



M12 Tubular Metal Photoelectric Sensors FDM Series

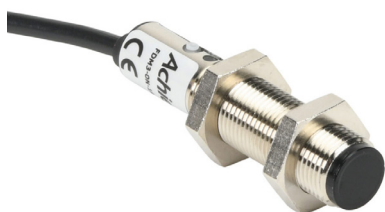
M12 (12mm) Tubular Metal - DC FDM Series

Overview

The AchieVe FDM series M12 tubular photoelectric sensors offers DC Digital sensitivity adjustment by teach-in button or remote cable, and multifunction LED status indicator. This series offers diffuse reflection, polarized retroreflective, and through-beam models. Housings have an IP67 enclosure rating with complete protection against electrical damage.

Features

- Diffuse reflection, polarized retroreflective, and through-beam models available
- M12 quick-disconnect (purchase cable separately) or pigtail models
- Multifunction LED status indicator
- Red and infrared models
- Complete protection against electrical damages
- IP67 protection degree
- 3-year warranty



FDM3-0N-1A



FDM3-0N-1H



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Part Number	Price	Sensing Distance	Switching Frequency	Light Emission	Logic	Output Function	Connection Type *	Wiring	Drawing Link
Diffuse Reflection with Sensitivity Adjustment									
FDM3-0N-1A	\$35.00	100mm [3.9 in]	1 kHz	Infrared LED (880nm)	NPN	Selectable Light-on/Dark-on	4-wire, 2m [6.5 ft] pigtail	Diagram 1	PDF
FDM3-0N-1H	\$35.00				NPN		4-pin M12 quick-disconnect	Diagram 1	PDF
FDM3-0P-1A	\$35.00				PNP		4-wire, 2m [6.5 ft] pigtail	Diagram 2	PDF
FDM3-0P-1H	\$35.00				PNP		4-pin M12 quick-disconnect	Diagram 2	PDF
FDM7-0N-1A	\$36.00	300mm [11.8 in]			NPN		4-wire, 2m [6.5 ft] pigtail	Diagram 1	PDF
FDM7-0N-1H	\$36.00				NPN		, 4-pin M12 quick-disconnect	Diagram 1	PDF
FDM7-0P-1A	\$36.00				PNP		4-wire, 2m [6.5 ft] pigtail	Diagram 2	PDF
FDM7-0P-1H	\$36.00				PNP		, 4-pin M12 quick-disconnect	Diagram 2	PDF
Polarized Retroreflective Teach-in **									
FDMP-0N-1A	\$39.00	2m [6.5 ft]	1 kHz	visible red LED (660nm)	NPN	Selectable Light-on/Dark-on	4-wire, 2m [6.5 ft] pigtail	Diagram 3	PDF
FDMP-0N-1H	\$39.00				NPN		4-pin M12 quick-disconnect	Diagram 3	PDF
FDMP-0P-1A	\$39.00				PNP		4-wire, 2m [6.5 ft] pigtail	Diagram 4	PDF
FDMP-0P-1H	\$39.00				PNP		4-pin M12 quick-disconnect	Diagram 4	PDF
Through-beam Receiver ***									
FDMR-0N-1A	\$30.00	4m [13.1 ft]	250 Hz	—	NPN	Selectable Light-on/Dark-on	4-wire, 2m [6.5 ft] pigtail	Diagram 5	PDF
FDMR-0N-1H	\$30.00			—	NPN		4-pin M12 quick-disconnect	Diagram 5	PDF
FDMR-0P-1A	\$30.00			—	PNP		4-wire, 2m [6.5 ft] pigtail	Diagram 6	PDF
FDMR-0P-1H	\$30.00			—	PNP		4-pin M12 quick-disconnect	Diagram 6	PDF
Through-beam Emitter - Potentiometer ***									
FDME-00-1A	\$24.00	4m [13.1 ft]	—	infrared LED (880nm)	—	—	4-wire, 2m [6.5 ft] pigtail	Diagram 7	PDF
FDME-00-1H	\$24.00		—		—	—	4-pin M12 quick-disconnect	Diagram 7	PDF

* Purchase cable separately for the M12 quick-disconnect models.

