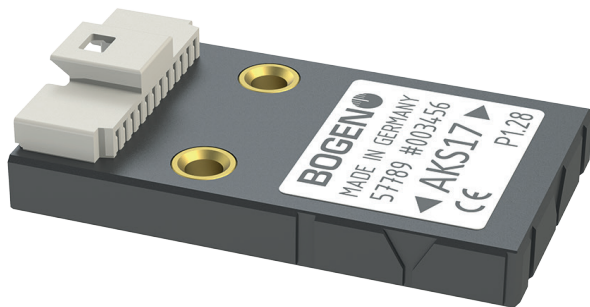




Measuring



Positioning



AKS17 Absolute Magnetic Sensing Head

- Rotary applications
- Linear applications
- Non-contact, quick position measurement

Features

- Lower case incremental
- 19 to 22 Bit absolute resolution
- 16 Bit incremental resolution
- Single piece unit
- No wear from usage
- Resistant to dust, cooling lubricant emulsion, oil, etc.
- Different diameters and length offered
- Application for Industrial Goods, Automation, Life Science and High-Tech Industry

Optimal motion control with the AKS17 – solution for rotary and linear scales

The absolute magnetic sensing head AKS17 for linear and rotary applications:

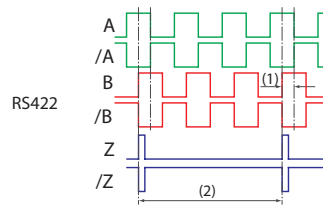
With the new absolute measuring head AKS17 and the associated scales BOGEN offers inexpensive magnetic linear and rotary measurement solutions for absolute measurements. The AKS17 provides linear measurements up to 2350 mm and rotational solutions both radially and axially, each with three different sizes. The measuring head also provides both BISS-C or SSI as output, plus incremental signal output in parallel. With a resolution of 19-22 bits this hollow shaft sensor surpasses typical shaft end applications many times over. With dimensions of 28 mm in length, 16 mm width at a maximum height of 6.6 mm, the measuring head is extremely compact.

Features

| | |
|-----------------------------------|--|
| Absolute resolution | 19-Bit (128/127/120 Nonius) 20-Bit (256/255/240 Nonius) 21-Bit (512/511/496 Nonius) 22-Bit (1024/1023/992 Nonius) |
| Commutation signal | For 1 to 16 pole pairs (UVW) |
| Rotation speed | tbd |
| Supply voltage | 5 V ± 5 % |
| Maximum output load | 50 mA per Channel |
| Energy consumption (without load) | <120 mA ± 5 % (UB = 5,0 V) |
| LED | Green LED = device on Red LED = bad set up (adjustment required) |
| Operating temperature | -20 to +60 °C |
| Storage temperature | -40 to +80 °C |
| Protection class | IP67 (with FFC connector) |
| ABZ Incremental resolution | 4 and 262144 in intervals of 4 steps |
| Weight | ca. 2.5 g |
| Pole pitch | 1.28 or 1.50 mm |

Output Signals ABZ

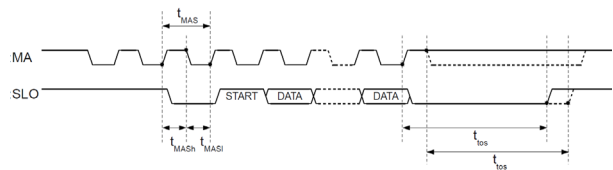
| | |
|---------------------------------|---------------------|
| Signals / Inverted signals | A, /A, B, /B, Z, /Z |
| Signal amplitude (without load) | RS422 (± 5 V) |



- (1) Phase shift A and B 90° ± 10° electrical
- (2) Signal period depending on the reference track pattern
Z Length default is 1 counts

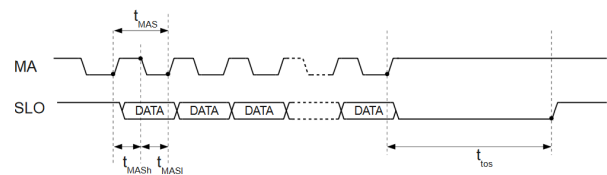
Output Signals BISS

| | |
|---|---------------------------------------|
| Signals | Clock (MA+, MA-) Data (SLO+, SLO-) |
| Signal amplitude (without load) | RS422 (± 5 V) |
| Protocol | BISS-C BP3 encoder profile |
| Timeout (t _{tos}) | 150-380 ns |
| Permissible clock period (t _{MAS}) | 100 ns up to 2 * timeout |
| Clock signal hi level duration (t _{MASh}) | 50 ns up to timeout |
| Clock signal lo level duration (t _{MASl}) | 50 ns |



