

FW Series Photoelectric Sensors

M30 (30 mm) Compact Metal - DC



- 8 models available
- Zinc alloy nickel-plated housing
- Diffuse with background suppression and polarized retro-reflective models
- 30 mm mounted with 1 mounting hex nut included
- NPN or PNP, Light-on, Dark-on output models
- Easy-to-use multi-turn potentiometer for setting switchpoint distance on select models
- M12 quick-disconnect; order cable separately
- IP67 rated



FW Series Photoelectric Sensors Selection Chart							
Part Number	Price	Sensing Distance	Output State	Logic	Connection	Wiring	Characteristic Curves
Diffuse with background suppression							
FW3-LP-1E	retired	Adjustable 50 to 800 mm (1.97 to 31.5 in)	Light-On	PNP	M12 (12 mm) connector	Diagram 1	Chart 1
FW3-LN-1E	retired		Light-On	NPN		Diagram 2	Chart 1
FW3-LP-2E	retired	Fixed 0.0 to 600 mm (0 to 23.62 in)	Light-On	PNP		Diagram 1	NA
FW3-LN-2E	retired		Light-On	NPN		Diagram 2	NA
Polarized retro-reflective*							
FWP-DP-1E	retired	0.1 to 15m (0.33 to 49.21 ft)	Dark-On	PNP	M12 (12 mm) connector	Diagram 1	Chart 2
FWP-LP-1E	retired		Light-On	PNP		Diagram 1	
FWP-DN-1E	retired		Dark-On	NPN		Diagram 2	
FWP-LN-1E	retired		Light-On	NPN		Diagram 2	

*Note: Purchase reflectors separately.

Switching Element Function		
	Reflective Models	Diffuse Models
Light-on	N.C.	N.O.
Dark-on	N.O.	N.C.

Wiring Diagrams

Connector

M12 connector

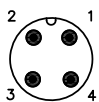


Diagram 1

PNP Output

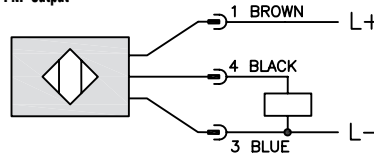
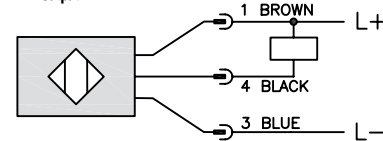


Diagram 2

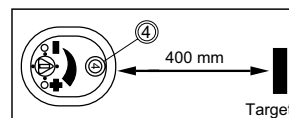
NPN Output



NOTE: CLASS 2 POWER SOURCE REQUIRED

Adjustable Background Suppression Settings

- Measure the desired range. Example: target distance 400 mm
- Set the range:
 - Turn the setting screw of the potentiometer clockwise until the required range to the target has been reached. Each rotation corresponds to 100 mm.
 - If the setting fails, increase the potentiometer value until the target is detected.



FW Series Photoelectric Sensors

Specifications	Diffuse with Background Suppression Models	Retro-Reflective Models
Type	Diffuse reflection	Polarized Retro-reflective
Sensing Distance	FW3-L*-1E: 50 to 800 mm (1.97 to 31.5 in) FW3-L*-2E: 0.0 to 600 mm (23.62 in)	0.1 to 15m (0.33 to 49.21 ft)
Light Spot Diameter	FW3-LP-1E, FW3-LN-1E: 55 mm (2.17 in) at maximum range FW3-LP-2E, FW3-LN-2E: 30 mm (1.18 in) at maximum range	100 mm x 130 mm (3.94 in x 5.12 in) Sensing range 5m (16.4 ft)
Emission	Red LED (visible) 624-625 nm	
Sensitivity	Adjustable (FW3-LP-1E, FW3-LN-1E)	
Output Type	NPN or PNP, Light-on or Dark-on	
Operating Voltage	10 to 30 VDC	
No Load Supply Current	35 mA	20 mA
Operating (Load) Current	200 mA	
Off-state (Leakage) Current	N/A	
Voltage Drop	<2.5V	
Switching Frequency	300 Hz	1000 Hz
Ripple	N/A	
Time Delay Before Availability (tv)	Minimal	
Short-Circuit Protection	Yes (non-latching)	
Operating Temperature	-25 to 60 °C (-37.7 to 140 °F)	
Protection Degree (DIN 40050)	IP67	
LED Indicators - Switching Status	Yellow	
LED Indicators - Power	Green	
Housing Material	Zinc Alloy Nickel-plated (ZnAl4Cu1)	
Lens Material	Polymethyl methacrylate (PMMA)	
Shock/Vibration	See terminology section	
Tightening Torque	80Nm (59 lb-ft)	
Weight	0.5 lbs	
Connectors	M12 Connector	
Accessories	1 mounting hex nut included	
Agency Approvals	CULus listed UL file E328811, CE	