** Purchase reflector separately.

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



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Wiring Diagrams

Diagram 1
4-Wire NPN Output
DM3/DM7

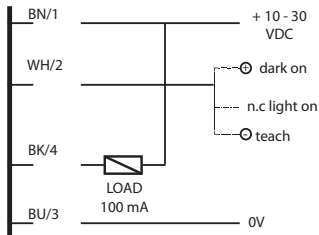


Diagram 2
4-Wire PNP Output
DM3/DM7

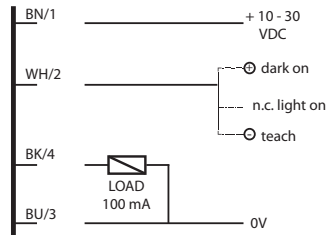


Diagram 3
4-Wire NPN Output
DMP

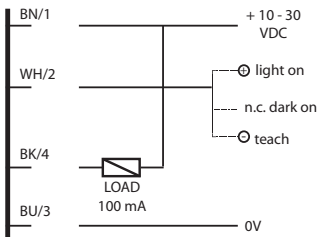


Diagram 4
4-Wire PNP Output
DMP

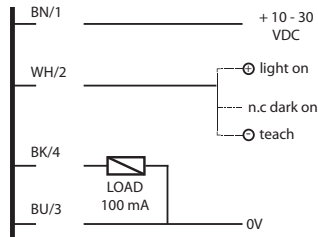


Diagram 5
4-Wire NPN Output
DMR

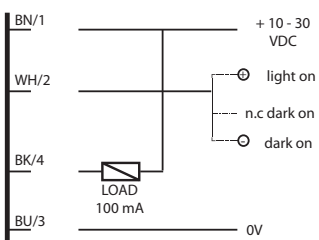


Diagram 6
4-Wire PNP Output
DMR

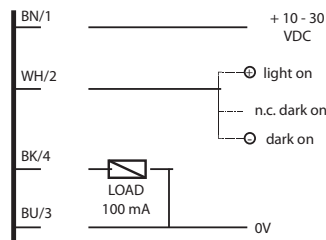
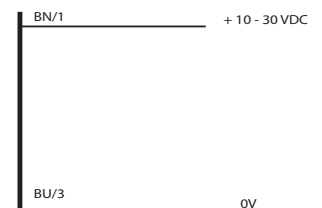
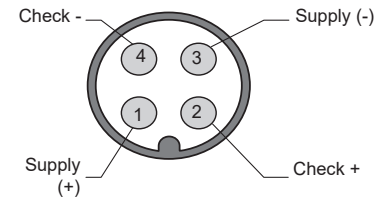
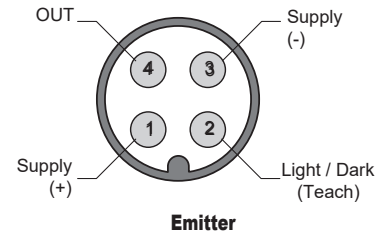


