# Photoelectrics
# Diffuse-reflective, Relay Output
# Type PMD

CARLO GAVAZZI




- **Range: 800 mm**
- **Modulated, infrared light**
- **Make or break switching function (switch selectable)**
- **LED-indication for target detected**
- **Multi supply voltage:**
  **12 to 240 VDC and**
  **24 to 240 VAC, 50/60 Hz**
- **25 x 65 x 81 mm reinforced PC housing, IP 67**
- **Timer options (adjustable)**
- **NO and NC output**

## Product Description

Diffuse-reflective photoelectric switch. Range up to 0.8 m. Adjustable sensitivity. Im-mune to ambient light. Output function switch selectable. Protection degree IP 67. Screw terminal connection. 25 x 65 x 81 mm plastic housing. PG 13 or 1/2" NPT cable gland. Timer options: Delay on operate, delay on release, one shot (triggered on lead-ing or trailing edge).

## Ordering Key

**PMD8R G T**

**Type**
**Cable gland**
**Option: Timer function**

## Type Selection

| Housing<br>W x H x D | Ordering no.<br>without timer | Ordering no.<br>with timer |
|---|---|---|
| 25 x 65 x 81<br>PG 13.5 cable gland<br>1/2" NPT cable gland | **PMD 8R G**<br>**PMD 8R I** | **PMD 8R GT**<br>**PMD 8R IT** |

## Specifications

| | |
|---|---|
| **Rated operating dist.** ($S_n$)<br>(0 to 5,000 lux) | 800 mm<br>Reference target:<br>Kodak test card R27,<br>white, 90% reflectivity,<br>200 x 200 mm |
| **Rated operational volt.** ($U_B$)<br>AC: 45 to 65 Hz | 10.8 to 264 VDC<br>21.6 to 264 VAC |
| **Rated operational power**<br>(relay ON) | ≤ 2 W (2.5 VA) |
| **Output**<br>Contact ratings (AgCdO)<br>Resistive loads AC 1<br>DC 1<br>Small inductive loads AC 15<br>DC 13<br>Mechanical life (typical)<br>Electrical life (typical) | <br>µ (micro gap)<br>3 A/250 VAC<br>3 A/30 VDC<br>2 A/250 VAC<br>3 A/30 VDC<br>≥ 40 x $10^6$ operations<br>≥ 5 x $10^5$ operations<br>at 220 VAC - 3 A resistive<br>load: 360 impulses/h |
| **Dielectric voltage** | 2000 VAC (rms) (cont./supply) |
| **Sensing range** ($S_d$) | 0.2 - 0.8 m |
| **Light source** | GaAlAs, LED, 880 nm |
| **Light type** | Infrared, modulated |

| | |
|---|---|
| **Optical angle**<br>(200 x 200 mm test card) | <br>± 12° |
| **Operating frequency** | 20 Hz |
| **Response time**<br>OFF-ON ($t_{ON}$)<br>ON-OFF ($t_{OFF}$) | <br>≤ 20 ms<br>≤ 30 ms |
| **Power ON delay** ($t_v$) | ≤ 300 ms (typ. 100 ms) |
| **Output function** | Switch selectable, make or break switching |
| **Indication**<br>Target detected | <br>LED, yellow |
| **Optional timer**<br>Delay on operate<br>Delay on release<br>One shot | <br>0.1 to 7 s ± 2 s<br>0.1 to 7 s ± 2 s<br>0.1 to 7 s ± 2 s |
| **Environment**<br>Overvoltage category<br>Pollution degree<br>Degree of protection | <br>III (IEC 60664/60664A; 60947-1)<br>3 (IEC 60664/60664A; 60947-1)<br>IP 67 (IEC 60529; 60947-1) |
| **Temperature**<br>Operating<br>Storage | <br>-25° to +55°C (-13° to +131°F)<br>-30°to +80°C (-22° to +176°F) |



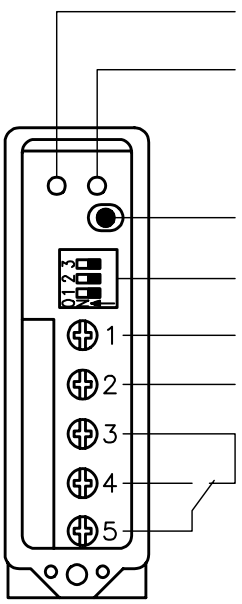
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## Specifications (cont.)

