

# PHOTOELECTRIC SWITCHES

## Features

- Diameter M18 x1mm
- Supply voltage 12-30 VDC
- Short circuit protected
- Conforming to IP66
- Fast response



## Specifications

Item	Standard
Light Source	Infrared LED (940nm)
Detector	Photo-transistor
Operating Indicator	Red LED, Light when output energized
Sealing	Conforming to IP66(IEC)
Extraneous Light Immunity	300 Lux 3000
Housing Materials	Plastic Housing :ABS resin      Metal Housing:Brass Plastic Nut:PBT                      Metal Nut:Brass Lens:Polycarbonate or PMMA
Ambient Humidity	35-85% RH
Storage Temperature	-30°C to +70°C (-22° F to 158° F)
Cable Length	2m(6.5' Three Conductor Cable)
Weight	About 120g (4.3 oz.) for plastic Housing

## Product Selection

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1    2   3   4

### 1. TYPE

<b>WE</b>	DC, Metal housing 0.5ms response time
<b>WM</b>	DC, Plastic, housing
<b>WA</b>	AC, Plastic housing
<b>WR</b>	DC, Metal housing

### 3. OUTPUT TYPES

<b>2</b>	Universal
<b>3</b>	NPN open collector
<b>4</b>	PNP open collector
<b>5</b>	AC three wire
<b>6</b>	AC two wire

### 2. SENSITIVITY & DETECTION DISTANCE

<b>T</b>	Thru-Beam.
<b>M</b>	Retro-Reflective.
<b>RXA</b>	Diffuse Reflective.
<b>RXB</b>	Diffuse Reflective.
<b>U</b>	Background Suppression

### 4. Complimentary outputs

<b>L</b>	Light on
<b>D</b>	Dark on

**HIGHLY**

D12

Design, specifications are subject to change without notice.

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Model item Type	WM Series DC Type			WA Series DC Type		
	Operating principle	Detecting distance	NPN Output	PNP Output	Detecting distance	AC 3 Wires
Thru-Beam	10M	WM-T3AD	WM-T4AD	10M	WA-T5AD	WA-T6AD
Retro-Reflective	2.4M	WM-M3D WM-M3L	WM-M4D WM-M4L	2M	WA-M5D WA-M5L	WA-M6D WA-M6L
Diffuse Reflective	200mm	WM-R3AL	WM-R4AL	200mm	WA-R5AL	WA-R6AL
Diffuse Reflective	80mm	WM-R3BL	WM-R4BL	80mm	WA-R5BL	WA-R6BL
Background Suppression	45mm	WM-U3L	WM-U4L	45mm	WA-U5L	WA-U6L

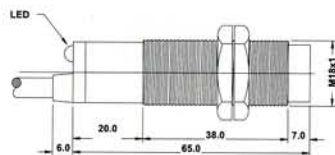
## GENERAL SPECIFICATION

Operating Voltage	12-30 VDC
Operating Principle	Thru-Beam
Response Time	10ms
Power-on Reset Time	30ms
Max. Load Current	200mA
Sealing	Conforming to IP66(IEC)
Housing Material	Brass. Ni plated
Cable Length	2 meter
Circuit Protection	1. Output short circuit 2. Reverse polarity of supply voltage

Model Item	Output Circuit	NPN Open Coll.	
		20M	30M
Detecting Distancce		WR-T3D	WR-T4D
		WR-T3AD	WR-T4AD

