

## Encoders

magnetic absolute Encoder, SSI Interface with BISS-C Protocol, 4096 steps per revolution

For combination with Brushless DC-Motors

### Series AES-4096

		AES-4096	
Steps per revolution		4 096	
Resolution		12 Bit	
Signal output		SSI Interface with BISS-C Protocol	
Supply voltage	$U_{DD}$	4,5 ... 5,5	V
Current consumption, typical <sup>1)</sup>	$I_{DD}$	typ. 16, max. 23	mA
Output current, max. (DATA) <sup>2)</sup>		4	mA
Clock Frequency, max. (CLK)		2	MHz
Input low level (CLK)		0 ... 0,8	V
Input high level (CLK)		2 ... $U_{DD}$	V
Setup time after power on, max.	$t_{setup}$	4	ms
Timeout	$t_{timeout}$	16	$\mu$ s
Inertia of sensor magnet	$J$	0,08	gcm <sup>2</sup>
Operating temperature range		-40 ... +100	°C

<sup>1)</sup>  $U_{DD} = 5$  V: with unloaded outputs

<sup>2)</sup>  $U_{DD} = 5$  V: low logic level < 0,4 V, high logic level > 4,6 V: CMOS- and TTL compatible

#### For combination with Motor

<b>Dimensional drawing A</b>	<L1 [mm]		
2444 ... B - K3051	55,3		
3056 ... B - K3051	67,3		
3564 ... B - K3051	75,3		
4490 ... B - K3051	100,3		
4490 ... B5 - K3051	100,3		
<b>Dimensional drawing B</b>	<L1 [mm]		
2232 ... BX4	50,2		
2250 ... BX4	68,2		
2250 ... BX4 S	68,2		
<b>Dimensional drawing C</b>	<L1 [mm]		
3242 ... BX4	60,0		
3268 ... BX4	86,0		

#### Characteristics

The absolute encoder in combination with the FAULHABER motors is ideal for commutation, speed and position control. It can also be used to create a sinusoidal commutation signal.

In the AES version, absolute position information is provided with a resolution of up to 4096 steps per revolution at the signal outputs and communicated via a SSI Interface with BISS-C Protocol. Absolute means, that each shaft position is assigned to an unique angular value within one revolution. This value is already available directly after power-on.

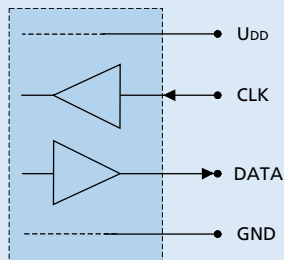
The advantages are a reduced torque ripple, a higher efficiency, and reduced electrical noise generation.

For brushless DC-Motors series BX4 both motor and encoder are connected via a common ribbon cable.

To view our large range of accessory parts, please refer to the "Accessories" chapter.

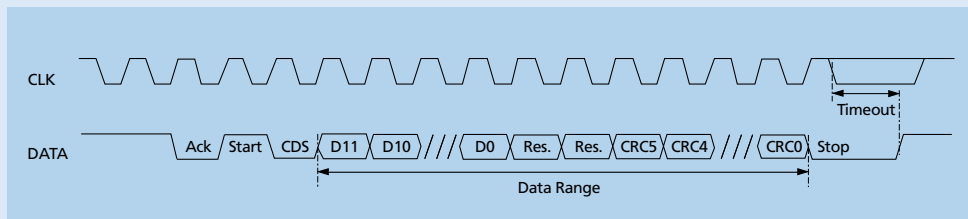
**Circuit diagram / Output signals**

**Output circuit**



**Interface Protocol BISS-C**

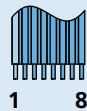
Angle position values are ascending for clockwise rotation.  
Clockwise rotation as seen from the shaft end.



**Connector information / Variants**

No.	Function
1	Phase C
2	Phase B
3	Phase A
4	GND
5	U <sub>DD</sub>
6	CLK
7	N.C.
8	DATA

**Connection Encoder and Motor see dimensional drawing B and C**



**Option**

For brushless DC-Motors series BX4 connector variants (Option no.: 3830) AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800



No.	Function
1	GND
2	U <sub>DD</sub>
3	CLK
4	N.C.
5	DATA
6	N.C.

