FA Series LED Photoelectric Sensors

M18 (18mm) Plastic - DC

- Diffuse, polarized reflective, and through-beam models with long sensing distances
- Plastic housing
- Axial cable or M12 quick-disconnect models
- NPN or PNP; Complementary N.O./N.C. outputs
- IP67 rated

FA Series LED Photoelectric Sensors Selection Chart								
Part Number	***Price***	***Sensing Range***	***Output State***	***Logic***	***Connection***	***Wiring***	***Dimensions***	***Characteristic Curves***
Diffuse								
FAI8-BN-0A		1m [39.37 in	Complementary N.O./N.C.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 1
FAI8-BP-0A				PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 1
FAI8-BN-0E				NPN	M12 [12mm] connector	Diagram 1	Figure 2	Chart 1
FAI8-BP-0E				PNP	M12 [12mm] connector	Diagram 2	Figure 2	Chart 1
Polarized reflective*								
FARN-BN-0A		3m [118.11 in]	Complementary N.O./N.C.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 2
FARN-BP-0A				PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 2
FARN-BN-0E				NPN	M12 [12mm] connector	Diagram 1	Figure 2	Chart 2
FARN-BP-0E				PNP	M12 [12mm] connector	Diagram 2	Figure 2	Chart 2
Through-beam								
FAID-BN-0A	Receiver	20m [65.62 ft]	Complementary N.O./N.C.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 3
FAID-BP-0A	Receiver			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 3
FAID-BN-0E	Receiver			NPN	M12 [12mm] connector	Diagram 1	Figure 2	Chart 3
FAID-BP-0E	Receiver			PNP	M12 [12mm] connector	Diagram 2	Figure 2	Chart 3
FAIH-00-0A	Emitter			Receiver dependent	2m [6.5 ft] axial cable	Diagram 3	Figure 1	Chart 3
FAIH-00-0E	Emitter				M12 [12mm] connector	Diagram 3	Figure 2	Chart 3

***Purchase reflectors separately.**
****Purchase one receiver and one emitter for a complete set.**

Wiring Diagrams

Diagram 1

NPN Output

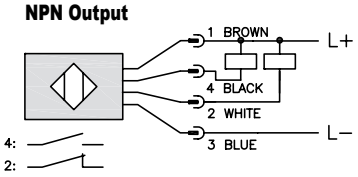


Diagram 2

PNP Output

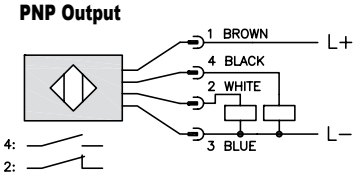
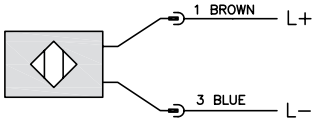


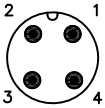
Diagram 3

Emitter



Connector

M12 connector



Switching Element Function		
	Through-Beam and Reflective Models	***Diffuse Models***
Light-on	N.C.	N.O.
Dark-on	N.O.	N.C.

Note: N.O. = Signal ON when emitter is NOT sensing receiver.
N.C. = Signal ON when emitter is sensing receiver.

FA Series LED Photoelectric Sensors

FA Series LED Specifications			
Mounting Type	***Diffuse Models***	***Reflective Models***	***Through-Beam Models***
	Diffuse reflection	***Polarized reflection[3]***	***Through-beam[4]***
Sensing Distance	1m[1]	3m[2]	20m
Light Spot Diameter	180mm @ 800mm	200mm @ 4m	600mm @ 20m
Emission	Infrared [880nm]	Red [660nm]	Infrared [880nm]
Sensitivity	Adjustable		
Output Type	NPN or PNP - Complementary N.O./N.C.		
Operating Voltage	10-30 VDC		
No-load Supply Current	< 30mA		< 25mA
Operating (Load) Current	< 100mA		
Off-state (Leakage) Current	< 10µA		
Voltage Drop	2V max at 100mA		
Switching Frequency	250Hz		
Ripple	<10%		
Time Delay Before Availability (tv)	200ms		
Short-Circuit Protection	Yes, switch auto-resets after load is removed		
Operating Temperature	-25 to 70°C [-13 to 158°F]; Drift: 10% Sr		
Protection Degree (DIN 40050)	IEC IP67		
LED Indicators/Switching Status	Yellow (output energized)		Receiver: Yellow (output energized) Emitter: Green (power ON)
Housing Material	Polybutylene Terephthalate [PBT]		
Lens Material	Polycarbonate [PC]	PMMA	Polycarbonate [PC]
Shock/Vibration	See terminology section		
Tightening Torque	1 Nm [0.737 lb-ft]		
Weight (cable/M12 connector)	100g [3.53 oz]		Emitter + Receiver 200g [7.05 oz]
Connection	2m [6.5 ft] axial cable; M12 [12mm] connector. Two lock nuts included		
Agency Approvals	UL file E187310, CE		

