

IKS15

Incremental Magnetic Sensing Head

IKS15 convinces customers in automation, measurement and control technology with extremely high accuracy and a particularly high degree of modularity. BOGEN offers different variants of the IKS15, which we configure according to customer-specific requirements. In combination with BOGEN precision scales, measurement solutions can thus be customized for almost any application.

Incremental
Measuring

Rotary
Linear
Applications

Positioning



Features and Benefits

- high accuracy
- software-programmable interface
- unlimited measuring length
- connector options including multiple cable lengths
- resistant to dust, cooling lubricant emulsion, etc.

Features

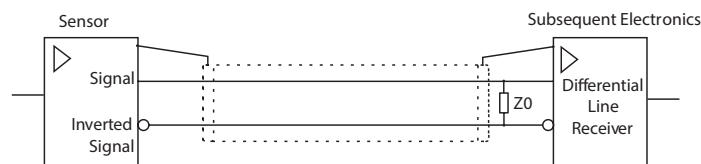
| | |
|-----------------------------------|--|
| signal band-width | up to 1 MHz |
| max. movement speed | up to 5000 m/s, depending on the pole pitch, resolution and max. output frequency (maximum movement speed of P 0.5 is 500 m/s; P 1 is 1000 m/s; P 2 is 2000 m/s; P 2.54 is 2540 m/s; P 5 is 5000 m/s) |
| energy consumption (without load) | < 50 mA (UB = 5 V) |
| operating temperature | - 20 to + 70 °C |
| storage temperature | - 20 to + 80 °C |
| protection class | IP67 |
| LED | green LED = set up ok red LED = LED error mode see order code on page 5 |
| adjustable parameters | interface (with optional programming device and the appropriate software) |
| weight | weight IKS15 (plastic case) ~60g (L2 T1 C4 standard quality cable with length 2 m; connector D-SUB 15) weight IKS15.1 (metal case) ~75g (L2 T1 C4 standard quality cable with length 2 m; connector D-SUB 15) |

Sensing Head Variants

| | |
|------------------------------|---|
| pole pitch | 0.5 mm; 1 mm; 2 mm; 2.54mm; 5 mm |
| reference | reference chip for 2nd track (except for 0.5 mm pole pitch) or periodically from the pole pitch |
| supply voltage | V5 = 5 V ± 5 % V7 = 7 - 32 V |
| interface (without load) | D4 = 1 Vpp D5 = 2 Vpp |
| cable length of sensing head | standard 2 m, optional variable length from 10 cm up to 6 m |
| connector | plug according to order code, other options on request |

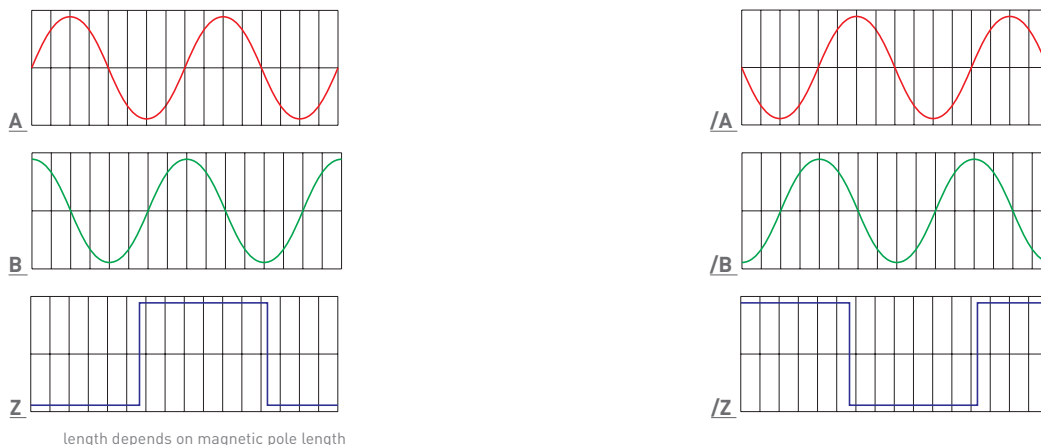
Output Circuit

load resistor 1 Vpp Z0 = 100 Ω, 2 Vpp Z0 = 1 kΩ at the receiving end



Output Signals

| | |
|------------------------|--|
| signals | cosinus (A,/A), sinus (B,/B), index (Z,/Z) |
| signal error indicator | output signals (A, /A, B, /B, Z, /Z) |



LED Error Codes (Order Parameter E1)

The amount of flashing signs of the red LED indicates the fault. It starts after a fast pulsed light.

