

## 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

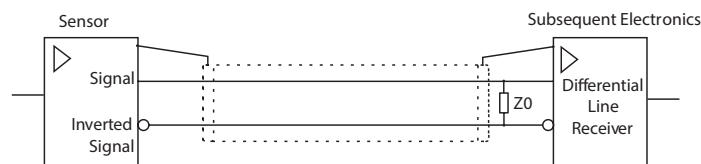
signal band-width	up to 1 MHz
max. movement speed	up to 5000 m/s, depending on the pole pitch, resolution and max. output frequency (maximum movement speed of P 0.5 is 500 m/s; P 1 is 1000 m/s; P 2 is 2000 m/s; P 2.54 is 2540 m/s; P 5 is 5000 m/s)
energy consumption (without load)	< 50 mA (UB = 5 V)
operating temperature	- 20 to + 70 °C
storage temperature	- 20 to + 80 °C
protection class	IP67
LED	green LED = power on and no error red LED = error mode, see error code on page 3
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 1 m and 3 m, optional variable length from 10 cm up to 6 m
connector	plug according to order code, other options on request

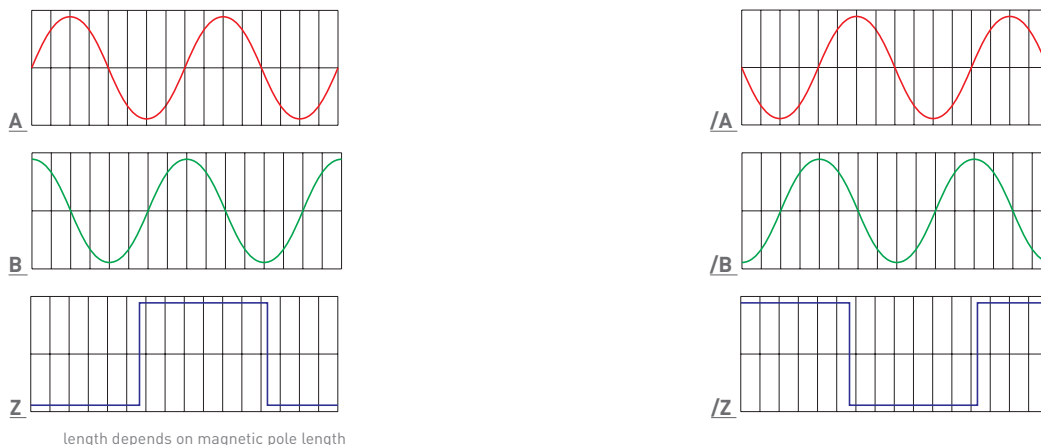
## Output Circuit

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)

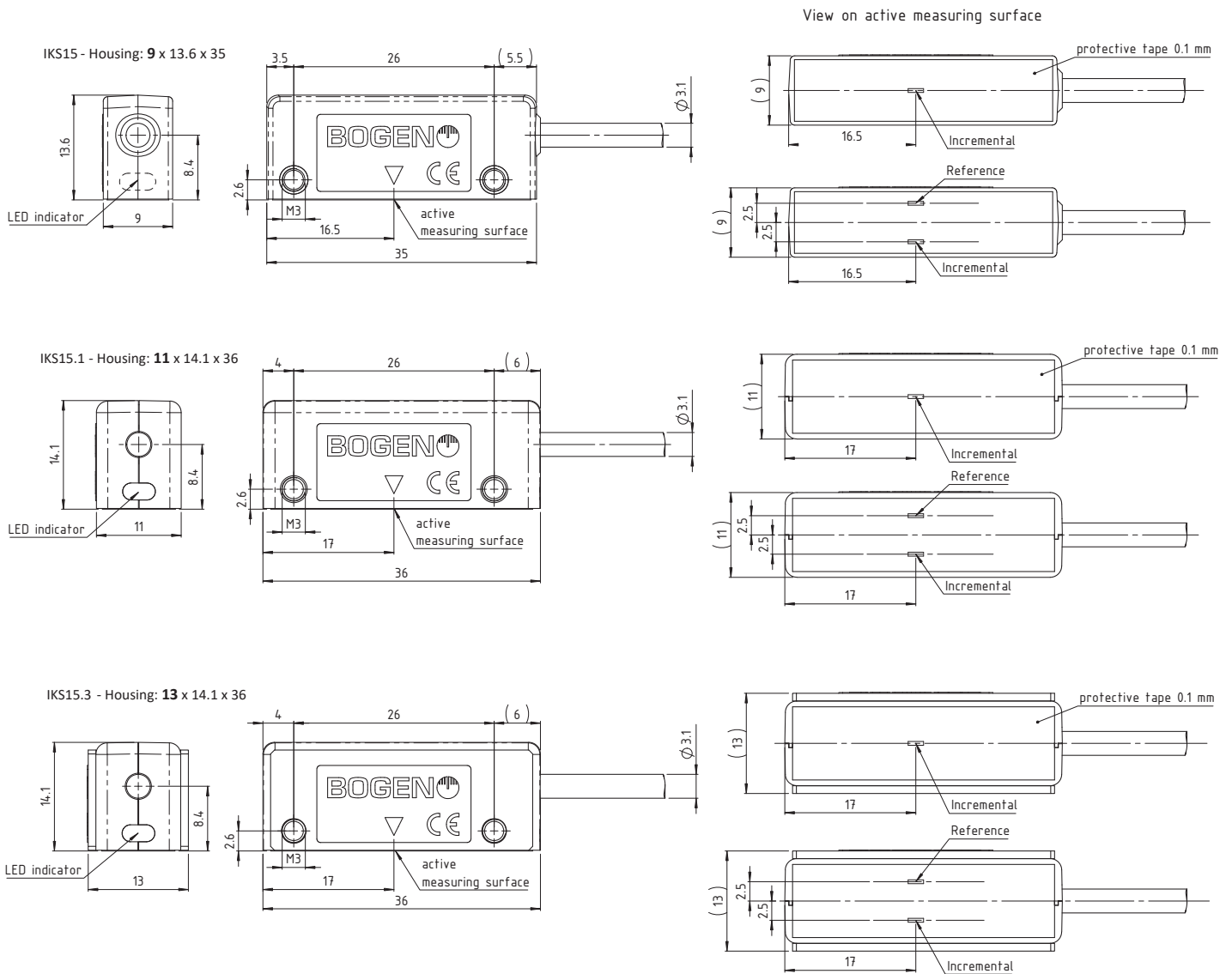
The amount of flashing signs of the red LED indicates the fault. It starts after a fast pulsed light.



