

# Proximity Sensors Inductive Stainless Steel Housing Types IA, M12, M18 and M30, NAMUR

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- Stainless steel housing, cylindrical
- Diameter: M12, M18, M30
- Short or long versions
- Sensing distance: 2 to 15 mm
- Output: NAMUR EN 50 227
- Protection: Reverse polarity
- LED-indication
- 2 m cable or plug M12



## Product Description

Proximity switch in M12, M18 and M30 stainless steel housing. Made in accordance with Euronorm EN 50 227 and EN 60 947-5-2. For thermoplastic housing refer to type IA 12C.... Amplifier relay SD.... is available.

## Ordering Key

**IA 12 ESF 02 UC M1**

Type \_\_\_\_\_  
Housing size \_\_\_\_\_  
Housing type \_\_\_\_\_  
Sensing function \_\_\_\_\_  
Sensing distance \_\_\_\_\_  
Output type \_\_\_\_\_  
Plug \_\_\_\_\_

## Type Selection

Housing diameter	Body style	Connection	Rated operating distance (S <sub>n</sub> )	Ordering no. Namur
M12	Short	Cable	2 mm <sup>1)</sup>	IA 12 ESF 02 UC
M12	Short	Plug	2 mm <sup>1)</sup>	IA 12 ESF 02 UC M1
M12	Long	Cable	2 mm <sup>1)</sup>	IA 12 ELF 02 UC
M12	Long	Plug	2 mm <sup>1)</sup>	IA 12 ELF 02 UC M1
M12	Short	Cable	4 mm <sup>2)</sup>	IA 12 ESN 04 UC
M12	Short	Plug	4 mm <sup>2)</sup>	IA 12 ESN 04 UC M1
M12	Long	Cable	4 mm <sup>2)</sup>	IA 12 ELN 04 UC
M12	Long	Plug	4 mm <sup>2)</sup>	IA 12 ELN 04 UC M1
M18	Short	Cable	5 mm <sup>1)</sup>	IA 18 ESF 05 UC
M18	Short	Plug	5 mm <sup>1)</sup>	IA 18 ESF 05 UC M1
M18	Long	Cable	5 mm <sup>1)</sup>	IA 18 ELF 05 UC
M18	Long	Plug	5 mm <sup>1)</sup>	IA 18 ELF 05 UC M1
M18	Short	Cable	8 mm <sup>2)</sup>	IA 18 ESN 08 UC
M18	Short	Plug	8 mm <sup>2)</sup>	IA 18 ESN 08 UC M1
M18	Long	Cable	8 mm <sup>2)</sup>	IA 18 ELN 08 UC
M18	Long	Plug	8 mm <sup>2)</sup>	IA 18 ELN 08 UC M1
M30	Short	Cable	10 mm <sup>1)</sup>	IA 30 ESF 10 UC
M30	Short	Plug	10 mm <sup>1)</sup>	IA 30 ESF 10 UC M1
M30	Long	Cable	10 mm <sup>1)</sup>	IA 30 ELF 10 UC
M30	Long	Plug	10 mm <sup>1)</sup>	IA 30 ELF 10 UC M1
M30	Short	Cable	15 mm <sup>2)</sup>	IA 30 ESN 15 UC
M30	Short	Plug	15 mm <sup>2)</sup>	IA 30 ESN 15 UC M1
M30	Long	Cable	15 mm <sup>2)</sup>	IA 30 ELN 15 UC
M30	Long	Plug	15 mm <sup>2)</sup>	IA 30 ELN 15 UC M1

<sup>1)</sup> For flush mounting in metal

<sup>2)</sup> For non-flush mounting in metal



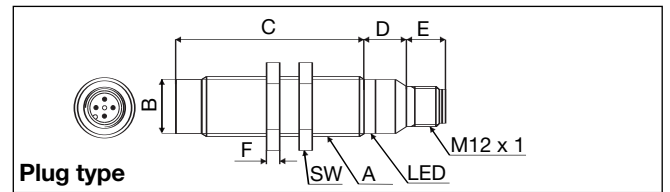
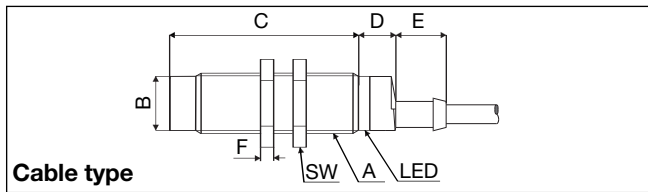
## Specifications

