

# Photoelectrics Through-beam System, Relay Output Type MPF.RS

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- Industrial doors and gates
- Range: 15 m
- Modulated infrared light
- Option with individually adjustable channel sensitivity
- Amplifier with "Snap-ON" photoelectric switches
- Supply voltage: 12-24 VAC/DC, 115 VAC or 230 VAC
- Output: SPST relay
- LED indications for light ON and supply ON
- 4 module M36 DIN rail housing
- Ø12 mm "Snap-ON", Ø18 or M14 photoelectric housing
- 1, 2 or 3 multiplexed channels
- With make or break test input
- UL 325, EN 12453 (TUV approved)

## Product Description

The MPFRS.. is a family of inexpensive general purpose photoelectric sensors in 3 different types of housings with separate amplifier. They are designed to meet the requirements for industrial doors and gates. The "Snap-ON" photo switch can be mounted in material with a thickness from 0.6 mm and up to 2.25 mm. The sensor set is easy to use and no adjustments are necessary. The amplifier has a

test input designed to disable the emitters and therefore evaluate the sensor function. Multiplexed channels prevent cross-talk between each set of photosensors. The amplifiers are available with the following voltages: 12-24 VAC/DC, 115 VAC and 230 VAC. The output is made as positive security e.g. power lost, short-circuit or broken sensor cable makes the relay go to off state.

## Ordering Key

### Amplifier

**MPF 3 230 RS AI**

Type \_\_\_\_\_  
 Number of channels \_\_\_\_\_  
 Voltage supply \_\_\_\_\_  
 Output relay \_\_\_\_\_  
 Safety \_\_\_\_\_  
 Adjustable sensitivity \_\_\_\_\_  
 Inverted test input (break) \_\_\_\_\_

### Sensor

**MPF T 15 M14 4C**

Type \_\_\_\_\_  
 Emitter \_\_\_\_\_  
 Range \_\_\_\_\_  
 Housing diameter \_\_\_\_\_  
 Optical angle \_\_\_\_\_  
 Connectors on cable \_\_\_\_\_

## Type Selection, Amplifier

Housing W x H x D	Ordering no. Supply: 12-24 VAC/DC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
70 x 57 x 86 mm	MPF1-912 RS	MPF1-115 RS	MPF1-230 RS
	MPF2-912 RS	MPF2-115 RS	MPF2-230 RS
	MPF3-912 RS	MPF3-115 RS	MPF3-230 RS
	MPF1-912 RSI *)	MPF1-115 RSI *)	MPF1-230 RSI *)
	MPF2-912 RSI *)	MPF2-115 RSI *)	MPF2-230 RSI *)
	MPF3-912 RSI *)	MPF3-115 RSI *)	MPF3-230 RSI *)
	MPF1-912 RSA *)	MPF1-115 RSA *)	MPF1-230 RSA *)
	MPF2-912 RSA *)	MPF2-115 RSAv	MPF2-230 RSA
	MPF3-912 RSA *)	MPF3-115 RSA *)	MPF3-230 RSA *)
	MPF1-912 RSAI *)	MPF1-115 RSAI *)	MPF1-230 RSAI *)
	MPF2-912 RSAI *)	MPF2-115 RSAI *)	MPF2-230 RSAI *)
	MPF3-912 RSAI *)	MPF3-115 RSAI *)	MPF3-230 RSAI *)

\*) Products available on request

## Type Selection, Photoelectric Switch

Housing diameter	Rated operational distance (S <sub>n</sub> )	Optical angle	Ordering no. Emitter	Ordering no. Receiver	Ordering no. Fitting
Ø12 mm	15 m	4°	MPFT 15-4	MPFR-4	AMPF-MB1
M14	15 m	4°	MPFT 15-M14-4	MPFR-M14-4	
D18	15 m	4°	MPFT 15-D18-4	MPFR-D18-4	
Ø12 mm	15 m	4°	MPFT 15-4C	MPFR-4C	
M14	15 m	4°	MPFT 15-M14-4C	MPFR-M14-4C	
D18	15 m	4°	MPFT 15-D18-4C	MPFR-D18-4C	
Fitting for Ø12					

