



# MLP1-SMMA0AC

MLP1

SAFETY LOCKING DEVICES

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
MLP1-SMMA0AC	1077943

Other models and accessories → [www.sick.com/MLP1](http://www.sick.com/MLP1)



## Detailed technical data

## Features

<b>Sensor principle</b>	Transponder
<b>Locking force</b>	500 N
<b>Retaining force</b>	25 N
<b>Offset tolerance</b>	≤ 5 mm
<b>Safe switch off distance <math>S_{ar}</math></b>	45 mm
<b>For process protection only</b>	✓

## Safety-related parameters

<b>Safety integrity level</b>	SIL3 (IEC 61508), SILCL3 (EN 62061)
<b>Category</b>	Category 4 (EN ISO 13849)
<b>Performance level</b>	PL e (EN ISO 13849) <sup>1)</sup>
<b>PFH<sub>D</sub> (mean probability of a dangerous failure per hour)</b>	$1.5 \times 10^{-8}$ (EN ISO 13849) <sup>2)</sup>
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)
<b>Type</b>	Type 4 (EN ISO 14119)
<b>Actuator coding level</b>	Low coding level (EN ISO 14119)
<b>Safe state in the event of a fault</b>	At least one safety-related semiconductor output (OSSD) is in the OFF state.

<sup>1)</sup> In a cascade, the performance level for the cascade as a whole depends on the number and type of devices in the cascade. PL e is only possible in cascades with a maximum of 6 devices.

<sup>2)</sup> At 40 °C and 1000 m above sea level.

## Interfaces

<b>Connection type</b>	Cable with plug M12, 5-pin
Length of cable	150 mm
Cable material	PVC
Connecting cable length	≤ 140 m

## Electrical data

<b>Protection class</b>		III (IEC 61140)
<b>Contamination rating</b>		3 (EN 60947-1)
<b>Classification according to cULus</b>		Class 2
<b>Usage category</b>		DC-13 (IEC 60947-5-1)
<b>Rated insulation voltage <math>U_i</math></b>		32 V
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		1,500 V
<b>Supply voltage <math>U_V</math> when an individual safety switch is connected</b>		
	Sensor	24 V DC (19.2 V DC ... 28.8 V DC)
	Magnet	24 V DC (19.2 V DC ... 28.8 V DC)
<b>Supply voltage <math>U_V</math> when a cascade is connected</b>		
	Sensor	24 V DC (22.8 V DC ... 28.8 V DC)
	Magnet	24 V DC (21.6 V DC ... 28.8 V DC)
<b>Power consumption</b>		
	Locking active	350 mA
	Locking deactivated	50 mA
<b>Switching frequency</b>		$\leq 0.5$ Hz
<b>Type of output</b>		Semiconductor (OSSD)
<b>Output current (OSSDs)</b>		$\leq 100$ mA
<b>Diagnostic output</b>		$\leq 25$ mA, short-circuit protected
<b>Cable capacitance</b>		400 nF (for OUT A and OUT B)
<b>Response time</b>		50 ms <sup>1)</sup>
<b>Enable time</b>		100 ms <sup>1)</sup>
<b>Risk time</b>		100 ms <sup>1)</sup>
<b>Switch-on time</b>		2.5 s
<b>Locking principle</b>		Power to lock

<sup>1)</sup> In a cascade, the value is multiplied by the number of safety switches in the cascade.

## Mechanical data

<b>Weight</b>		
	Switches	510 g
	Actuator	210 g
<b>Material</b>		
	Sensor housing	Anodized aluminum
	Actuator housing	Fiber-glass-reinforced PVC
	Anchor plate	Nickel-plated steel
<b>Dimensions (W x H x D)</b>		
	Switches	120 mm x 60 mm x 38.5 mm
	Actuator	120 mm x 60 mm x 20.5 mm
<b>Offset tolerance</b>		
	Vertical	$\leq 5$ mm

