



# Mini Rectangular Plastic Photoelectric Sensors FBM Series

## Overview

The FBM series photoelectric sensors are reliable and powerful for standard detection tasks in material handling, packaging, and other applications. The FBM series offers large ranges, highly Visible Red LED, Pinpoint LED, and Infrared models. Strong opto performance and various electrical options make the FBM series photoelectric sensors a solid performer even in rough industrial environments.

## Features

- Diffuse with background suppression, polarized retroreflective, and through-beam models available
- Operating voltage 10–30 VDC
- Complete overload protection
- Standard 25.4mm hole spacing
- IP67 Protection degree
- M8 quick-disconnect (purchase cable separately) or pigtail models
- 2-year warranty



FBM-RS-0P-0A



FBM-RS-0N-0F

## Mini Rectangular Plastic Photoelectric Sensors FBM Series

Part Number	Price	Sensing Distance	Light Emission	Logic	Output Function	Connection Type	Dimensions [L x H x W]	Wiring Diagram	Drawing Link
Diffuse with Background Suppression - Multi-turn Potentiometer									
<a href="#">FBM-RS-0P-0A</a>	\$32.50	2–400mm [0.07–14.75in]	Visible red 645 nm	PNP	Selectable Light-on/Dark-on	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RS-0N-0A</a>	\$32.50			NPN		3-wire, 4-pin M8 quick-disconnect		Diagram 1	<a href="#">PDF</a>
<a href="#">FBM-RS-0P-0F</a>	\$32.50			PNP				Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RS-0N-0F</a>	\$32.50			NPN		Diagram 1		<a href="#">PDF</a>	
<a href="#">FBM-PS-0P-0A</a>	\$38.50		Pinpoint LED 660 nm	PNP		3-wire, pigtail, 6.5ft/2m, PVC		Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-PS-0N-0A</a>	\$38.50			NPN		3-wire, 4-pin M8 quick-disconnect		Diagram 1	<a href="#">PDF</a>
<a href="#">FBM-PS-0P-0F</a>	\$38.50			PNP				Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-PS-0N-0F</a>	\$38.50			NPN		Diagram 1		<a href="#">PDF</a>	
<a href="#">FBM-IS-0P-0A</a>	\$32.50		Infrared 850 nm	PNP		3-wire, pigtail, 6.5ft/2m, PVC		Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-IS-0N-0A</a>	\$32.50			NPN				Diagram 1	<a href="#">PDF</a>
Polarized Retroreflective - Fixed									
<a href="#">FBM-RP-0P-0A</a>	\$24.00	0.02–5m [0.06–16.40ft]	Visible red 645 nm	PNP	Selectable Light-on/Dark-on	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RP-0N-0A</a>	\$24.00			NPN		3-wire, 4-pin M8 quick-disconnect		Diagram 1	<a href="#">PDF</a>
<a href="#">FBM-RP-0P-0F</a>	\$24.00			PNP				Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RP-0N-0F</a>	\$24.00			NPN				Diagram 1	<a href="#">PDF</a>
Polarized Retroreflective - Fixed - Shiny and Reflective Objects									
<a href="#">FBM-RG-0P-0A</a>	\$28.50	0.04–4m [0.13–13.12ft]	Visible red 645 nm	PNP	Selectable Light-on/Dark-on	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RG-0P-0F</a>	\$28.50			PNP		3-wire, 4-pin M8 quick-disconnect		Diagram 2	<a href="#">PDF</a>
Polarized Retroreflective - 270–degree Potentiometer									
<a href="#">FBM-RN-0P-0A</a>	\$26.50	0.02–5m [0.06–16.40ft]	Visible red 645 nm	PNP	Selectable Light-on/Dark-on	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RN-0N-0A</a>	\$26.50			NPN		3 wire, 4-pin M8 quick-disconnect		Diagram 1	<a href="#">PDF</a>
<a href="#">FBM-RN-0P-0F</a>	\$26.50			PNP				Diagram 2	<a href="#">PDF</a>
Through-beam Receivers									
<a href="#">FBM-RR-0P-0A</a>	\$21.00	0–10m [0–32.80ft]	—	PNP	Selectable Light-on/Dark-on	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RR-0N-0A</a>	\$21.00			NPN		3-wire, 4-pin M8 quick-disconnect		Diagram 1	<a href="#">PDF</a>
<a href="#">FBM-RR-0P-0F</a>	\$21.00			PNP				Diagram 2	<a href="#">PDF</a>
<a href="#">FBM-RR-0N-0F</a>	\$21.00			NPN				Diagram 1	<a href="#">PDF</a>
Through-beam Emitters									
<a href="#">FBM-RE-00-0A</a>	\$18.50	0–10m [0–32.80ft]	Visible red 645 nm	—	—	3-wire, pigtail, 6.5ft/2m, PVC	20 x 11 x 32.4mm [0.78 x 0.43 x 1.27in]	Diagram 3	<a href="#">PDF</a>
<a href="#">FBM-RE-00-0F</a>	\$18.50					3-wire, 4-pin M8 quick-disconnect		Diagram 3	<a href="#">PDF</a>

