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

M12 (12mm)Tubular Metal -DC FDM Series									
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

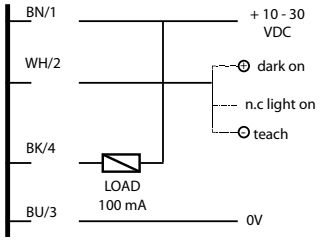
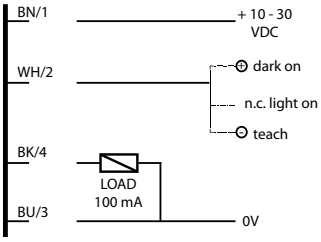
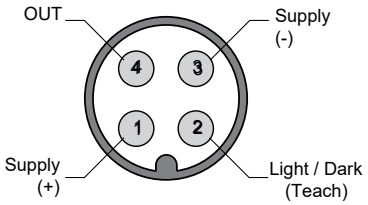


Diagram 2
4-Wire PNP Output
DM3/DM7



M12 Connector
Diffuse reflection polarized receiver



Emitter

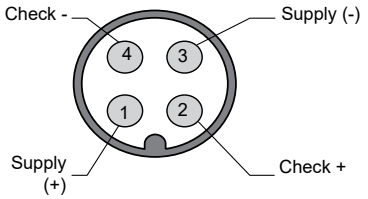


Diagram 3
4-Wire NPN Output
DMP

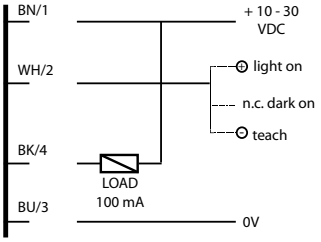


Diagram 4
4-Wire PNP Output
DMP

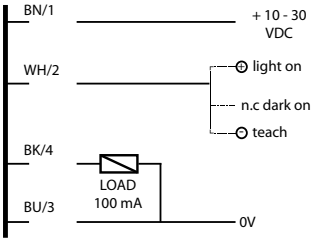


Diagram 5
4-Wire NPN Output
DMR

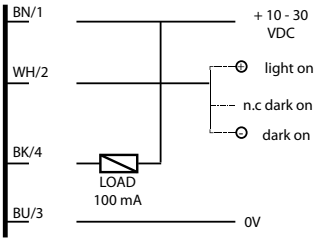


Diagram 6
4-Wire PNP Output
DMR

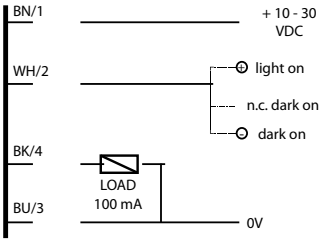
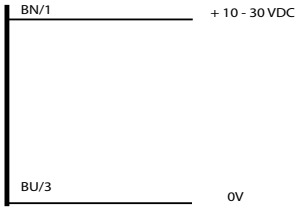


Diagram 7
Emitter
DME



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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		

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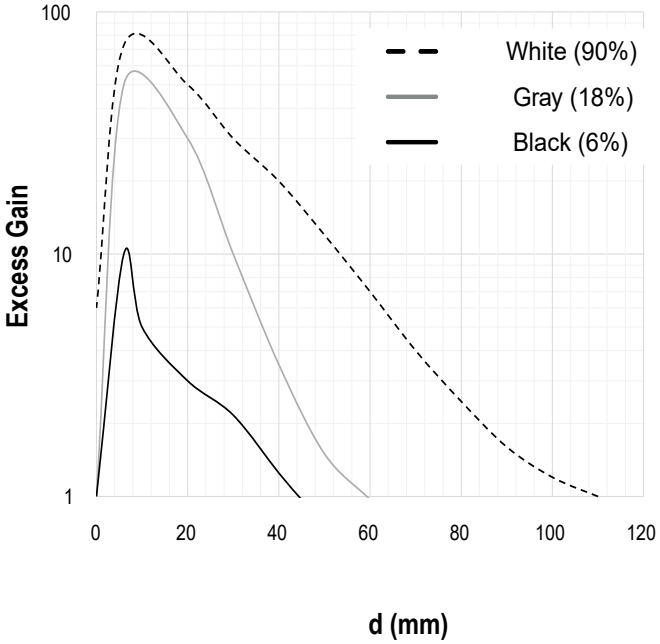
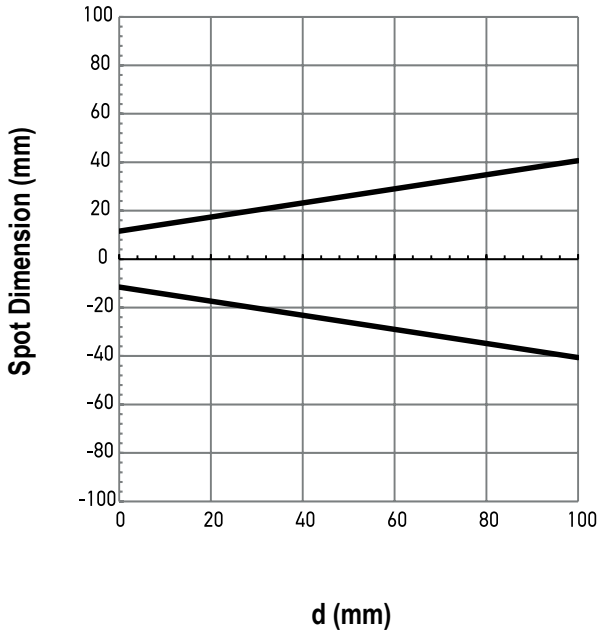
Characteristic Curves FDM3 Models
Diffuse Reflection

