

FA Series / Diffuse reflection sensor / Retro-reflective sensor / Through-beam sensor

Models with plastic housing



- Construction type: M18x1
- Optical axis: Axial / Angled (90°)
- Measuring range: 0 - 20000 mm
- Connection type: M12 connector / Cable
- Housing material: Plastic (PBT)
- IP67 ingress protection
- Power supply: 10 - 30 V DC

TYPE	MEASURING RANGE	CONNECTION TYPE	SENSITIVITY ADJUSTMENT	AXIAL		ANGLED (90°)	
				NPN	PNP	NPN	PNP
FA SERIES - PLASIC HOUSING							
Diffuse reflection sensor	0 - 100 mm	M12 connector	No	FAR2/BN-0E	FAR2/BP-0E	FAR2/BN-2E	FAR2/BP-2E
			Yes	FAR3/BN-0E	FAR3/BP-0E	FAR3/BN-2E	FAR3/BP-2E
		Cable	No	FAR2/BN-0A	FAR2/BP-0A	FAR2/BN-2A	FAR2/BP-2A
			Yes	FAR3/BN-0A	FAR3/BP-0A	FAR3/BN-2A	FAR3/BP-2A
	0 - 400 mm	M12 connector	No	FAI6/BN-0E	FAI6/BP-0E	FAI6/BN-2E	FAI6/BP-2E
			Yes	FAI7/BN-0E	FAI7/BP-0E	FAI7/BN-2E	FAI7/BP-2E
		Cable	No	FAI6/BN-0A	FAI6/BP-0A	FAI6/BN-2A	FAI6/BP-2A
			Yes	FAI7/BN-0A	FAI7/BP-0A	FAI7/BN-2A	FAI7/BP-2A
0 - 1000 mm (Axial) 0 - 800 mm (Angled 90°)	M12 Stecker	Yes	FAI8/BN-0E	FAI8/BP-0E	FAI8/BN-2E	FAI8/BP-2E	
	Kabel	Yes	FAI8/BN-0A	FAI8/BP-0A	FAI8/BN-2A	FAI8/BP-2A	
Retro-reflective sensor	0 - 4000 mm	M12 connector	No	FAIC/BN-0E	FAIC/BP-0E	FAIC/BN-2E	FAIC/BP-2E
			Yes	FAIM/BN-0E	FAIM/BP-0E	FAIM/BN-2E	FAIM/BP-2E
		Cable	No	FAIC/BN-0A	FAIC/BP-0A	FAIC/BN-2A	FAIC/BP-2A
			Yes	FAIM/BN-0A	FAIM/BP-0A	FAIM/BN-2A	FAIM/BP-2A
Retro-reflective sensor with polarised light	0 - 3000 mm (Axial)	M12 connector	No	FARP/BN-0E	FARP/BP-0E	FARP/BN-2E	FARP/BP-2E
			Yes	FARN/BN-0E	FARN/BP-0E	FARN/BN-2E	FARN/BP-2E
	0 - 2000 mm (Angled 90°)	Cable	No	FARP/BN-0A	FARP/BP-0A	FARP/BN-2A	FARP/BP-2A
			Yes	FARN/BN-0A	FARN/BP-0A	FARN/BN-2A	FARN/BP-2A
Retro-reflective sensor for transparent objects	0 - 1000 mm	M12 connector	Yes	FARL/BN-0E	FARL/BP-0E	FARL/BN-2E	FARL/BP-2E
		Cable	Yes	FARL/BN-0A	FARL/BP-0A	FARL/BN-2A	FARL/BP-2A
Through-beam sensor Emitter	0 - 20000 mm (Axial) 0 - 15000 mm (Angled 90°)	M12 connector	No	FAIH/00-0E		FAIH/00-2E	
with check			FAIH/X0-0E		FAIH/X0-2E		
Through-beam sensor Receiver			No	FAIZ/BN-0E	FAIZ/BP-0E	FAIZ/BN-2E	FAIZ/BP-2E
			Yes	FAID/BN-0E	FAID/BP-0E	FAID/BN-2E	FAID/BP-2E
Through-beam sensor Emitter		Cable	No	FAIH/00-0A		FAIH/00-2A	
with check			FAIH/X0-0A		FAIH/X0-2A		
Through-beam sensor Receiver			No	FAIZ/BN-0A	FAIZ/BP-0A	FAIZ/BN-2A	FAIZ/BP-2A
			Yes	FAID/BN-0A	FAID/BP-0A	FAID/BN-2A	FAID/BP-2A