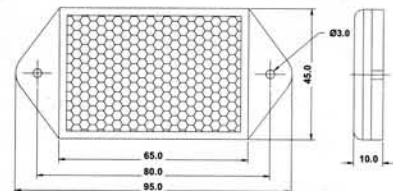
## Dimensions

WE Series DC Type Plastic  
WM Series DC Type metal

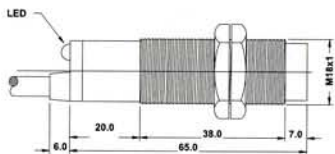


## Reflector

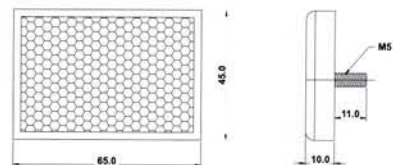
PR-272W



WA Series AC Type WA Type



PR-272S

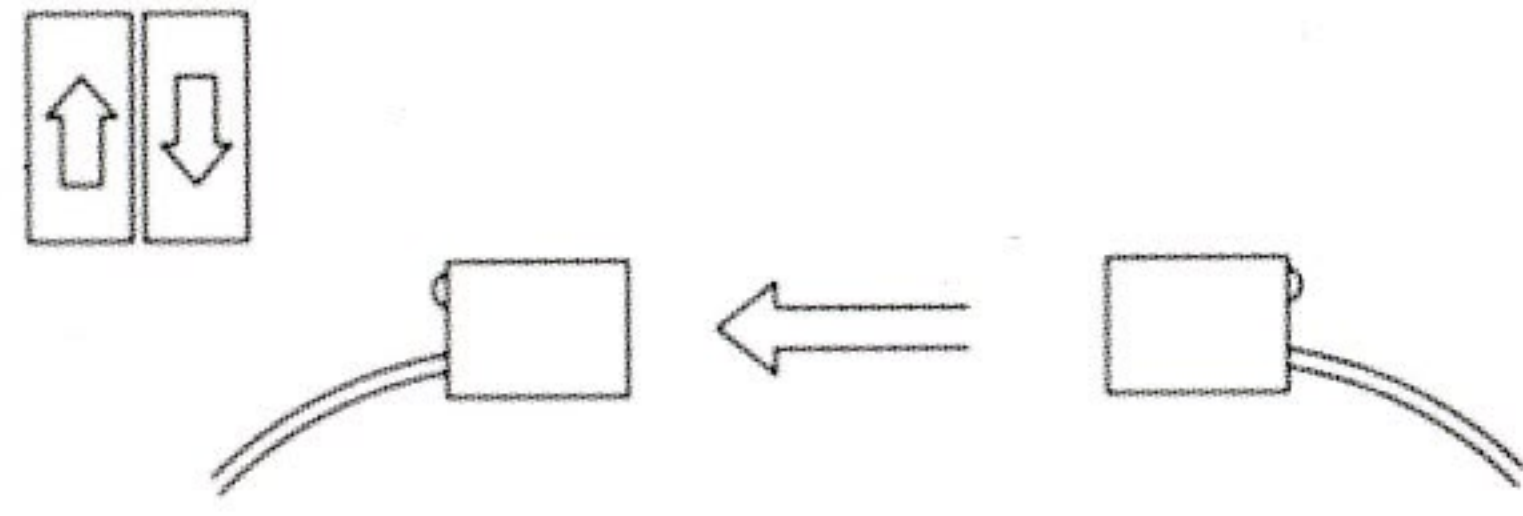
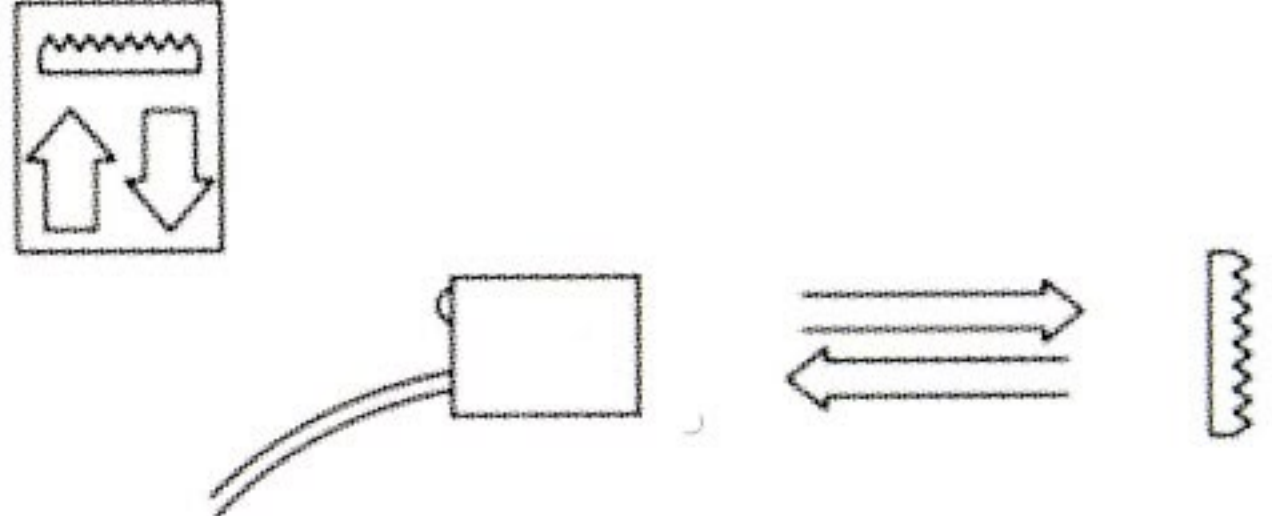