**Connection Encoder see dimensional drawing A**

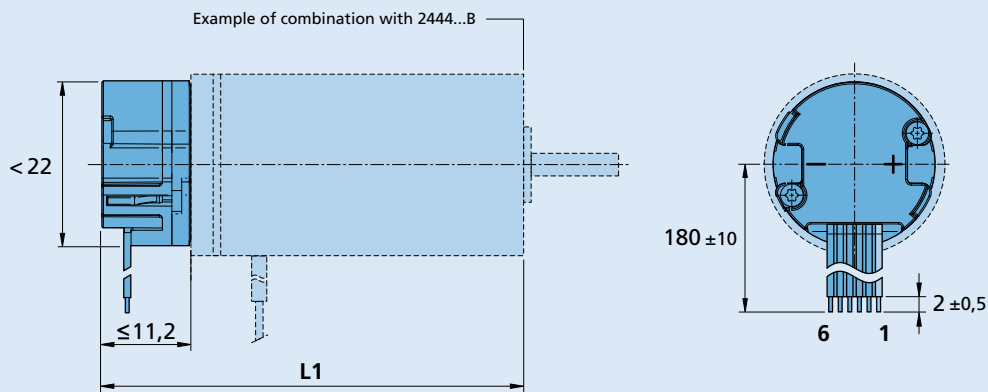


**Full product description**

Example:  
2444024B-K3051 AES-4096  
3242G024BX4 AES-4096

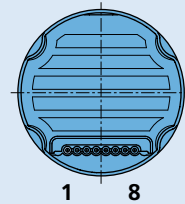
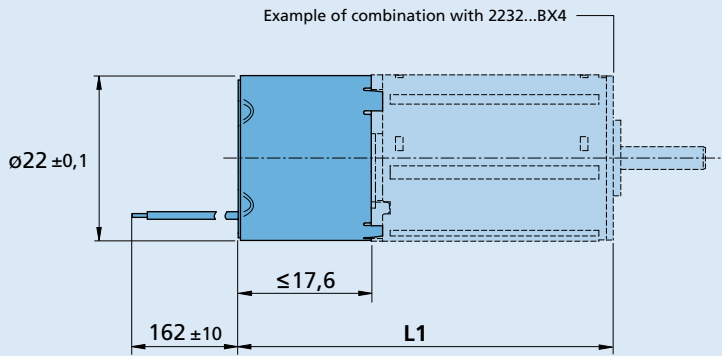
**Caution:**  
Incorrect lead connection will damage the motor electronics!

**Dimensional drawing A**



**AES-4096**

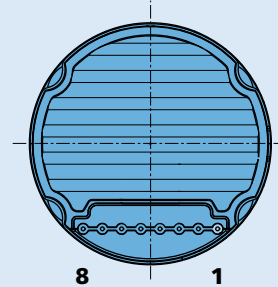
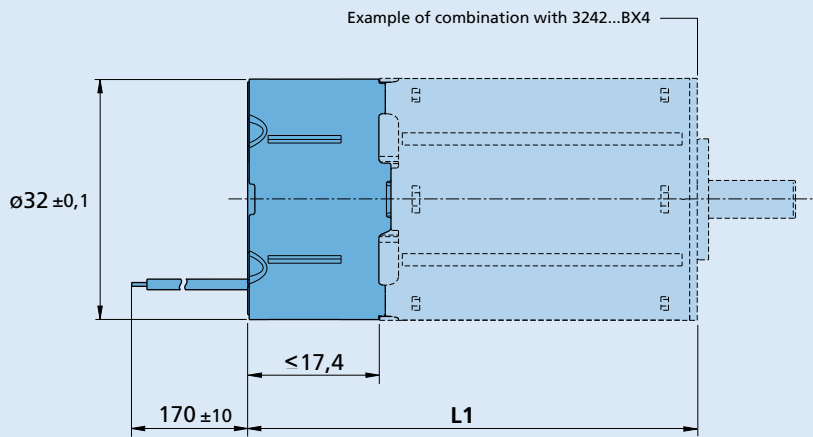
**Dimensional drawing B**



**Cable**  
PVC-ribbon cable  
8-AWG 26, 1,27 mm

**AES-4096**

**Dimensional drawing C**



**Cable**  
PVC-ribbon cable  
8-AWG 24, 2,54 mm

**AES-4096**