FA Series / Diffuse reflection sensor / Retro-reflective sensor / Through-beam sensor

Models with brass housing



- Construction type: M18x1
- Optical axis: Axial / Angled (90°)
- Measuring range: 0 - 20000 mm
- Connection type: M12 connector / Cable
- Housing material: Brass
- IP67 ingress protection
- Power supply: 10 - 30 V DC

TYPE	MEASURING RANGE	CONNECTION TYPE	SENSITIVITY ADJUSTMENT	AXIAL		ANGLED (90°)	
				NPN	PNP	NPN	PNP
FA SERIES - BRASS HOUSING							
Diffuse reflection sensor	0 - 100 mm	M12 connector	No	FAR2/BN-1E	FAR2/BP-1E	FAR2/BN-3E	FAR2/BP-3E
			Yes	FAR3/BN-1E	FAR3/BP-1E	FAR3/BN-3E	FAR3/BP-3E
		Cable	No	FAR2/BN-1A	FAR2/BP-1A	FAR2/BN-3A	FAR2/BP-3A
			Yes	FAR3/BN-1A	FAR3/BP-1A	FAR3/BN-3A	FAR3/BP-3A
	0 - 400 mm	M12 connector	Yes	FAI7/BN-1E	FAI7/BP-1E	FAI6/BN-3E	FAI6/BP-3E
			No	FAI6/BN-1A	FAI6/BP-1A	FAI6/BN-3A	FAI6/BP-3A
		Cable	Yes	FAI7/BN-1A	FAI7/BP-1A	FAI7/BN-3A	FAI7/BP-3A
			Yes	FAI8/BN-1E	FAI8/BP-1E	FAI8/BN-3E	FAI8/BP-3E
0 - 1000 mm (Axial) 0 - 800 mm (Angled 90°)	M12 connector	Yes	FAI8/BN-1E	FAI8/BP-1E	FAI8/BN-3E	FAI8/BP-3E	
	Cable	Yes	FAI8/BN-1A	FAI8/BP-1A	FAI8/BN-3A	FAI8/BP-3A	
Retro-reflective sensor	0 - 4000 mm	M12 connector	No	FAIC/BN-1E	FAIC/BP-1E	FAIC/BN-3E	FAIC/BP-3E
			Yes	FAIM/BN-1E	FAIM/BP-1E	FAIM/BN-3E	FAIM/BP-3E
		Cable	No	FAIC/BN-1A	FAIC/BP-1A	FAIC/BN-3A	FAIC/BP-3A
			Yes	FAIM/BN-1A	FAIM/BP-1A	FAIM/BN-3A	FAIM/BP-3A
Retro-reflective sensor with polarised light	0 - 3000 mm (Axial)	M12 connector	No	FARP/BN-1E	FARP/BP-1E	FARP/BN-3E	FARP/BP-3E
			Yes	FARN/BN-1E	FARN/BP-1E	FARN/BN-3E	FARN/BP-3E
	0 - 2000 mm (Angled 90°)	Cable	No	FARP/BN-1A	FARP/BP-1A	FARP/BN-3A	FARP/BP-3A
			Yes	FARN/BN-1A	FARN/BP-1A	FARN/BN-3A	FARN/BP-3A
Retro-reflective sensor for transparent objects	0 - 1000 mm	M12 connector	Yes	FARL/BN-1E	FARL/BP-1E	FARL/BN-3E	FARL/BP-3E
		Cable	Yes	FARL/BN-1A	FARL/BP-1A	FARL/BN-3A	FARL/BP-3A
Through-beam sensor Emitter	0 - 20000 mm (Axial) 0 - 15000 mm (Angled 90°)	M12 connector	No	FAIH/00-1E		FAIH/00-3E	
with check			FAIH/X0-1E		FAIH/X0-3E		
Through-beam sensor Receiver			No	FAIZ/BN-1E	FAIZ/BP-1E	FAIZ/BN-3E	FAIZ/BP-3E
			Yes	FAID/BN-1E	FAID/BP-1E	FAID/BN-3E	FAID/BP-3E
Through-beam sensor Emitter		Cable	No	FAIH/00-1A		FAIH/00-3A	
with check			FAIH/X0-1A		FAIH/X0-3A		
Through-beam sensor Receiver			No	FAIZ/BN-1A	FAIZ/BP-1A	FAIZ/BN-3A	FAIZ/BP-3A
			Yes	FAID/BN-1A	FAID/BP-1A	FAID/BN-3A	FAID/BP-3A