Diagram 7
Emitter
DME



M12 Connector

Diffuse reflection polarized receiver





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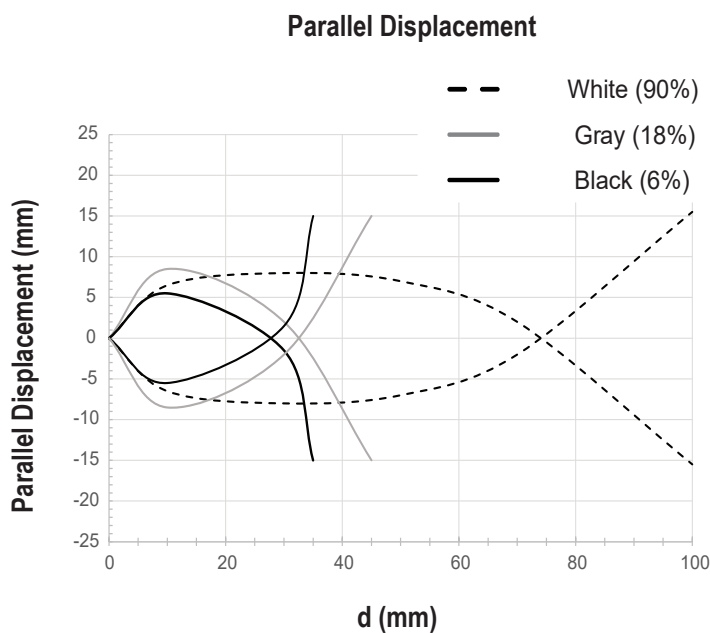
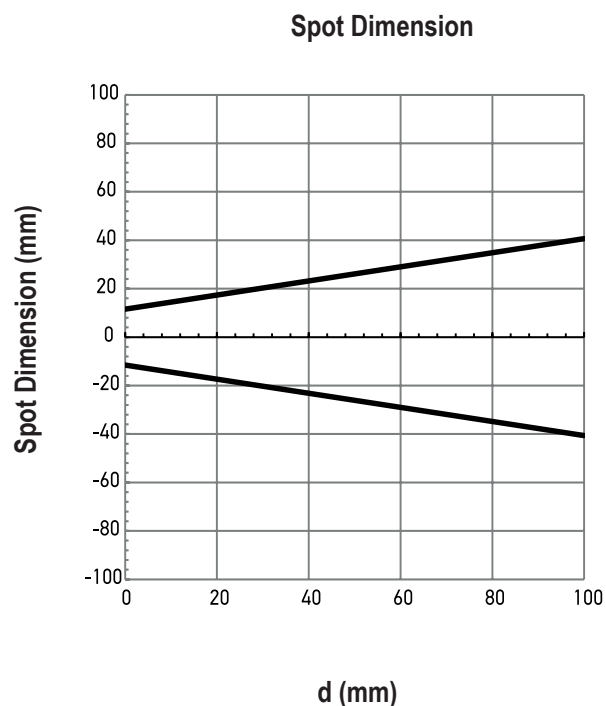
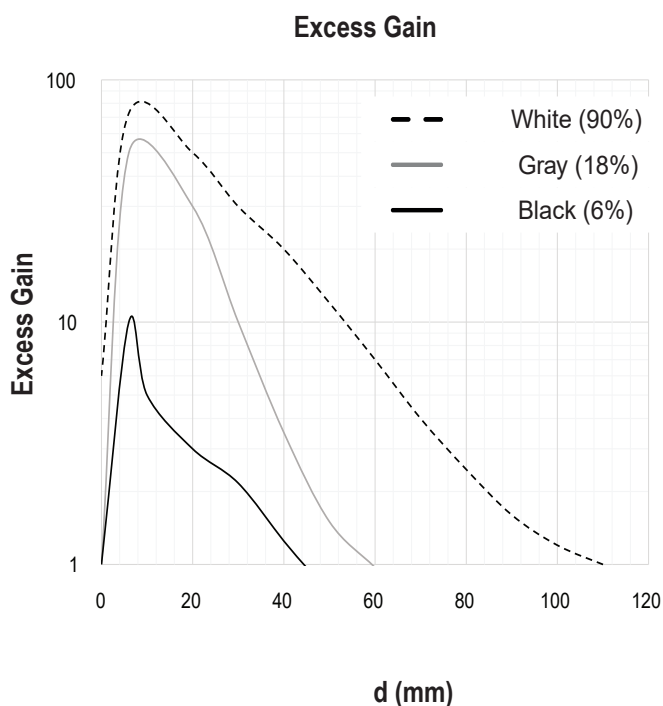
M12 (12mm) Tubular Metal -DC FDM Series Specifications

