

Part No. 501 10224



	<b>M12</b>	<i>stainless steel</i> <b>316 L</b>	<b>10mm</b>
<b>10 - 30 V</b> DC		<b>400 Hz</b>	<b>non-embedded</b>

- Slim and short cylindrical metal housing M12x1
- 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°

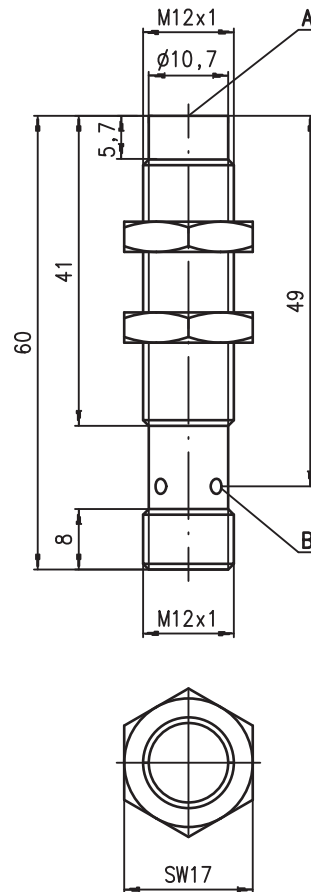
	<b>ISO 9001</b>	<b>ECOLAB</b>

**Accessories:**

(available separately)

- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting clamp (MC 012...)

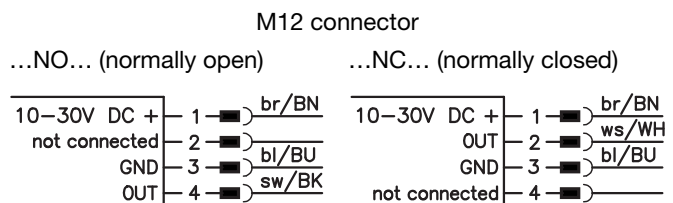
**Dimensioned drawing**



**Tightening torque of the fastening nuts < 20Nm !**

- 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 • 212\_06gb.fm

**Specifications**

**General specifications**

Type of installation non-embedded installation  
 Typ. operating range limit  $S_n$  10.0mm  
 Operating range  $S_a$  0 ... 8.1mm

**Electrical data**

Operating voltage  $U_B$  1) 10 ... 30VDC  
 Residual ripple  $\sigma$   $\leq 15\%$  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, make-contact (NO)  
 .../4NC... PNP transistor, break-contact (NC)  
 .../2NO... NPN transistor, make-contact (NO)  
 .../2NC... NPN transistor, break-contact (NC)

Voltage drop  $U_d$   $\leq 2$ V  
 Hysteresis H of  $S_r$   $\leq 15\%$   
 Temperature drift of  $S_r$   $\leq 10\%$  2)  
 Repeatability  $\leq 5\%$  3)

**Timing**

Switching frequency f 400Hz  
 Delay before start-up  $\leq 40$ ms

**Indicators**

Yellow LED (visible from 360°) switching state

**Mechanical data**

Housing stainless steel AISI 316L (DIN 1.4404)  
 Standard surface plate 30 x 30mm<sup>2</sup>, Fe360  
 Active surface stainless steel AISI 316L (DIN 1.4404)  
 Weight (M12 plug) approx. 80g  
 Connection type M12 connector, 4-pin

**Environmental data**

Ambient temperature -25°C ... +85°C  
 Protection class IP 67, IP 68, IP 69K  
 Environmentally tested acc. to ECOLAB  
 Protective circuit 1, 2, 3  
 Standards applied IEC/EN 60947-5-2  
 Electromagnetic compatibility IEC 60255-5 1 kV  
 IEC 61000-4-2 Level 3 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; 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).

$S_n = 10$ mm	Designation	Part No.
	IS 212 FM/4NO.5F-10N-S12	501 09738

**Tables**

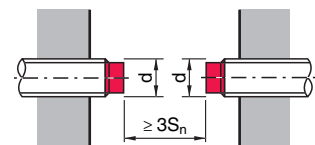
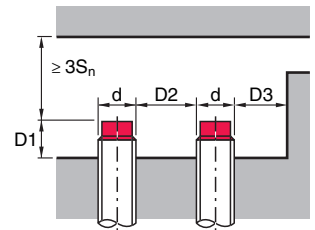
Reduction factors:  
for  $S_n = 10.0$ mm

Steel Fe360	1
Copper	0.80
Aluminum	1.00
Brass	1.40
Stainless steel	0.65 <sup>1)</sup>

1) Surface plate min. 2mm thick

**Mounting**

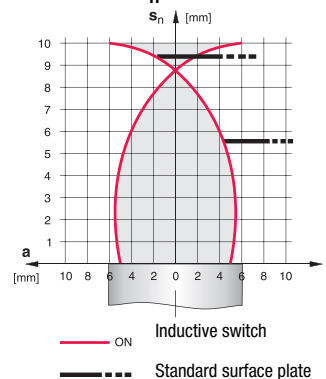
**Non-embedded installation:**



Ferromagnetic and non-ferromagnetic materials				
$S_n$ [mm]	Installation in	D1 [mm]	D2 [mm]	D3 [mm]
10.0	Aluminum	13.0	108.0	24.0
	Steel Fe360	22.0		
	Brass	15.0		
	Stainless steel	21.0		

**Diagrams**

Models with  $S_n = 10.0$ mm



**Type key**

I	S	2	1	2	F	M	/	4	N	0	.	5	F	-	1	0	N	-	S	1	2
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**Operating principle / construction**

**IS** Inductive switch / Standard

**Series**

**212** series with M12 x 1 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**

**10N** typ. scan range limit 10.0mm / non-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.