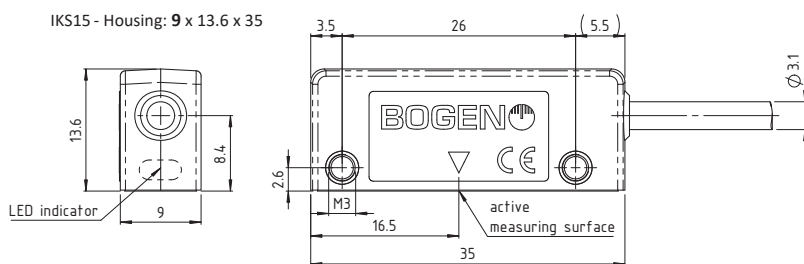


The example displays a weak and fluctuating magnetic field (fault 2 and 3).

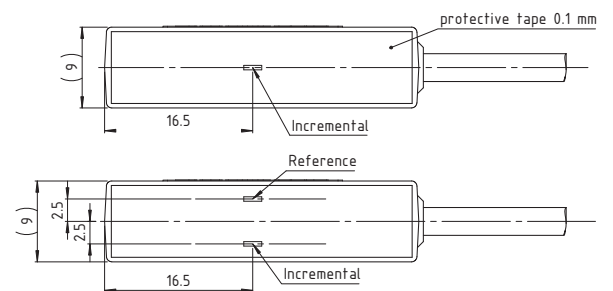
| LED flashing signs amount | description |
|---------------------------|--|
| 1, 2 | magnetic field error |
| 3 | the range of the magnetic fluctuation is too large |
| 4 | output frequency is too high |
| 5 | movement speed is too high |
| 6 | movement speed is much too high (latched) |
| 7, 8 | movement speed too high for internal signal, processing with current programming (latched) |
| 9, 10, 11 | internal error 9, 10, 11 (latched) |

Dimensions

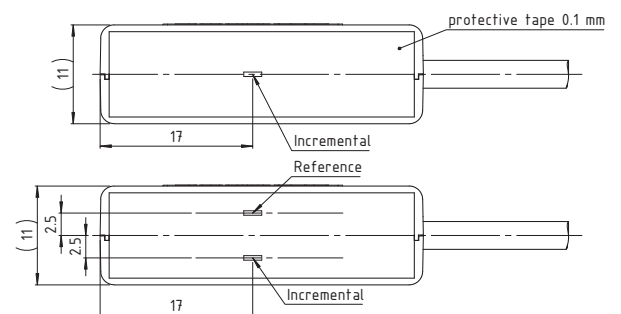
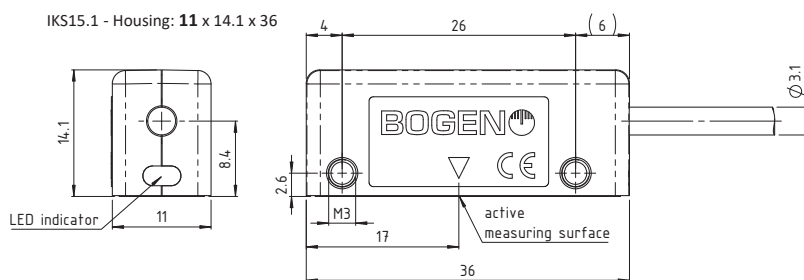
IKS15 - Housing: 9 x 13.6 x 35



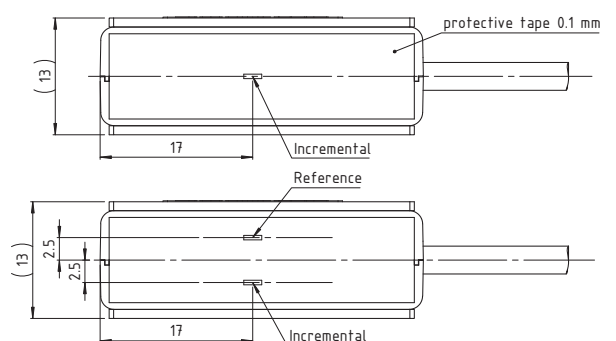
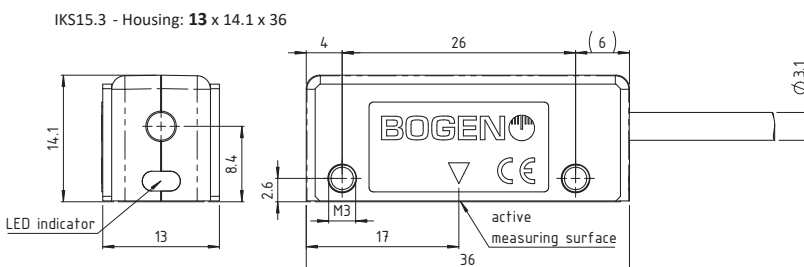
View on active measuring surface



