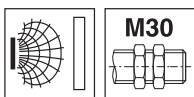


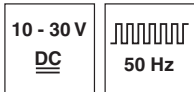
**IS 230 factor 1**

**Inductive switches**

en\_01-2015/01 50128378



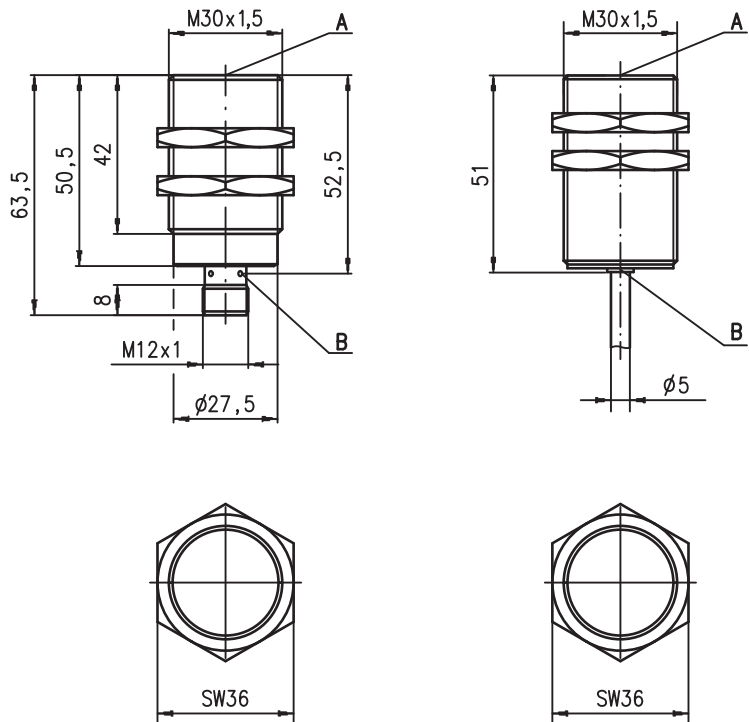
**10 mm**



**Embedded**

- Switching distance independent of object property (factor 1 sensor)
- Slim and short cylindrical metal housing M30x1.5
- V2A / AISI 303 stainless steel 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 < 50Nm !**

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

**Electrical connection**

Cable

10-30V DC +	br/BN
GND	bl/BU
OUT	sw/BK

M12 connector

...NO... (normally open)

...NC... (normally closed)

10-30V DC +	1	br/BN
not connected	2	bl/BU
GND	3	sw/BK
OUT	4	

10-30V DC +	1	br/BN
OUT	2	ws/WH
GND	3	bl/BU
not connected	4	



...NO...-S12 (normally open): 3-pin or 4-pin M12 connection cables can be used.  
 ...NC...-S12 (normally closed): only 4-pin M12 connection cables can be used.

We reserve the right to make changes • DS\_IS230E\_F1\_en\_50128378.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

**Electrical data**

Operating voltage  $U_B$  <sup>1)</sup> 10 ... 30VDC  
Residual ripple  $\sigma$   $\leq 20\%$  of  $U_B$   
Output current  $I_L$   $\leq 200$ mA  
Open-circuit current  $I_0$   $\leq 10$ mA  
Residual current  $I_r$   $\leq 100$  $\mu$ A  
Switching output/function .../4NO... PNP transistor, NO contact  
.../4NC... PNP transistor, NC contact  
.../2NO... NPN transistor, NO contact  
.../2NC... NPN transistor, NC contact

Voltage drop  $U_d$   $\leq 2$ V  
Hysteresis H of  $S_r$   $\leq 15\%$   
Temperature drift of  $S_r$   $\leq 10\%$  <sup>2)</sup>  
Repeatability  $\leq 0.3$ mm <sup>3)</sup>