FA Series / Diffuse reflection sensor

Technical Details

	FAR2/Bx-xx	FAR3/Bx-xx	FAI6/Bx-xx	FAI7/Bx-xx	FAI8/Bx-xx
GENERAL DATA					
Series	FA				
Type	Diffuse reflection sensor				
Sensorfunction	Switch				
Construction type	M18x1				
Connection type	Cable 4-core / M12 connector 4-pin				
Light source	Red light, visible		Infrared		
MEASUREMENT DATA					
Repeat accuracy	5 %				
Response time	200 ms				
Temperature drift	10 %				
OUTPUTS					
Output function	NO / NC				
Light-on / dark-on	Light-on / dark-on				
Switching hysteresis	≤ 10 %				
Switching frequency	250 Hz				
POWER SUPPLY					
Power supply V DC	10 - 30 V DC				
Load current max.	100 mA				
No-load current	30 mA				
Short circuit protection	Yes				
Reverse polarity protection	Yes				
Ripple	≤ 10 %				
Voltage drop	2 V at 100 mA				
Leakage current	10 µA				
PHYSICAL CHARACTERISTICS					
Housing material	Plastic (PBT) / Brass nickel-plated				
Optic material	Polycarbonate (PC)				
Ingress protection	IP67				
Dimensions (W x H x D)	Cableversion: 18 x 67.7 mm (axial) / 18 x 78.7 mm (angled 90°) Plugversion: 18 x 81.7 mm (axial) / 18 x 92.7 mm (angled 90°)				
Cable length	2000 mm (Cableversion)				
Weight	100 g				
Tightening torque	1 Nm (Plastic) / 40 Nm (Brass)				
ENVIRONMENTAL					
Operating temperature range	-25 - +70 °C				
External light	max. 10000 lux				
APPROVALS					
CE	EN 60947-5-2				
EMC	EN 50082-2				
cULus	Yes				