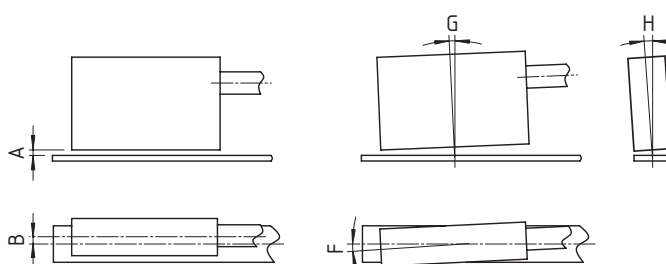
IKS15.1 - Housing: 11 x 14.1 x 36



IKS15.3 - Housing: 13 x 14.1 x 36



Installation Tolerances



| | pole pitch | | | | |
|-----------------------|-------------|------------|------------|-------------|------------|
| | 0.5 mm | 1 mm | 2 mm | 2.54 mm | 5 mm |
| A [mm] | 0.1 to 0.25 | 0.1 to 0.5 | 0.1 to 1.0 | 0.1 to 1.25 | 0.1 to 2.5 |
| B ⁽¹⁾ [mm] | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| B ⁽²⁾ [mm] | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| G | 0.5° | 1° | 1° | 1° | 1° |
| H | 3° | 3° | 3° | 3° | 3° |
| F | 3° | 3° | 3° | 3° | 3° |

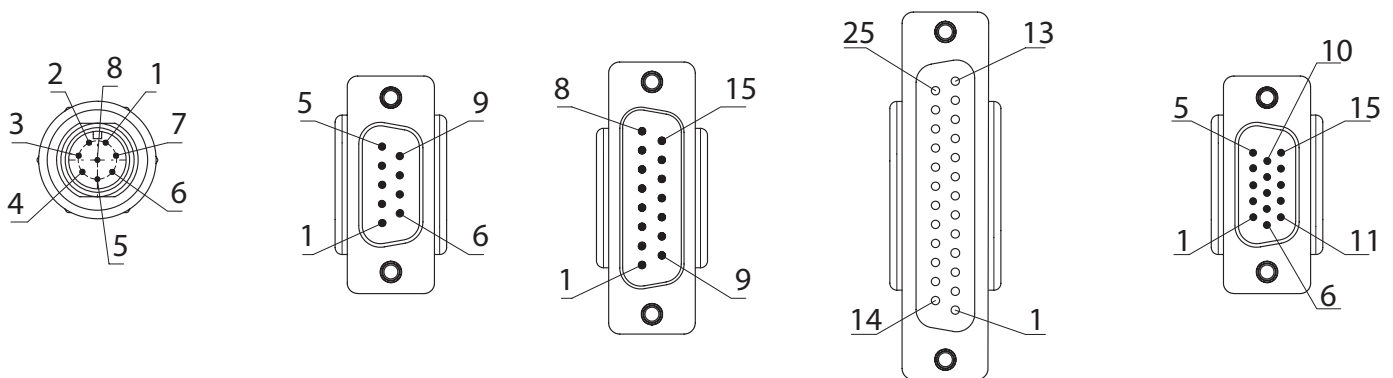
⁽¹⁾ relative to 10 mm scale width (1-track)

⁽²⁾ relative to 10 mm scale width (2-track)

Pin Assignment

| signal | color | pin no. | | | | |
|--------|-------|-----------------------|----------------------|-----------------------|-------------------------|--------------------------|
| | | C2 M12 plug (male) | C3 D-SUB 9 (male) | C4 D-SUB 15 (male) | C5 D-SUB 25 (female) | C6 D-SUB 15 HD (male) |
| V - | blue | 1 | 9 | 2 | 2 + 16 ⁽³⁾ | 2 |
| V + | red | 2 | 5 | 7 | 1 + 14 ⁽³⁾ | 7 |
| cos | A | 3 | 4 | 14 | 3 | 14 |
| | /A | 4 | 8 | 6 | 4 | 6 |
| sin | B | 5 | 3 | 13 | 6 | 13 |
| | /B | 6 | 7 | 5 | 7 | 5 |
| Z | pink | 7 | 2 | 12 | 17 | 12 |
| /Z | white | 8 | 6 | 4 | 18 | 4 |
| shield | - | 1 | case | case | case | case + 15 |

⁽³⁾ pin 1 with pin 14 and pin 2 with pin 16 connected through solder bridge



C2: M12 plug (male)

C3: D-SUB 9 (male)

C4: D-SUB 15 (male)

C5: D-SUB 25 (female)

C6: D-SUB 15 HD (male)

For detailed technical features on optional accessories such as rotary and linear scales please see separate data sheets.