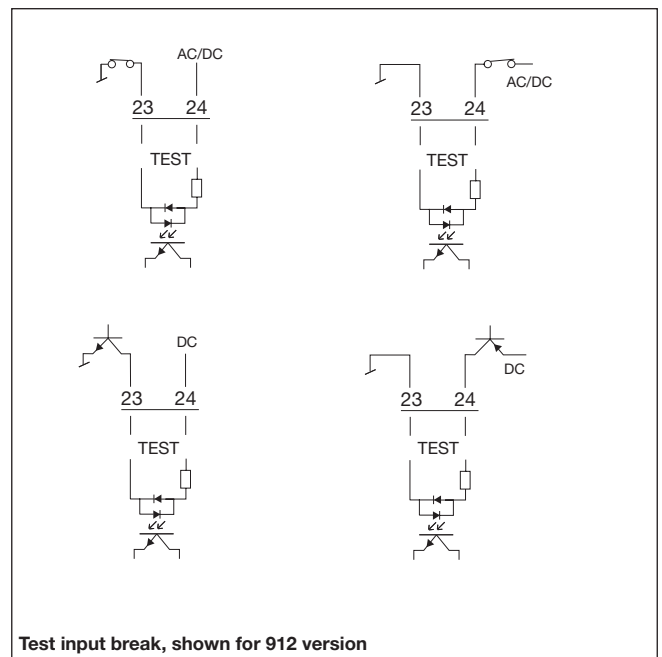
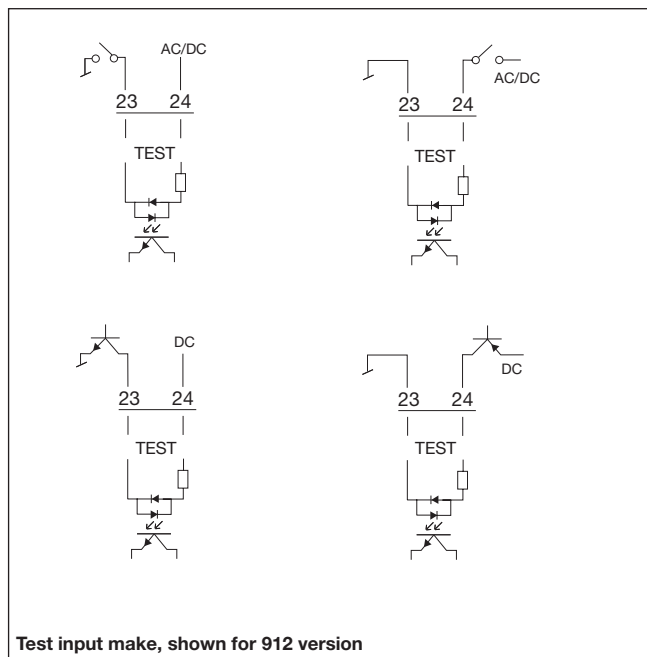
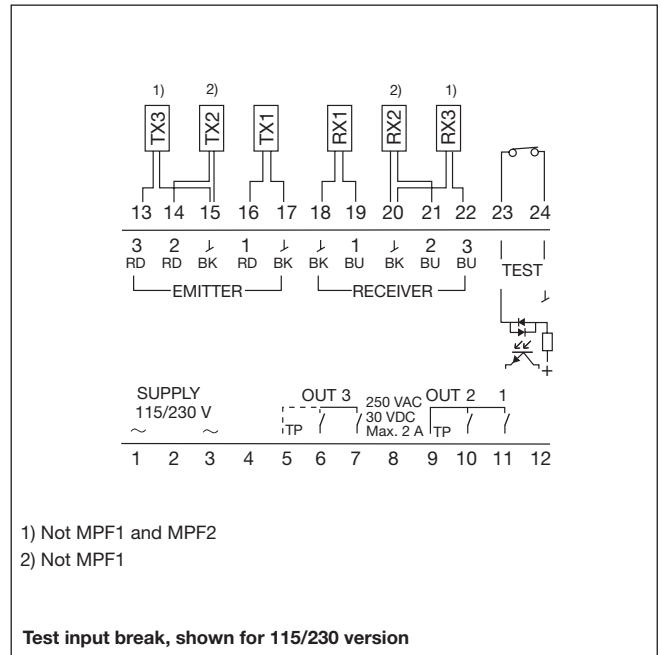
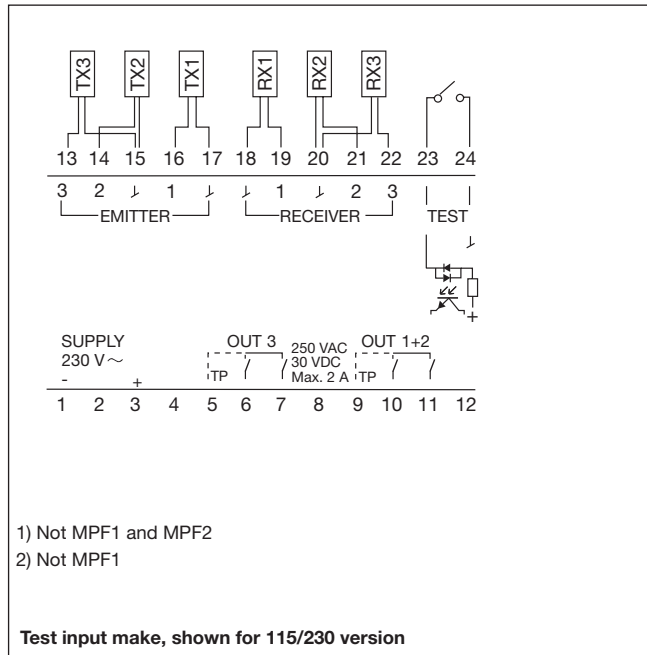
## Specifications, Amplifier

