

Part No. 501 11727



	<b>M30</b>	<i>stainless steel</i> <b>316 L</b>	<b>20mm</b>
<b>10 - 30 V</b> <b>DC</b>		<b>100 Hz</b>	<b>embedded</b>

- Slim and short cylindrical metal housing M30x1.5
- V4A / AISI 316L stainless steel housing
- ECOLAB tested
- For food and beverage applications
- Built-in short circuit protection, inductive protection and polarity reversal protection
- LED for switching state visible from 360°

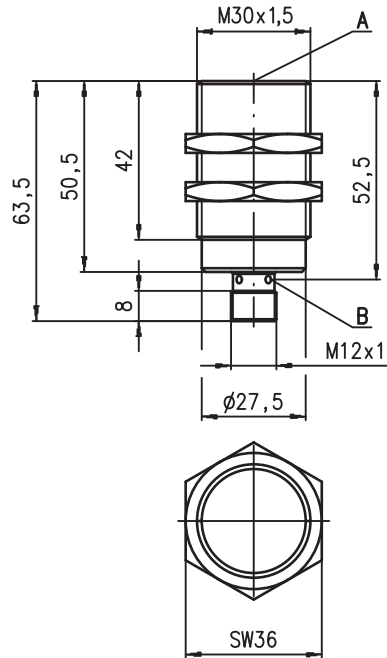
	<b>ISO 9001</b>	<b>ECOLAB</b>

**Accessories:**

(available separately)

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

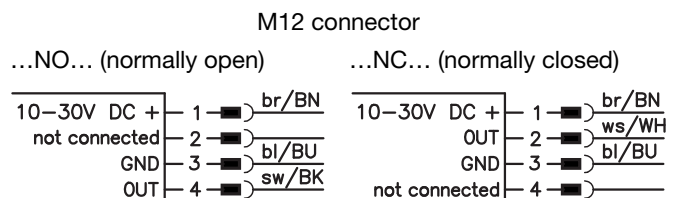
**Dimensioned drawing**



**Tightening torque of the fastening nuts < 150Nm !**

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

**Electrical connection**



**...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 • 230\_03gb.fm

**Specifications**

**General specifications**

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

**IS 230...-20E...**  
 embedded installation  
 20.0mm  
 0 ... 16.2mm

**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  
 $\leq 15\%$  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

100Hz  
 $\leq 40$ ms

**Indicators**

Yellow LED (visible from 360°)

switching state

**Mechanical data**

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

stainless steel AISI 316L (DIN 1.4404)  
 60 x 60mm<sup>2</sup>, Fe360  
 stainless steel AISI 316L (DIN 1.4404)  
 approx. 140g  
 M12 connector, 4-pin

**Environmental data**

Ambient temperature  
 Protection class  
 Environmentally tested acc. to  
 Protective circuit 4)  
 Standards applied  
 Electromagnetic compatibility

-25°C ... +85°C  
 IP 67, IP 68, IP 69K  
 ECOLAB  
 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).

$S_n = 20$ mm	Designation	Part No.
	IS 230 FM/4NO.5F-20E-S12	501 11435

**Tables**

Reduction factors for surface plates made of:  
 for  $S_n = 20.0$ mm

Steel Fe360	1
Copper	0.90
Aluminum	1.00
Brass	1.30
Stainless steel	0.7 <sup>1)</sup>

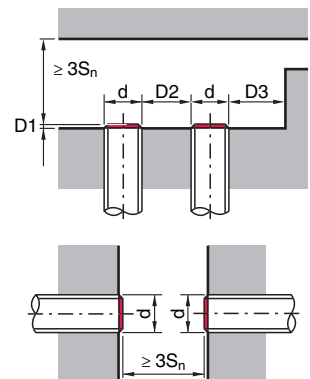
Reduction factors for installation in:

Steel Fe360	0.90
Aluminum	0.70
Brass	0.60
Stainless steel	1.30

1) Surface plate min. 2mm thick

**Mounting**

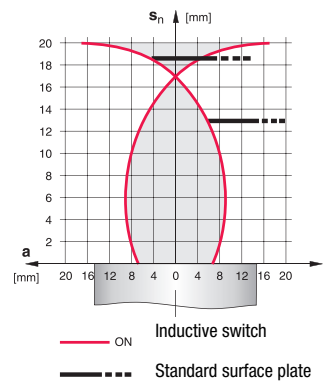
**Embedded installation:**



Ferromagnetic and non-ferromagnetic materials			
$S_n$ [mm]	D1 [mm]	D2 [mm]	D3 [mm]
20.0	0	80.0	30.0

**Diagrams**

Models with  $S_n = 20.0$ mm



**Type key**

I	S	2	3	0	F	M	/	4	N	0	.	5	F	-	2	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 (active surface: stainless steel AISI 316L) / 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)

**Special equipment**

**5F** Food version

**Measurement range / type of installation**

**20E** typ. scan range limit 20.0mm / embedded installation

**Electrical connection**

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

**Remarks**

- **Approved purpose:**  
Inductive switches are electronic sensors used for the inductive, contactless detection of objects.