| | |
|---|---|
| **Vibration** | 10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6) |
| **Shock** | 2 x 1 m & 100 x 0.5 m (IEC 60068-2-32) |
| **Rated insulation voltage** | 250 VAC (rms) |
| **Housing material** | |
| Body | PC/ABS, grey, reinforced |
| Front | PC, black |
| Cover | PC, black |
| Cable gland | PA, black, reinforced |
| Mounting bracket | Steel, galvanized |
| **Connection** | |
| Screw terminal | 5 x 2 x 1 mm$^2$ |
| Cable gland | PG 13.5 or 1/2" NPT for cable 6 to 10 mm |
| **Weight** | 110 g |
| **Approvals** | UL, CSA |
| **CE-marking** | Yes |

## Connection Diagram




Time adjustment (optional)

Sensitivity adjustment

LED

DIP switches

12 - 240 VDC
24 - 240 VAC
50/60 Hz

30 VDC
250 VAC
Max. 3 A

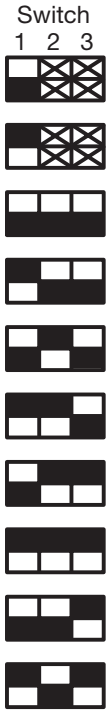
## Delivery Contents

- Photoelectric switch: PMD 8R
- Cable gland
- Installation instruction
- Mounting bracket
- **Packaging:** Corrugated cardboard (environmentally friendly recycling material)

## Accessories

- MB02 (longer mounting bracket), please refer to "Accessories"

## Selection of Function




1 Break switching

2 Make switching

3 Delay on operate - Break switching

4 Delay on operate - Make switching

5 Delay on release - Break switching

6 Delay on release - Make switching

7 One shot, trailing edge - Break switching

8 One shot, trailing edge - Make switching

9 One shot, leading edge - Break switching

10 One shot, leading edge - Make switching

☒ Don't care

Upper postion ON (Mode 1)
Lower position OFF (Mode 0)

## Reduction Factors

| **Reduction factors photoelectric switches** | |
|---|---|
| **Note:** Real sensing distance = rated operating distance ($S_n$) x reduction factor | |
| Kodak test card, white, type R 27, 90% reflectivity | 1.0 |
| Dead black cardboard | 0.1 - 0.4 |
| Kodak test card, grey, type R 27 | 0.41 - 0.45 |
| White Styropack | 1.0 - 1.2 |
| Bright metal | 1.2 - 2.0 |
| White cotton | 0.5 - 0.8 |
| Grey PVC | 0.4 - 0.8 |
| Raw wood | 0.4 - 0.8 |
| ER 1, reflector | 0.3 |

## Truth Table

| | Make switching | | Break switching | |
|---|---|---|---|---|
| Object present | No | Yes | No | Yes |
| LED | OFF | ON | OFF | ON |
| Load | Non-active | Active | Active | Non-active |



