

# Photoelectric Sensors Selection Guide



Specification	FA Series LED DC	FA Series Laser DC	FB Series DC	SS Series DC
<b>Description</b>	18mm plastic, DC	18mm plastic, DC	18mm plastic, DC	18mm plastic, DC
<b>Sensing Distances</b>	Diffuse models: 1m Reflective models: 3m Through-beam: 20m	Diffuse models: 300mm Reflective models: 20m Through-beam: 50m	Diffuse models: 400mm Reflective models: 2.5m Through-beam models: 8m	Diffuse models: 100mm, 200mm, 400mm Reflective models: 2m Through-beam models: 8m
<b>Output State</b>	Complementary N.O. / N.C.	Complementary N.O. / N.C.	Light-on, Dark-on	N.O. / N.C. selectable
<b>Logic Output</b>	NPN / PNP	NPN / PNP	NPN / PNP	NPN / PNP
<b>Connection Type</b>	Axial cable / M12 connector	Axial cable / M12 connector	M12 connector	Axial cable / M12 connector
<b>Supply Voltage</b>	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
<b>Switching Frequency</b>	250Hz	Diffuse and reflective models: 800Hz Through-beam models: 1kHz	1kHz	Diffuse and reflective models: 250Hz Through-beam models 25Hz
<b>Rating</b>	IEC IP67	IEC IP67	Diffuse: IEC IP65 Retro-reflective and Thru-beam: IEC IP67	IEC IP67



Specification	MS Series DC	FARS Series DC	FF Series	FFRS Series
<b>Description</b>	18mm plastic with background suppression, DC	18mm diffuse with background suppression	IP69K sensors, 18 mm stainless steel, DC	IP69K sensors, 18mm stainless steel diffuse with background suppression, DC
<b>Sensing Distances</b>	Diffuse Reflection Standard distance models: ... 50mm Extended distance models: ... 100mm	30 to 130 mm	Diffuse: 100m, 400m, 800mm Polarized reflective: 4m Through-beam: 20m Retro-reflective: 1m	Standard: 30 to 130mm Shiny object: 60 to 100mm
<b>Output State</b>	N.O. / N.C. selectable	N.O. / N.C. background suppression Light-on/Dark-on selectable Q/Qnot	N.O. / N.C. Complementary; Light-on/Dark-on selectable	N.O. / N.C. Complementary; Light-on/Dark-on selectable
<b>Logic Output</b>	NPN / PNP selectable	NPN/PNP	NPN / PNP	NPN / PNP
<b>Connection Type</b>	Axial cable M12 connector	Axial cable M12 connector	M12 connector	M12 connector
<b>Supply Voltage</b>	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
<b>Switching Frequency</b>	80Hz	1kHz	Diffuse, Polarized reflective and Retro-reflective: 500Hz, Through-beam: 250Hz	Standard: 1kHz Shiny: 400Hz
<b>Rating</b>	IEC IP67	IEC IP67	IEC IP68, IP69K	IEC IP68, IP69K

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Specification	MQ Series AC	MV Series AC	C5 Series DC	HE/HER Series DC	DM Series DC
<b>Description</b>	18mm diffuse with background suppression, 90° radial optic	18mm plastic, AC	5mm stainless steel, DC	8mm Thru-Beam	12mm nickel-plated brass with Teach operating distance function, DC
<b>Sensing Distances</b>	Standard distance models: 50mm Extended distance models: 100mm	Diffuse: 100mm, 200mm, 400mm Reflective: 3m Through-beam: 16m	Diffuse models: 50mm Through-beam models: 250mm	1000 mm / Ex. gain = 2	Diffuse models: 100mm, 300mm Reflective models: 2m Through-beam: 4m
<b>Output State</b>	N.O./N.C. background suppression	N.O./ receiver dependent	N.O. / receiver dependent	N.O./N.C.	Diffuse: N.O./N.C. selectable Polarized reflective: N.O./N.C. selectable Through-beam: N.O./N.C./ receiver dependent
<b>Logic Output</b>	Triac	Triac	NPN / PNP/ N.O. only	NPN / PNP	NPN / PNP
<b>Connection Type</b>	M12 quick disconnect	Axial cable M12 connector	Axial cable M8 connector	Axial cable M8 quick disconnect	Axial cable / M12 connector
<b>Supply Voltage</b>	20 to 253 VAC	20 to 253 VAC	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
<b>Switching Frequency</b>	25Hz	25Hz	250Hz	10kHz	Diffuse and reflective models: 400Hz Through-beam models: 250Hz
<b>Rating</b>	IEC IP67	IEC IP67	IEC IP67	IEC IP67	IEC IP67



