

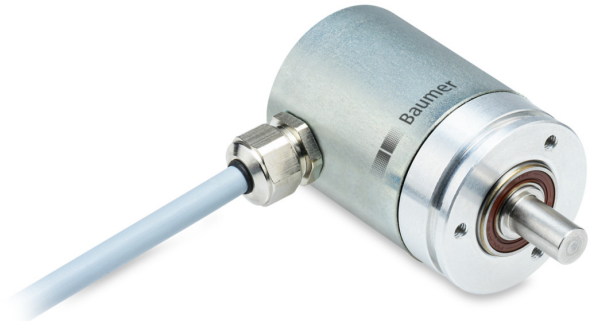
## EAM300-S - SSI

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  $\pm 0.15^\circ$
- 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	$\leq 170$ ms after power on
Data currency	Typ. 2 $\mu$ s (cyclic request)
Interface	SSI
Function	Multiturn Singleturn
Operating mode	Linear feedback shift register (on request)
Steps per revolution	$\leq 16384$ / 14 bit
Number of revolutions	$\leq 262144$ / 18 bit
Absolute accuracy	$\pm 0.15^\circ$ (+20 $\pm 15^\circ$ C) $\pm 0.25^\circ$ (-40...+85 $^\circ$ 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)	$\varnothing 30$ mm
Shaft type	$\varnothing 5 \times 12$ mm solid shaft $\varnothing 6 \times 12$ mm solid shaft $\varnothing 8 \times 12$ mm solid shaft
Flange	Synchro flange
Protection EN 60529	IP 65 (without shaft seal) IP 67 (with shaft seal)
Operating speed	$\leq 6000$ rpm
Starting torque	$\leq 0.75$ Ncm (+20 $^\circ$ C, IP 65) $\leq 1.1$ Ncm (+20 $^\circ$ C, IP 67)
Moment of inertia	0.98 gcm <sup>2</sup>
Admitted shaft load	$\leq 10$ N axial $\leq 10$ N radial
Material	Housing: steel zinc-coated Flange: aluminium Shaft: stainless steel
Operating temperature	-40...+85 $^\circ$ 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

# EAM300-S - SSI

Solid shaft with synchro flange

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

## 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 approximate 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

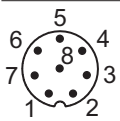
Cable data: 8 x 0.09 mm<sup>2</sup>

### 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 signal
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 direction input).

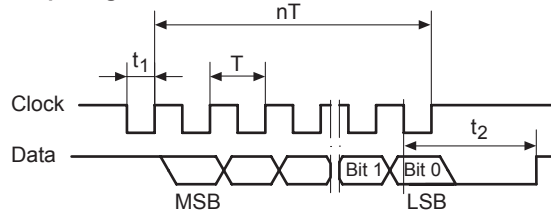
## Trigger level

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



$T = 0.5 \dots 10 \mu\text{s}$

$t_1 = 0.25 \dots 5 \mu\text{s}$

$t_2 = 20 \pm 2 \mu\text{s}$

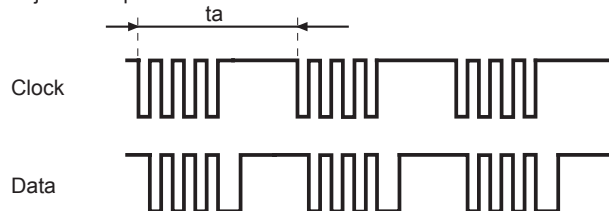
$f_{\text{max.}} = 2 \text{ MHz}$

### Data acquisition time $t_a$

Following timing of the SSI Masters is the requirement for a data refresh rate of typ. 2  $\mu\text{s}$ . If this is not fulfilled the data refresh rate is <50  $\mu\text{s}$ .

