

IS 230

Inductive switches

en 02-2010/03 50110212



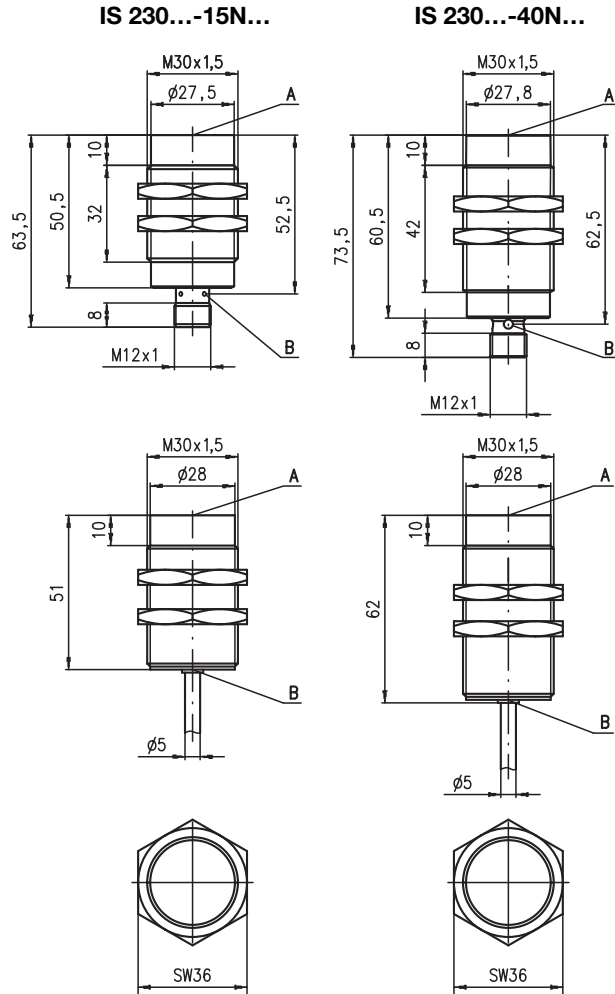
M30 15 mm  
40 mm



10 - 30 V DC  
700 Hz non-embedded

- 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°

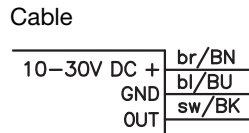
Dimensioned drawing



Tightening torque of the fastening nuts < 40Nm !

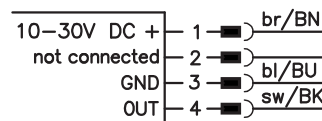
- A Active surface
- B Yellow indicator diode

Electrical connection

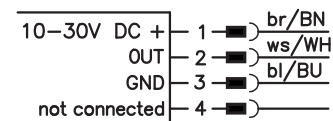


M12 connector

...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\_N\_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...-15N...

non-embedded installation  
 15.0mm  
 0 ... 12.1mm

### IS 230...-40N...

40.0mm  
 0 ... 32.4mm

### 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  $U_B$   
 $\leq 200$ mA  
 $\leq 10$ 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

$\leq 2$ V  
 $\leq 15\%$   
 $\leq 10\%$  2)  
 $\leq 5\%$  3)

### Timing

Switching frequency f  
 Delay before start-up

700Hz  
 $\leq 300$ ms

100Hz  
 $\leq 200$ 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  
 45 x 45mm<sup>2</sup>, Fe360  
 PBTP  
 approx. 145g/approx. 210g  
 M12 connector 4-pin or  
 cable: 2m, PVC, 3 x 0.34mm<sup>2</sup>,  $\varnothing$  5.0mm

### 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](http://www.leuze.com).

$S_n$	Designation	Part No.
<b>15mm</b>	IS 230 MM/4NO-15N	501 09716
	IS 230 MM/4NO-15N-S12	501 09717
	IS 230 MM/2NO-15N	501 09718
<b>40mm</b>	IS 230 MM/4NO-40N	501 09726
	IS 230 MM/4NO-40N-S12	501 09727
	IS 230 MM/2NO-40N	501 09728

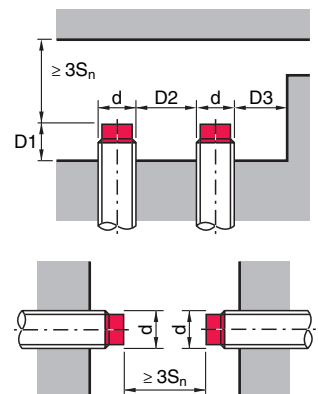
## Tables

### Reduction factors:

for $S_n = 15.0$ mm		for $S_n = 40.0$ mm	
Steel Fe360	1	Steel Fe360	1
Copper	0.43	Copper	0.37
Aluminum	0.49	Aluminum	0.42
Brass	0.53	Brass	0.47
Stainless steel	0.84	Stainless steel	0.78

## Mounting

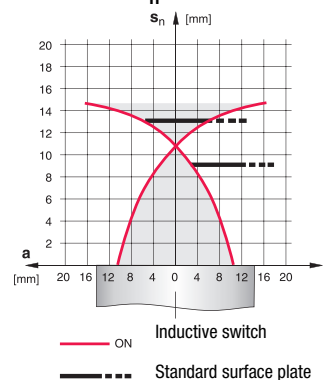
### Non-embedded installation:



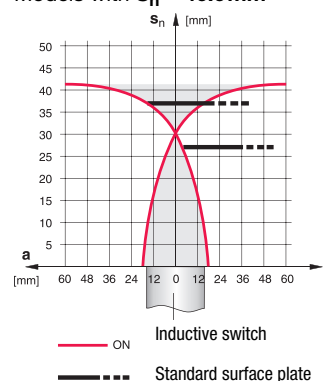
Ferromagnetic and non-ferromagnetic materials			
$S_n$ [mm]	D1 [mm]	D2 [mm]	D3 [mm]
15.0	13.0	45.0	15.0
40.0	Fe360:	35.0	120.0
	Aluminum:	25.0	
	Brass:	25.0	
	Stainless steel:	20.0	

## Diagrams

### Models with $S_n = 15.0$ mm



### Models with $S_n = 40.0$ mm



## Type key

I	S	2	3	0	M	M	/	4	N	0	-	1	5	N	-	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**

**15N** Typ. scan range limit 15.0 mm / non-embedded installation

**40N** Typ. scan range limit 40.0 mm / non-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.

