

en 02-2010/03 50110211



**M30**  
10 mm  
22 mm

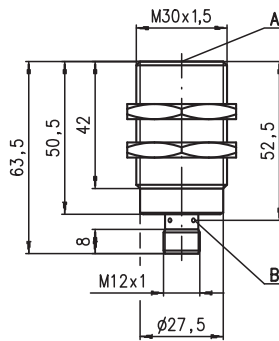


10 - 30 V  
DC  
**Embedded**  
1,2 kHz

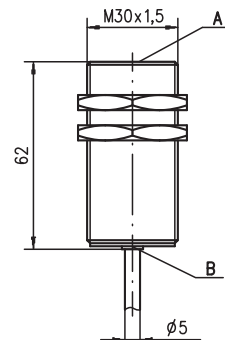
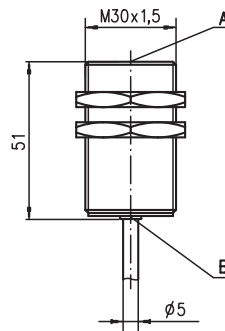
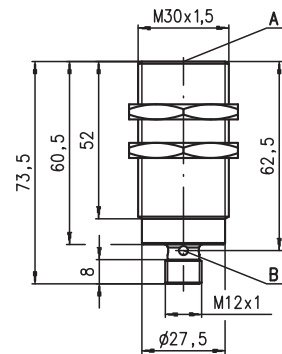
- Slim and short cylindrical metal housing M30
- Chromium-plated brass housing
- Built-in short circuit protection, inductive protection and polarity reversal protection
- LED for switching state visible from 360°

Dimensioned drawing

IS 230...-10E...



IS 230...-22E...

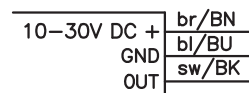


Tightening torque of the fastening nuts < 40Nm !

- A Active surface
- B Yellow indicator diode

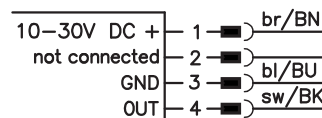
Electrical connection

Cable

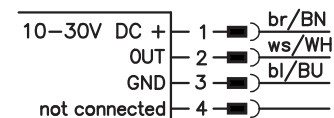


M12 connector

...NO... (normally open)



...NC... (normally closed)



...NO...-S12 (normally open):  
...NC...-S12 (normally closed):

3-pin or 4-pin M12 connection cables can be used.  
only 4-pin M12 connection cables can be used.

We reserve the right to make changes • DS\_IS\_230\_E\_en.fm



Accessories:

(available separately)

- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting clamp (MC 030...)

## Specifications

### General specifications

Type of installation  
 Typ. operating range limit  $S_n$   
 Operating range  $S_a$

**IS 230...-10E...**  
 embedded installation  
 10.0mm  
 0 ... 8.1mm

**IS 230...-22E...**  
 22.0mm  
 0 ... 17.8mm

### Electrical data

Operating voltage  $U_B$  1)  
 Residual ripple  $\sigma$   
 Output current  $I_L$   
 Open-circuit current  $I_0$   
 Residual current  $I_r$   
 Switching output/function

10 ... 30VDC  
 $\leq 20\%$  of  $U_B$   
 $\leq 200\text{mA}$   
 $\leq 10\text{mA}$   
 $\leq 100\mu\text{A}$   
 .../4NO... PNP transistor, make-contact (NO)  
 .../4NC... PNP transistor, break-contact (NC)  
 .../2NO... NPN transistor, make-contact (NO)  
 .../2NC... NPN transistor, break-contact (NC)

Voltage drop  $U_d$   
 Hysteresis  $H$  of  $S_r$   
 Temperature drift of  $S_r$   
 Repeatability

$\leq 2\text{V}$   
 $\leq 10\%$   
 $\leq 10\%$  2)  
 $\leq 5\%$  3)

### Timing

Switching frequency  $f$   
 Delay before start-up

1.2kHz  
 $\leq 300\text{ms}$

200Hz  
 $\leq 200\text{ms}$

### Indicators

Yellow LED (visible from 360°)

switching state

### Mechanical data

Housing  
 Standard surface plate  
 Active surface  
 Weight (M12 plug/cable)  
 Connection type

chromium-plated brass  
 30 x 30mm<sup>2</sup>, Fe360  
 PBTP  
 approx. 155g/approx. 210g  
 M12 connector 4-pin or  
 cable: 2m, PVC, 3 x 0.34mm<sup>2</sup>,  $\varnothing$  5.0mm