FA Series / Retro-reflective sensor

Technical Details

	FAIC/Bx-xx	FAIM/Bx-xx	FARP/Bx-xx	FARN/Bx-xx	FARL/Bx-xx
GENERAL DATA					
Series	FA				
Type	Retro-reflective sensor				
Special feature	-		with polarised light		for transparent objects
Sensorfunction	Switch				
Construction type	M18x1				
Connection type	Cable 4-core / M12 connector 4-pin				
Light source	Infrared			Red light, visible	
MEASUREMENT DATA					
Repeat accuracy	5 %				
Response time	200 ms				
Temperature drift	10 %				
OUTPUTS					
Output function	NO / NC				
Light-on / dark-on	Light-on / dark-on				
Switching hysteresis	≤ 10 %				
Switching frequency	250 Hz				
POWER SUPPLY					
Power supply V DC	10 - 30 V DC				
Load current max.	100 mA				
No-load current	30 mA				
Short circuit protection	Yes				
Reverse polarity protection	Yes				
Ripple	≤ 10 %				
Voltage drop	2 V at 100 mA				
Leakage current	10 µA				
PHYSICAL CHARACTERISTICS					
Housing material	Plastic (PBT) / Brass nickel-plated				
Optic material	Polycarbonate (PC)				
Ingress protection	IP67				
Dimensions (W x H x D)	Cableversion: 18 x 67.7 mm (axial) / 18 x 78.7 mm (angled 90°) Plugversion: 18 x 81.7 mm (axial) / 18 x 92.7 mm (angled 90°)				
Cable length	2000 mm (Cableversion)				
Weight	100 g				
Tightening torque	1 Nm (Plastic) / 40 Nm (Brass)				
ENVIRONMENTAL					
Operating temperature range	-25 - +70 °C				
External light	max. 10000 lux				
APPROVALS					
CE	EN 60947-5-2				
EMC	EN 50082-2				
cULus	Yes				

FA Series / Through-beam sensor

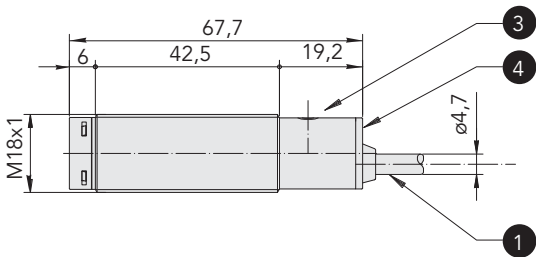
Technical Details

	FAIH/X0-xx	FAIH/00-xx	FAIZ/Bx-xx	FAID/Bx-xx
GENERAL DATA				
Series	FA			
Type	Through-beam sensor			
Special feature	with check	-		
Emitter / Receiver	Emitter		Receiver	
Sensorfunction	-		Switch	
Construction type	M18x1			
Connection type	Cable 4-core / M12 connector 4-pin			
Light source	Infrared			
MEASUREMENT DATA				
Repeat accuracy	5 %			
Response time	-	200 ms		
Temperature drift	10 %			
OUTPUTS				
Output function	-	NO / NC		
Light-on / dark-on	-	Light-on / dark-on		
Switching hysteresis	≤ 10 %			
Switching frequency	-	250 Hz		
POWER SUPPLY				
Power supply V DC	10 - 30 V DC			
Load current max.	-	100 mA		
No-load current	25 mA			
Short circuit protection	Yes			
Reverse polarity protection	-	Yes		
Ripple	≤ 10 %			
Voltage drop	-	2 V at 100 mA		
Leakage current	-	≤ 10 µA		
PHYSICAL CHARACTERISTICS				
Housing material	Plastic (PBT) / Brass nickel-plated			
Optic material	Polycarbonate (PC)			
Ingress protection	IP67			
Dimensions (W x H x D)	Cableversion: 18 x 67.7 mm (axial) / 18 x 78.7 mm (angled 90°) Plugversion: 18 x 81.7 mm (axial) / 18 x 92.7 mm (angled 90°)			
Cable length	2000 mm (Cableversion)			
Weight	100 g			
Tightening torque	1 Nm (Plastic) / 40 Nm (Brass)			
ENVIRONMENTAL				
Operating temperature range	-25 - +70 °C			
External light	max. 10000 lux			
APPROVALS				
CE	EN 60947-5-2			
EMC	EN 50082-2			
cULus	Yes			

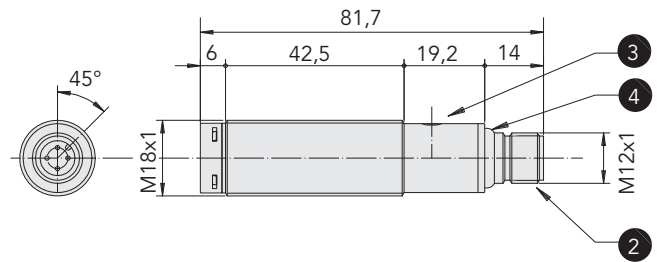
FA Series / Diffuse reflection sensor / Retro-reflective sensor / Through-beam sensor