[1] With 100x100mm white matte paper
[2] With standard diameter 84mm RL110 reflector.
[3] Purchase reflectors separately.
[4] An emitter (FAIH) and receiver (FAID) pair must be ordered for a complete sensor set.
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Dimensions

mm

Figure 1

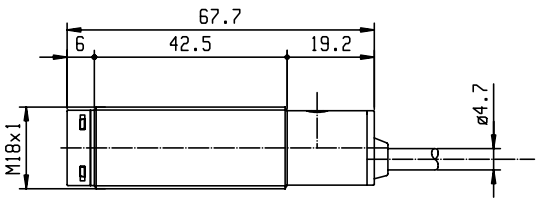
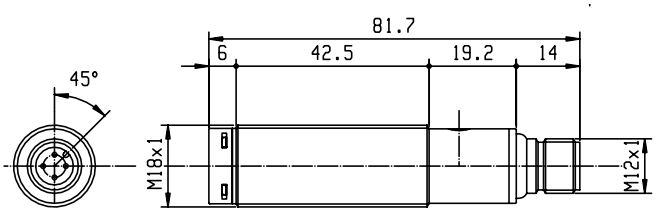


Figure 2

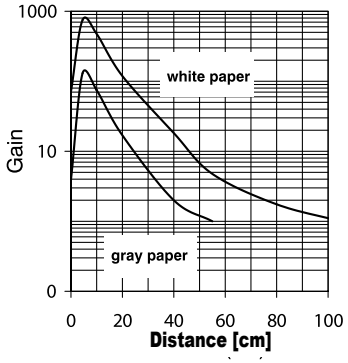


FA Series LED Photoelectric Sensors

Characteristic Curves

Chart 1 (Diffuse)

Excess Gain



Parallel Displacement

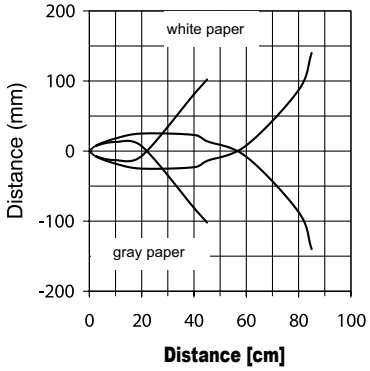
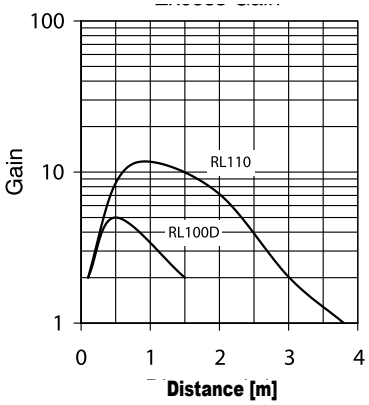


Chart 2 (Polarized Reflective)

Excess Gain



Parallel Displacement

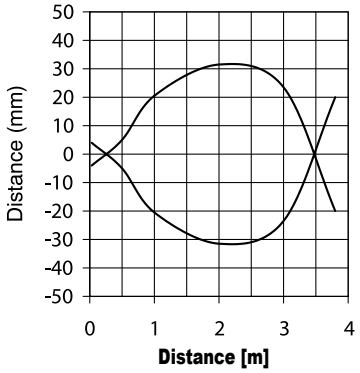
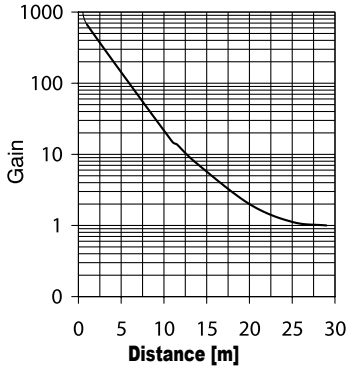


Chart 3 (Throughbeam)

Excess Gain



Parallel Displacement