**Timing**

Switching frequency f 50Hz  
Delay before start-up  $\leq 50$ ms

**Indicators**

Yellow LED (visible from 360°) switching state <sup>4)</sup>

**Mechanical data**

Housing V2A stainless steel (1.4305, AISI 303)  
Standard measuring plate 60 x 60mm<sup>2</sup>, Fe360  
Active surface V2A stainless steel (1.4305, AISI 303)  
Weight (M12 plug/cable) approx. 140g/approx. 190g  
Connection type M12 connector, 4-pin, or cable: 2m, PUR, 3 x 0.34mm<sup>2</sup>,  $\varnothing$  5mm

**Environmental data**

Ambient temperature -25°C ... +70°C  
Degree of protection IP 67, IP 68, IP 69K  
Protective circuit <sup>5)</sup> 1, 2, 3  
Standards applied IEC/EN 60947-5-2  
Electromagnetic compatibility IEC 60255-5 1kV  
IEC 61000-4-2 Level 4 air 8kV (ESD)  
IEC 61000-4-3 Level 3 10V/m (RFI)  
IEC 61000-4-4 Level 3 2kV (Burst)

- 1) Observe the safety regulations and installation instructions regarding power supply and wiring.
- 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) Continuous LED:  $0 \leq S \leq 0.8S_r$ ; flashing LED:  $0.8S_r \leq S \leq S_r$
- 5) 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).

$S_n = 10$ mm	Designation	Part no.
	IS 230 FM/2NO.5-10E	50128166
	IS 230 FM/4NO.5-10E	50128164
	IS 230 FM/2NO.5-10E-S12	50128165
	IS 230 FM/4NO.5-10E-S12	50128163
	Additional types on request	

**Tables**

Reduction factors for surface plates made of: for  $S_n = 10.0$ mm

Steel Fe360	1
Copper	0.8
Aluminum	1
Brass	1.3
Stainless steel	0.6 <sup>1)</sup>

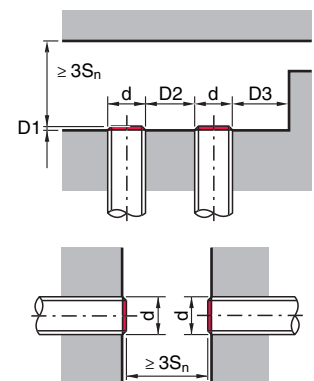
Reduction factors for installation in: for  $S_n = 10.0$ mm

Steel Fe360	0.9
Aluminum	0.8
Brass	0.8
Stainless steel	0.9

1) Surface plate min. 2mm thick

**Mounting**

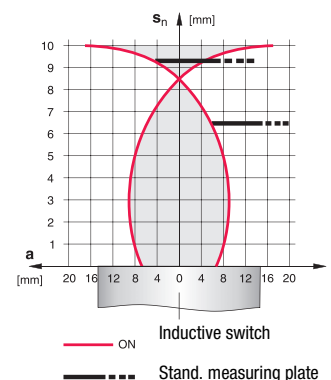
**Embedded installation:**



Ferromagnetic and non-ferromagnetic materials			
$S_n$ [mm]	D1 [mm]	D2 [mm]	D3 [mm]
10.0	0	30.0	20.0

**Diagrams**

Models with  $S_n = 10.0$ mm



**Remarks**

**Operate in accordance with intended use!**

- ☞ This product is not a safety sensor and is not intended as personnel protection.
- ☞ The product may only be put into operation by competent persons.
- ☞ Only use the product in accordance with the intended use.

# IS 230 factor 1

# Inductive switches

## Part number code

I	S	2	3	0	F	M	/	4	N	0	.	5	-	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

**FM** Full-metal housing (one piece, gap-free) / metric thread

### Output function

**4NO** PNP transistor, NO contact

**4NC** PNP transistor, NC contact

**2NO** NPN transistor, NO contact

**2NC** NPN transistor, NC contact

### Properties / Special equipment

**5** Housing material V2A (1.4305, AISI 303)

### Measurement range / type of installation

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

### Electrical connection

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

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

