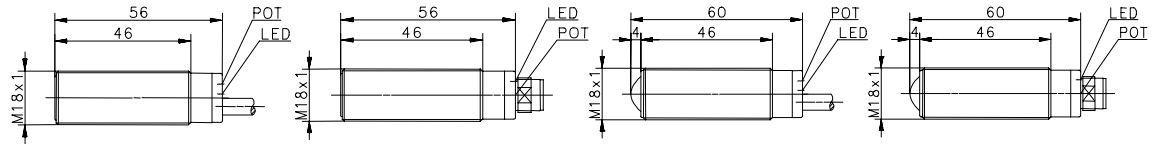


### Series M18

#### Overview of diffuse reflective and retro reflective sensors



Type OT, plastic housing								
Sensing range	Plain front type (PA 12)				Lens type (glass)			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
RT 100mm fix.	6557819004	6557219004	6557818002	6557218001				
RT 300mm var.	6557819005	6557219005	6557818003	6557218005				
RT 500mm var.	6557819006	6557219006	6557818006	6557218006				
FF 40mm fix.	6558819001	6558219001	6558818002	6558218001				
RS 0,05 - 3m fix.	6554819003	6554219002	6554818001	6554218001				
PS 0 - 2,5m var.					6555819003	6555219001	6555818001	6555218001
PS 0 - 0,8m var.					6555819004	6555219002	6555818002	6555218002

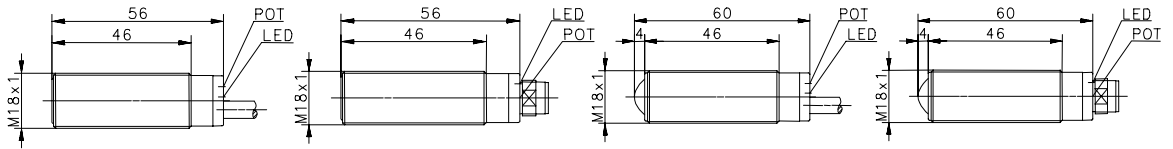
Type OM, brass housing								
Sensing range	Plain front type (PA 12)				Lens type (glass)			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
RT 100mm fix.	6557817002	6557217001	6557816001	6557216001				
RT 300mm var.	6557817003	6557217002	6557816002	6557216003				
RT 500mm var.	6557817004	6557217003	6557816006	6557216004				
FF 40mm fix.	6558817001	6558217001	6558816001	6558216001				
RS 0,05 - 3mfix.	6554817001	6554217001	6554816001	6554216001				
PS 0 - 2,5m var.					6555817001	6555217001	6555816001	6555216001
PS 0 - 0,8m var.					6555817002	6555217002	6555816002	6555216002

Type ON, stainless steel housing								
Sensing range	Plain front type (PA 12)				Lens type (glass)			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
RT 100mm fix.	6557822001	6557222001	6557821001	6557221001				
RT 300mm var.	6557822002	6557222002	6557821002	6557221002				
RT 500mm var.	6557822003	6557222003	6557821003	6557221003				
FF 40mm fix.	6558822001	6558222001	6558821001	6558221001				
RS 0,05 - 3m fix.	6554822001	6554222001	6554821001	6554221001				
PS 0 - 2,5m var.					6555822001	6555222001	6555821001	6555221001
PS 0 - 0,8m var.					6555822002	6555222002	6555821002	6555221002

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### Overview of through-beam sensors



Type OT, plastic housing								
Sensing range	Receiver				Set			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
8 m	6551819001	6551219002	6551818001	6551218001	6551819101	6551219102	6551818101	6551218101
	Emitter							
	6551019001		6551018001					

Type OM, brass housing								
Sensing range	Receiver				Set			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
8 m	6551817001	6551217001	6551816001	6551216001	6551817101	6551217101	6551816101	6551216101
	Emitter							
	6551017001		6551016001					

Type ON, stainless steel housing								
Sensing range	Receiver				Set			
	2m cable		M12 plug-in connection		2m cable		M12 plug-in connection	
	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN
8 m	6551822001	6551222001	6551821001	6551221001	6551822101	6551222101	6551821101	6551221101
	Emitter							
	6551022001		6551021001					