66 x 66mm<sup>2</sup>, Fe360

### Environmental data

Ambient temperature  
 Protection class  
 Protective circuit 4)  
 Standards applied  
 Electromagnetic compatibility

-25°C ... +70°C  
 IP 67  
 1, 2, 3  
 IEC/EN 60947-5-2  
 IEC 60255-5  
 IEC 61000-4-2  
 IEC 61000-4-3  
 IEC 61000-4-4

1 kV  
 Level 3 air 8kV (ESD)  
 Level 3 10V/m (RFI)  
 Level 3 2kV (Burst)

- 1) Observe the safety regulations and installation instructions regarding power supply and wiring; for UL applications: only for use in "Class 2" circuits acc. to NEC
- 2) Over the entire operating temperature range
- 3) For  $U_B = 20 \dots 30\text{VDC}$ , ambient temperature  $T_a = 23^\circ\text{C} \pm 5^\circ\text{C}$
- 4) 1=polarity reversal protection, 2=short circuit protection, 3=inductive protection for all outputs

## Order guide

The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com).

$S_n$	Designation	Part No.
<b><math>S_n = 10\text{mm}</math></b>	IS 230 MM/4NO-10E	50109712
	IS 230 MM/4NO-10E-S12	50109713
	IS 230 MM/4NC-10E-S12	50111871
	IS 230 MM/2NO-10E-S12	50109714
<b><math>S_n = 22\text{mm}</math></b>	IS 230 MM/4NO-22E	50109720
	IS 230 MM/4NO-22E-S12	50109721
	IS 230 MM/4NC-22E-S12	50109722
	IS 230 MM/2NO-22E	50109723

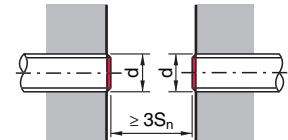
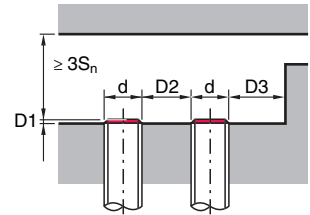
## Tables

### Reduction factors:

	for $S_n = 10.0\text{mm}$	for $S_n = 22.0\text{mm}$
Steel Fe360	1	1
Copper	0.40	0.35
Aluminum	0.45	0.40
Brass	0.55	0.45
Stainless steel	0.80	0.66

## Mounting

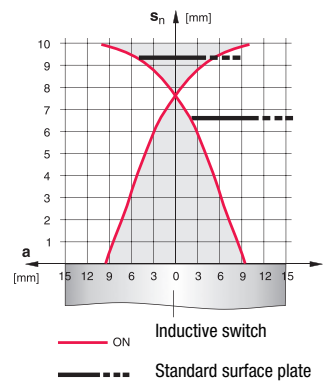
### Embedded installation:



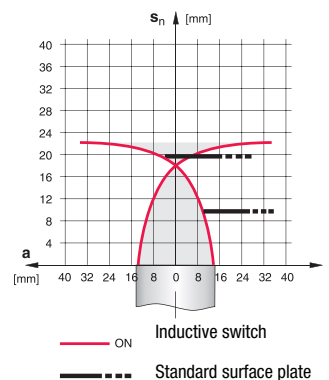
Ferromagnetic and non-ferromagnetic materials			
$S_n$ [mm]	D1 [mm]	D2 [mm]	D3 [mm]
10.0	0	30.0	10.0
22.0	6.0	50.0	22.0

## Diagrams

### Models with $S_n = 10.0\text{mm}$



### Models with $S_n = 22.0\text{mm}$



## Type key

I	S	2	3	0	M	M	/	4	N	0	-	1	0	E	-	S	1	2
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**Operating principle / construction**

**IS** Inductive switch / Standard

**Series**

**230** Series with M30 x 1.5 external thread

**Housing / thread**

**MM** Metal housing (active surface: plastic) / metric thread

**Output function**

**4NO** PNP transistor, make-contact (NO)

**4NC** PNP transistor, break-contact (NC)

**2NO** NPN transistor, make-contact (NO)

**2NC** NPN transistor, break-contact (NC)

**Measurement range / type of installation**

**10E** Typ. scan range limit 10.0 mm / embedded installation

**22E** Typ. scan range limit 22.0 mm / embedded installation

**Electrical connection**

**N/A** Cable, PVC, standard length 2000 mm

**S12** M12 connector, 4-pin, axial

**200-S12** Cable, PVC, length 200 mm with M12 connector, 4-pin, axial

## Remarks

- **Approved purpose:**

The inductive switches are electronic sensors for the inductive, contactless detection of objects.

This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