Output Signals SSI

| | |
|---|---------------------------------------|
| Signals | Clock (MA+, MA-) Data (SLO+, SLO-) |
| Signal amplitude (without load) | RS422 (± 5 V) |
| Multiturn | output possible |
| Timeout (t _{tos}) | 375-605 ns |
| Permissible clock period (t _{MAS}) | 250 ns up to 2 * timeout |
| Clock signal hi level duration (t _{MASh}) | 125 ns up to timeout |
| Clock signal lo level duration (t _{MASl}) | 125 ns |



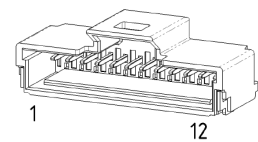
Orientation Options

| | Orientation Option 1 (Parallel) | Orientation Option 2 (Perpendicular) |
|---------------------|---------------------------------|--------------------------------------|
| Linear Scale | | |
| Rotary Scale Radial | | |
| Rotary Scale Axial | | |

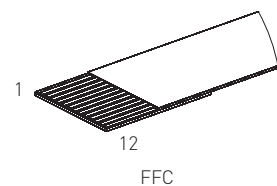
Note:
Not mentioned dimensions are equivalent to specification of dimensions Molex

Pin Assignment

| Signal | Pin No. | |
|--------|--|------------------------------|
| | Connector C1 | Connector C3 |
| | Molex 501568-1207 (12 pin male connector) | FFC (12 pin, 0.5mm pitch) |
| /Z | 1 | 1 |
| Z | 2 | 2 |
| /B | 3 | 3 |
| SLO- | 4 | 4 |
| SLO+ | 5 | 5 |
| V- | 6 | 6 |
| V+ | 7 | 7 |
| MA- | 8 | 8 |
| MA+ | 9 | 9 |
| B | 10 | 10 |
| /A | 11 | 11 |
| A | 12 | 12 |



Molex 501568-1207

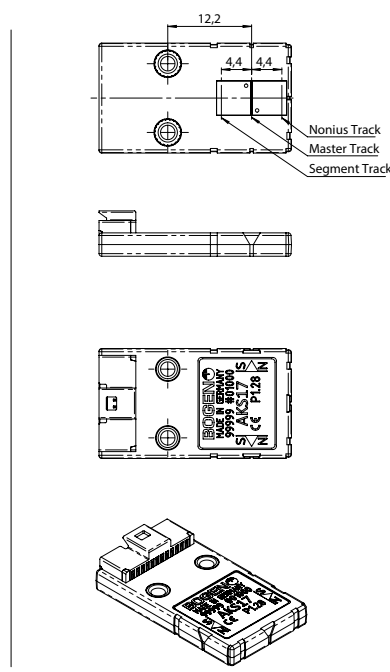
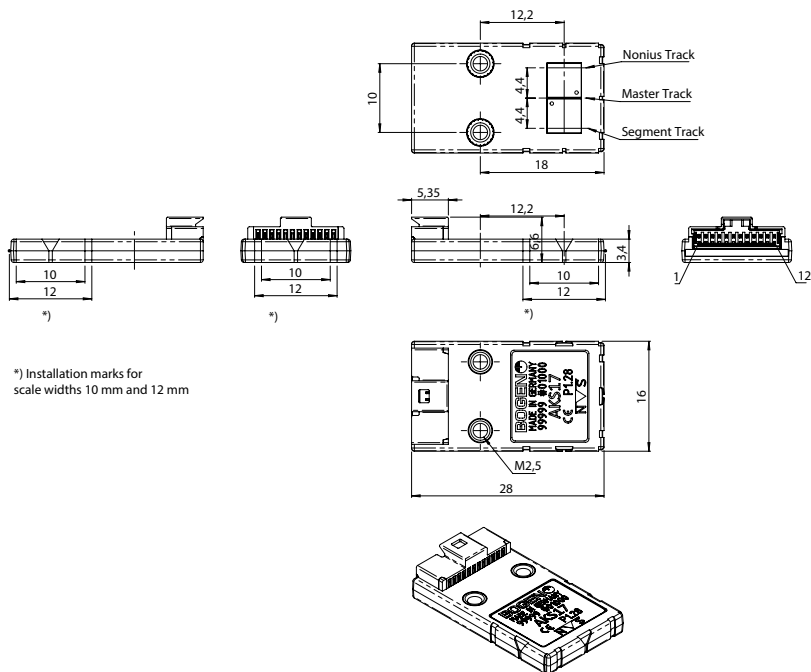