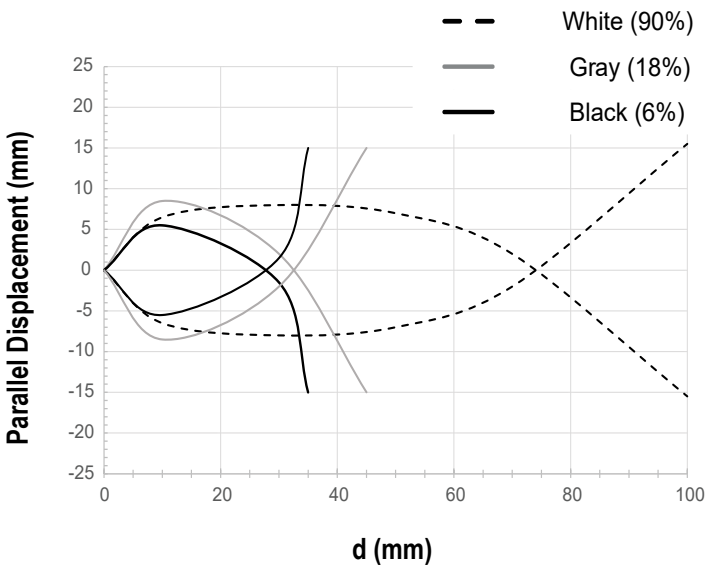
Excess Gain



Spot Dimension



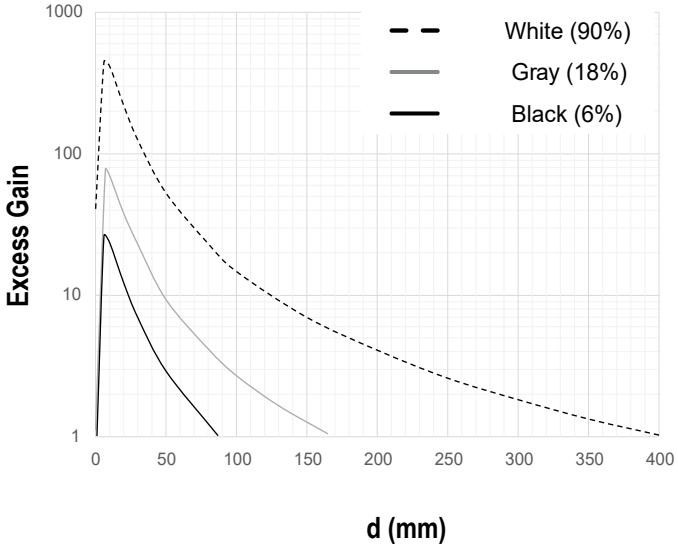
Parallel Displacement



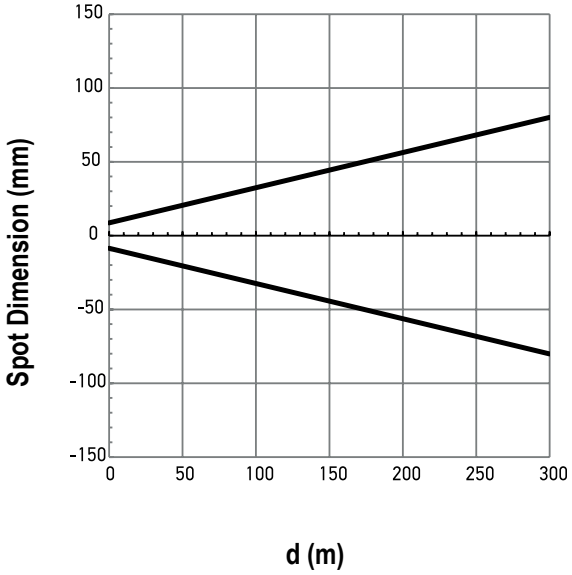
M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDM7 Models
Diffuse Reflection