Dimensions

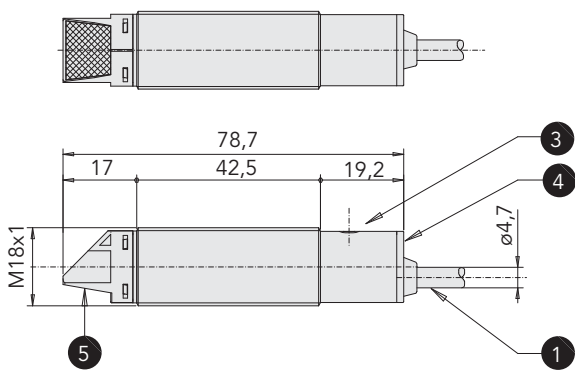
Axial optic / Cable



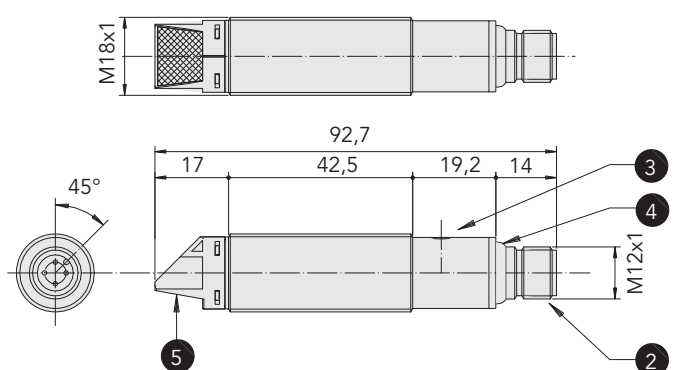
Axial optic / Connector



Angled optic (90°) / Cable



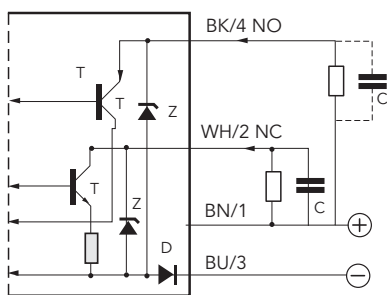
Angled optic (90°) / Connector



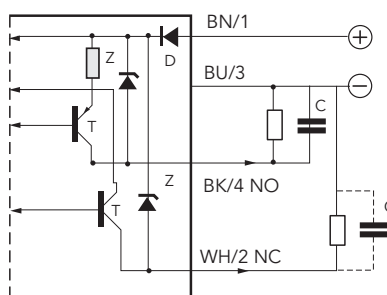
1: Cable 4-core / 2: M12 connector 4-pin / 3: Sensitivity adjustment / 4: LED – output status / 5: Optical axis: Angled (90°)

Electrical diagrams

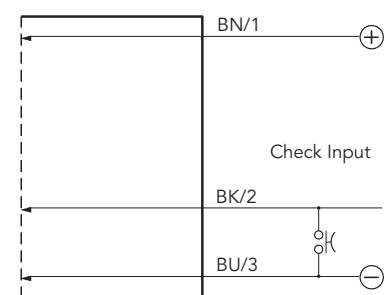
NPN



PNP



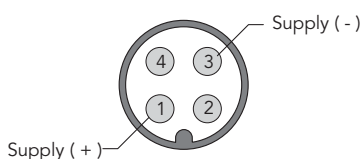
Emitter with check



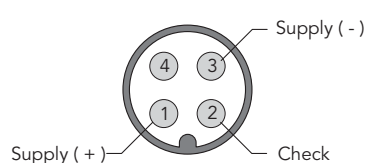
BN: brown / BK: black / BU: blue / WH: white