Optional Accessory

Order Codes for Linear Scales, 10 mm Width

| pole pitch | accuracy A3 | accuracy A10 | accuracy A20 | accuracy A40 (standard) |
|------------|-----------------|------------------|------------------|-------------------------|
| 0.5 | KBEE10-0.5-A3K | KBEE10-0.5-A10K | KBEE10-0.5-A20K | KBEE10-0.5-K |
| 1 | KBEE10-1-A3K | KBEE10-1-A10K | KBEE10-1-A20K | KBEE10-1-K |
| 2 | KBEE10-2-A3K | KBEE10-2-A10K | KBEE10-2-A20K | KBEE10-2-K |
| 2.54 | KBEE10-2.54-A3K | KBEE10-2.54-A10K | KBEE10-2.54-A20K | KBEE10-2.54-K |
| 5 | KBEE10-5-A3K | KBEE10-5-A10K | KBEE10-5-A20K | KBEE10-5-K |

⁽⁴⁾ Scale dimensions: 10 mm x 1.3 mm (w/o cover tape), length up to 50 m. Other accuracies, other pole pitches, other scale widths and scales with reference track on request. See separate data sheet for linear scales for further possibilities.

Rotary Scales

For our complete scope of rotary scales, [please see separate data sheet.](#)

Order Code

IKS15 W - Z P V D L T C E

| | | code ⁽⁵⁾ | explanation ⁽⁵⁾ |
|---|---------------------------------|---------------------|--|
| W | width [mm] | | 9 mm (Plastic case) |
| | | .1 | 11 mm (Metal case) |
| | | .3 | 13 mm (Metal case) |
| Z | reference signal ⁽⁸⁾ | Z0 | without periodic index signal ⁽⁷⁾ |
| | | Z2 | from reference marks (requires 2-track magnetic tape with incremental track and reference track) |
| P | pole pitch [mm] | P0.5 | 0.5 mm (not interoperable with Z2) |
| | | P1 | 1 mm |
| | | P2 | 2 mm |
| | | P2.54 | 2.54 mm |
| | | P5 | 5 mm |
| V | supply voltage [V] | V5 | 5 V |
| | | V24 | 7...32 V (on request only) |
| D | interface ⁽⁶⁾ | D4 | 1 Vpp |
| | | D5 | 2 Vpp |
| L | cable length [m] | L1 | 1 m |
| | | L2 | 2 m |
| | | L3 | 3 m |
| | | L... | ... m |
| | | L6 | 6 m |
| T | cable type | T1 | standard quality (4 mm diameter) |
| | | T2 | drag chain quality |
| C | connector (others on request) | C2 | M12 plug (male) (on request only) |
| | | C3 | D-SUB 9 (male) |
| | | C4 | D-SUB 15 (male) |
| | | C5 | D-SUB 25 (female) |
| | | C6 | D-SUB 15 HD (male) |
| | | C99 | customer specific connector. |
| E | LED mode ⁽⁶⁾ | E0 | LED Green: best performance LED RED: Error signalization with LED on |
| | | E1 | LED green: best performance LED red: error signalization with blinking codes, see on page 2 |

⁽⁵⁾ standard parameters are bold

⁽⁶⁾ user programmable parameters (optional IKS-Programming device necessary)

⁽⁷⁾ please do not connect pin "Z" an "/Z" on delivered connector

⁽⁸⁾ Z length depend on magnetic pole length

Ordering Example

| | |
|------------------------|---|
| IKS15-Z0P2V5D4L2T2C4E1 | IKS15 Magnetic Sensing Head, width 9 mm, without periodic index signal, 2 mm pole pitch, voltage 5 V, interface 1 Vpp, cable length 2 m, standard cable, D-SUB 15 (male) connector, error signalization with blinking error codes |
|------------------------|---|

BOGEN can provide customised resolutions and cables. Here is an ordering example for a customized order code:

| | |
|----------------------------|--|
| IKS15.1-Z2P2V5D5L0.3T2C4E1 | IKS15 Magnetic Sensing Head, width 11 mm, with periodic index, 2 mm pole pitch, voltage 5 V, interface 2 Vpp, cable length 0.3 m, standard cable, D-SUB 15 (male) connector, error signalization with blinking error codes |
|----------------------------|--|

Corresponding Linear and Rotary Magnetic Scales

BOGEN offers a comprehensive scope of standard and tailor-made scales in a variety of sizes and accuracy classes.

For more information on our standard linear and rotary magnetic scales, [please refer to our dedicated datasheets.](#)

For your special requests, [please click here to contact our application engineers.](#)



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