# Photoelectrics
# Retro-reflective, Relay Output
# Type PMR

CARLO GAVAZZI




- **Range: 10 m**
- **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

Retro-reflective photoelectric switch. Range up to 10 m. Fixed sensitivity. Immune to ambient light. Output function switch selectable. Protection degree IP 67. Screw terminal connection. 25 x 65 x 81 mm plastic housing. PG 13.5 or 1/2" NPT cable gland. Timer options: Delay on operate, delay on release, one shot (triggered on leading or trailing edge).

## Ordering Key

**PMR10R G T**

**Type**
**PG 13.5 cable gland**
**Option: Timer function**

## Type Selection

| Housing<br>W x H x D | Range<br>$S_n$ | Ordering no.<br>without timer | Ordering no.<br>with timer |
|---|---|---|---|
| 25 x 65 x 81<br>PG 13.5 cable gland | 10 m | **PMR 10R G** | **PMR 10R GT** |
| 1/2" NPT cable gland | 10 m | **PMR 10R I** | **PMR 10R IT** |

## Specifications

| | | |
|---|---|---|
| **Rated operating dist.** ($S_n$)<br>(0 to 5,000 lux) | | PMR10.. 10 m<br>with reflector type ER 4, ref. target |
| **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) | | ≤ 1.5 W (2.0 VA) |
| **Output** | | |
| Contact ratings (AgCdO) | | µ (micro gap) |
| Resistive loads | AC 1 | 3 A/250 VAC |
| | DC 1 | 3 A/30 VDC |
| Small inductive loads | AC 15 | 2 A/250 VAC |
| | DC 13 | 3 A/30 VDC |
| Mechanical life | | ≥ 40 x $10^6$ operations |
| Electrical life | | ≥ 5 x $10^5$ operations at 220 VAC - 3 A resistive load: 360 impulses/h |
| **Dielectric voltage** | | 2000 VAC rms (cont./supply) |
| **Sensitivity** | | Fixed |
| **Light source** | | GaAlAs, LED, 880 nm |
| **Light type** | | Infrared, modulated |
| **Optical angle** | | ±2° |

| | |
|---|---|
| **Light spot size** | 280 mm at 4 m |
| **Operating frequency** (f) | 20 Hz |
| **Response time** | |
| OFF-ON ($t_{ON}$) | ≤ 20 ms |
| ON-OFF ($t_{OFF}$) | ≤ 30 ms |
| **Power ON delay** ($t_v$) | ≤ 300 ms (typ. 100 ms) |
| **Output function** | Switch selectable, make or break switching |
| **Indication** | |
| Target detected | LED, yellow |
| **Optional timer** | |
| Delay on operate | 0.1 to 7 s ± 2 s |
| Delay on release | 0.1 to 7 s ± 2 s |
| One shot | 0.1 to 7 s ± 2 s |
| **Environment** | |
| Overvoltage category | III (IEC 60664/60664A; 60947-1) |
| Pollution degree | 3 (IEC 60664/60664A; 60947-1) |
| Degree of protection | IP 67 (IEC 60529; 60947-1) |
| **Temperature** | |
| Operating | -25° to +55°C (-13° to +131°F) |
| Storage | -30° to +80°C (-22° to +176°F) |



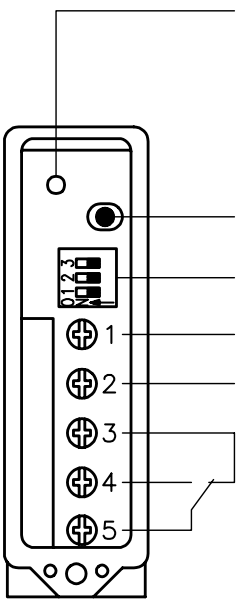
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## Specifications (cont.)

| | |
|---|---|
| **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, grey |
| Front | PC, black |
| Cover | PC, black |
| Cable gland | PA, black, reinforced |
| Mounting bracket | Steel, black |
| **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)

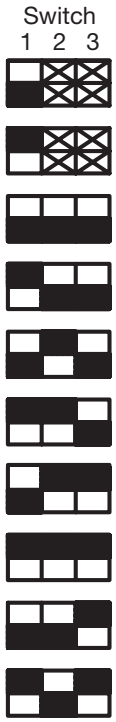
LED

DIP switches

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

30 VDC
250 VAC
Max. 3 A

## 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

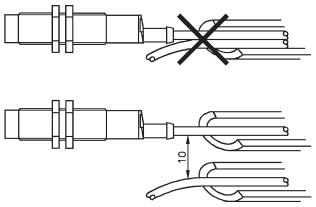
Upper postion ON (Mode 1)
Lower position OFF (Mode 0)

## Truth Table

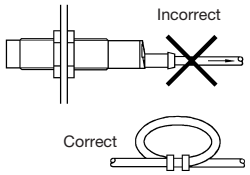
| | Make switching | | Break switching | |
|---|---|---|---|---|
| Object present | Yes | No | Yes | No |
| LED | OFF | ON | OFF | ON |
| Load | Non-active | Active | Active | Non-active |