Sensor Type	Diffuse Reflection	Polarized Retroreflective Teach-in	Through-beam
Sensing Distance	FDM3: 100mm [3.9 in] FDM7: 300mm [11.8 in]	2.5m [8ft]	4m [13.1 ft]
Thermal Drift	≤ 10% Sr		
Repeatability	≤ 5%		
Response Time Maximum	500μs	500μs	2ms (Receiver only)
Output Types	NPN, PNP	NPN, PNP	NPN, PNP (Receiver only)
Operating Voltage	10-30 VDC		
Maximum Residual Ripple	10%		
Leakage Current	≤ 130μA	≤ 130μA	≤ 130μA (Receiver only)
No Load Supply Current	30mA		
Maximum DC Output Voltage Drop	2V @ IL - 100mA	2V @ IL - 100mA	2V @ IL - 100mA (Receiver only)
Operating (Load) Current	100mA	100mA	100mA (Receiver only)
Short-circuit Protection	Yes		
Reverse Polarity Protection	Yes		
Impulsive Overvoltage Protection	Yes		
Delay to Availability	≤ 150ms		
Operating Temperature	-25 to 70°C [-13 to 158°F]		
Protection Degree	IP67		
LED Indicators	Yellow (output status)		Emitter: Yellow (power on) Receiver: Yellow (output status)
Housing Material	Nickel plated brass / PBT cable exit		
Lens Material	PMMA - Poly (methyl methacrylate)		
Optical Location	Axial		
Shock/Vibration	Shock IEC 60068-2-27 / Vibration IEC 60068-2-6		
Ambient Light Immunity	15000 lux (incandescent lamp), < 1000 lux (fluorescent lamp)		5000 lux (incandescent lamp) > 3000 lux fluorescent lamp (Receiver only)
Tightening Torque	10 N•m [7.37 lb•ft] (mounted)		
Weight	52g [1.83 oz] Connector version / 16g [0.56 oz] Cable version		
IO-Link	N/A		
Connectors	PVC, 2m [6.5 ft] 3-wire or 4-wire, 26AWG M12 4-pin connector		
Agency Approvals	cULus File E328811, CE, UKCA		



M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDM3 Models Diffuse Reflection

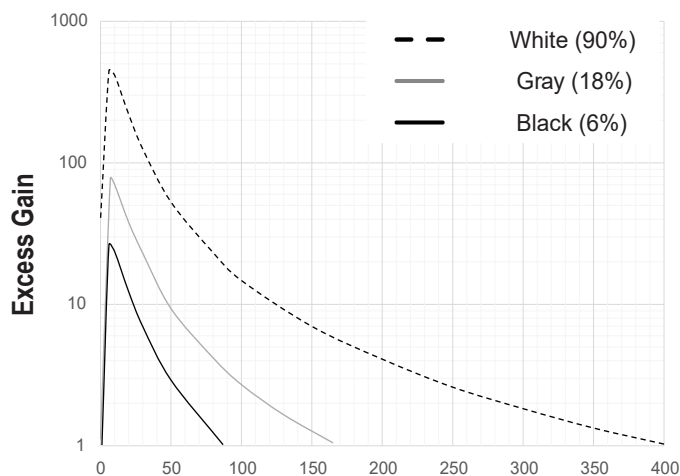




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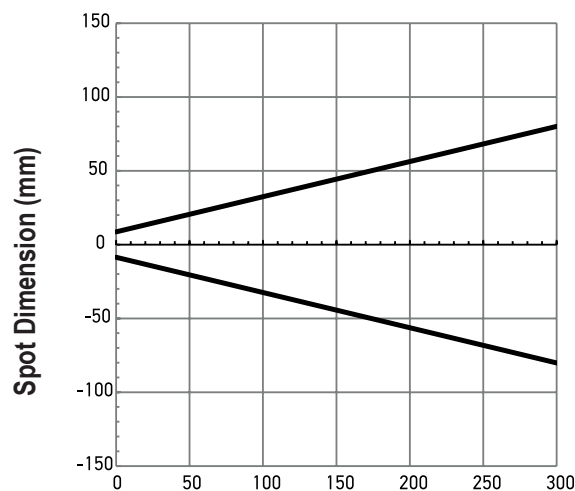
Characteristic Curves FDM7 Models Diffuse Reflection