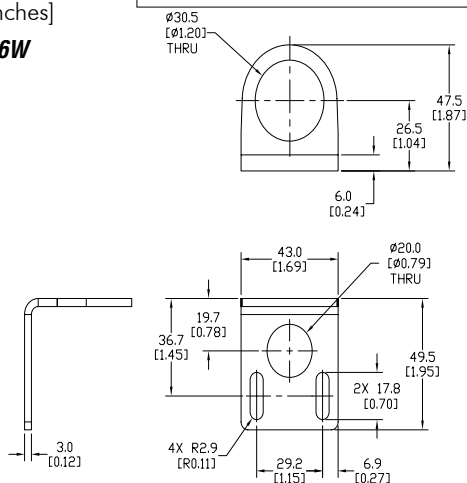
¹With 200x200mm white matte paper, 90% remission. ²With standard diameter 84mm reflector.

Dimensions

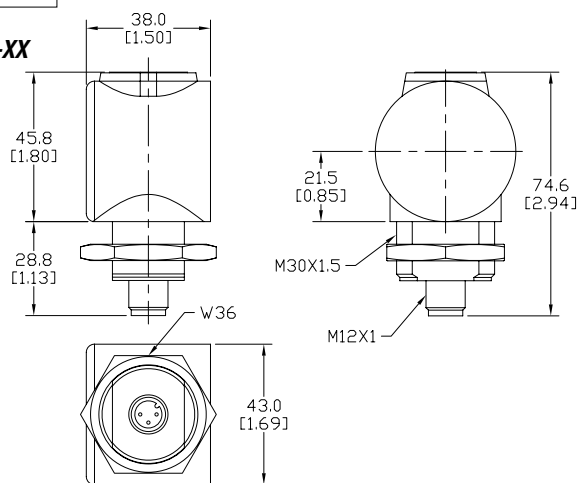
Warning: These products are not safety sensors and are not suitable for use in personal safety applications.

mm [inches]

ST30C6W



FW3-XX-XX

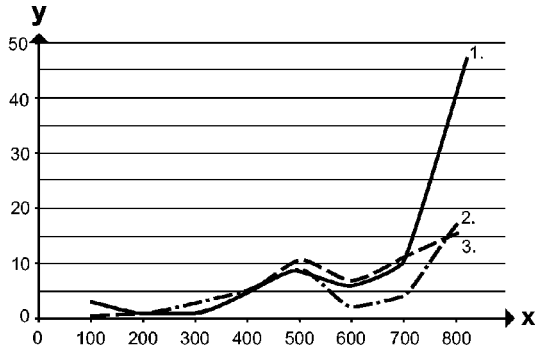


FW Series Photoelectric Sensors

Characteristic Curves

Background Suppression Curves

Chart 1 (Diffuse with Background Suppression)