### Abbreviations:

- RT = Diffuse reflective sensor
- RS = Retroreflective sensor
- PS = Polarised retro sensor
- FF = Convergent beam sensor, fixed focus
- fix. = sensing range is fixed
- var. = sensing range adjustable with potentiometer (spindle~)

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### Switching function and wiring diagrams

The description refers to:

#### Sensors

Diffuse reflective sensor  
Retroreflective sensor  
Through-beam sensor

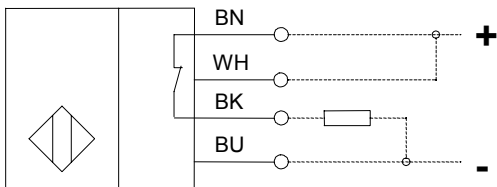
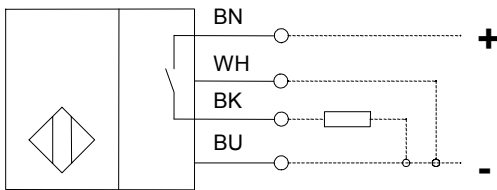
#### Sensing types

RT, FF  
RS, PS  
EE

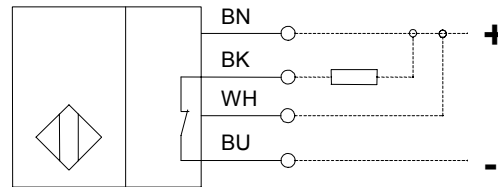
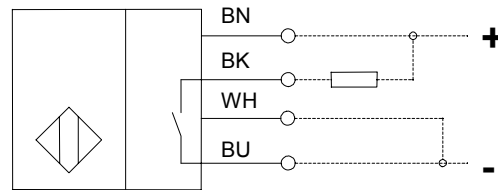
#### Mounting conditions

without an object inside the sensing range  
with mounted reflector but without an object inside the sensing range  
with mounted emitter but without an object inside the sensing range

#### PNP – Sensors



#### NPN - Sensors



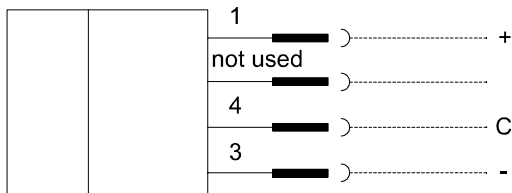
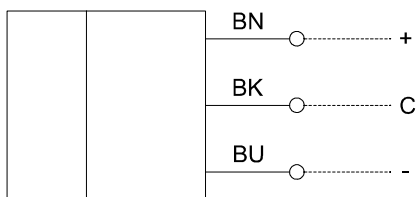
With the CTRL. wire **WH** output function is programmable. The change of the output function comes into effect after switching on the supply voltage.

A not connected **WH** wire (e.g. connector type) occurs in a N.O. function.

WH must be connected, if it is 4-wired cable, depending on the output function.

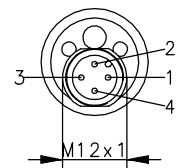
Sensor types RT and FF usually are light active, other sensors like RS, PS and EE are dark active.