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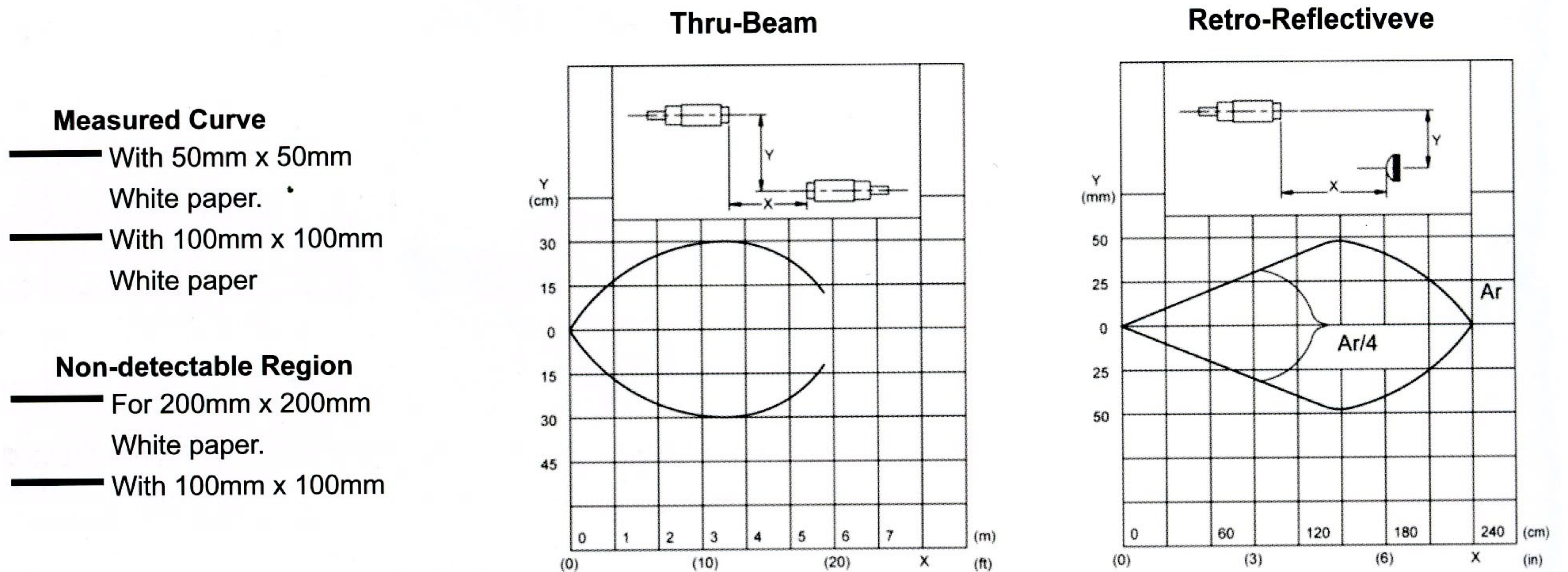
# PHOTOELECTRIC SWITCHES

Operating Principle	Thru-Beam		Retro-Reflective	
				
<b>Feature</b>	<ul style="list-style-type: none"> <li>● Long range detection</li> <li>● Small object detectable</li> <li>● 1.2 ms response time</li> </ul>		<ul style="list-style-type: none"> <li>● One-side wiring</li> <li>● Easy to align</li> <li>● Fast response</li> </ul>	
<b>Detecting Distance</b>	0-5 meter		0-2 meter(*1)	
<b>Detecting Capability</b>	>8mm dia. opaque		>10-40mm dia. Opaque(*2)	
<b>Hysteresis</b>	N/N		N/A	
<b>Mode of Operation</b>	Dark ON			
<b>Max. Switching Rate (Response time)</b>	400 Hz (1.2 ms)		250 Hz (2 ms)	
<b>Power-on Reset Time</b>	20 ms			
<b>Operating Voltage</b>	12-30 VDC			
<b>Current Consumption</b>	20 mA(receiver) 25 mA(transmitter)		25 mA	
<b>Circuit Protection</b>	1. Output short circuit 2. Reverse polarity of supply voltage			
<b>Max. Load Current</b>	120 mA			
<b>Output Residue Voltage</b>	Less than 1.5V (at load current = 120 mA)			
<b>Output Circuit</b>	NPN	PNP	NPN	PNP
<b>Model Item*4</b>	WE-T3AD	WE-T4AD	WE-M3D	WE-M4D

