

# MM 12 Advanced

## Magnetic Proximity Sensors



## Highlights

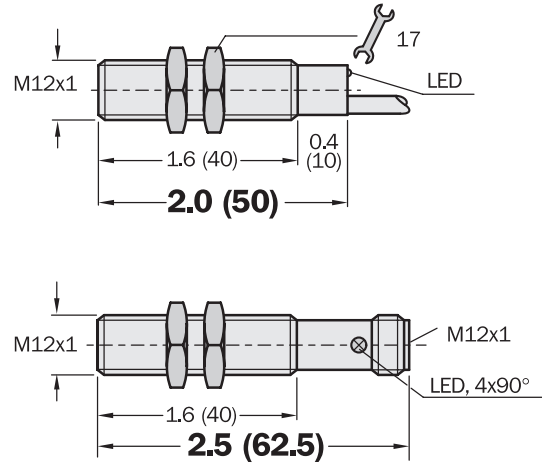
- Sensing range up to 60 mm
- PNP output
- High switching frequency
- Short-circuit protection (pulsed)
- Robust brass housing, nickel-plated with fine thread M12 x 1 mm
- Cable or connector
- Enclosure rating IP 67
- LED status indicator

## MM 12 Advanced



## Dimensional Drawing

dimensions in inches (mm)





Accessories	page
Cables and connectors	909
Mounting brackets	925
Magnets	978, 979

## Electrical and Mechanical Data

<b>Operating voltage</b> $U_b$	10...30 V DC
<b>Ripple</b> $U_{pp}$	$\leq 10\%$ of $U_b$
<b>Voltage drop</b> $U_b$	$\leq 1.5$ V with $I_a$ max.
<b>Power consumption</b> (without load)	$\leq 10$ mA
<b>Continuous current</b> $I_a$	$\leq 300$ mA
<b>Time delay before availability</b> $t_v$	$\leq 2$ ms
<b>Hysteresis</b> H	1% - 10% of $s_r$
<b>Repeatability</b> R ( $U_b$ and $T_a$ constant)	$\leq 1\%$ of $s_r$
<b>Temperature drift</b>	$\pm 10\%$ of $s_r$
<b>EMC</b>	to EN 60 947-5-2
<b>Wire-break protection</b>	Yes
<b>Short circuit protection (pulsed)</b>	Yes
<b>Reverse polarity protection</b>	Yes
<b>Power-up pulse suppression</b>	Yes
<b>Enclosure rating</b> to EN 60529	IP 67
<b>Shock and vibration stress</b>	30 g, 11 ms, 10 to 55 Hz, 1 mm
<b>Ambient temperature</b> $T_a$	-13...167°F (-25...75°C)
<b>Housing material</b>	Brass, nickel-plated, plastic
<b>Tightening torque</b>	7.0 Nm
<b>Connection cable</b>	PUR-PVC, 3 x 0.25 mm <sup>2</sup>

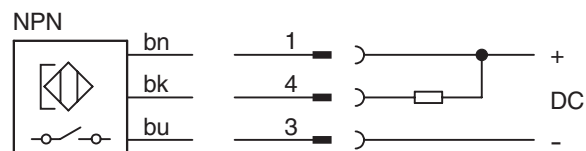
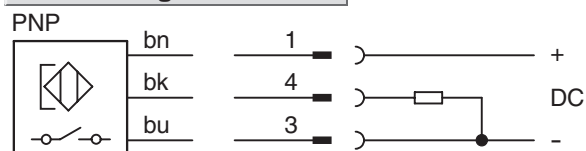
## Selection Table

Sensing range $S_n$ in (mm)	Magnetic alignment	Switching output	Output function	Switching frequency f in Hz	Connection type	Type	Part no.
2.4 (60)	Axial	PNP		5000	Cable 2 m	MM12-60APS-ZUO	7 900 268
2.4 (60)	Axial	PNP		5000	Connector M12 x 1 mm	MM12-60APS-ZCO	7 900 270

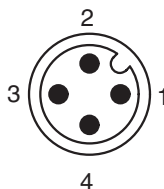
## Sensing Ranges

Magnet type	Sensing Range $s_n$ Any installation type (flush or non-flush) in a non-magnetizable material	Sensing Range $s_n$ Flush installation in a magnetizable material (e.g. iron)M
M 1.0	0.9 in (23 mm)	0.7 in (17 mm)
M 2.0	0.9 in (24 mm)	0.6 in (14 mm)
M 3.0	1.4 in (36 mm)	0.9 in (23 mm)
M 4.0	2.4 in (60 mm)	1.5 in (37 mm)
M 5.0/5.1	2.7 in (68 mm)	1.7 in (44 mm)