Note: Purchase cable separately for the M8 quick-disconnect models.  
 Purchase reflectors separately for the Polarized Retroreflective models.  
 Purchase 1 receiver and 1 emitter for a complete set.  
 The FBM Series Photoelectric Sensors are not intended for safety applications.



# Mini Rectangular Plastic Photoelectric Sensors FBM Series

FBM Series Specifications				
Sensor Type	Diffuse, with Background Suppression	Polarized Retroreflective	Through-beam Receivers	Through-beam Emitters
Light Spot Diameter	Pinpoint LED models: 5.6 mm diameter at 100 mm distance	–	–	–
Operating Voltage	10–30 VDC			
Residual Ripple	0 to 15%, From U <sub>B</sub>			
Open-circuit Current	0–15 mA	0–20 mA		
Switching Current (maximum)	50 mA			–
Switching Voltage High	≥(U <sub>B</sub> -2.5V)			–
Switching Voltage Low	≤ 2.5 V			–
Switching Frequency	1 kHz	500 Hz	900 Hz	–
Response Time	0.5 ms	1 ms	0.56 ms	–
Time Delay Before Availability (tv)	300 ms			
Voltage Reversal Protection	Yes			
Short-circuit Protection	Yes			
Operating Temperature	-40 to +60 °C [-40 to +140 °F]			
Storage Temperature	-40 to +70 °C [-40 to +158 °F]			
Degree of Protection	IP67			
LED Indicators - Switching Status	Yellow continuous: Object detected Green continuous: Operation ready	Yellow continuous: Light path free Yellow Flashing: Light path free, no function reserve Green continuous: Operation ready		Yellow continuous: Transmitted beam active Green continuous: Operation ready
Housing Material	ABS (Acrylonitrile butadiene styrene) / PC (Polycarbonate)			
Lens Material	Plastic / PMMA			
Jacket Material	PVC			
Weight	20g [0.70 oz] Connector models 44g [1.55 oz] Cable models		18g [0.63 oz] Connector models 44g [1.55 oz] Cable models	
Connectors	4-pin M8 quick-disconnect or 3-wire, pigtail, A-coded, wire cross 0.14 mm <sup>2</sup> 26 AWG			
Agency Approvals	cULus File: E328811, CE			

To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

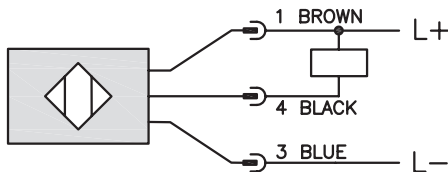


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## Wiring Diagrams

Diagram 1

3-Wire NPN Output - Light-ON



3-Wire NPN Output - Dark-ON

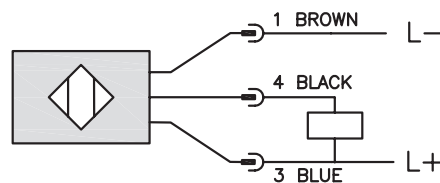
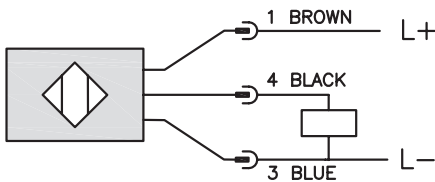