FFC

Dimensions Molex

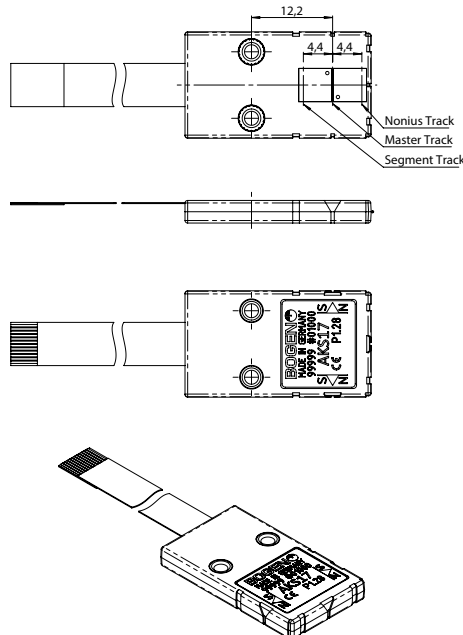
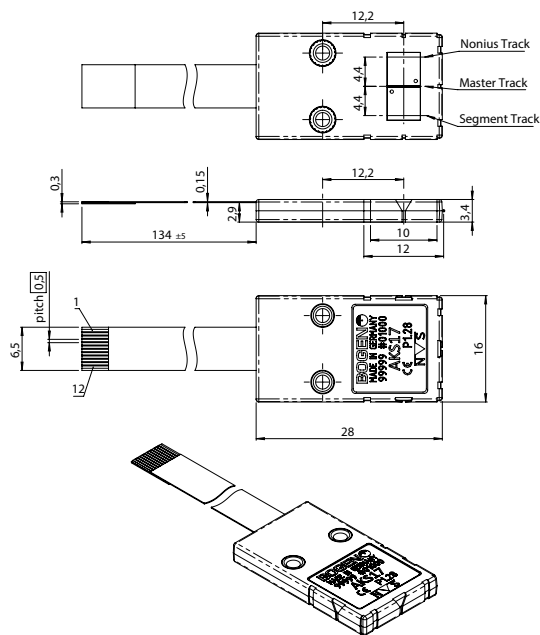
Orientation Option 1 (parallel)

Orientation Option 2 (perpendicular)



*) Installation marks for scale widths 10 mm and 12 mm

Dimensions FFC



Note:
Not mentioned dimensions are equivalent to specification of dimensions Molex

Calibration

Each unit needs to be calibrated in final assembly with a nonius scale. For the calibration, the scale needs to be moved over the whole measuring length. For calibration, the programming unit including cables and the BOGEN software will be needed. A PC is required for the calibration.