<b>Rated operational volt.</b> ( $U_e$ ) ( $U_B$ )	8.2 VDC 7 to 9 VDC (6 to 35 VDC, all specifications not observed in extended supply range)	<b>Hysteresis (H)</b> (Differential travel)	1 to 15% of sensing distance
<b>Self-inductance</b>	$\leq 500\mu\text{H}$	<b>Effective operating dist. (<math>S_r</math>)</b>	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
<b>Self-capacitance</b>	$\leq 120 \text{ nF}$	<b>Usable operating dist. (<math>S</math>)</b>	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
<b>No-load supply current (<math>I_0</math>)</b>	Activated: $\leq 1 \text{ mA}$ Not activated: $\geq 2.2 \text{ mA}$ Max. 9.35 mA	<b>Ambient temperature</b>	Operating Storage
<b>Protection</b>	Reverse polarity		-25° to +70°C (-13° to +158°F) -30° to +80°C (-22° to +176°F)
<b>Transient voltage</b>	$\leq 1 \text{ kV}/0.5 \text{ J}$	<b>Degree of protection</b>	IP 67 (Nema 1, 3, 4, 6, 13)
<b>EMC</b>	Approved according to EN 50 080, EN 50 081	<b>Housing material</b>	
<b>Power ON delay</b>	$< 10 \text{ ms}$	Body	Stainless Steel (1.4301)
<b>Frequency of operating cycles (f)</b>	<b>IA12xxF02</b> 1.400 Hz <b>IA12xxN04</b> 1.200 Hz <b>IA18xxF05</b> 500 Hz <b>IA18xxN08</b> 200 Hz <b>IA30xxF10</b> 300 Hz <b>IA30xxF15</b> 100 Hz	Front	Grey thermoplastic polyester
<b>Indication not activated</b>	LED, yellow	Back	Black thermoplastic polyester
<b>Assured operating dist. (<math>S_a</math>)</b>	$0 \leq S_a \leq 0.81 S_n$	<b>Connection</b>	
<b>Repeat accuracy (R)</b>	$\leq 5\%$	Cable	2 m, 2 x 0.5 mm <sup>2</sup> , grey PVC, oil proof M12 x 1
		Plug	M12 x 1
		Cables for plug (-1)	CONH1A series
		<b>Weight (cable excluded)</b>	<b>IA 12xx</b> 20 g <b>IA 18xxF05</b> 26 g <b>IA 18xxN08</b> 30 g <b>IA 30xxF10</b> 75 g <b>IA 30xxN15</b> 80 g
		<b>Tightening torque</b>	<b>IA 12</b> 7.5 Nm <b>IA 18</b> 27.5 Nm <b>IA 30</b> 100 Nm
		<b>Approvals</b>	UL
		<b>CE-marking</b>	Yes

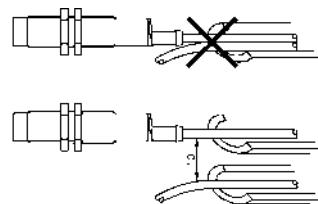
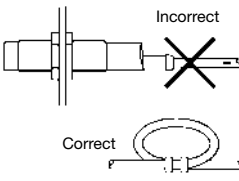
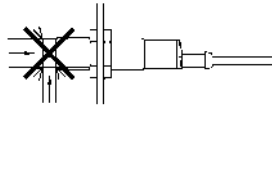
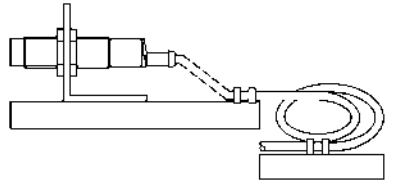
## Dimensions