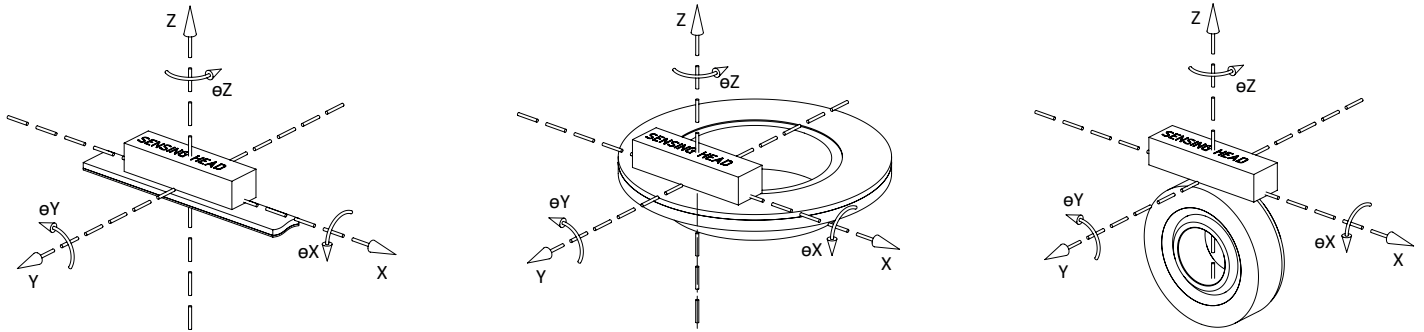
The example displays a faulty sensor (fault 1).

LED flashing signs amount	description
1	magnetic sensor out of order
11	temperature alarm
12	EEPROM malfunction

## Dimensions



## Installation Tolerances



	pole pitch				
	0.5 mm	1 mm	2 mm	2.54 mm	5 mm
Z [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
Y <sup>(1)</sup> [mm]	2.5	2.5	2.5	2.5	2.5
Y <sup>(2)</sup> [mm]	0.5	0.5	0.5	0.5	0.5
$\theta Y$	0.5°	1°	1°	1°	1°
$\theta X$	3°	3°	3°	3°	3°
$\theta Z$	3°	3°	3°	3°	3°

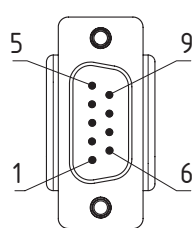
<sup>(1)</sup> relative to 10 mm scale width (1-track)

<sup>(2)</sup> relative to 10 mm scale width (2-track)

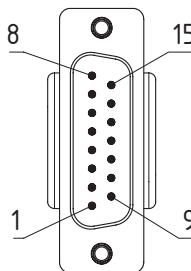
## Pin Assignment

signal	colour	pin no.		
		C3 D-SUB 9 (male)	C4 D-SUB 15 (male)	C7 M12 plug (male)
V -	blue	9	2	1
V +	red	5	7	2
cos	A	4	14	3
	/A	8	6	4
sin	B	3	13	5
	/B	7	5	6
Z	pink	2	12	7
/Z	white	6	4	8
shield	-	case	case	coupling screw

