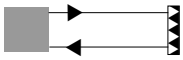
Series M1

Short and sweet – the metric M18, a highlight among many

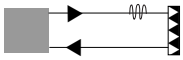
up to 35 m

Through-beam sensors M1S/M1E



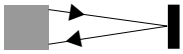
up to 6,2 m

Retro-reflective sensors M1R



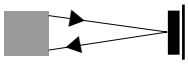
up to 5,4 m

Retro-reflective sensors
with polarizing filters M1P and M1C



up to 55 cm

Diffuse-reflective sensors M1T



10 cm

Diffuse-reflective sensors
with background rejection M1H

High functionality

Diverse operating principles
ELESTA's M1 sensors are available as through-beam sensors, retro-reflective sensors with and without polarizing filters, diffuse-reflective sensors, as well as retro-reflective sensors for transparent objects. Additionally, diffuse-reflective sensors with background rejection are available.

Light reserve warning indicator
All of the sensors in the M1 series contain a *light-reserve warning indicator* (blinking function indicator) for controlling dirt build-up on the lenses and as an *alignment aid.*

High switching frequency
All M1 sensors have a 1000 Hz switching frequency, allowing for the reliable detection of even fast moving objects.

Low power consumption
The M1 sensors distinguish themselves with an extremely small power consumption of less than 15 mA.

Test input
The M1 through-beam sensors are available standard with *test input,* for confirming that the sensor is operating properly.

Simple installation and operation

Unique angle optics
The diameter of the right angle optics head is no greater than that of the sensor housing. Therefore, the right angle optics sensors are very easy to bore mount. These sensors are optionally available with a extended stainless steel case for protection of the right angle optic head.

Various connection versions
All M1 sensors are available standard with a 4 wire 2 m cable or a 4 pin M12 connector.

User friendly adjustment button with integrated *function indicator*
The optical range of each M1 sensor can be adjusted to meet the specific application. The range is comfortably adjusted with a Nr. 2 screwdriver on a robust range adjustment button. The function indicator is integrated in the adjustment button and is visible over a wide angle even under bright ambient light conditions.

Reliable for the highest demands

Robust construction with IP 67 *sealing*
The M1 photoelectric sensors are built with a polyamide 12 or stainless steel housing, and are protected against water and dust. The sensors meet the *sealing* requirements of IP 67.

EMC-tested
The M1 sensors are tested according to IEC 801, EN50081-1 and EN50082-2. This assures trouble free use even in high electromagnetically contaminated environments.

High ambient light rejection
Thanks to pulse modulation and a multilevel disturbance rejection, the M1 sensors are extremely insensitive to foreign light sources.

Reverse polarity protection
All of the M1 sensor's electrical connections are protected against reverse wiring.

Short-circuit protection
The M1 sensor's transistor outputs are electronically protected against short circuit.

Power-up output suppression
During power-up the outputs of the M1 sensors are blocked for typically 30 msec.

Glass-protected optics
As an option, the M1 sensors are available with a glass window to protect the optics against aggressive chemicals and mechanical damage (scratching).

Designation code

M1 x xxx xxx xxx

Housing

:Polyamid
M:Stainless steel
S :Stainless steel (protected angle optic head)

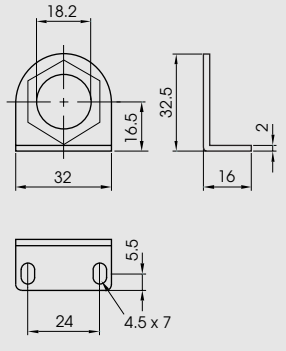
Principle	Supply	Outputs	Connection	Electr. option	Light	Range
C: Retro-reflective for transparent objects E: Through-beam receiver H: Diffuse-reflective with background rejection P: Retro-reflective with polarizing filters R: Retro-reflective S: Through-beam emitter T: Diffuse-reflective Z: Accessory	1: 10-30 VDC	KA: No output NA: NPN *light- and dark-on* PA: PNP *light- and dark-on*	1: Cable 2 m 4: Connector M12	00: Range adjustable 01: Range adjustable, *test input* 40: Range not adjustable 41: Range not adjustable, *test input*	A: Right angle optic, red I: Straight optic, infrared R: Straight optic, red W: Right angle optic, infrared	M1S/M1E: 1: 15 m 2: 10 m 3: 10 m 4: 35 m M1R/M1P/M1C: 1: 2,5 m 2: 3 m 3: 2 m 4: 2,5 m 5: 1,5 m M1T/H: 1: 10 cm 2: 20 cm 3: 40 cm 4: 55 cm 5: 5 cm 6: 10 cm

