

Retro-reflective sensors with polarizing filters, 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
- Connections: Straight cable, 2 meter
Connector, M12
- EMC tested according to IEC 801 and EN50081-1/EN 50082-2



Product designation Plastic housing ¹⁾

Product designation Stainless steel ¹⁾

Output

Connection

Range adjustment

Optical data ²⁾

Range

Emitter

Electrical data ²⁾

Supply voltage U_s

Allowable ripple

Current consumption (without load)

Max. load current I_L

Residual voltage

Max. switching frequency

Environmental data

Sealing

Temperature T_A
(operating and storage)

Weight Plastic/Stainless steel

M1P 1NA 100 R1	M1P 1NA 400 R1	M1P 1PA 100 R1	M1P 1PA 400 R1
M1P 1NA 100 R1M	M1P 1NA 400 R1M	M1P 1PA 100 R1M	M1P 1PA 400 R1M
NPN (light- and dark-on)		PNP (light- and dark-on)	
Cable 2 m	Connector M12	Cable 2 m	Connector M12
Yes			
0,15...2,5 m (retroreflector OZR 001)			
Visible-red LED, 660 nm, pulsed, with polarizing filter			
10...30 VDC			
+/- 10% of U_{sp}			
< 15 mA			
100 mA			
< 1,6 V			
1000 Hz			
IP 67			
-25...+65 °C			
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.

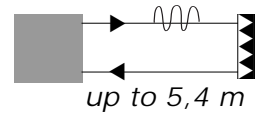
2) When not otherwise noted, all technical data at $T_A = 25\text{ °C}$ and $U_s = 24\text{ V}$.

Retro-reflector ●	Range	Retro-reflector ■	Range	Retro-reflective tape	Range
OZR 001	0.15 – 2.5 m	OZR 101	0.03 – 4.0 m	OZR 201	0 m
OZR 002	0.06 – 2.3 m	OZR 102	0.09 – 1.5 m	OZR 202	0 m
OZR 003	0.09 – 1.0 m	OZR 103	0.03 – 3.2 m	OZR 203	0.25 – 1.3 m
		OZR 104	0.03 – 5.4 m	OZR 204*	0.25 – 0.9 m
				OZR 205*	0.25 – 1.3 m