Type	A	B Ø mm	C mm	D mm	E mm	F mm	SW mm
IA 12 ESF 02 UC	M12 x 1 x 30	10.7	30	11	5.0	4	17
IA 12 ELF 02 UC	M12 x 1 x 50	10.7	50	11	5.0	4	17
IA 12 ESF 02 UC M1	M12 x 1 x 30	10.7	30	12.6	11.9	4	17
IA 12 ELF 02 UC M1	M12 x 1 x 50	10.7	50	12.6	11.9	4	17
IA 12 ESN 04 UC	M12 x 1 x 30	10.7	34	11	5.0	4	17
IA 12 ELN 04 UC	M12 x 1 x 50	10.7	54	11	5.0	4	17
IA 12 ESN 04 UC M1	M12 x 1 x 30	10.7	34	12.6	11.9	4	17
IA 12 ELN 04 UC M1	M12 x 1 x 50	10.7	54	12.6	11.9	4	17
IA 18 ESF 05 UC	M18 x 1 x 30	16.7	30	11.6	15.4	4	24
IA 18 ELF 05 UC	M18 x 1 x 50	16.7	50	11.6	15.4	4	24
IA 18 ESF 05 UC M1	M18 x 1 x 30	16.7	30	13.1	11.9	4	24
IA 18 ELF 05 UC M1	M18 x 1 x 50	16.7	50	13.1	11.9	4	24
IA 18 ESN 08 UC	M18 x 1 x 30	16.7	38	11.6	15.4	4	24
IA 18 ELN 08 UC	M18 x 1 x 50	16.7	58	11.6	15.4	4	24
IA 18 ESN 08 UC M1	M18 x 1 x 30	16.7	38	13.1	11.9	4	24
IA 18 ELN 08 UC M1	M18 x 1 x 50	16.7	58	13.1	11.9	4	24
IA 30 ESF 10 UC	M30 x 1.5 x 30	28	30	13.6	15.4	5	36
IA 30 ELF 10 UC	M30 x 1.5 x 50	28	50	13.6	15.4	5	36
IA 30 ESF 10 UC M1	M30 x 1.5 x 30	28	30	13.6	11.9	5	36
IA 30 ELF 10 UC M1	M30 x 1.5 x 50	28	50	13.6	11.9	5	36
IA 30 ESN 15 UC	M30 x 1.5 x 30	28	42	13.6	15.4	5	36
IA 30 ELN 15 UC	M30 x 1.5 x 50	28	62	13.6	15.4	5	36
IA 30 ESN 15 UC M1	M30 x 1.5 x 30	28	42	13.6	11.9	5	36
IA 30 ELN 15 UC M1	M30 x 1.5 x 50	28	62	13.6	11.9	5	36

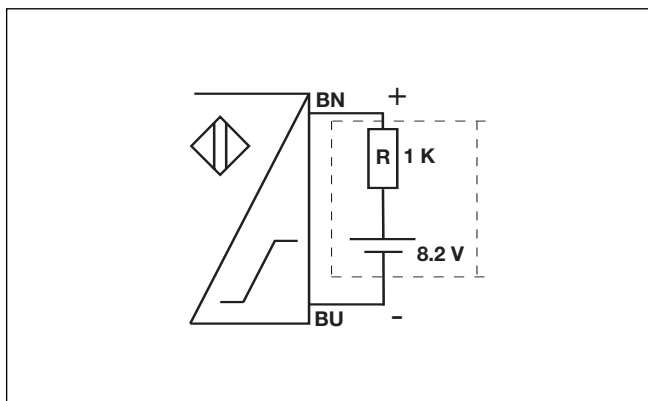
## Dimensions (cont.)



## Installation Hints

<p><i>To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables</i></p> 	<p><i>Relief of cable strain</i></p>  <p><b>Incorrect</b></p> <p><b>Correct</b></p> <p>The cable should not be pulled</p>	<p><i>Protection of the sensing face</i></p>  <p>A proximity switch should not serve as mechanical stop</p>	<p><i>Switch mounted on mobile carrier</i></p>  <p>Any repetitive flexing of the cable should be avoided</p>
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## Wiring Diagram



## Power Supplies

> SD 110/210 Refer to Technical information.  
 > SD 170/270

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