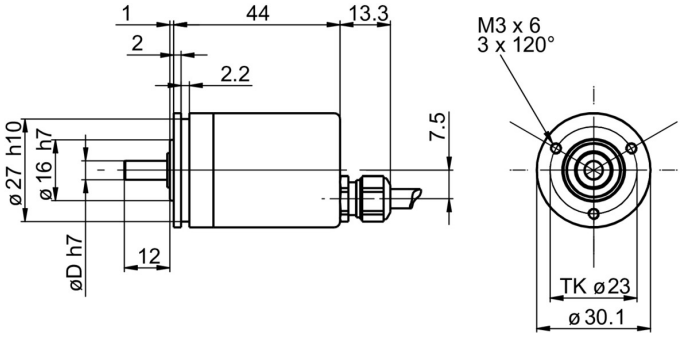
Flange connector M12, radial, IP 65



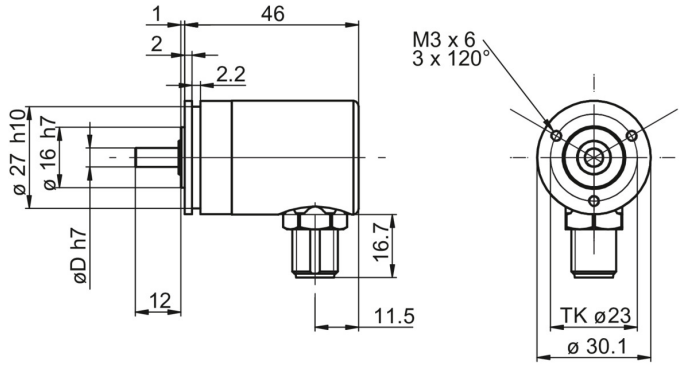
Flange connector M12, axial, IP 65



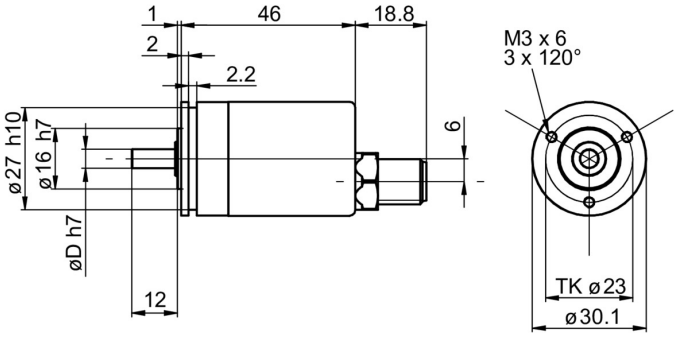
Cable, radial, IP 65



Cable, axial, IP 65



Flange connector M12, radial, IP 67



Flange connector M12, axial IP 67

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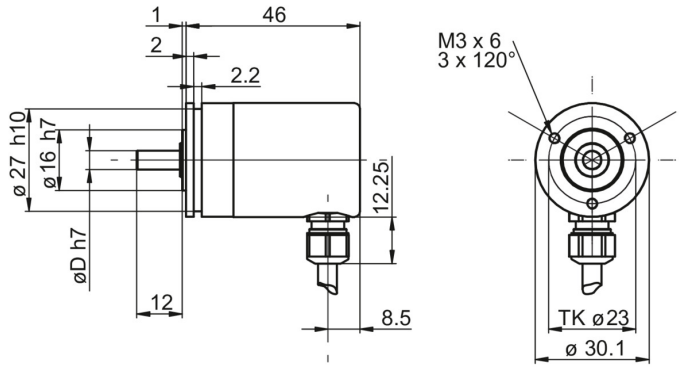
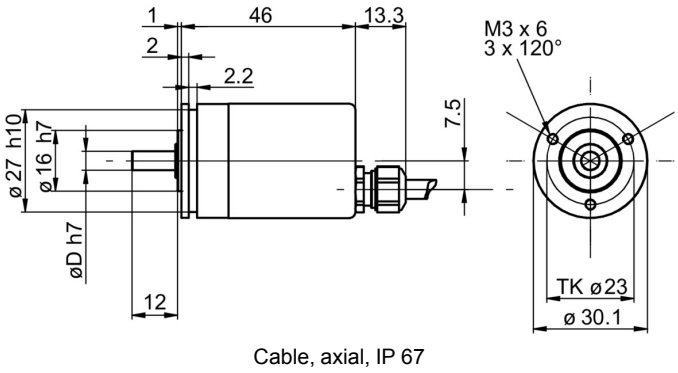
Dimensions



Cable, radial, IP 67



Cable, axial, IP 67

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Ordering reference

	EAM300	-	S	M	#	.	#	##	##	.	##	##	0	.	A
Product															
	EAM300														
Shaft type															
Solid shaft			S												
Flange (shaft)															
Bride synchro, ø27mm, M3				M											
Shaft															
ø8 x 12 mm					8										
ø5 x 12 mm					5										
ø6 x 12 mm					6										
Protection class															
IP 65							5								
IP 67							7								
Connection															
Flange socket axial, M12, 8-pin, male contacts, CCW								A							
Flange socket radial, M12, 8-pin, male contacts, CCW								B							
Cable radial, 2 m								L							
Cable axial, 2 m								U							
Voltage supply / interface															
4.5...30 VDC, SSI binary									4B						
4.5...30 VDC, SSI gray									4G						
Resolution Singleturn															
12 Bit											12				
13 Bit											13				
14 Bit											14				
Resolution Multiturn															
No option												00			
12 Bit												12			
13 Bit												13			
16 Bit												16			
18 Bit												18			
Resolution supplement															
No option													0		
Operating temperature															
-40...+85 °C															A

Accessories

Mounting accessories

10106004	Clamp set ø10 mm