* 30 cm long

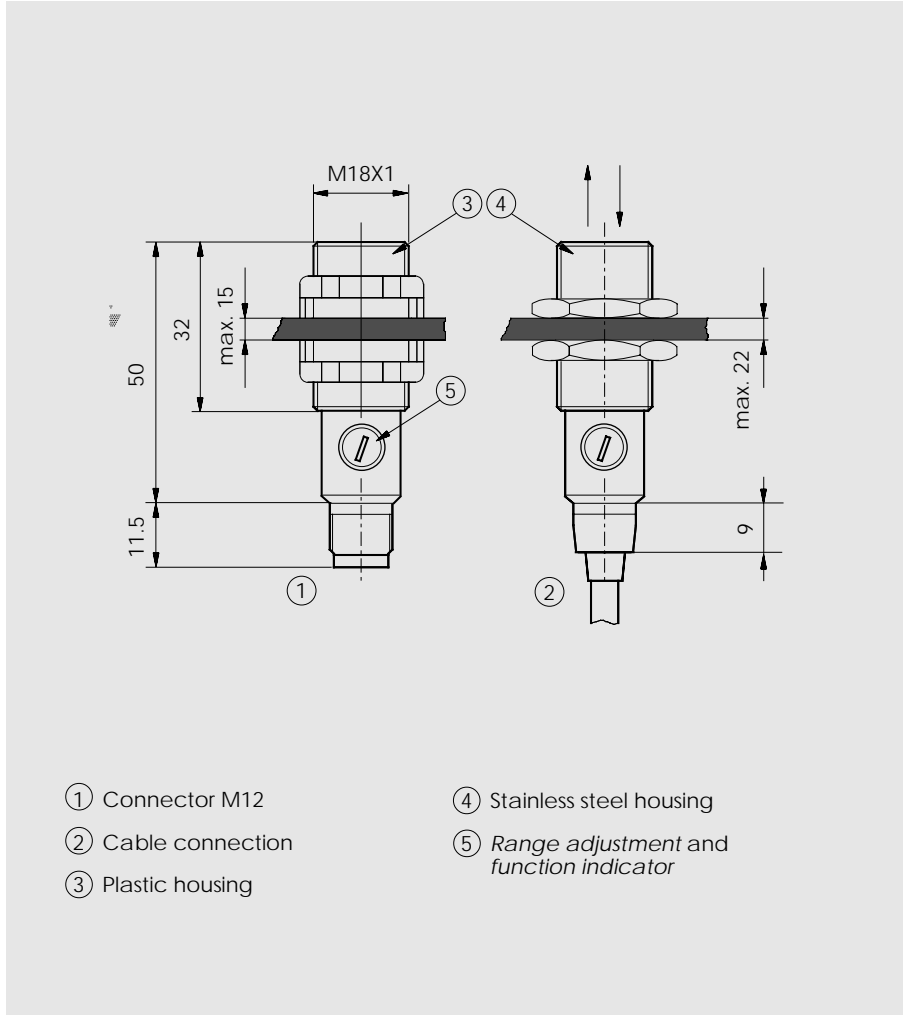
10...30 VDC

NPN / PNP
light-on and
dark-on output

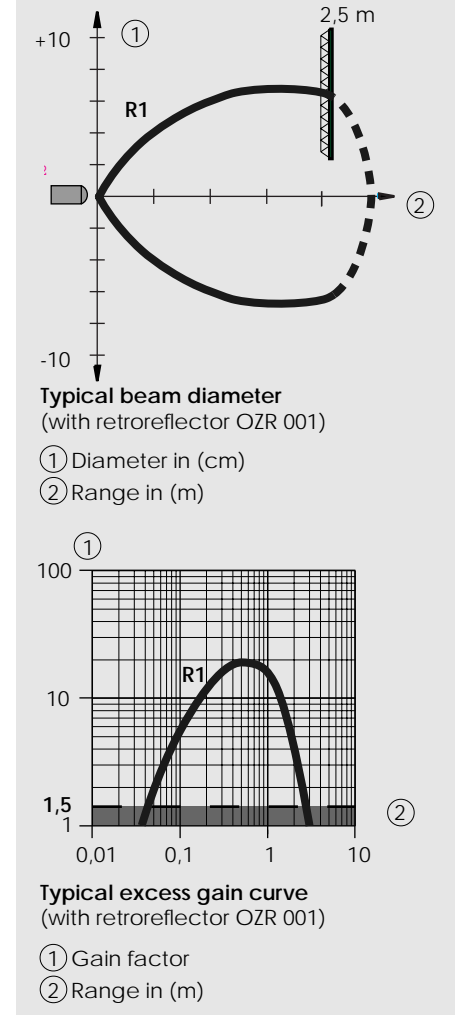


M1P

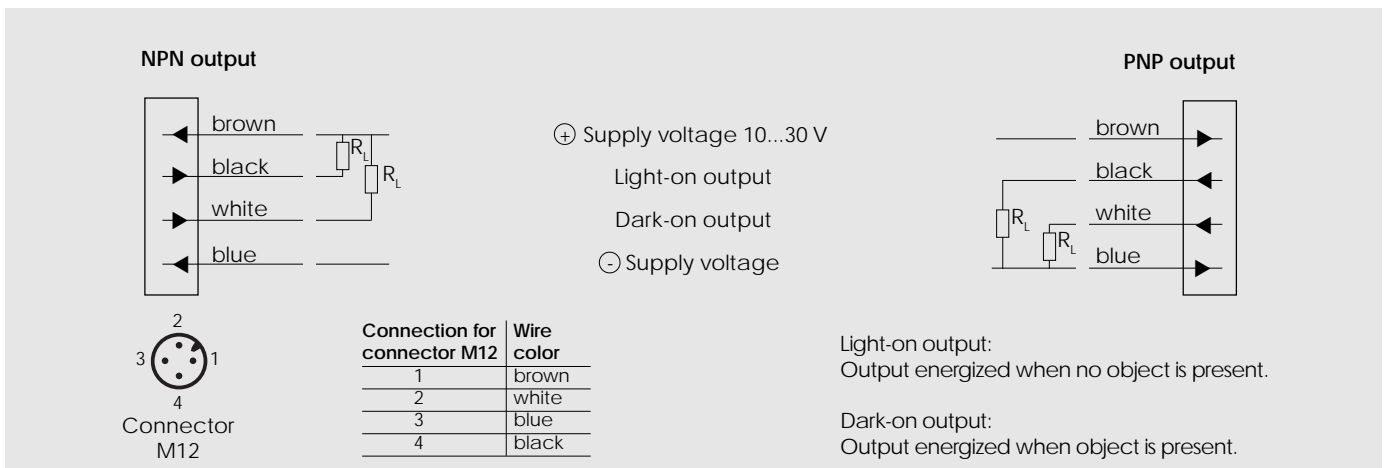
Dimensions (50 mm, M18 x 1)