Diagram 2

3-Wire PNP Output - Light-ON



3-Wire PNP Output - Dark-ON

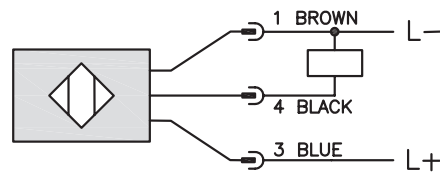
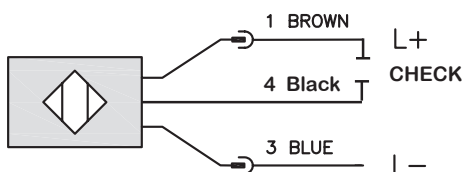
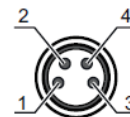


Diagram 3

Emitter



M8 connector



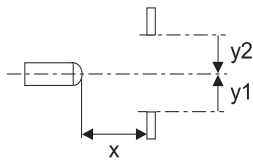
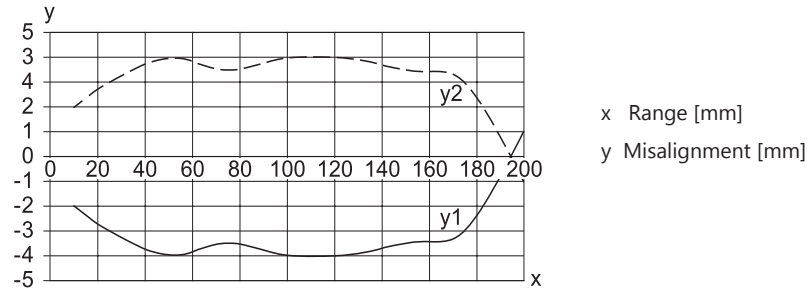


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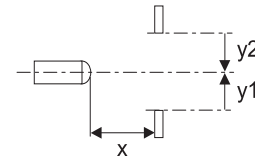
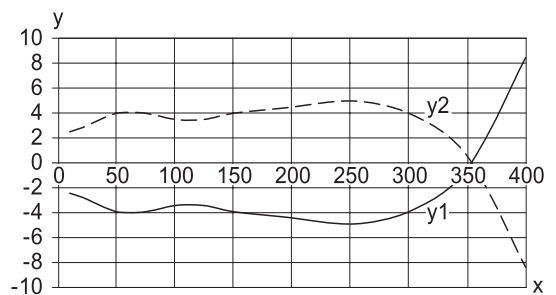
## Characteristic Curves

### Diffuse with Background Suppression Models

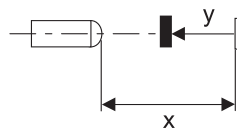
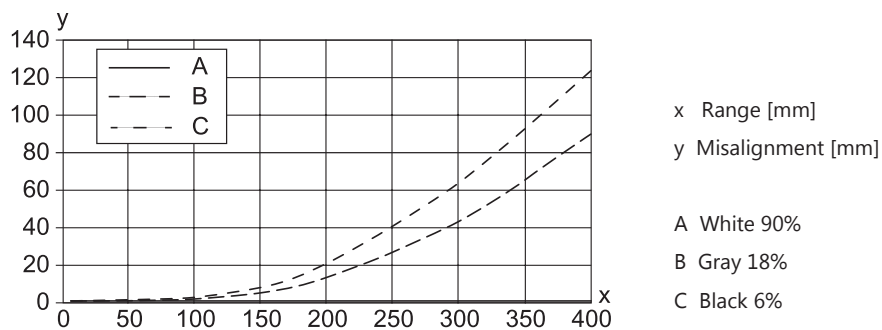
Typical response behavior at 90% diffuse reflection (focusing distance 200 mm)



Typical response behavior at 90% diffuse reflection (focusing distance 400 mm)