#### through-beam sensors - transmitter



#### M12 connector and corresponding colours

pin number	colour	code
1	brown	BN
2	white	WH
3	blue	BU
4	black	BK

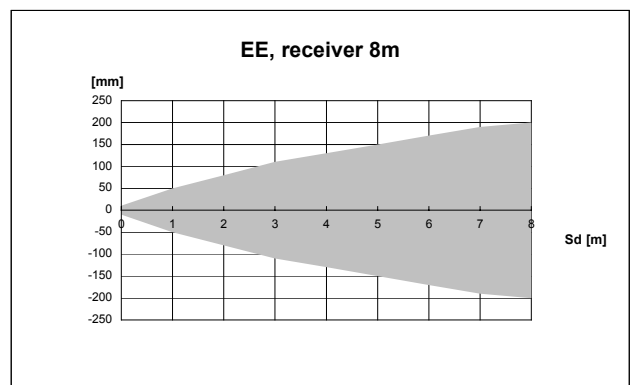
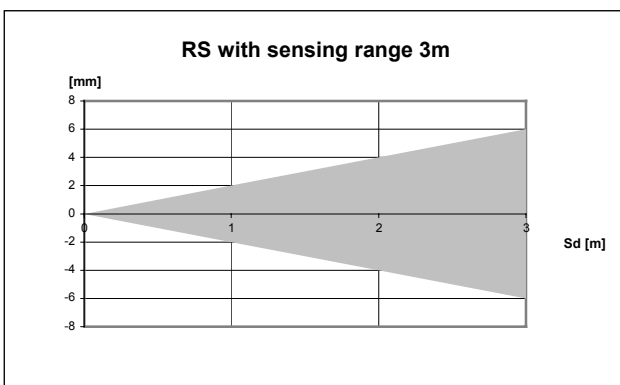
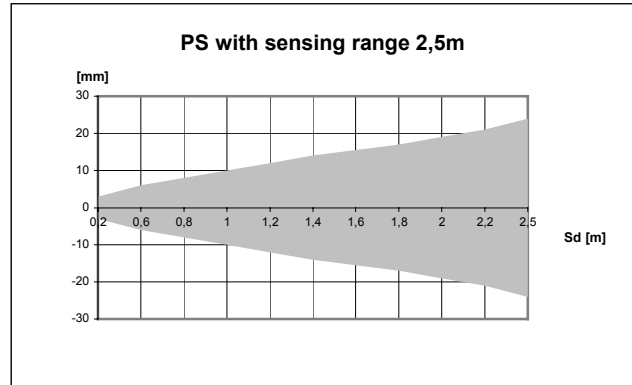
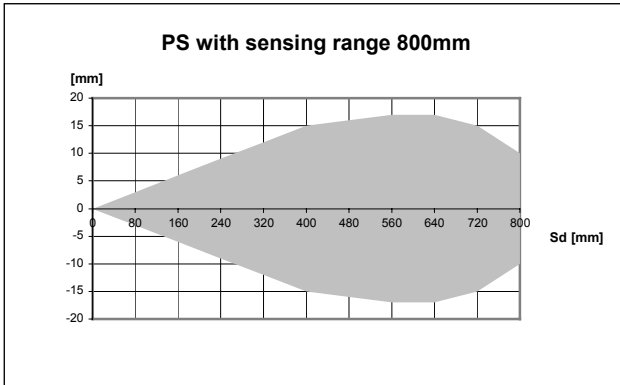
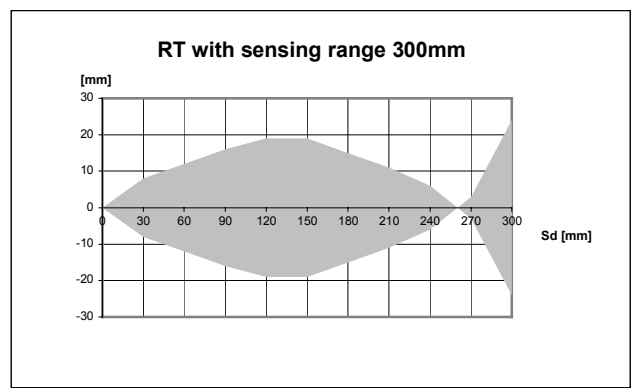
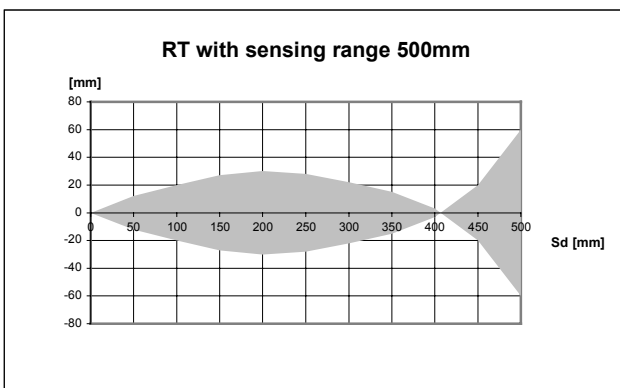
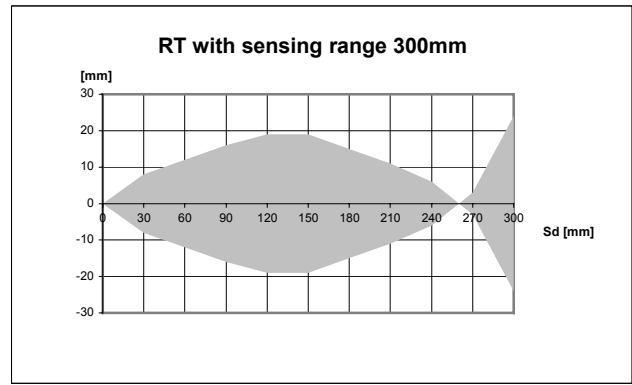
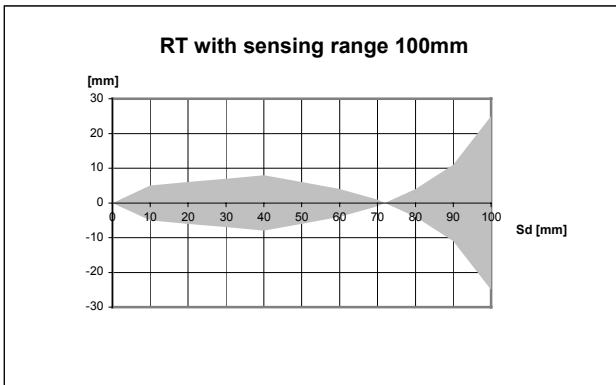