Optical diagrams



Wiring diagram



Retro-reflective sensors with polarizing filters, right angle optics, M18 housing



- Range adjustable
- Glass protected optics
- 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
- 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



Product designation Plastic housing ¹⁾

Product designation Stainless steel ¹⁾

Output

Connection

Range adjustment

Optical data ²⁾

Range

Emitter

Electrical data ²⁾

Supply voltage U_s

Allowable ripple

Current consumption (without load)

Max. load current I_L

Residual voltage

Max. switching frequency

Environmental data

Sealing

Temperatrer T_A
(operating and storage)

Weight Plastic/Stainless steel

M1P 1NA 100 A3	M1P 1NA 400 A3	M1P 1PA 100 A3	M1P 1PA 400 A3
M1P 1NA 100 A3M	M1P 1NA 400 A3M	M1P 1PA 100 A3M	M1P 1PA 400 A3M
NPN (light- and dark-on)		PNP (light- and dark-on)	
Cable 2 m	Connector M12	Cable 2 m	Connector M12
Yes			
0,09...2 m (retroreflector OZR 001)			
Visible-red LED, 660 nm, pulsed, with polarizing filter			
10...30 VDC			
+/- 10% of U_{sp}			
< 15 mA			
100 mA			
< 1,6 V			
1000 Hz			
IP 67			
-25...+65 °C			
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.

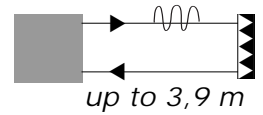
2) When not otherwise noted, all technical data at $T_A = 25^\circ\text{C}$ and $U_s = 24\text{ V}$.

Retro-reflector ●	Range	Retro-reflector ■	Range	Retro-reflective tape	Range
OZR 001	0.09 – 2.0 m	OZR 101	0.03 – 3.1 m	OZR 201	0 m
OZR 002	0.08 – 1.9 m	OZR 102	0.08 – 1.1 m	OZR 202	0 m
OZR 003	0.08 – 0.8 m	OZR 103	0.03 – 2.6 m	OZR 203	0.15 – 1.0 m
		OZR 104	0.03 – 3.9 m	OZR 204*	0.15 – 0.7 m
				OZR 205*	0.15 – 1.0 m