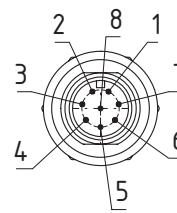
<sup>(3)</sup> pin 1 with pin 14 and pin 2 with pin 16 connected through solder bridge



C3: D-SUB 9 (male)



C4: D-SUB 15 (male)



C7: M12 plug (male)

## Order Code

**IKS15 - W - Z - P - V - D - L - T - C - E**

		code <sup>(5)</sup>	explanation <sup>(5)</sup>
<b>W</b>	width [mm]		9 mm (Plastic case)
		.1	11 mm (Metal case)
		.3	13 mm (Metal case)
<b>Z</b>	reference signal <sup>(8)</sup>	<b>Z0</b>	<b>without periodic index signal <sup>(7)</sup></b>
		Z2	from reference marks (requires 2-track magnetic tape with incremental track and reference track)
<b>P</b>	pole pitch [mm]	P0.5	0.5 mm (not interoperable with Z2)
		P1	1 mm
		<b>P2</b>	<b>2 mm</b>
		P2.54	2.54 mm
		P5	5 mm
<b>V</b>	supply voltage [V]	<b>V5</b>	<b>5 V</b>
		V24	7...32 V (on request only)
<b>D</b>	interface <sup>(6)</sup>	<b>D4</b>	<b>1 Vpp</b>
		D5	2 Vpp
<b>L</b>	cable length [m]	<b>L1</b>	<b>1 m</b>
		<b>L3</b>	<b>3 m</b>
		L ...	... m
		L6	6 m
<b>T</b>	cable type	<b>T2</b>	<b>drag chain quality (4 mm quality) <sup>(9)</sup></b>
		T99	customer specific cable
<b>C</b>	connector	C3	D-SUB 9 (male)
		<b>C4</b>	<b>D-SUB 15 (male)</b>
		C7	M12 plug (male) (on request only)
		C99	customer specific connector.
<b>E</b>	LED mode <sup>(6)</sup>	E0	LED Green: best performance LED RED: Error signalization with LED on
		<b>E1</b>	<b>LED green: best performance</b> <b>LED red: error signalization with blinking codes, see on page 2</b>

<sup>(5)</sup> standard parameters are bold

<sup>(6)</sup> user programmable parameters (optional IKS-Programming device necessary)

<sup>(7)</sup> please do not connect pin "Z" and "/Z" on delivered connector

<sup>(8)</sup> Z length depend on magnetic pole length

<sup>(9)</sup> recommended bending radius for permanently installed cables: 20 mm, for freely movable cables: 40 mm

BOGEN Magnetics GmbH reserves the right to make changes, without notice, in the products, including software, described or contained herein in order to improve design and/or performance. Information in this document is believed to be accurate and reliable. However, BOGEN Magnetics GmbH does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. BOGEN Magnetics GmbH takes no responsibility for the content in this document if provided by an information source outside of BOGEN products. In no event shall BOGEN Magnetics GmbH be liable for any indirect, incidental, punitive, special or consequential damages (including but not limited to lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) irrespective the legal base the claims are based on, including but not limited to tort (including negligence), warranty, breach of contract, equity or any other legal theory. Notwithstanding any damages that customer might incur for any reason whatsoever, BOGEN product aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the General Terms and Conditions of Sale of BOGEN Magnetics GmbH. Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights. Unless otherwise agreed upon in an individual agreement BOGEN products sold are subject to the General Terms and Conditions of Sales as published at [www.bogen-magnetics.com](http://www.bogen-magnetics.com).

## 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

### Optional Accessory

#### Order Codes for Linear Scales, 10 mm Width<sup>(4)</sup>

pole pitch	accuracy A3	accuracy A10	accuracy A20	accuracy A40 (standard)
0.5	LMS-I0.5-W10-A03-K	LMS-I0.5-W10-A10-K	LMS-I0.5-W10-A20-K	LMS-I0.5-W10-A40-K
1	LMS-I1-W10-A03-K	LMS-I1-W10-A10-K	LMS-I1-W10-A20-K	LMS-I1-W10-A40-K
2	LMS-I2-W10-A03-K	LMS-I2-W10-A10-K	LMS-I2-W10-A20-K	LMS-I2-W10-A40-K
2.54	LMS-I2.54-W10-A03-K	LMS-I2.54-W10-A10-K	LMS-I2.54-W10-A20-K	LMS-I2.54-W10-A40-K
5	LMS-I5-W10-A03-K	LMS-I5-W10-A10-K	LMS-I5-W10-A20-K	LMS-I5-W10-A40-K

<sup>(4)</sup> 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.

For our complete scope of linear and rotary scales, please see separate data sheet.