Typical black/white behavior



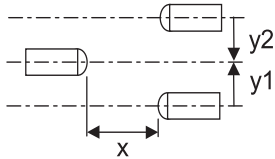
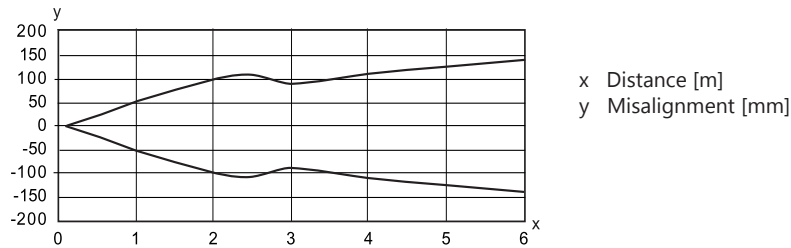


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## Characteristic Curves

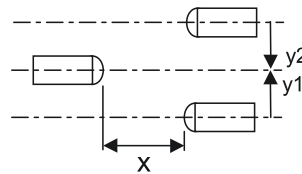
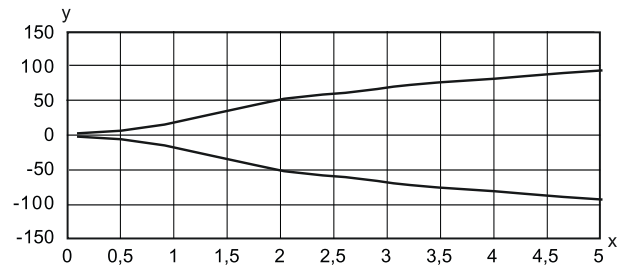
### Polarized Reflective FBM-RP Models

Typical response behavior with reflector [OPT2030](#)

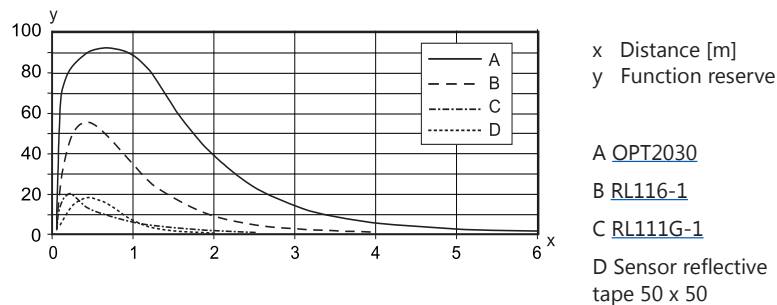


### Polarized Reflective FBM-RG and FBM-RN Models

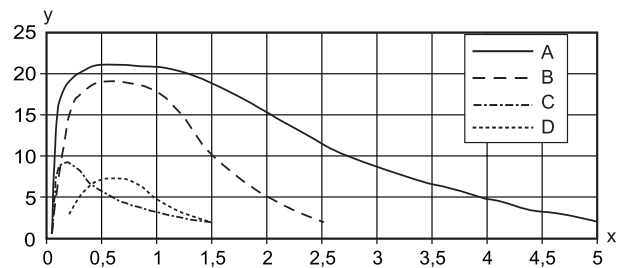
Typical response behavior



Typical function reserve



Typical function reserve



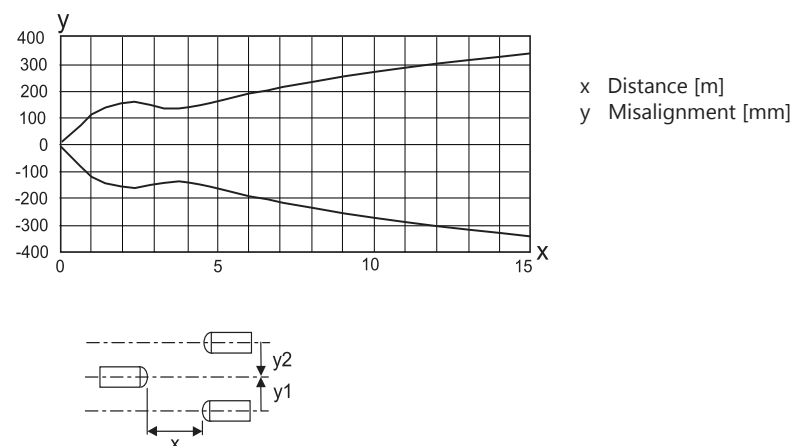


# Mini Rectangular Plastic Photoelectric Sensors FBM Series

## Characteristic Curves

### Through-beam Receivers and Emitters

Typical response behavior



Typical function reserve