## 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*

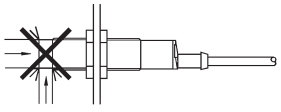



*Relief of cable strain*



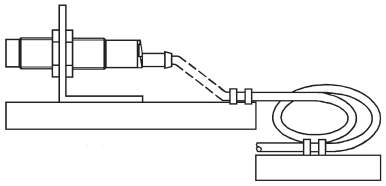

The cable should not be pulled

*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

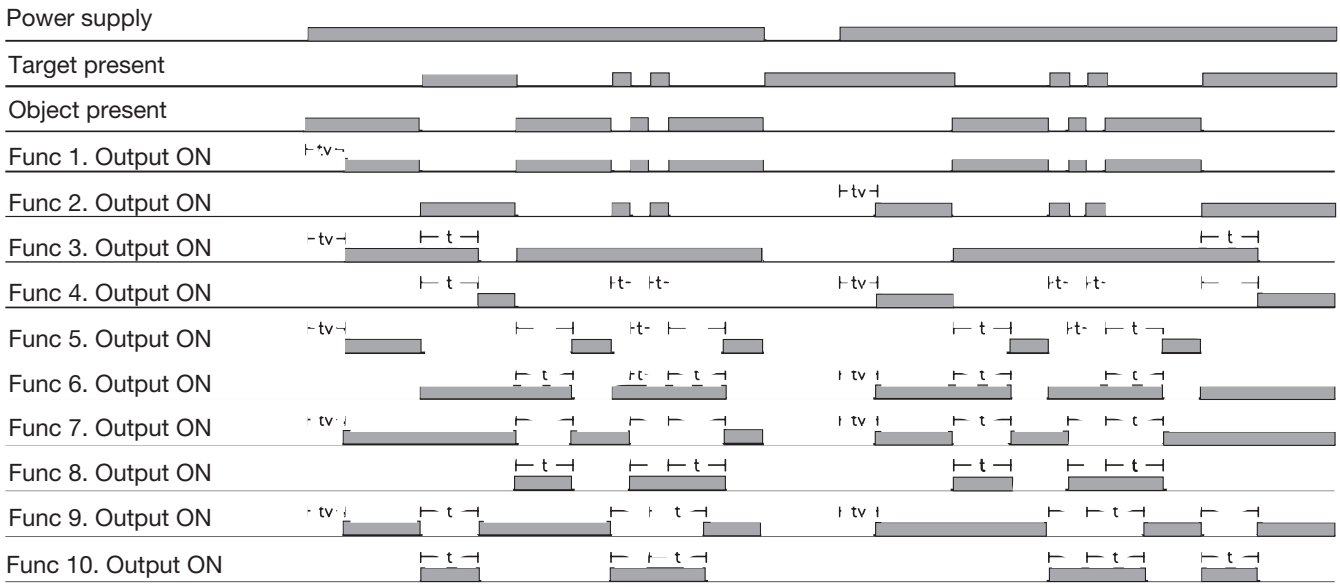


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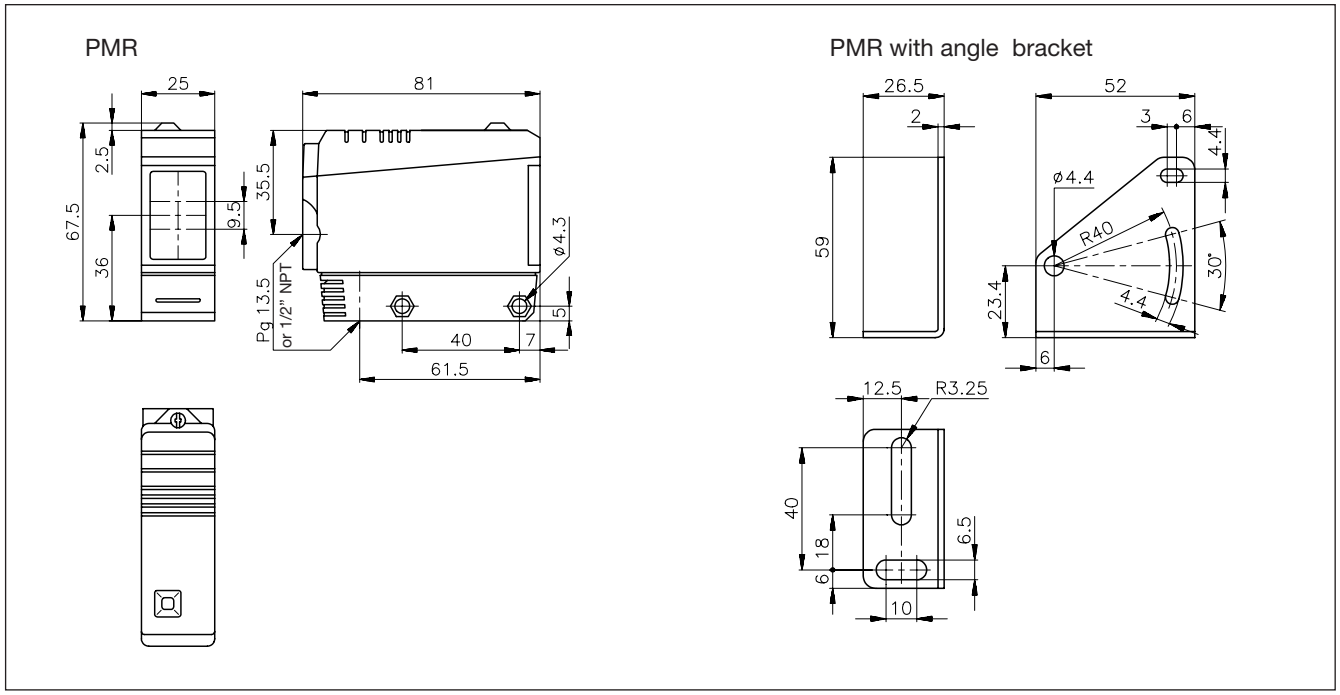
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## Operation Diagram

t = Time delay
tv = Power ON delay




## Dimensions




## Accessories

- Reflectors: ER series
- MB02 (longer mounting bracket)

For further information refer to “Accessories”

## Delivery Contents

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



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