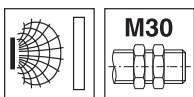
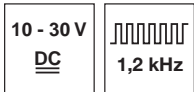


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M30
10 mm
22 mm

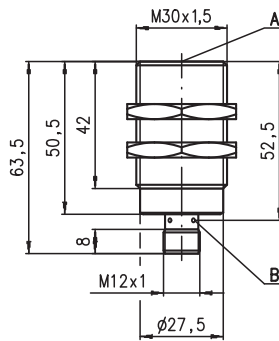


Embedded
1,2 kHz

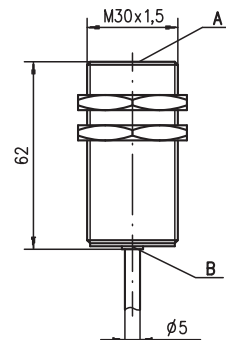
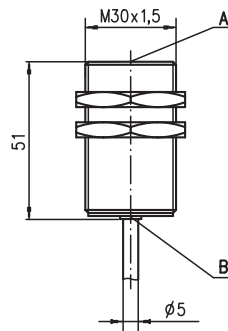
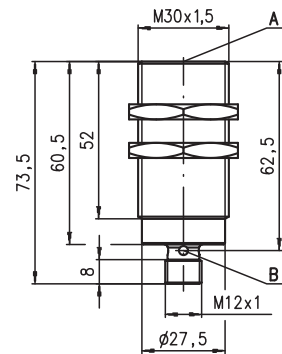
- Slim and short cylindrical metal housing M30
- Chromium-plated brass housing
- Built-in short circuit protection, inductive protection and polarity reversal protection
- LED for switching state visible from 360°

Dimensioned drawing

IS 230...-10E...



IS 230...-22E...

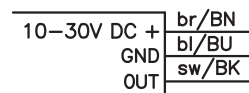


Tightening torque of the fastening nuts < 40Nm !

- A** Active surface
- B** Yellow indicator diode

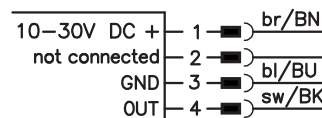
Electrical connection

Cable

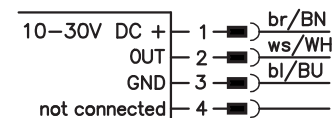


M12 connector

...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 σ
 Output current I_L
 Open-circuit current I_0
 Residual current I_r
 Switching output/function

10 ... 30VDC
 $\leq 20\%$ of U_B
 ≤ 200 mA
 ≤ 10 mA
 $\leq 100\mu$ 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

≤ 2 V
 $\leq 10\%$
 $\leq 10\%$ 2)
 $\leq 5\%$ 3)

Timing

Switching frequency f
 Delay before start-up

1.2kHz
 ≤ 300 ms

200Hz
 ≤ 200 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 30mm², Fe360
 PBTP
 approx. 155g/approx. 210g
 M12 connector 4-pin or
 cable: 2m, PVC, 3 x 0.34mm², \varnothing 5.0mm

66 x 66mm², 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 $U_B = 20 \dots 30$ 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.

S_n	Designation	Part No.
$S_n = 10$mm	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
$S_n = 22$mm	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

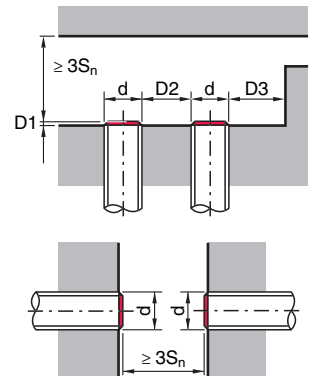
Tables

Reduction factors:

	for $S_n = 10.0$ mm	for $S_n = 22.0$ 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

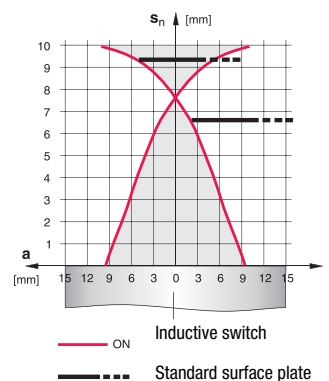
Embedded installation:



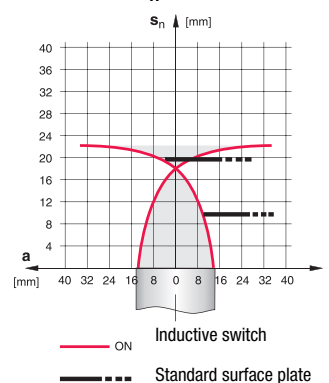
Ferromagnetic and non-ferromagnetic materials			
S_n [mm]	D1 [mm]	D2 [mm]	D3 [mm]
10.0	0	30.0	10.0
22.0	6.0	50.0	22.0

Diagrams

Models with $S_n = 10.0$ mm



Models with $S_n = 22.0$ mm



Type key

I	S	2	3	0	M	M	/	4	N	0	-	1	0	E	-	S	1	2
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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.