Connector

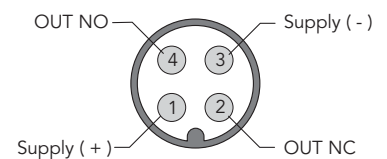
Emitter



Emitter with check



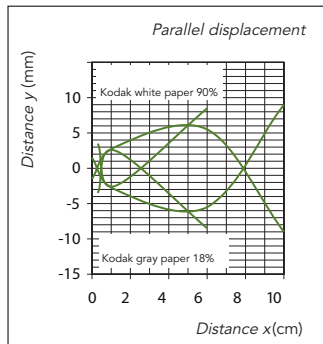
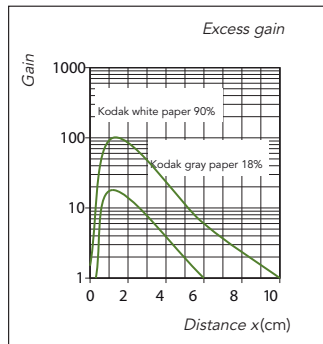
FAxx-Bx-xx



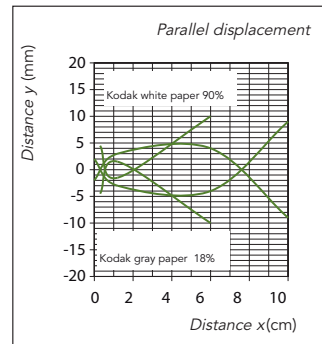
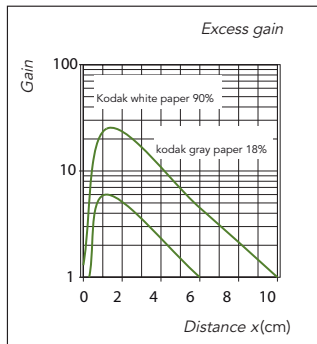
FA Series / Diffuse reflection sensor

Sensing area

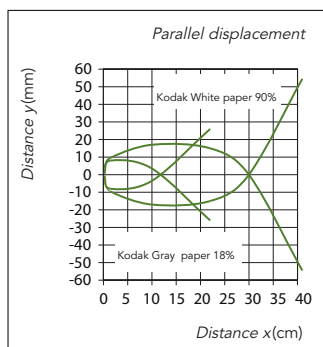
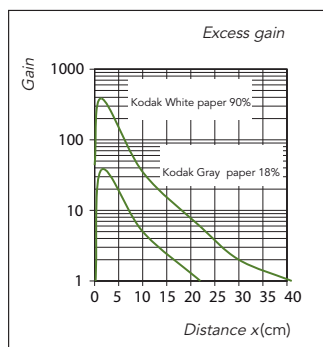
FAR2/xx-xx / FAR3/xx-xx - Axial



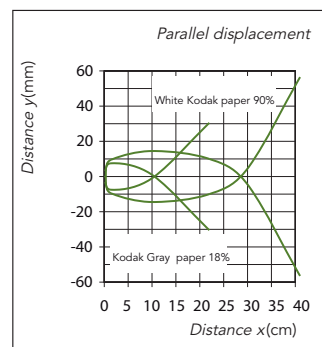
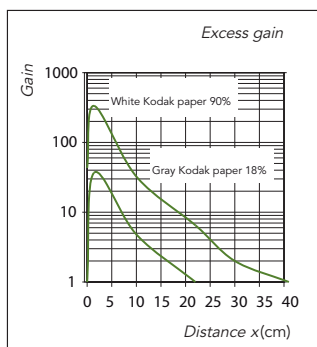
FAR2/xx-xx / FAR3/xx-xx - Angled (90°)