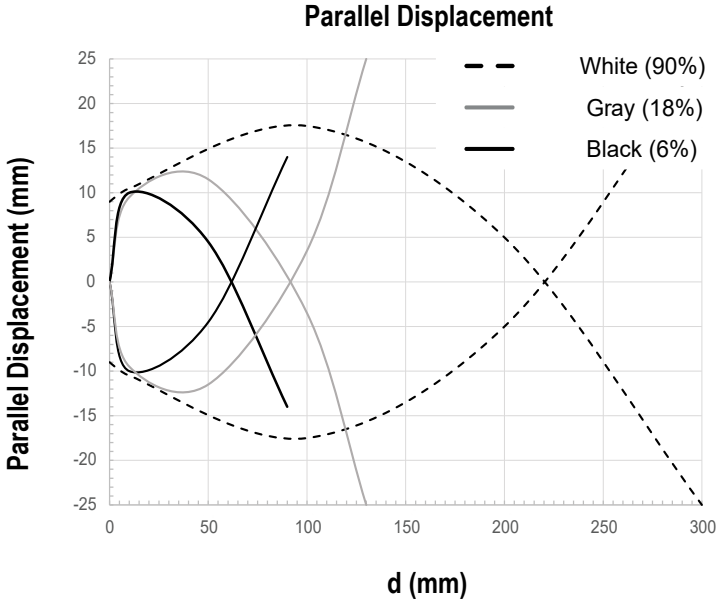
Excess Gain



Spot Dimension



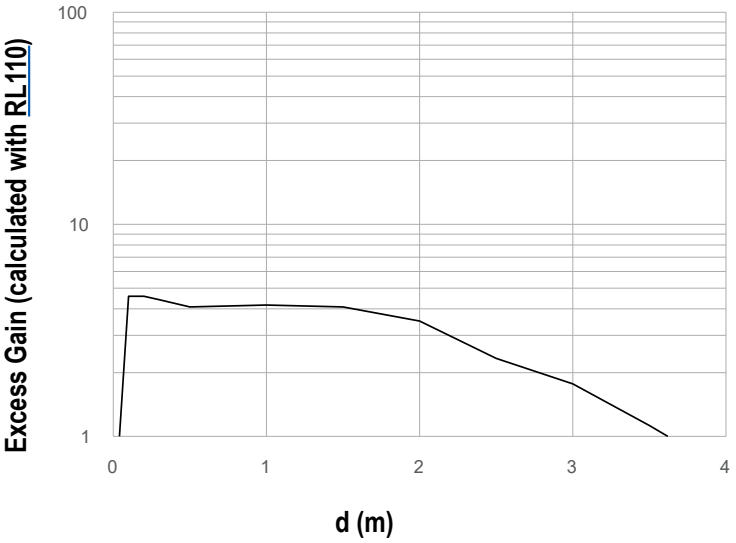
Parallel Displacement



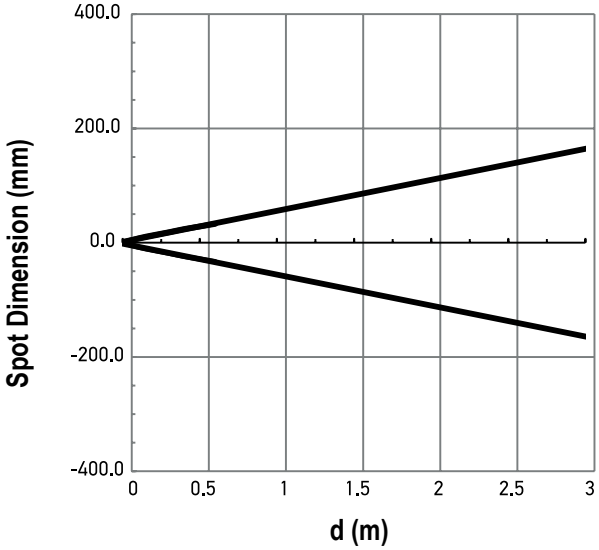
M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDMP Models
Polarized Retroreflective