<b>Rated operational volt.</b> <b>AC types (U<sub>B</sub>)</b> Terminals 1 & 3 MPF.- 230 RS. MPF.- 115 RS. MPF.- 912 RS.	230 VAC ± 15%, 50 to 60 Hz 115 VAC ± 15%, 50 to 60 Hz 12-24 VAC/DC ± 15%, 50 to 60 Hz	<b>Output function</b> MPF1+2 MPF3	Relay 2 x SPST Relay 2 x SPST + 2 x SPST
<b>Dielectric voltage</b> MPF.- 230 RS.	4 kVAC (rms)	<b>Indication function</b> Supply ON Beam ON (no object present)	LED, green LED, yellow
<b>Rated impulse withstand volt.</b>	4 kV (1.2/50 μs)	<b>Environment</b> Overvoltage category Degree of protection Pollution degree	III (IEC 66064) IP 40 (IEC 60529/60947-5-2) 3 (IEC 60664/60664A, 60947-1)
<b>Rated operational power</b> <b>MPF.- 912 RS</b> AC supply DC supply	3 VA 2 W	<b>Temperature</b> Operating Storage	-20° to +60°C (-4° to +140°F) -30° to +80°C (-22° to +176°F)
<b>MPF.- 115/230 RS</b> AC supply DC supply	max. 4.5 VA max. 4.5 VA	<b>Connection</b>	Screw terminals (max. 2.5 mm <sup>2</sup> )
<b>Output Specifications</b> Resistive load MPF.-xxx RS, RSA, RSI, RSAI 600.000 switchings 300.000 switchings 100.000 switchings AC15 AC14 DC13	1 A@250 VAC/30 VDC 2 A@250 VAC/30 VDC 2 A@250 VAC/30 VDC (UL) 0.75 A@240 VAC 0.60 A@120 VAC 0.22 A@125 VDC	<b>Protection output</b>	Reverse output, transients, short-circuit
<b>Rated insulation volt. (U<sub>i</sub>)</b> MPF.- 230 RS. MPF.- 115 RS. MPF.- 912 RS.	250 VAC (rms) 120 VAC (rms) 50 VAC (rms), 50 VDC	<b>Test input</b> MPF.- 230 RS. MPF.- 115 RS. MPF.- 912 RS. Testfunction activated Testfunction deactivated	Potential-free contact Potential-free contact Max. 28 V@15 mA AC/DC ≥ 3.5 V AC/DC ≤ 1.0 V AC/DC
<b>Operating frequency (f)</b> Light/dark ratio 1:1 Contact output	10 Hz	MPF.- 912 RSI. Testfunction deactivated Testfunction activated	Max. 28 V@15 mA AC/DC ≥ 3.5 V AC/DC ≤ 1.0 V AC/DC
<b>Response time</b> OFF-ON (t <sub>ON</sub> ) ON-OFF (t <sub>OFF</sub> )	≤ 50 ms ≤ 40 ms	<b>Housing material</b>	PC
<b>Power ON delay (t<sub>v</sub>)</b>	≤ 300 ms	<b>Weight</b> MPF.- 115/230 RS MPF.- 912 RS	280 g 126 g
		<b>CE-marking</b> <b>UL-marking</b> <b>TÜV-marking</b>	Yes Yes (UL 508, UL 325) Yes (EN 12453)