$t_a < 5000 \mu\text{s}$

$t_a \text{ jitter} < \pm 2 \mu\text{s}$

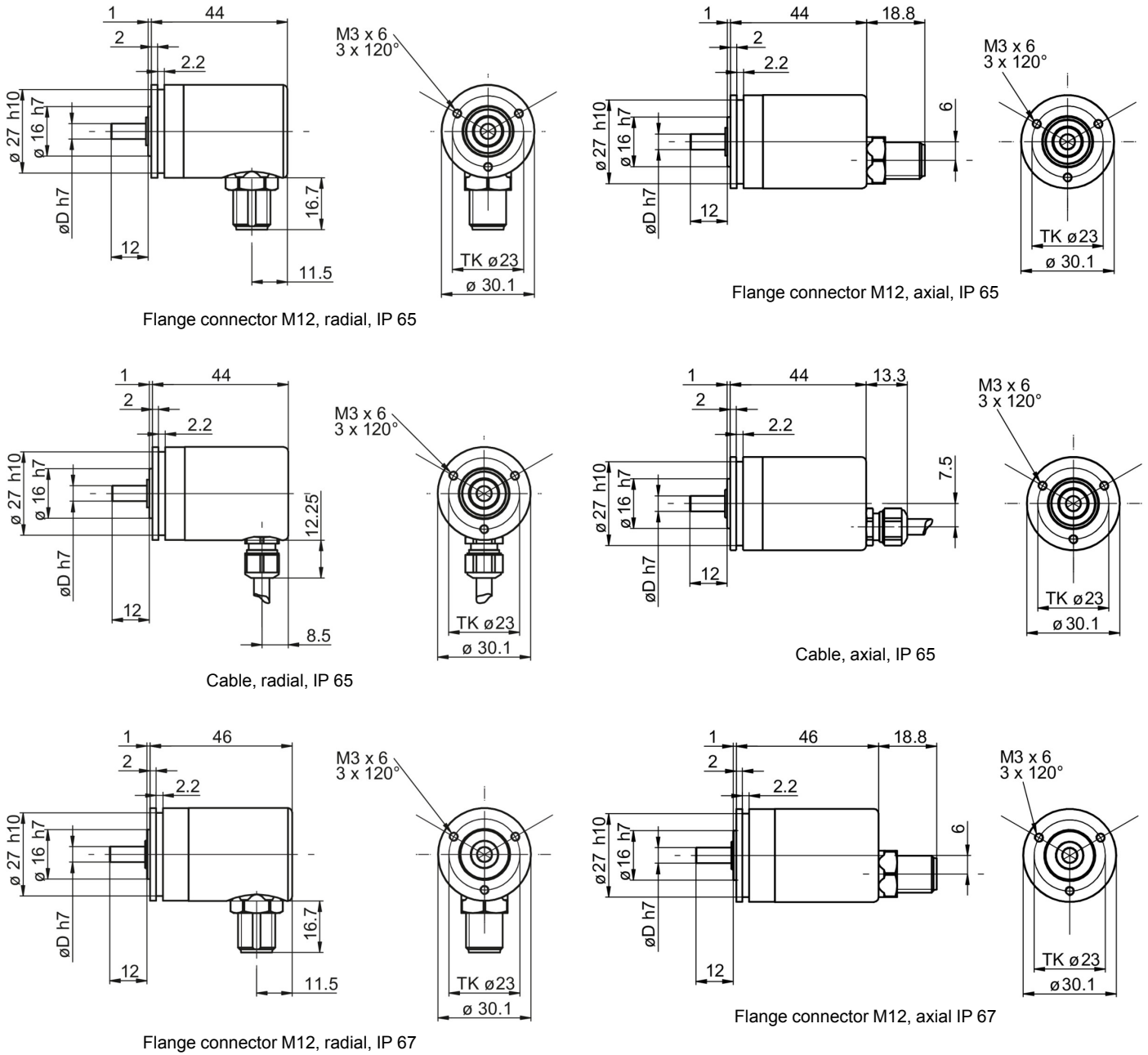


# EAM300-S - SSI

Solid shaft with synchro flange

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

## Dimensions

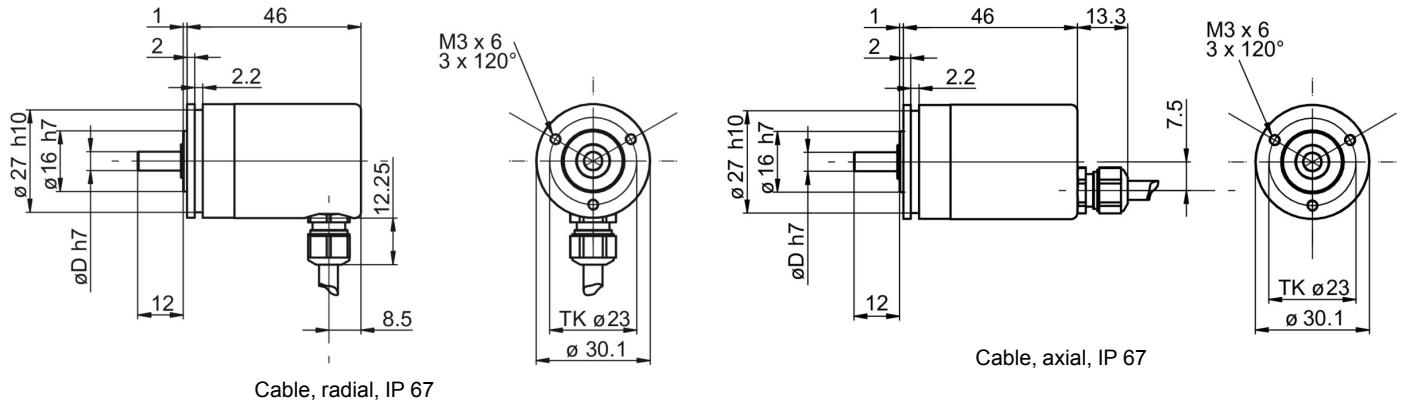


# EAM300-S - SSI

Solid shaft with synchro flange

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

## Dimensions



# EAM300-S - SSI

Solid shaft with synchro flange

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

## Ordering reference

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

## Accessories

### Mounting accessories

10106004 Clamp set ø10 mm