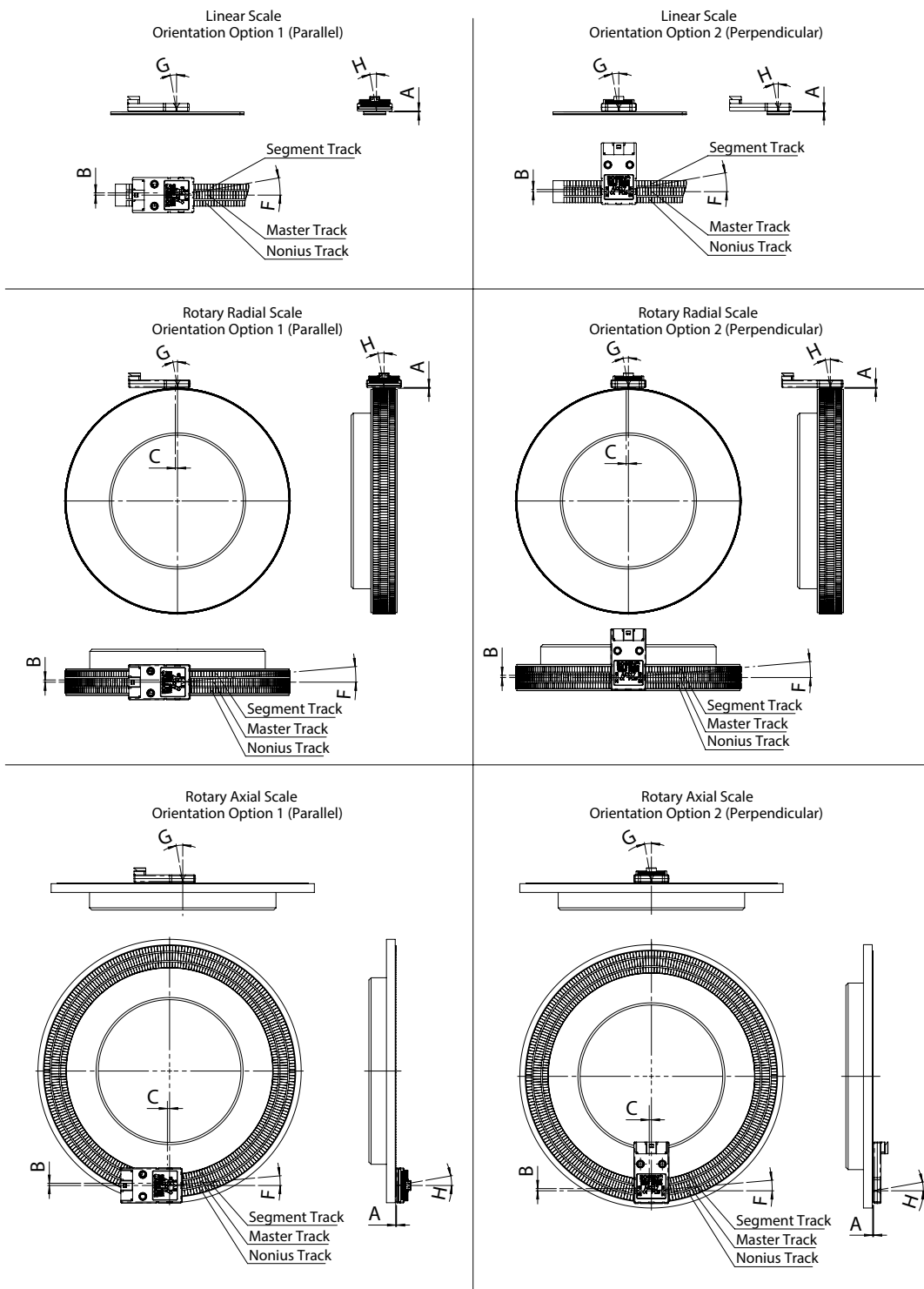
Optional Accessory

- 00052040: Programming unit (includes adapter and cable)
- 00022305: Receptacle connector housing 12 pol (Molex Part No.: 501330-1200)
- 00022306: Cable assembly 28 AWG, 300mm (Molex Part No.: 92001-1198)

Optional Accessory – rotary and linear scales

See separate data sheet for scales for further possibilities. >>

Installation Tolerances



Maximum Displacement

| | |
|--------|------|
| A [mm] | 0.4 |
| B [mm] | ±0.5 |
| C [mm] | ±0.5 |
| F [°] | tbd |
| G [°] | tbd |
| H [°] | tbd |

Note:

- For tolerance purposes the bracket for mounting the AKS17 should have adjustment options.
- Maximum eccentricity of rotary scale must be < 0.06 mm.
- Angular displacement: to be defined (tbd)
- The installation tolerance is the same for both orientation options

Order Code

Parameters

AKS17 -

| | | | | | | |
|---|---|---|---|---|---|---|
| Z | O | P | A | D | C | H |
|---|---|---|---|---|---|---|

| | | | Code ⁽¹⁾ | Explanation ⁽¹⁾ |
|-------------------|----------|---|---------------------|--|
| Parameters | Z | Size | Z4 | 19-Bit (128/127/120 Nonius) |
| | | | Z5 | 20-Bit (256/255/240 Nonius) |
| | | | Z6 | 21-Bit (512/511/496 Nonius) |
| | | | Z7 | 22-Bit (1024/1023/992 Nonius) |
| | O | Orientation Option | O1 | Parallel |
| | | | O2 | Perpendicular |
| | P | Pole Pitch [mm] | P1.28 | 1.28 mm |
| | | | P1.50 | 1.50 mm (available Q4/2016) |
| | A | Interface Absolute ⁽²⁾ | A1 | BISS |
| | | | A2 | SSI |
| | D | Interface Incremental ⁽²⁾ | D1 | None (on request) |
| | | | D2.<C> | ABZ (<C> counts of scale, value between 4 and 262144 in steps of 4, default is 16384) |
| | | | D3 | BLDC motor commutation (UVW) (on request) |
| | | | D4 | Step / direction (on request) |
| | | | D5 | CW / CCW Incremental (on request) |
| | C | Connector | C1 | Molex 12 pin |
| | | | C3.134 | FFC 12 pin, 0.5 mm pitch, length 134mm |
| | H | Housing | H1 | Standard case |
| | | | H2 | PCB only (on request) |

⁽¹⁾ standard parameters are bold

⁽²⁾ programmable with programming unit

Ordering Example

AKS17-Z501P1.28A1D2.16384C1H1 AKS17 Magnetic Sensing Head, size 20-Bit, orientation option parallel, 1.28 mm pole pitch, with BISS and ABZ interface with 16384 counts per scale, connector Molex 12 Pin, housing standard

AKS17-Z402P1.28A1D1C1H2 AKS17 Magnetic Sensing Head, size 19-Bit, orientation option perpendicular, 1.28 mm pole pitch, with BISS interface only, connector Molex 12 Pin, PCB only

AKS17-Z601P1.28A1D2.16384C3H1 AKS17 Magnetic Sensing Head, size 21-Bit, orientation option parallel, 1.28 mm pole pitch, with BISS and ABZ interface with 16384 counts per scale, connector 12 Pole FFC 0.5 mm pole pitch length 100mm, housing standard