* 30 cm long

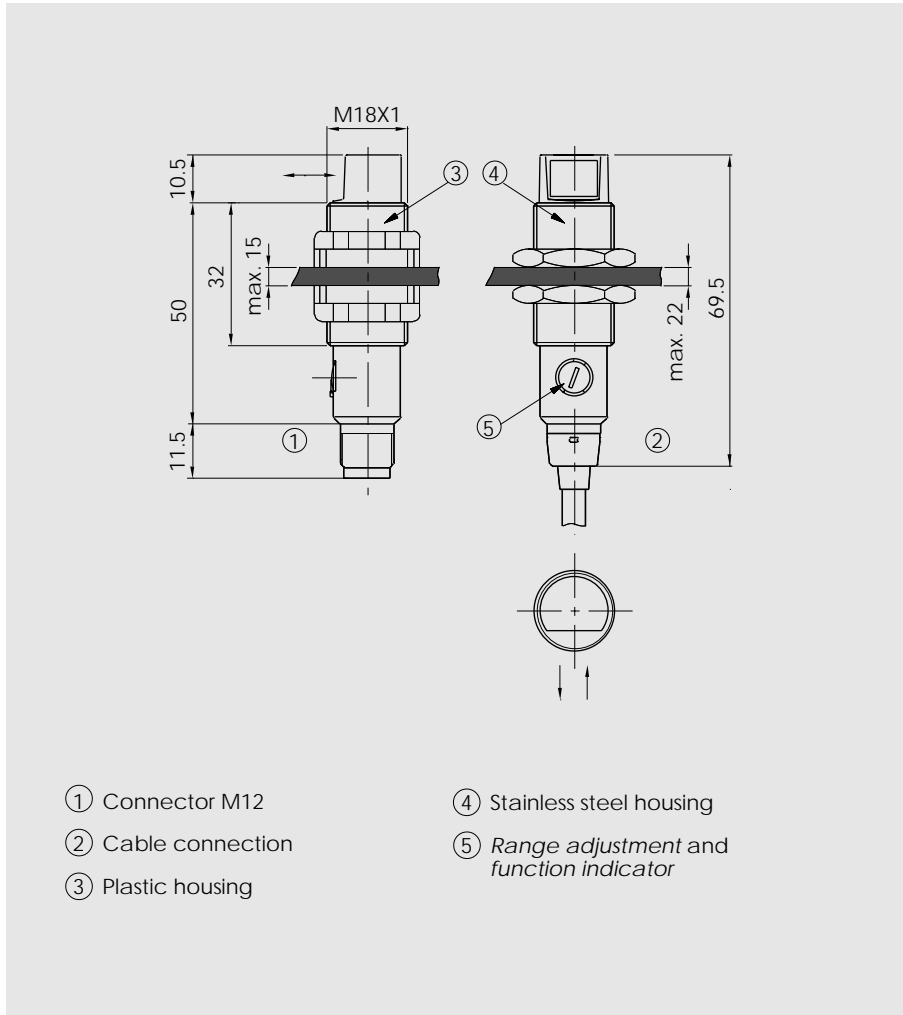
10...30 VDC

NPN / PNP
light-on and
dark-on output

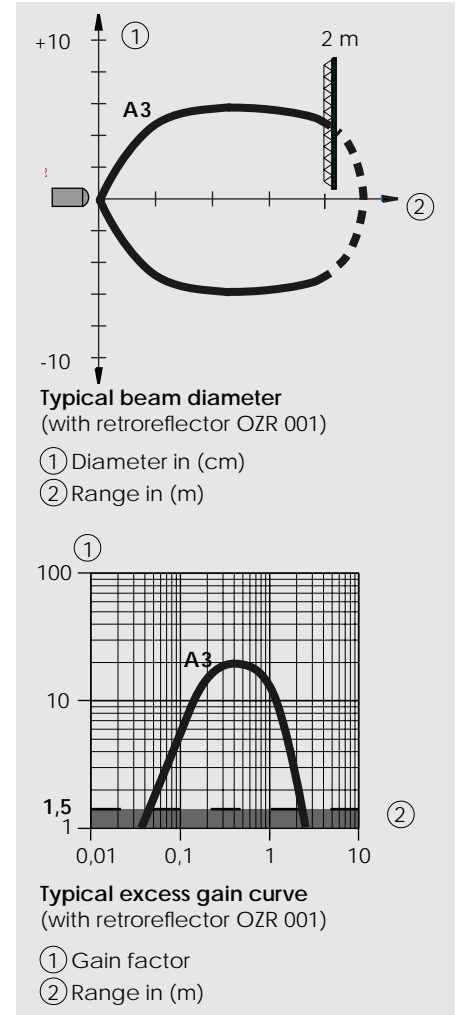


M1P right angle optics

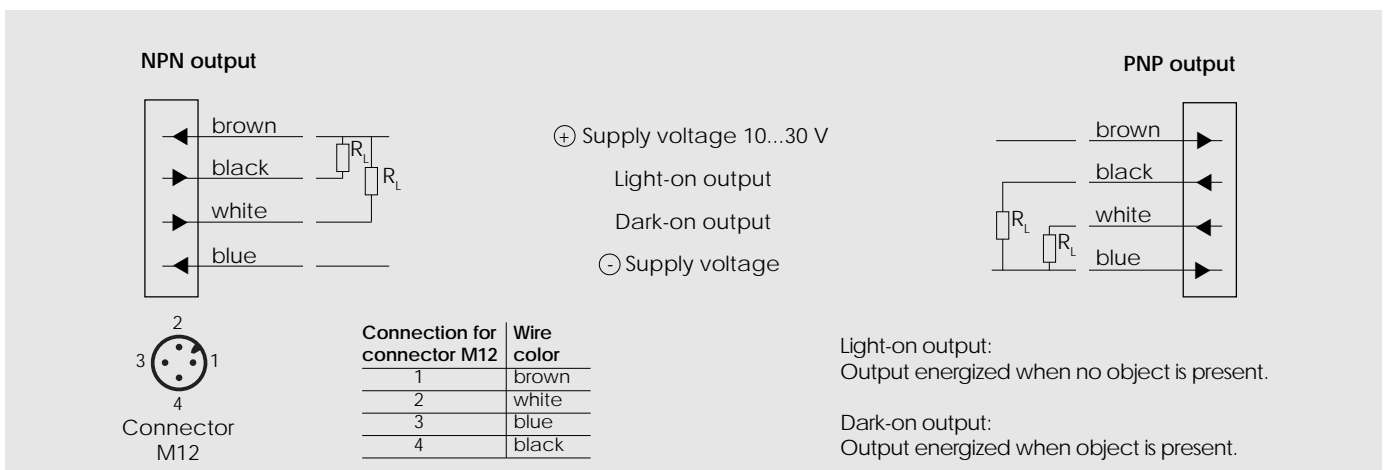
Dimensions (60.5 mm, M18 x 1)



Optical diagrams



Wiring diagram



Retro-reflective sensors with polarizing filters, for transparent objects, M18 housing



- Increased switching accuracy for detecting glass or transparent plastics
- 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
- Connections: Straight cable, 2 meter
Connector, M12
- EMC tested according to IEC 801 and EN50081-1/EN 50082-2



Product designation Plastic housing ¹⁾

Product designation Stainless steel ¹⁾

Output

Connection

Range adjustment

Optical data ²⁾

Range

Emitter

Electrical data ²⁾

Supply voltage U_s

Allowable ripple

Current consumption (without load)

Max. load current I_L

Residual voltage

Max. switching frequency

Environmental data

Sealing

Temperature T_A
(operating and storage)

Weight Plastic/Stainless steel

M1C 1NA 100 R5	M1C 1NA 400 R5	M1C 1PA 100 R5	M1C 1PA 400 R5
M1C 1NA 100 R5M	M1C 1NA 400 R5M	M1C 1PA 100 R5M	M1C 1PA 400 R5M
NPN (light- and dark-on)		PNP (light- and dark-on)	