Accessories

Retroreflectors: see page 130

Connector cables: see page 128

Mounting:



Mounting bracket M1Z 001

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Through-beam sensors, M18 housing

- ***Range* adjustable**
- ***Light reserve warning indicator***
- ***Dual transistor outputs*, NPN or PNP**
- **1000 Hz switching frequency**
- ***Short-circuit protection, reverse polarity protection,* and *power-up output suppression***
- ***Test input***
- **Connections: Straight cable, 2 meter**
  Connector, M12
- **EMC tested according to IEC 801 and EN50081-1/EN 50082-2**

CE

	Emitter				Receiver			
Product designation Plastic housing [1]	**M1S 1KA 101 I1**	**M1S 1KA 401 I1**	**M1S 1KA 101 I4**	**M1S 1KA 401 I4**	**M1E 1NA 140 I1**	**M1E 1NA 440 I1**	**M1E 1PA 140 I1**	**M1E 1PA 440 I1**
Product designation Stainless steel [1]	**M1S 1KA 101 I1M**	**M1S 1KA 401 I1M**	**M1S 1KA 101 I4M**	**M1S 1KA 401 I4M**	**M1E 1NA 140 I1M**	**M1E 1NA 440 I1M**	**M1E 1PA 140 I1M**	**M1E 1PA 440 I1M**
Output					NPN (light-/dark-on)		PNP (light-/dark-on)	
Connection	Cable 2 m	Connector M12	Cable 2 m	Connector M12	Cable 2 m	Connector M12	Cable 2 m	Connector M12
Range adjustment	Yes				No			
Optical data [2]								
Max. *range*	15 m		35 m		15/35 m			
Emitter	Infrared-LED, 880 nm, pulsed		Infrared-LED, 890 nm, pulsed					
Electrical data [2]								
Supply voltage U_S	10...30 VDC							
Allowable ripple	+/- 10% of U_{SP}							
Current consumption (without load)	< 25 mA				< 15 mA			
Max. load current I_L					100 mA			
Residual voltage					< 1,6 V			
Max. switching frequency					1000 Hz			
Test input: emitter on	> 8 V or open							
Test input inverse: emitter on	open or < 1,5 V							
emitter off	< 1,5 V							
emitter off	> 8 V							
Environmental data								
Sealing	IP 67							
Temperature T_A (operating and storage)	-25...+65 °C							
Weight Plastic/Stainless steel	Connector M12: ca.15/25 g , Cable 2 m: ca. 100/110 g							

1) For product designation of sensors with options see designation code on page 23.
2) When not otherwise noted, all technical data at T_A = 25 °C and U_S = 24 V.

Option
Versions with integrated optical apertures for the detection of small objects or for precise positioning tasks.

Slit aperature

Round aperature

Slit aperature	Range	Round aperature	Range
0.5 mm x 9 mm	2.4 m	ø 1.0 mm	0.45 m
1.0 mm x 9 mm	4.0 m	ø 1.5 mm	1.05 m
2.0 mm x 9 mm	6.5 m	ø 2.0 mm	2.15 m