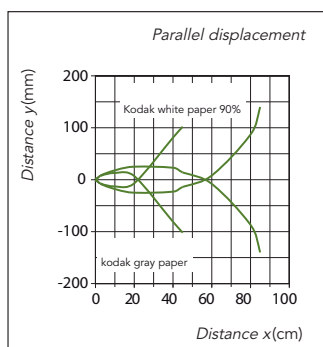
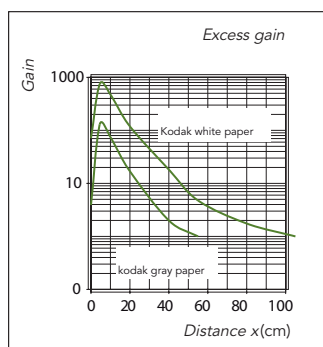
FAI6/xx-xx / FAI7/xx-xx - Axial



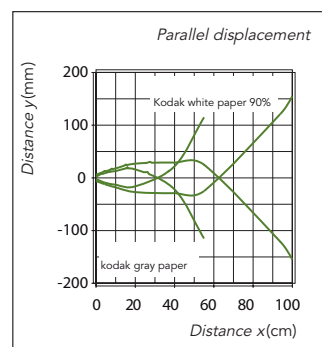
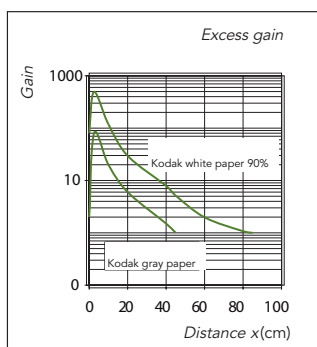
FAI6/xx-xx / FAI7/xx-xx - Angled (90°)



FAI8/xx-xx - Axial



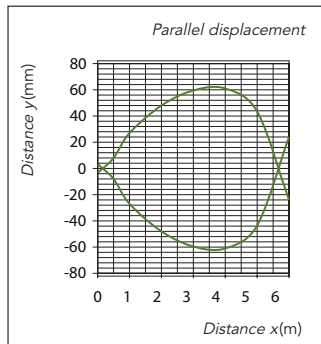
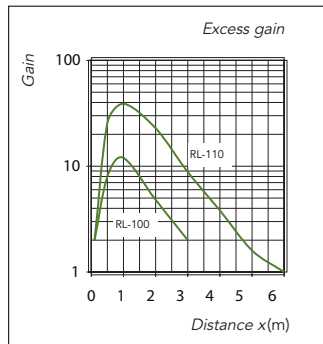
FAI8/xx-xx - Angled (90°)



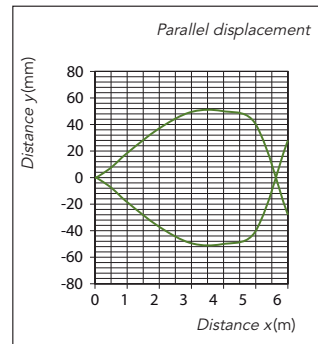
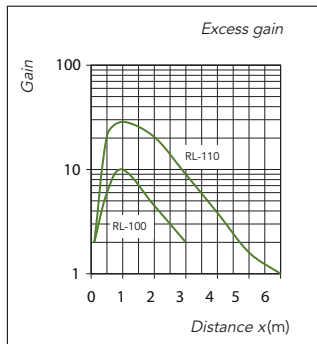
FA Series / Retro-reflective sensor

Sensing area

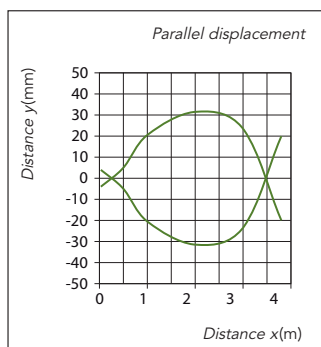
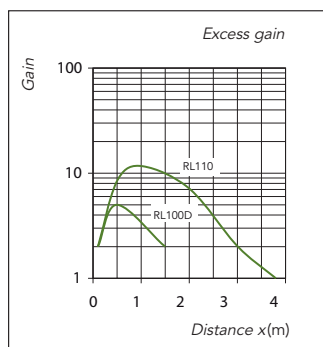
FAIC/xx-xx / FAIM/xx-xx - Axial