Horizontal	≤ 5 mm
Aperture angle	≤ 3°

### Ambient data

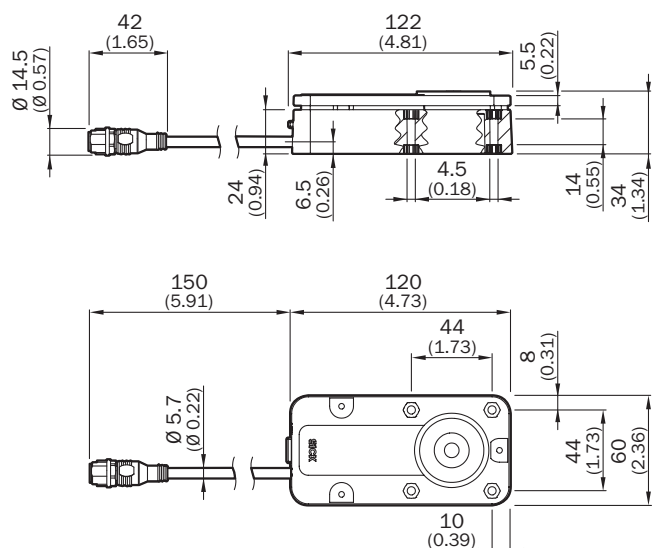
<b>Enclosure rating</b>	IP67 (EN 60529)
<b>Ambient operating temperature</b>	-20 °C ... +55 °C
<b>Storage temperature</b>	-25 °C ... +70 °C
<b>Relative humidity</b>	50 %, at 70 °C (IEC 60947-5-2)
<b>Vibration resistance</b>	10 Hz ... 55 Hz, 1 mm (IEC 60068-2-6)
<b>Shock resistance</b>	30 g, 11 ms (EN 60068-2-27)
<b>EMC</b>	EN IEC 61326-3-1 EN IEC 60947-5-2 EN IEC 60947-5-3

### Classifications

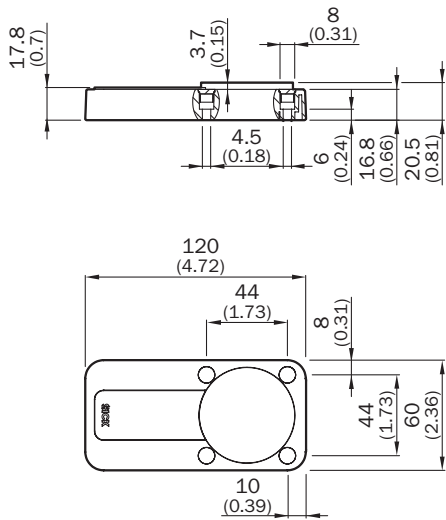
<b>ECl@ss 5.0</b>	27272603
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<b>ECl@ss 6.0</b>	27272603
<b>ECl@ss 6.2</b>	27272603
<b>ECl@ss 7.0</b>	27272603
<b>ECl@ss 8.0</b>	27272603
<b>ECl@ss 8.1</b>	27272603
<b>ECl@ss 9.0</b>	27272603
<b>ETIM 5.0</b>	EC002593
<b>ETIM 6.0</b>	EC002593
<b>UNSPSC 16.0901</b>	39122205

### Dimensional drawing (Dimensions in mm (inch))

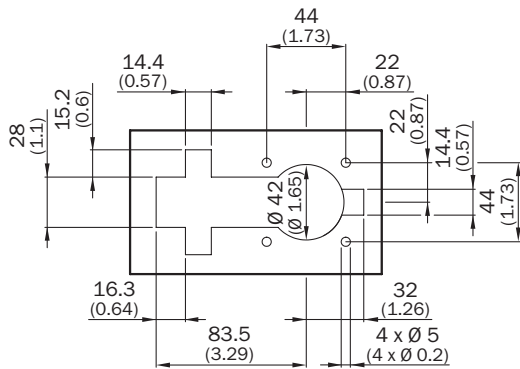
Sensor with M12 male connector



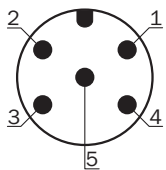
Actuator



Recess for flush mounting



Connection diagram



Pin	Designation	Description
1	+24 V DC	Safety switch voltage supply
2	OSSD 1	OSSD 1 output
3	0 V	0 V DC voltage supply
4	OSSD 2	OSSD 2 output
5	Magnet	Magnet control 24 V DC

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SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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