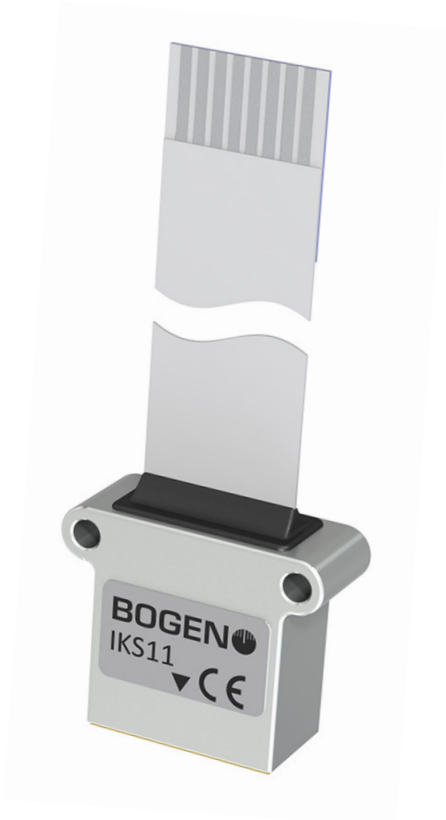




Measuring



Positioning



## IKS11 Incremental Magnetic Sensing Head

- Linear Applications
- Rotational Applications
- Non contact, quick position measurement

### Features

- High accuracy
- Resolution options available
- Single piece unit
- Customizable max output frequencies
- No wear from usage
- Resistant to dust, cooling lubricant emulsion, oil, etc.
- Unlimited measuring length

### Superb performance in less space – the IKS11

With the compact incremental magnetic sensing head IKS11 BOGEN offers superb performance in a small form factor. If space is decisive the IKS11 allows easy usage. The IKS11 impresses customers in automation, instrumentation and motion control applications. In combination with BOGEN precision scales, measurement solutions for almost every application can be custom-tailored.

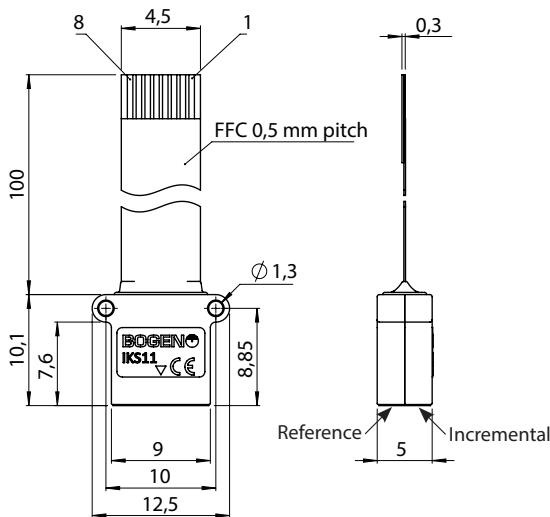
Features

Resolution (Depending on pole pitch)	0.020 to 500µm
Energy Consumption (without Load)	<65 mA (UB = 5 V)
Operating Temperature	-20 to +70 °C
Storage Temperature	-20 to +80 °C
Protection Class	IP67
Adjustable Parameters	- Resolution - Maximum output frequency - Interface

Sensing Head Variants

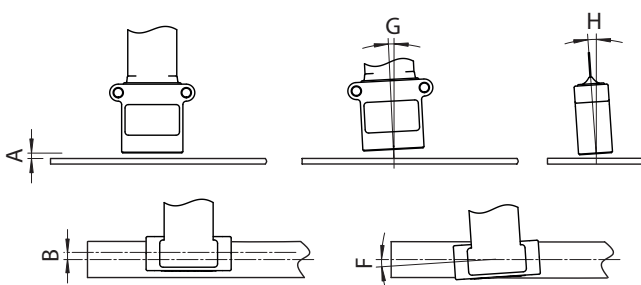
Pole pitch	0.5 mm; 1 mm; 2 mm
Reference	Reference chip for 2nd track not for 0.5 mm or periodically from the pole pitch
Supply Voltage	5 V ± 5 %
Interface (without load)	D1 = RS422 (0 to 5 V) D3 = Push-Pull TTL (0 to 5 V)
Cable Length of Sensing Head	10 cm FFC

Dimensions and Pin Assignment



Signal	Pin No.
A	1
/A	2
B	3
/B	4
Z	5
/Z	6
V -	7
V +	8

Installation Tolerances



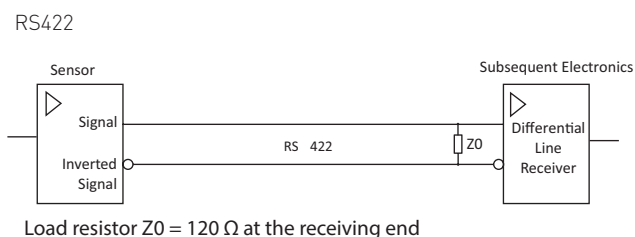
	Pole Pitch - 1 mm	Pole Pitch - 2 mm
A [mm]	0.1 to 0.5	0.1 to 1.0
B <sup>(3)</sup> [mm]	2.5	2.5
B <sup>(4)</sup> [mm]	0.5	0.5
G	1°	1°
H	3°	3°
F	3°	3°

<sup>(3)</sup> relative to 10 mm scale width (1-track)

<sup>(4)</sup> relative to 10 mm scale width (2-track)

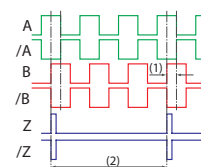
To avoid EMI please connect housing to protective earthing!