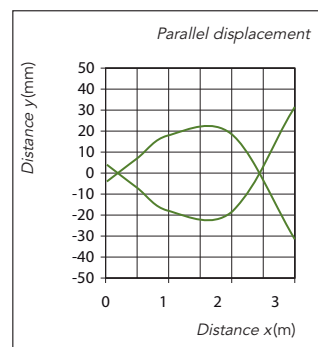
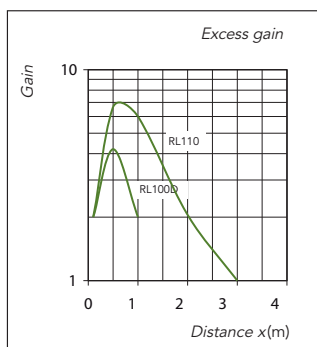
FAIC/xx-xx / FAIM/xx-xx - Angled (90°)



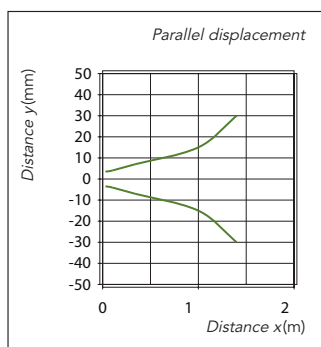
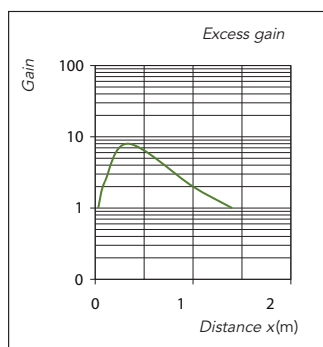
FARP/xx-xx / FARN/xx-xx - Axial



FARP/xx-xx / FARN/xx-xx - Angled (90°)



FARL/xx-xx

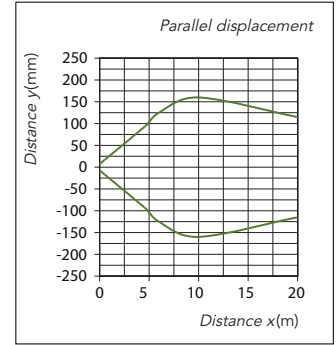
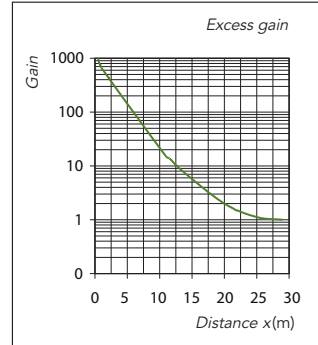
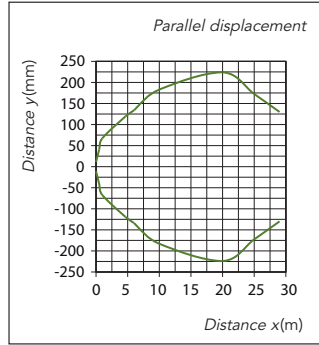
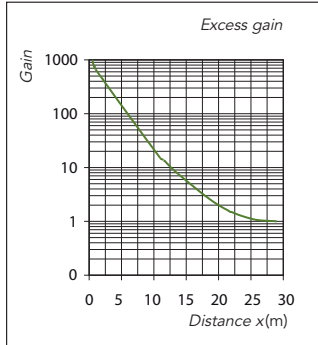


FA Series / Through-beam sensor

Sensing area

FAIH/xx-xx / FAID/xx-xx / FAIZ/xx-xx - Axial

FAIH/xx-xx / FAID/xx-xx / FAIZ/xx-xx - Angled (90°)



Welotec is using a ISO 9001:2008 certified quality management system • All specifications are subject to change

CAT-FA-V1.1 ed. 10/14 Welotec GmbH