

# EAM300-BF6.5A4G.13120.A

Blind hollow shaft, magnetic multiturn encoder 13 bit ST / 12 bit MT

Article number: 11273673

## Overview

- Encoder multiturn / SSI
- Precise magnetic sensing
- Angular accuracy up to  $\pm 0.15^\circ$
- Resolution 25 bit (13 bit ST, 12 bit MT)
- High resistance to shock and vibrations
- High protection up to IP 65
- Axial plug 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
Operating mode	Linear feedback shift register (on request)
Steps per revolution	8192 / 13 bit
Number of revolutions	4096 / 12 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
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

### Technical data - electrical ratings

Diagnostic function	DATAVALID (on request)
Approval	UL approval / E217823

### Technical data - mechanical design

Size (flange)	$\varnothing 30$ mm
Shaft type	$\varnothing 6$ mm (blind hollow shaft)
Protection EN 60529	IP 65 (without shaft seal)
Operating speed	$\leq 6000$ rpm
Starting torque	$\leq 0.75$ Ncm (+20 $^\circ$ C)
Moment of inertia	0.71 gcm <sup>2</sup>
Admitted shaft load	$\leq 10$ N axial $\leq 10$ N radial
Material	Housing: steel zinc-coated Flange: aluminium Hollow 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.	130 g
Connection	Flange connector M12, 8-pin

**General information**

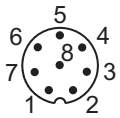
Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximate 6 K (standstill) and additionally for movement 1.5 K per 1000 rpm (IP 65) or 3.5 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**

**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).

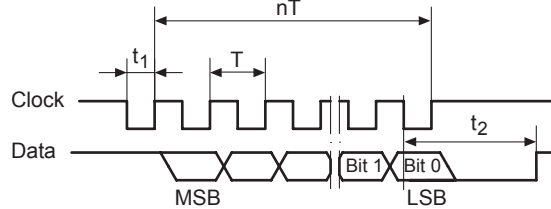
**Trigger level**

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**



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

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

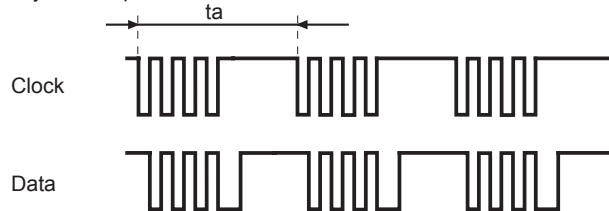
$t_2 = 20 \pm 2 \mu\text{s}$

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

**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  $\mu\text{s}$ .

$t_a < 5000 \mu\text{s}$   
 $t_a \text{ jitter} < \pm 2 \mu\text{s}$

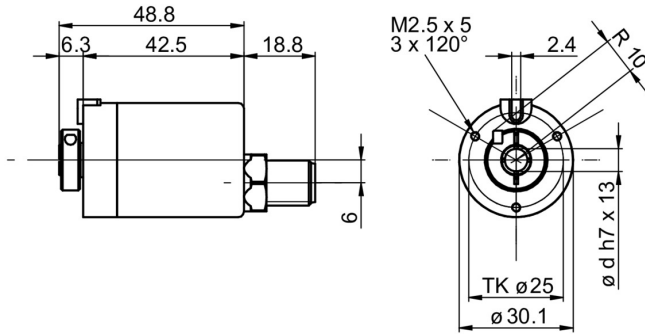


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## Dimensions



Flange connector M12, axial, IP 65

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### Accessories

#### Mounting accessories

10164796 Set of spring plate - EAM300