### Output Circuit



### Output Signals

Signals	A, /A, B, /B, Z, /Z
Signal Error Indicator	High impedance on all output signals (A, /A, B, /B, Z, /Z)



- (1) Phase shift A and B  $90^\circ \pm 10^\circ$  electrical
- (2) Signal period depending on the reference track pattern or as a periodic reference depending on the pole pitch
- Z Length default is 50 counts

### Maximum Movement Speed

Pole Pitch $P$ [mm]		Resolution $R$ [ $\mu\text{m}$ ]	Resolution $R_{dpi}$ [dpi]	Maximum Output Frequency per channel $F$ [kHz]					
1	2			3500	1750	1000	500	100	60
	x	500	50.8	>100	>100	>100	>100	>100	>100
x	x	200	127	>100	>100	>100	>100	80	48
x	x	100	254	>100	>100	>100	>100	40	24
	x	80	317.5	>100	>100	>100	>100	32	19.2
x	x	62.5	406.4	>100	>100	>100	>100	25	15
x	x	50	508	>100	>100	>100	>100	20	12
x	x	25	1016	>100	>100	>100	50	10	6
x	x	20	1270	>100	>100	80	40	8	4.8
x	x	12.5	2032	>100	87.5	50	25	5	3
x	x	10	2540	>100	70	40	20	4	2.4
x	x	5	5080	70	35	20	10	2	1.2
x	x	4	6350	56	28	16	8	1.6	0.96
x	x	2.5	10160	35	17.5	10	5	1	0.6
x	x	2	12700	28	14	8	4	0.8	0.48
x	x	1	25400	14	7	4	2	0.4	0.24
x	x	0.5	50800	7	3.5	2	1	0.2	0.12
x	x	0.25	101600	3.5	1.75	1	0.5	0.1	0.06
x	x	0.125	203200	1.75	0.875	0.5	0.25	0.05	0.03
x	x	0.05	508000	0.7	0.35	0.2	0.1	0.02	0.012
x		0.02	1270000	0.28	0.14	0.08	0.04	0.008	0.0048

### Definition:

Resolution  $R$  (Resolution is post quadrature)  
 Pole pitch  $P$  (available 1; 2 mm)  
 Resolution factor  $Rf$  (Resolution factor available from 4 to 65536 in integer increments of one)  
 Maximum Output Frequency per channel  $F$  (from 60 kHz to 3500 kHz)  
 Max-Movement-Speed  $V_{max}$   
 Interpolation =  $Rf / 4$

$$R = P / Rf$$

Resolution [dpi]  $R_{dpi}$   
 $R_{dpi} = 25400 / R$

$V_{max}$  is limited by following formulars:

1.  $V_{max} = 4 * F * R$
2.  $V_{max} = P * 50 \text{ kHz}$

## Order Code

## Parameters

 IKS11 - 

Z	P	D	R	F	C
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		Code <sup>(7)</sup>	Explanation <sup>(6)</sup>
<b>Z</b>	<b>Reference Signal <sup>(7,8)</sup></b>	Z1. ...	Periodic index signal, from the pole pitch, length of index signal ... counts <sup>(9)</sup>
		Z2. ...	From reference marks (requires 2-track magnetic tape with incremental track and reference track), length of index signal ... counts <sup>(9)</sup>
		<b>Z2.50</b>	<b>Periodic index signal, from the pole pitch with length of index signal 50 counts</b>
<b>P</b>	<b>Pole Pitch [mm]</b>	P0.5	0.5 mm
		P1	1 mm
		<b>P2</b>	<b>2 mm</b>
<b>D</b>	<b>Interface <sup>(7)</sup></b>	<b>D1</b>	<b>RS422</b>
		R0.5	Standard for pole pitch 1 mm
		<b>R1</b>	<b>Standard for pole pitch 2 mm</b>
<b>F</b>	<b>Maximum Output Frequency per channel <sup>(7)</sup> [kHz]</b>	<b>F1000</b>	<b>1000 kHz</b>
		F ...	Other non-standard output frequencies, see section "Resolution and Speed" in table 1 on page 2.
<b>C</b>	<b>Connector</b>	<b>C1</b>	<b>FFC 180°</b>
		C2	on request

<sup>(6)</sup> standard parameters are bold

<sup>(7)</sup> user programmable parameters (optional IKS-Programming device necessary)

<sup>(8)</sup> if no index signal is needed, please do not connect pin "Z" and "/Z" on delivered connector

<sup>(9)</sup> length of index signal available from 1 to 256

## Optional Accessory - Order Codes for Linear Scales, 10 mm width

Pole Pitch	Accuracy A3	Accuracy A10	Accuracy A20	Accuracy A40 (standard)
1	LMS-I1-W5-A3	LMS-I1-W5-A10	LMS-I1-W5-A20	LMS-I1-W5-A40
2	LMS-I2-W5-A3	LMS-I2-W5-A10	LMS-I2-W5-A20	LMS-I2-W5-A40

<sup>(5)</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.

Please contact us for different scales with various pole pitches, dimensions and number of poles.