Note : \*1 with reflector PR-272S or PR-272W, active area  $A_r = 2240\text{mm}^2$ .

\*2 refer to SENSING PERFORMANCE.

## SENSING PERFORMANCE



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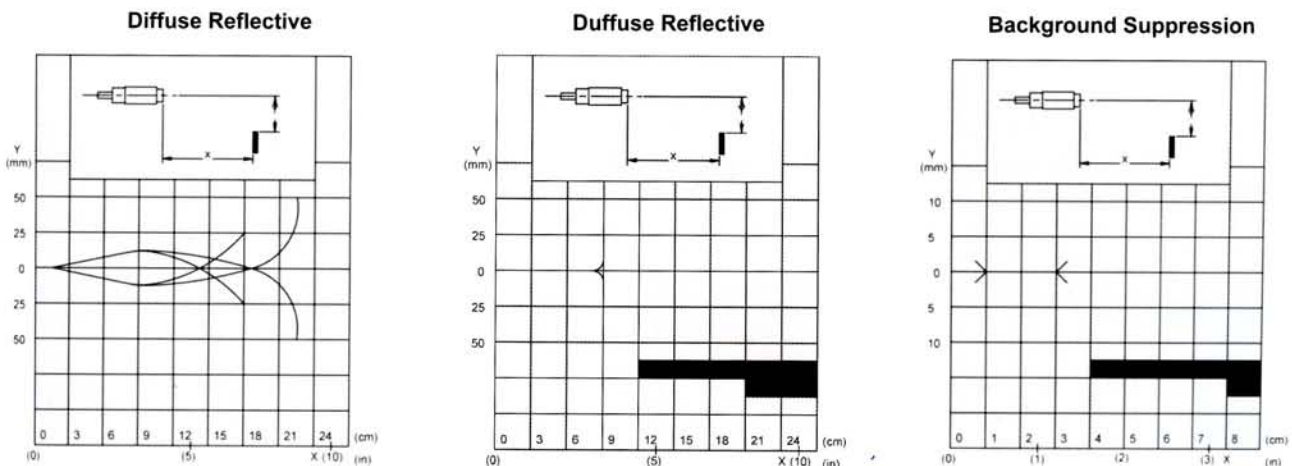
# PHOTOELECTRIC SWITCHES

Diffuse Reflective		Diffuse Reflective		Background Suppression	
<ul style="list-style-type: none"> <li>● Transparent material detection possible</li> <li>● Easy to use</li> <li>● Fast response</li> </ul>		<ul style="list-style-type: none"> <li>● Fo restricted area applications</li> <li>● Max sensitivity range at 15-40 mm(*3)</li> </ul>		<ul style="list-style-type: none"> <li>● Background reflections heavily suppressed</li> <li>● Max sensitivity range at 18-22 mm(*3)</li> </ul>	
0-200 mm(-2)		0-80 mm (*2)		10-30 mm (*2)	
See SENSING PERFORMANCE(measured curve & non-detectable region)					
20%		N/N		N/A	
Light ON					
250 Hz (2ms)					
20 ms					
12-30 VDC					
25 mA					
<ol style="list-style-type: none"> <li>1. Output short circuit</li> <li>2. Reverse polarity of supply voltage</li> </ol>					
120 mA					
Less than 1.5V (at load current = 120 mA)					
NPN	PNP	NPN	PNP	NPN	PNP
WE-R3AL	WE-R4AL	WE-R3BL	WE-R4BL	WE-U3L	WE-U4L

Note : \*3 max. sensitivity range is measured with 50mm x 50mm black paper.

\*4 WE series : DC type , plastic housing; WM series : DC type , metal housing; WA series : AC type , plastic housing.

## SENSING PERFORMANCE



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