Cable 2 m	Connector M12	Cable 2 m	Connector M12
Yes			
0,05...3,5 m (retroreflector OZR 104)			
Visible-red LED, 660 nm, pulsed, with polarizing filter			
10...30 VDC			
+/- 10% of U_{sp}			
< 15 mA			
100 mA			
< 1,6 V			
1000 Hz			
IP 67			
-25...+65 °C			
Connector M12: ca.15/25 g , Cable 2 m: ca. 100/110 g			

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2) When not otherwise noted, all technical data at $T_A = 25\text{ °C}$ and $U_s = 24\text{ V}$.

Technical explanation

To detect very transparent objects, best results are obtained, when decreasing the range adjustment of the sensor to the threshold, between a continuously lit function indicator and a blinking function indicator. In this condition (function indicator blinking) a glass window inserted into the optical path, will be reliably detected.

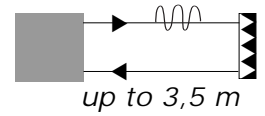
Retro-reflector ●	Range	Retro-reflector ■	Range	Retro-reflective tape	Range
OZR 001*	0.25 – 1.5 m	OZR 101	0.08 – 1.5 m	OZR 201	0 m
OZR 002	0.10 – 1.4 m	OZR 102	0.08 – 1.1 m	OZR 202	0 m
OZR 003	0 m	OZR 103	0.03 – 2.6 m	OZR 203	0.14 – 1.0 m
		OZR 104	0.05 – 3.5 m	OZR 204	0 m
				OZR 205**	0.4 – 0.8 m