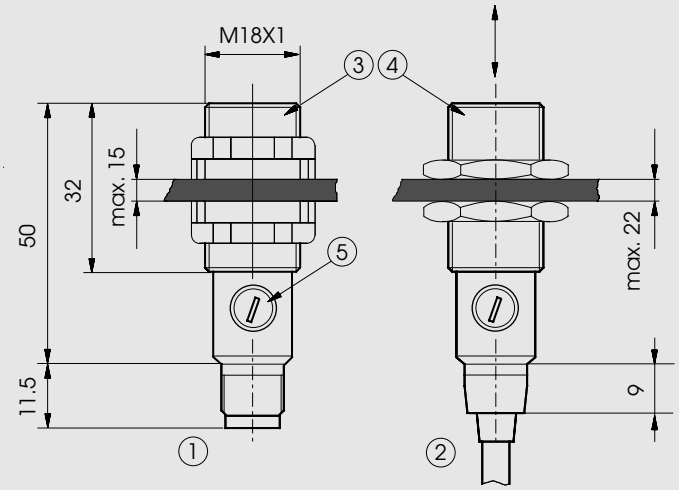
10...30 VDC

NPN / PNP
light-on and
dark-on output

15/35 m

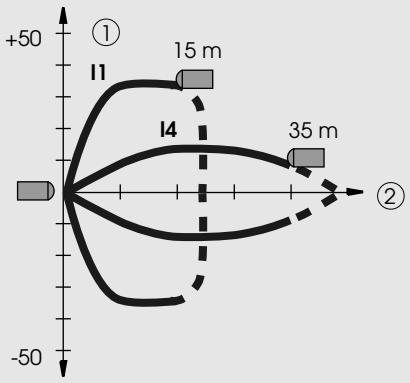
M1S/M1E

Dimensions (50 mm, M18 x 1)



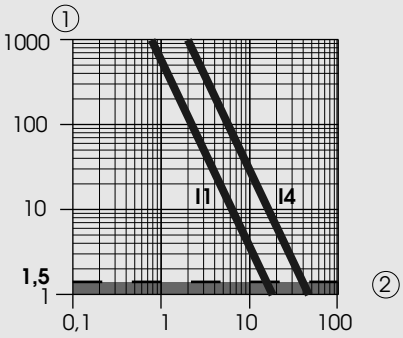
① Connector M12
② Cable connection
③ Plastic housing
④ Stainless steel housing
⑤ *Range adjustment* and *function indicator* (*operation indicator* for emitter)

Optical diagrams



Typical beam diameter

① Diameter in (cm)
② Range in (m)

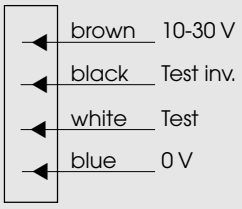


Typical excess gain curve

① Gain factor
② Range in (m)

Wiring diagram

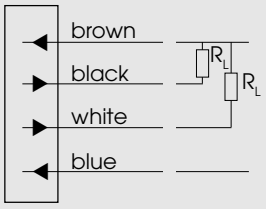
Emitter



Connector
M12

Receiver

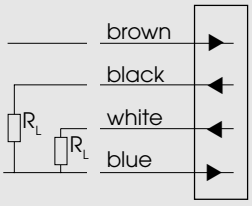
NPN output



Connection for connector M12	Wire color
1	brown
2	white
3	blue
4	black

⊕ Supply voltage 10...30 V
Light-on output
Dark-on output
⊖ Supply voltage

PNP output



Light-on output:
Output energized when no object is present.

Dark-on output:
Output energized when object is present.

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www.jaxxeninc.com info@jaxxeninc.com

Through-beam sensors, right angle optics, M18 housing

- ***Range* adjustable**
- ***Light reserve warning indicator***
- ***Dual transistor outputs,* NPN or PNP**
- **1000 Hz switching frequency**
- ***Short-circuit protection, reverse polarity protection,* and *power-up output suppression***
- ***Test input***
- **Extended stainless steel case for protection of angle optic head (option)**
- **Connections: Straight cable, 2 meter**
  Connector, M12
- **EMC tested according to IEC 801 and EN50081-1/EN 50082-2**

CE

	Emitter		Receiver			
Product designation Plastic housing [1]	**M1S 1KA 101 W3**	**M1S 1KA 401 W3**	**M1E 1NA 140 W3**	**M1E 1NA 440 W3**	**M1E 1PA 140 W3**	**M1E 1PA 440 W3**
Product designation Stainless steel [1]	**M1S 1KA 101 W3M**	**M1S 1KA 401 W3M**	**M1E 1NA 140 W3M**	**M1E 1NA 440 W3M**	**M1E 1PA 140 W3M**	**M1E 1PA 440 W3M**
Output			NPN (light- and dark-on)		PNP (light- and dark-on)	
Connection	Cable 2 m	Connector M12	Cable 2 m	Connector M12	Cable 2 m	Connector M12
Range adjustment	Yes		No			
Optical data [2]						
Max. *range*	10 m					
Emitter	Infrared-LED, 880 nm, pulsed					
Electrical data [2]						
Supply voltage U_S	10...30 VDC					
Allowable ripple	+/- 10% of U_{SP}					
Current consumption (without load)	< 25 mA		< 15 mA			
Max. load current I_L			100 mA			
Residual voltage			< 1,6 V			
Max. switching frequency			1000 Hz			
Test input: emitter on / emitter off	> 8 V or open < 1,5 V					
Test input inverse: emitter on / emitter off	open or < 1,5 V > 8 V					
Environmental data						
Sealing	IP 67					
Temperature T_A (operating and storage)	-25...+65 °C					
Weight Plastic/Stainless steel	Connector M12: ca.15/25 g , Cable 2 m: ca. 100/110 g					