Specification	C18 Series DC	GX Series DC	FE Series DC	CX Series DC	QX Series DC
<b>Description</b>	18mm nickel-plated brass, DC	18mm rectangular plastic, DC	Mini-rectangular plastic, DC	Mini-rectangular plastic, DC	Rectangular plastic, DC
<b>Sensing Distances</b>	Diffuse models: up to 600mm Diffuse models w/ background suppression: 10 to 120mm Reflective models: Up to 2m Through-beam models: Up to 6m	Diffuse models w/ background suppression: Up to 150mm Reflective models: Up to 4m Through-beam models: Up to 20m	Diffuse models: 800mm Reflective models: 4m Through-beam: 12m	Diffuse models: up to 600mm Diffuse models w/ background suppression: 15 to 150mm Reflective models: Up to 2m Through-beam models: Up to 6m	Diffuse models: 300mm Reflective models: 2.5m Through-beam models: 8m
<b>Output State</b>	Diffuse: Light-on / Dark-on selectable Diffuse models with background suppression: Light-on Polarized reflective: Dark-on Through-beam: Light-on / Dark-on / receiver dependent	Diffuse models w/ background suppression: Light-on Polarized reflective: Light-on / Dark-on Through-beam: Light-on / Dark-on / receiver dependent	Light-on/Dark-on selectable	N.O.	N.O./receiver dependent
<b>Logic Output</b>	NPN / PNP/ receiver dependent	NPN / PNP/ receiver dependent	NPN / PNP	NPN / PNP	NPN / PNP selectable / receiver dependent
<b>Connection Type</b>	Axial cable / M12 connector	M12 connector	Axial cable / M8 connector	Axial cable / M8 connector	Axial cable / M12 connector
<b>Supply Voltage</b>	10 to 36 VDC	10 to 30 VDC	10 to 30 VDC	10 to 36 VDC	10.8 to 30VDC
<b>Switching Frequency</b>	Diffuse models: 1kHz Diffuse models w/ background suppression: 500Hz Reflective models: 1kHz Through-beam models: 1kHz	1kHz	1kHz	Diffuse models: 1kHz Diffuse models w/ background suppression: 500Hz Reflective models: 1kHz Through-beam models: 1kHz	Diffuse and reflective models: 750Hz (Tr=0.5ms) Through-beam models: 500Hz (Tr=0.75ms)
<b>Rating</b>	IEC IP67	IEC IP67	IEC IP67	IEC IP65	IEC IP65

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Specification	FG Series AC/DC	CH Enhanced 50 Series
<b>Description</b>	Rectangular plastic, AC/DC	Fiberglass-reinforced plastic
<b>Sensing Distances</b>	Diffuse models: 550mm Reflective models: 9m Through-beam: 20m	Through-beam: 500 ft (152 m) Diffuse models: 10 ft. (3 m) Polarized reflex: 16 ft. (4.9 m) Clear /object detector: 45 in (1.2 m)
<b>Output State</b>	N.O./N.C.	Light-on/Dark-on selectable
<b>Logic Output</b>	SPDT 3A relay	Through-beam:NPN/PNP 250 mA, Solid-state relay 300 mA @ 240 VAC/VDC, SPDT EM relay 3 A @ 120 VAC Diffuse: NPN/PNP 250 mA, Solid-state relay 300 mA @ 240 VAC/VDC, SPDT EM relay 3 A @ 120 VAC Polarized reflex: NPN/PNP 250 mA, Solid-state relay 300 mA @ 240 VAC/VDC, SPDT EM relay 3 A @ 120 VAC Clear object detector: NPN/PNP 250 mA, Solid-state relay 300 mA @ 240 VAC/VDC, SPDT EM relay 3 A @ 120 VAC
<b>Connection Type</b>	Axial cable	Cable or mini/micro connection
<b>Supply Voltage</b>	12 to 240 VDC / 24 to 240 VAC	10 to 40 VDC, 12 to 240 VDC, 24 to 240 VAC
<b>Switching Frequency</b>	33Hz	various
<b>Rating</b>	IEC IP67	IEC IP67



Specification	DFT Series Fiber Amp	DFP Series Fiber Amp	SSF Series Fiber Amp
<b>Description</b>	Compact rectangular plastic fiber optic amplifier with Teach operating distance function, DC	Compact rectangular plastic fiber optic amplifier, DC	18mm plastic fiber optic amplifier, DC
<b>Sensing Distances</b>	See Optical Fiber Tables following the amplifier's specifications	See Optical Fiber Tables following the amplifier's specifications	See Optical Fiber Tables following the amplifier's specifications
<b>Output State</b>	Light-on / Dark-on selectable	Light-on / Dark-on selectable	Light-on / Dark-on selectable
<b>Logic Output</b>	NPN / PNP	NPN / PNP	NPN / PNP
<b>Connection Type</b>	Axial cable / M8 connector	Axial cable / M8 connector	Axial cable / M12 connector
<b>Supply Voltage</b>	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
<b>Switching Frequency</b>	1.5kHz	1.5kHz	800Hz
<b>Rating</b>	IEC IP64	IEC IP64	IEC IP67



Specification	CF Series Optical Fibers	BX Series Light Screen
<b>Description</b>	Cuttable diffuse reflection and through-beam fiber optic cables (2.2mm diameter)	Rectangular plastic high resolution area sensor, DC
<b>Sensing Distances</b>	Amplifier dependent. Refer to fiber optic tables for sensing distances.	Through-beam: 2m with 70mm height area
<b>Output State</b>	N/A	Selectable N.O / N.C.
<b>Logic Output</b>	N/A	NPN / PNP
<b>Connection Type</b>	N/A	M12 connector
<b>Supply Voltage</b>	N/A	12 to 24 VDC
<b>Switching Frequency</b>	N/A	N/A
<b>Rating</b>	IEC IP67	IEC IP67