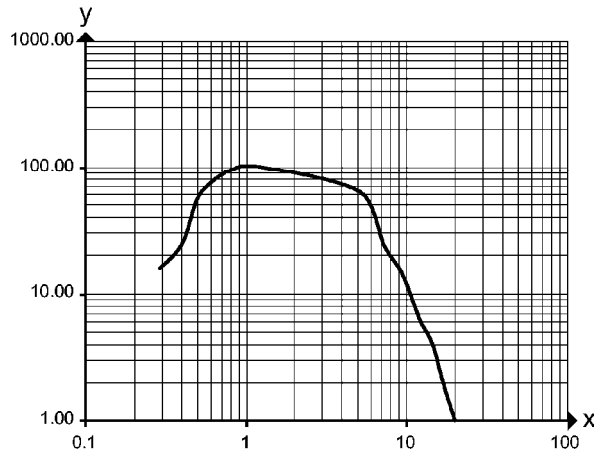


X	Distance to target [mm]
Y	Minimum distance object [mm]

Values in [mm]
 1 = object black (6 % remission), background white (90 % remission)
 2 = object gray (18 % remission), background white (90 % remission)
 3 = object white (90 % remission), background white (90 % remission)

Excess Gain Chart

Chart 2 (Polarized retro-reflective)



X	Distance to target [m]
Y	Excess gain factor

Accessories for 30mm Sensors

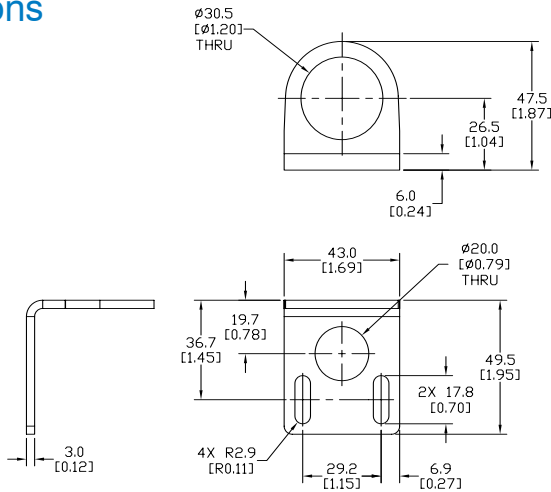
Right-angle Mounting Bracket

Mounting bracket, right-angle, 304 stainless steel. For use with 30mm sensors.

Accessories for FW Series Sensors			
Part Number	Price	Description	Weight lb (g)
ST30C6W	\$2.50	Mounting bracket, right angle, 304 stainless steel. For use with 30mm sensors.	0.15 (68.0)

Dimensions

mm [inches]



ST30C6W

Right-angle Swivel Mounting Systems

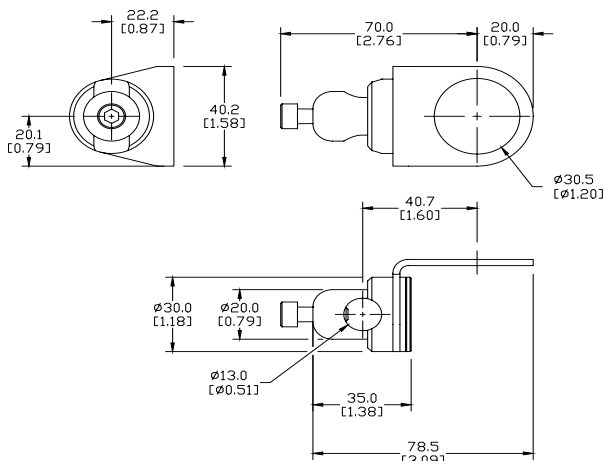
Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with 30mm sensors. Available in all 304 stainless steel or with an aluminum head with a 304 stainless steel mounting plate.

Accessories for 30mm Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight lb (g)
OPT2118	\$9.25	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 30mm sensors.	Aluminum	304 Stainless steel	0.18
OPT2119	\$16.50	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 30mm sensors.	304 Stainless Steel	304 Stainless steel	0.30

Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm [7.87 in] length), OPT2110 (300mm [11.81 in] length), and OPT2111 (500mm [19.69 in] length).

Dimensions

mm [inches]



OPT2118, OPT2119

See our website: www.AutomationDirect.com for complete engineering drawings