* not recommended for bottle detection

** 30 cm long

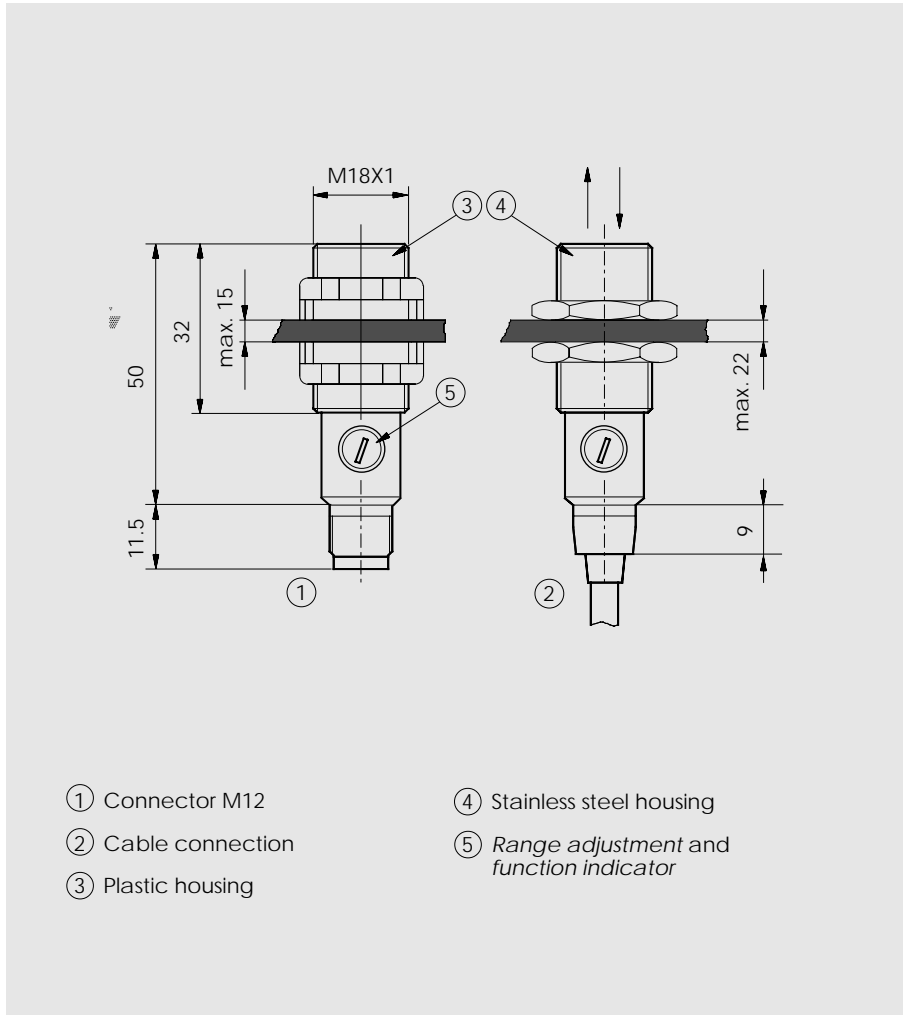
10...30 VDC

NPN / PNP
light-on and
dark-on output

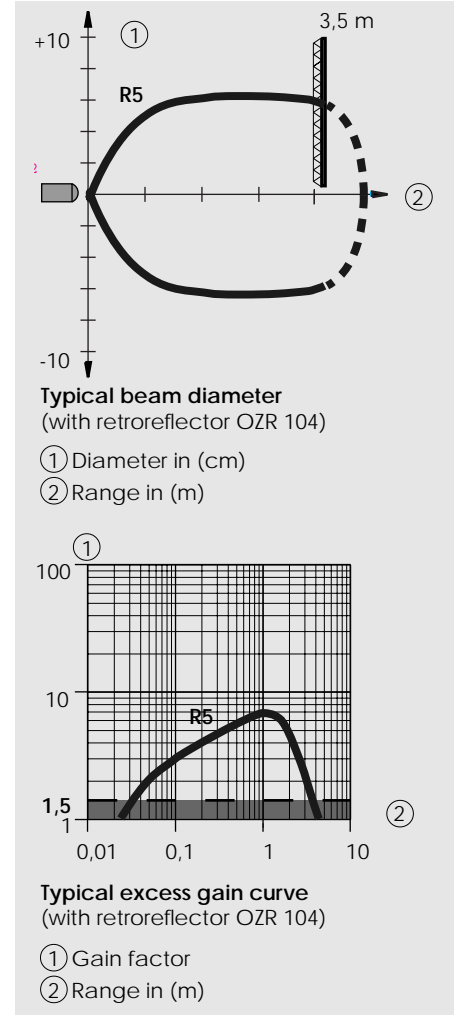


M1C

Dimensions (50 mm, M18 x 1)



Optical diagrams



Wiring diagram