Excess Gain



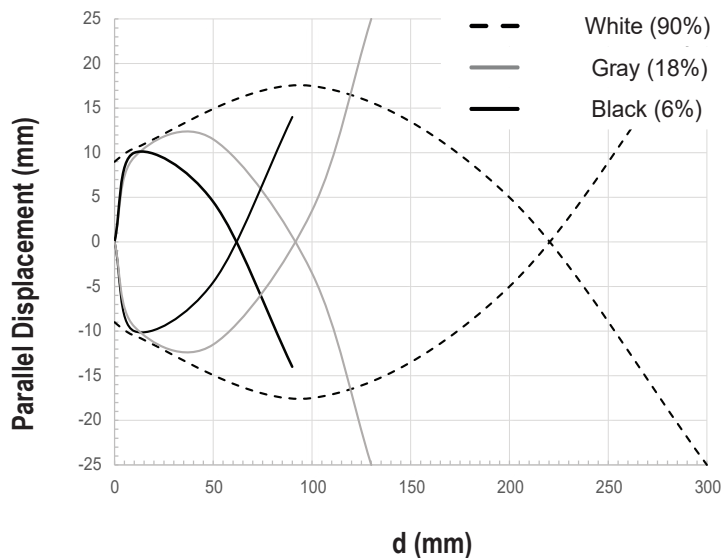
d (mm)

Spot Dimension



d (m)

Parallel Displacement



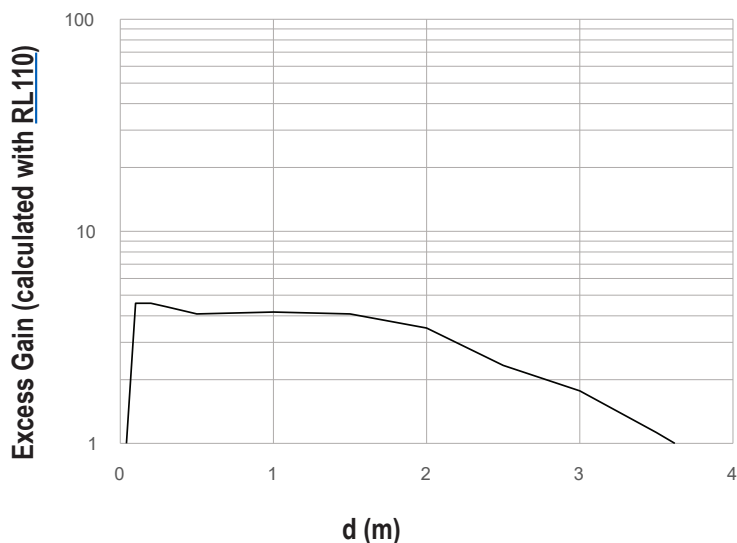
d (mm)



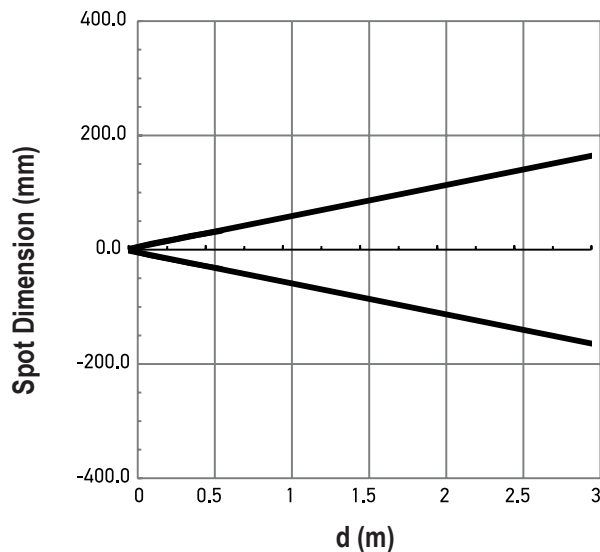
M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDMP Models Polarized Retroreflective