## Connection Diagram



Wire color	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC
	2	free



# MM 12 NAMUR

## Magnetic Proximity Sensors



## Highlights

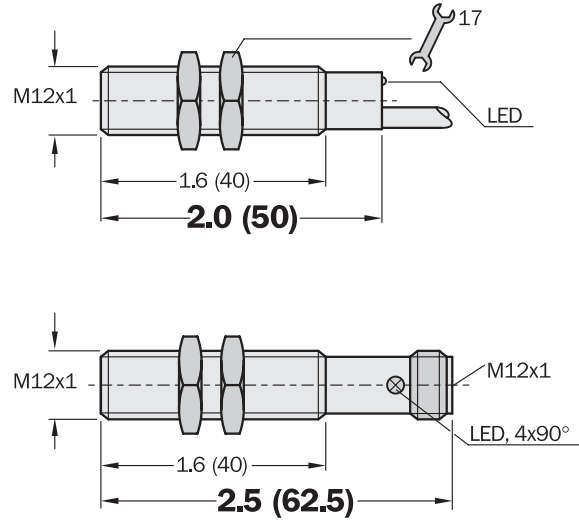
- Sensing range up to 60 mm
- High switching frequency
- NAMUR to EN 50 227
- Shielded or unshielded
- LED status indicator
- Robust brass housing, nickel-plated with fine thread M12 x 1 mm
- Cable or connector
- Enclosure rating IP 67

## MM 12 NAMUR



## Dimensional Drawing

dimensions in inches (mm)





Accessories	page
Cables and connectors	909
Mounting brackets	925
Magnets	978, 979
Power supply	966

## Electrical and Mechanical Data

<b>Operating voltage</b> $U_b$	5...25 V DC
<b>Rated voltage</b> $U_n$	8.2 V DC
<b>Ripple</b> $U_{pp}$	$\leq 5\%$ of $U_b$
<b>Power consumption, attenuated</b>	$\geq 2.5$ mA
<b>Power consumption, unattenuated</b>	$\leq 1.0$ mA
<b>Internal capacitance</b>	$\leq 15$ nF
<b>Internal inductance</b>	$\leq 25$ $\mu$ H
<b>Cable resistance</b>	$\leq 50$ $\Omega$
<b>Time delay before availability</b> $t_v$	$\leq 2$ ms
<b>Hysteresis</b> H	1% - 10% of $s_r$
<b>Repeatability</b> R ( $U_b$ and $T_a$ constant)	$\leq 1\%$ of $s_r$
<b>Temperature drift</b>	$\pm 10\%$ of $s_r$
<b>EMC</b>	to EN 60 947-5-2
<b>Short circuit protection (pulsed)</b>	Yes
<b>Reverse polarity protection</b>	Yes
<b>Enclosure rating</b> to EN 60529	IP 67
<b>Shock and vibration stress</b>	30 g, 11 ms, 10 to 55 Hz, 1 mm
<b>Ambient temperature</b> $T_a$	-13...158°F (-25...70°C)
<b>Housing material</b>	Brass, nickel-plated, plastic
<b>Tightening torque</b>	7.0 Nm
<b>Connection cable</b>	PUR-PVC, 3 x 0.25 mm <sup>2</sup>
Max. data for connecting isolating unit EN 2 EX or other approved isolating amplifier:	
<b>Short circuit current</b> $I_k$ max	30 mA
<b>No load voltage</b> $U_o$	16 V
<b>Power loss</b> $P_{max}$	75 mW

## Selection Table

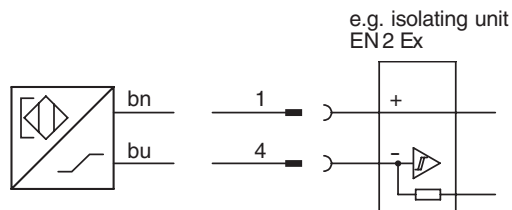
Sensing range $S_n^*$ in (mm)	Magnetic alignment	Version	Output function	Switching frequency f in Hz	Connection type	Type	Part no.
2.4 (60)	Axial	NAMUR		5000	Cable 2 m	MM12-60A-N-ZW0	7 900 286
2.4 (60)	Axial	NAMUR		5000	Connector M12 x 1 mm	MM12-60A-N-ZC0	7 900 287

\* Sensing range  $s_n$  based on installation in non-magnetizable material using magnet M 4.0.

## Sensing Ranges

Magnet type	Sensing Range $s_n$ Any installation type (flush or non-flush) in a non-magnetizable material	Sensing Range $s_n$ Flush installation in a magnetizable material (e.g. iron)M
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## Connection Diagram



Wire color	Contact	Assignment
bn brown	1	+ V DC
bu blue	4	- V DC
	3	free
	2	free