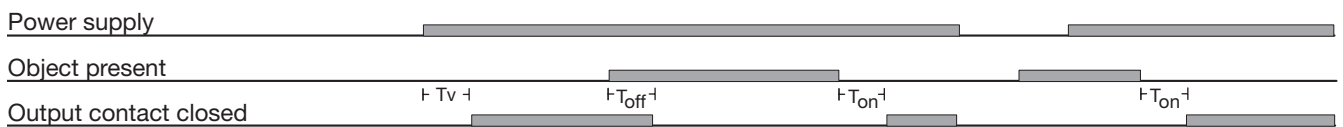
## Specifications, Photoelectric Switches

<b>Rated operation dist. (S<sub>n</sub>)</b>	15 m - 8 m (UL 325)	MPFT15-XXX-4C MPFR15-XXX-4C <i>Connector is placed 15 cm from Cable</i>	Red connector pair White connector pair <i>sensorhead</i> PVC, grey, 10 m, Ø 2.9 mm <sup>2</sup>
<b>Light source</b> <b>Light type</b>	LED 880 nm Infrared modulated	<b>Degree of protection</b>	IP 67 (IEC 60529/60947-5-2)
<b>Ambient light</b>	> 20.000 lux	<b>Mounting</b> "Snap-ON" MPFT15-4/C MPFR-4/C	Ø12 mm or fitting
<b>Housing material</b> MPFT15-4/C MPFT15-D18-4/C MPFR-4/C MPFR-D18-4/C Housing Backpart	PC ABS	Rubber profile MPFT15-D18-4/C MPFR-D18-4/C	D18
MPFT15-M14-4/C MPFR15-M14-4/C Housing Backpart	Stainless steel/PC PTE	Threaded barrel MPFT15-M14-4/C MPFR-M14-4/C	M14
<b>Connection</b> MPFT15-XXX-4 MPFR15-XXX-4 Cable	PVC, grey, 10 m, Ø 2.9 mm <sup>2</sup>	<b>CE-marking</b> <b>UL-marking</b> <b>TÜV-marking</b>	Yes Yes (UL 508, UL 325) Yes (EN 12453)