1) For product designation of sensors with options see designation code on page 23.
2) When not otherwise noted, all technical data at T_A = 25 °C and U_S = 24 V.

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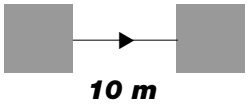
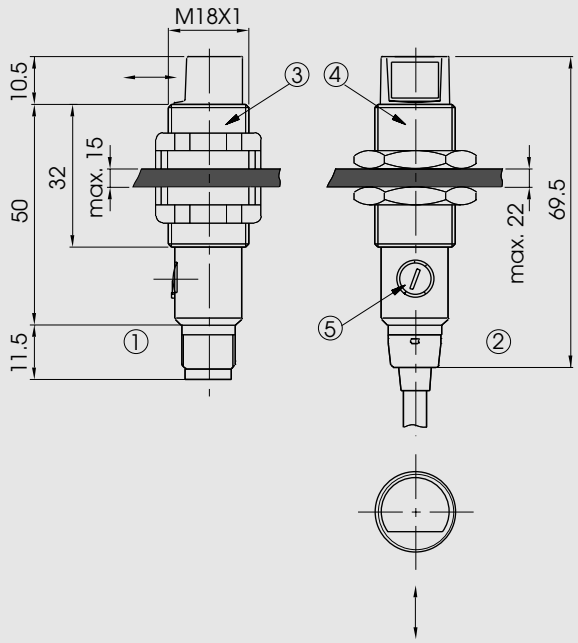
10...30 VDC

NPN / PNP
light-on and
dark-on output

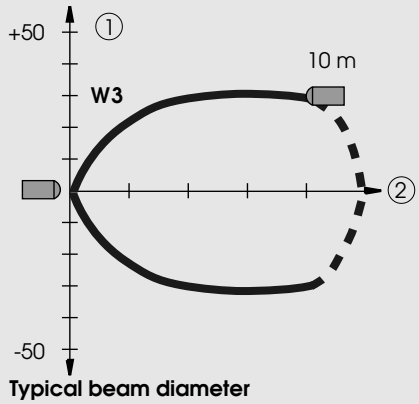


M1S/M1E
right angle optics

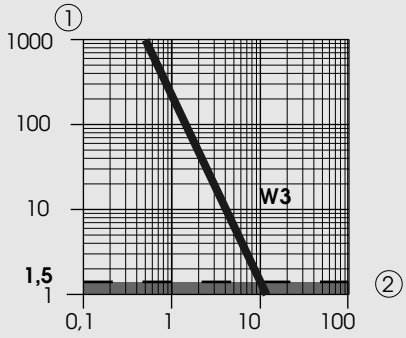
Dimensions (60.5 mm, M18 x 1)



Optical diagrams



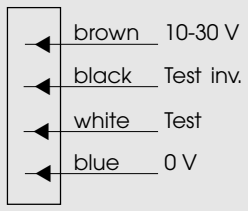
Typical beam diameter



Typical excess gain curve

Wiring diagram

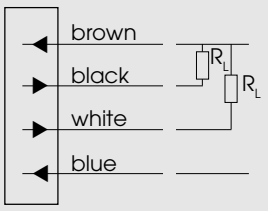
Emitter



Connector M12

Receiver

NPN output



Connection for connector M12	Wire color
1	brown
2	white
3	blue
4	black

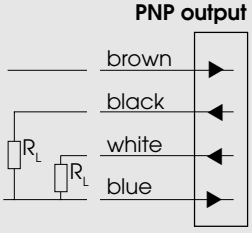
⊕ Supply voltage 10...30 V

Light-on output

Dark-on output

⊖ Supply voltage

PNP output



Light-on output:
Output energized when no object is present.

Dark-on output:
Output energized when object is present.

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