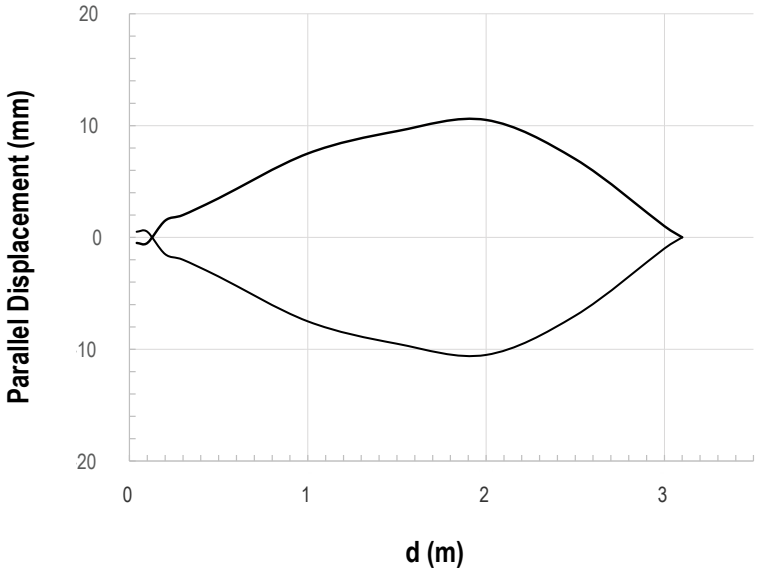
Excess Gain (calculated with RL110)



Spot Dimension



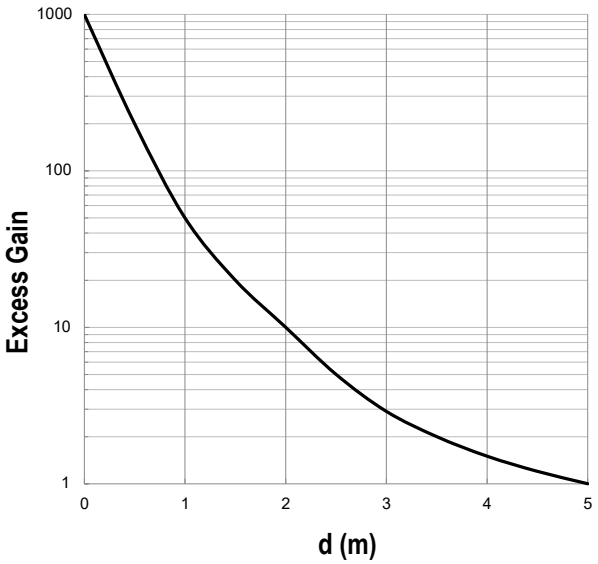
Parallel Displacement (calculated with RL110)



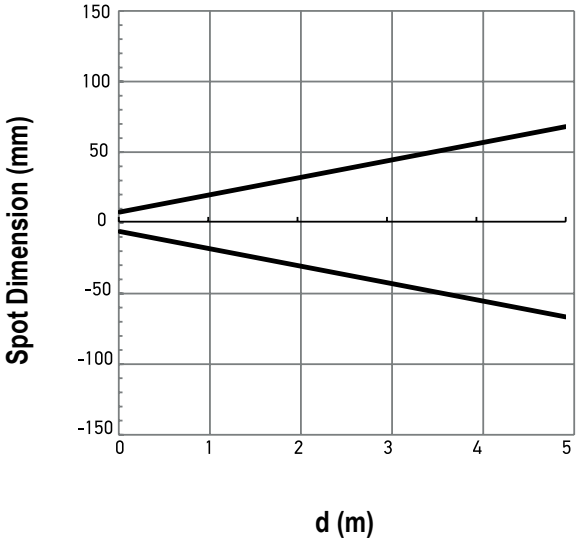
M12 Tubular Metal Photoelectric Sensors FDM Series

Characteristic Curves FDME Models
Emitters and Receivers

Excess Gain



Spot Dimension



Parallel Displacement