C = Control-Input. The emitter will be turned off when „Control“ and „-“ get connected (system test).

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## Typical sensing range



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### Identifying characteristics in accordance with EN 60947-5-2

Electrical data		
Sensing range	S <sub>d</sub>	see overview FF 40mm / RT 100mm = Target white 100mm x 100mm RT 300mm / 500mm = Target white 200mm x 200mm PS 800mm = Reflector 60mm x 51mm PS 2,5m / RS 3m = Reflector Ø80mm
Switching element function		programmable (L.A. / D.A.), permanent overload protection, indication: LED yellow
Repeat accuracy	R	≤ 10%
Differential travel (hysteresis)	H	≤ 15%
Operational voltage range	U <sub>B</sub>	10-36VDC
Rated insulation voltage	U <sub>i</sub>	75VDC
Rated impulse withstand voltage	U <sub>imp</sub>	500V
Voltage drop	U <sub>d</sub>	≤ 2V
Utilization category		DC-13 @ I <sub>e</sub> = 50mA and U <sub>e</sub> = 33VDC
Minimum operational current	I <sub>m</sub>	≤ 1mA
Off-state current	I <sub>r</sub>	≤ 0,1mA
No-load supply current	I <sub>o</sub>	≤ 15mA, ( transmitter ≤ 25mA )
Max. rated output current		200mA
Ambient light proof		10kLux
Short-circuit protection		pulsed
Frequency of operating cycles	f	500Hz
False polarity protection		yes
Time delay before availability	t <sub>v</sub>	50ms
Turn on time	t <sub>on</sub>	1ms

Electromagnetic compatibility (EMC)		
Electromagnetic field test	IEC 61000-4-3	3V/m
Electrostatic discharge test	IEC 61000-4-2	4kV (metallic enclosure) 8kV (plastic enclosure)
Electrical fast transient immunity test (Burst)	IEC 61000-4-4	2kV
Impulse voltage withstand ability (Surge)	IEC 61000-4-5	500V, 1,2/50µs @ R <sub>i</sub> = 42Ω
Radiated disturbance field strength	EN 55011	≤ 40dB (µV/m)

Mechanische Daten	
Enclosure	OT = PBT black OM = brass, nickel plated ON = stainless steel (Niro 1.4305)
End cap	PA66 black
Beam-output	PA12, PS: Glass lens
Ambient air temperature	-20°C...+70°C
Type of protection	IP67 (plug-in connection: only in fully locked position with it's plugs)
Pollution degree	3 (Pollution of the optic can cause impairments of the sensing range.)
Indication	Output LED yellow; Transmitter LED green
Termination type	Cable 3x0,34mm <sup>2</sup> x 2m, PVC-Outer jacket, black Cable 4x0,34mm <sup>2</sup> x 2m, PVC-Outer jacket, black Plug Socket M12x1, PA
For attachment	Hexagonal / knurled nut, ABS black Hexagon nut; brass, nickel plated or stainless steel (Niro 1.4305)

EC-Conformity	CE
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