

Encoders

magnetic single-turn 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 | |
| Single-turn resolution | | 12 Bit | |
| Signal output | | SSI Interface with BISS-C Protocol | |
| Supply voltage | U_{DD} | 4,5 ... 5,5 | V |
| Current consumption, typical ¹⁾ | I_{DD} | typ. 16, max. 23 | mA |
| Output current, max. (DATA) ²⁾ | | 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, typ. | $t_{timeout}$ | 16 | μ s |
| Inertia of sensor magnet | J | 0,08 | gcm^2 |
| Operating temperature range | | -40 ... +100 | $^{\circ}C$ |

¹⁾ $U_{DD} = 5$ V: with unloaded outputs

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

For combination with Motor

| Dimensional drawing A | <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 | | |
| Dimensional drawing B | <L1 [mm] | | |
| 2232 ... BX4 | 50,2 | | |
| 2250 ... BX4 | 68,2 | | |
| 2250 ... BX4 S | 68,2 | | |
| Dimensional drawing C | <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.

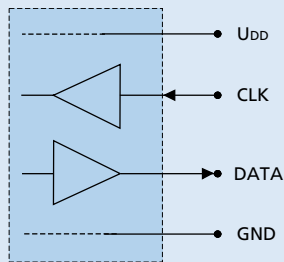
The advantages are a reduced torque ripple, a higher efficiency, and reduced electrical noise generation.

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.

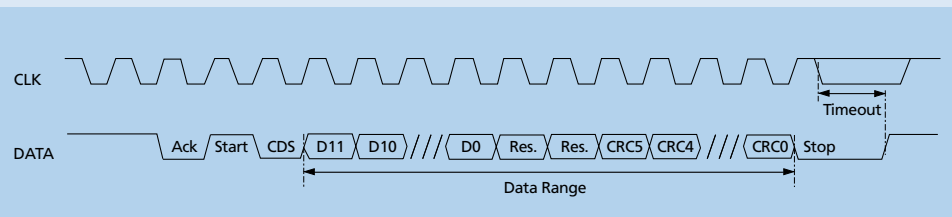
Circuit diagram / Output signals

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

Example product designation: 2444S024B-K3051 AES-4096

| Option | Type | Description |
|--------|---------------|---|
| 3830 | Connector | For brushless DC-Motors series BX4 connector variants AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800 |

Connection Encoder see drawing A

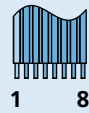
| No. | Function |
|-----|-----------------|
| 1 | GND |
| 2 | U _{DD} |
| 3 | CLK |
| 4 | N.C. |
| 5 | DATA |
| 6 | N.C. |



Standard cable
PVC-ribbon cable
6-AWG 26, 1,27 mm

see drawing B and C

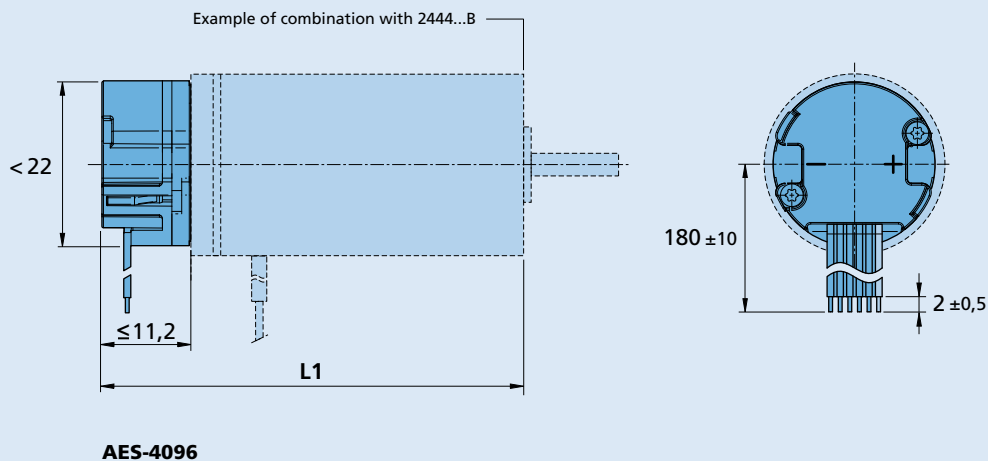
| No. | Function |
|-----|-----------------|
| 1 | Phase C |
| 2 | Phase B |
| 3 | Phase A |
| 4 | GND |
| 5 | U _{DD} |
| 6 | CLK |
| 7 | N.C. |
| 8 | DATA |



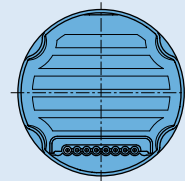
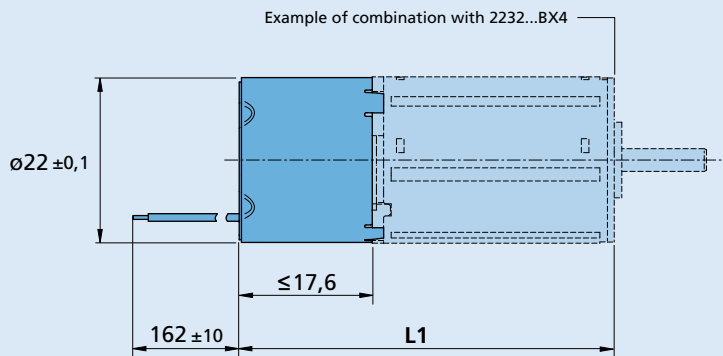
Standard cable
PVC-ribbon cable
Drawing B, 8-AWG 26, 1,27 mm
Drawing C, 8-AWG 24, 2,54 mm

Caution: incorrect lead connection will damage the motor electronics!

Dimensional drawing A

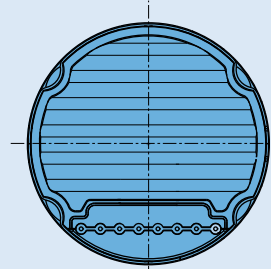
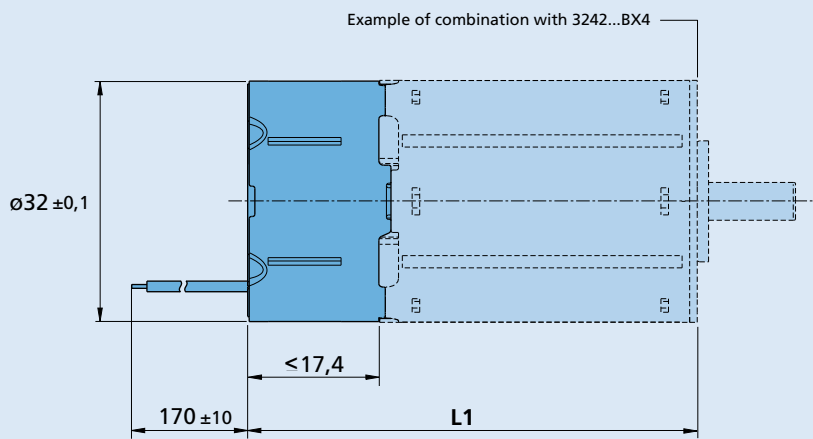


Dimensional drawing B



AES-4096

Dimensional drawing C



AES-4096