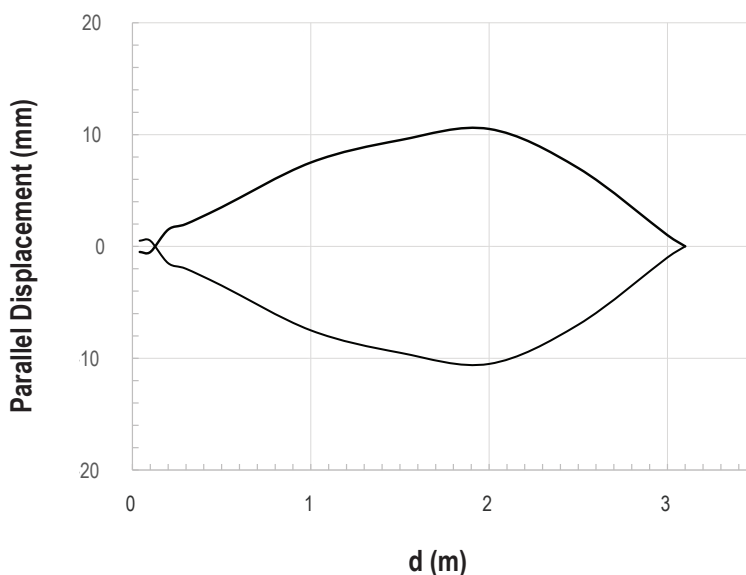
Excess Gain (calculated with [RL110](#))



Spot Dimension



Parallel Displacement (calculated with [RL110](#))

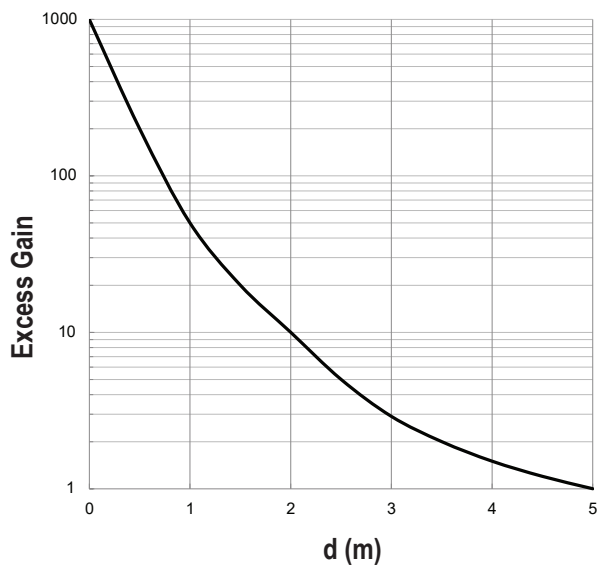




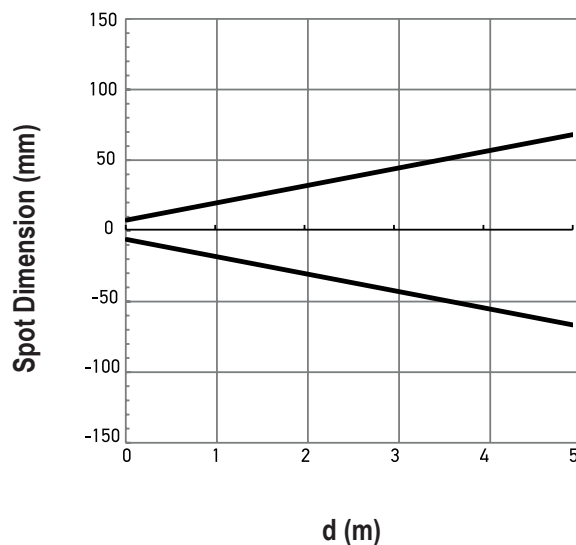
M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDME Models Emitters and Receivers

Excess Gain



Spot Dimension



Parallel Displacement