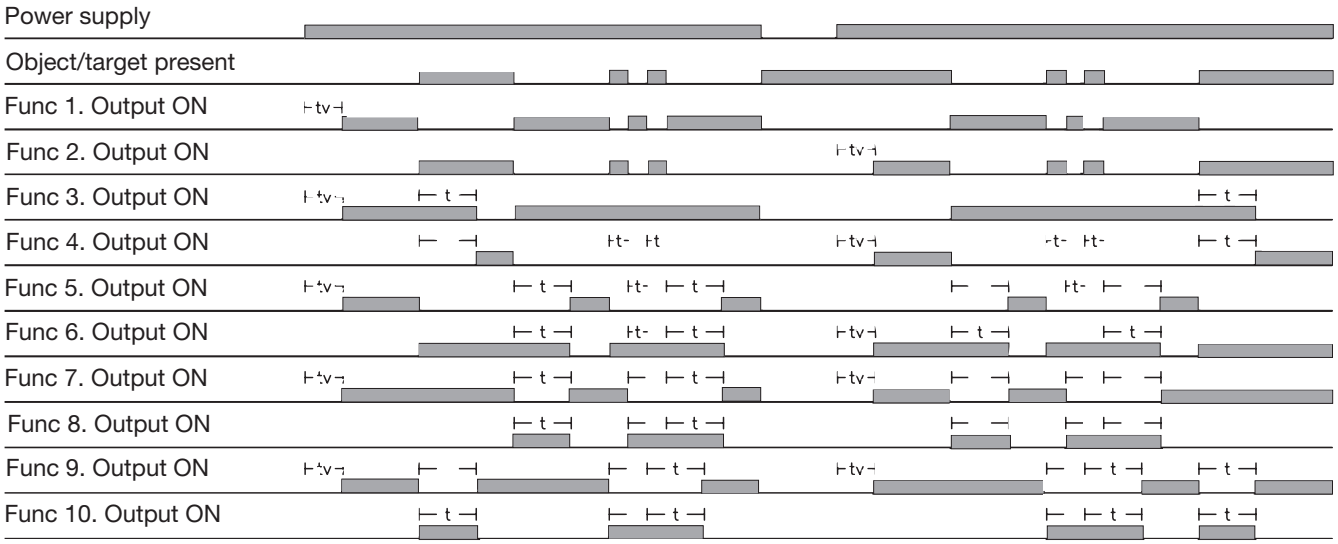
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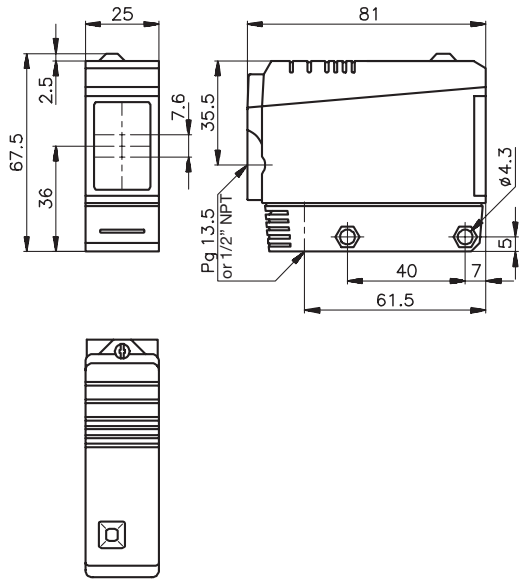
## Operation Diagram

t = Time delay
tv = Power ON delay

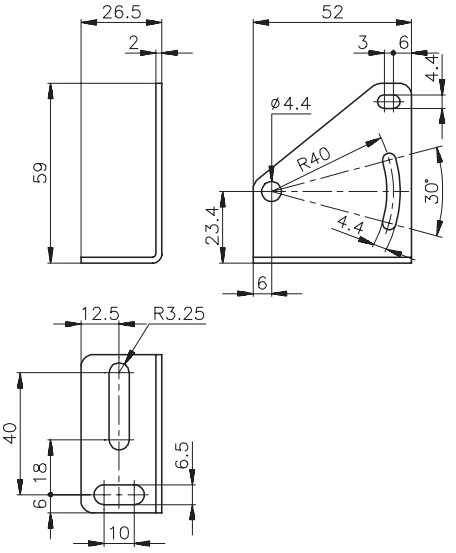



## Dimensions

PMD 8R

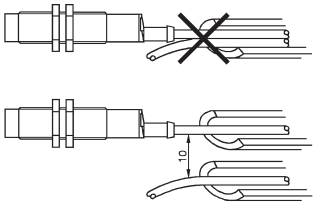



PMD 8R with angle bracket

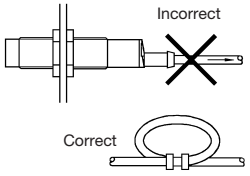



## Installation Hints

*To avoid interference from inductive voltage/ current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables*

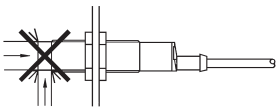



*Relief of cable strain*



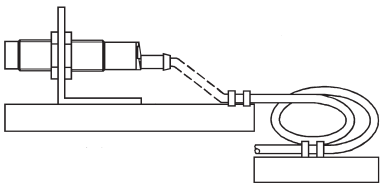

The cable should not be pulled

*Protection of the sensing face*



A proximity switch should not serve as mechanical stop

*Switch mounted on mobile carrier*



Any repetitive flexing of the cable should be avoided



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