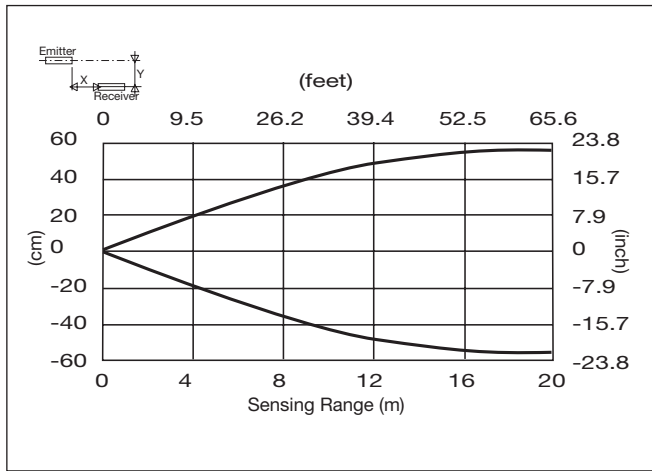
## Wiring Diagrams



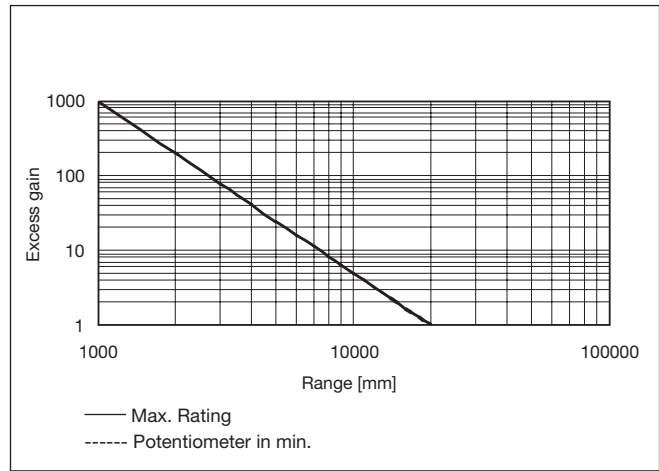
## Operation Diagram



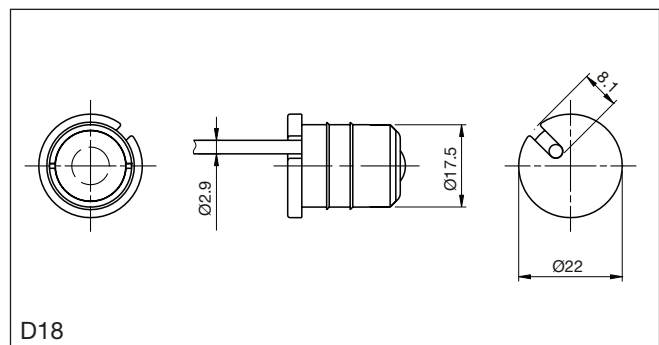
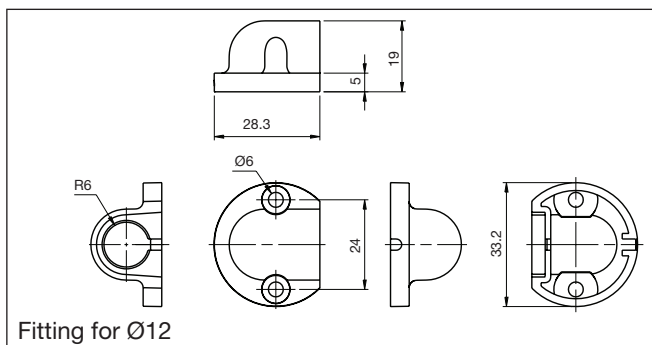
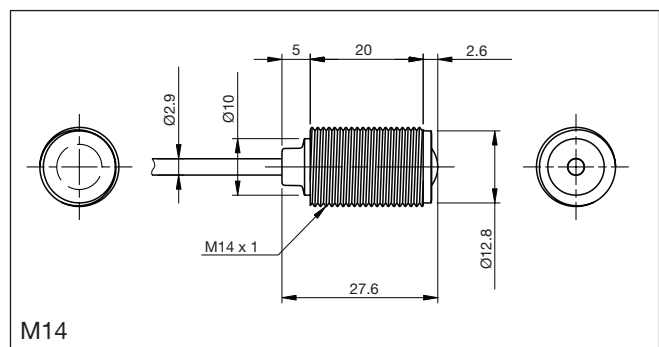
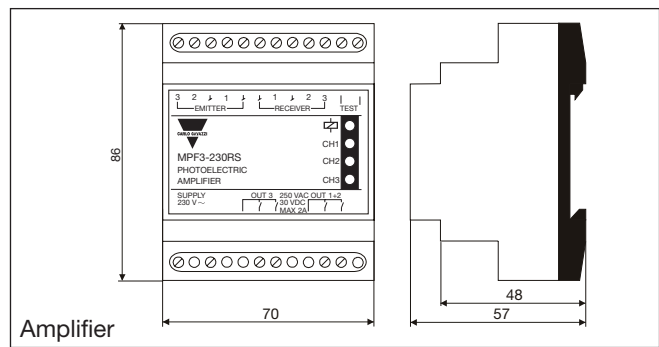
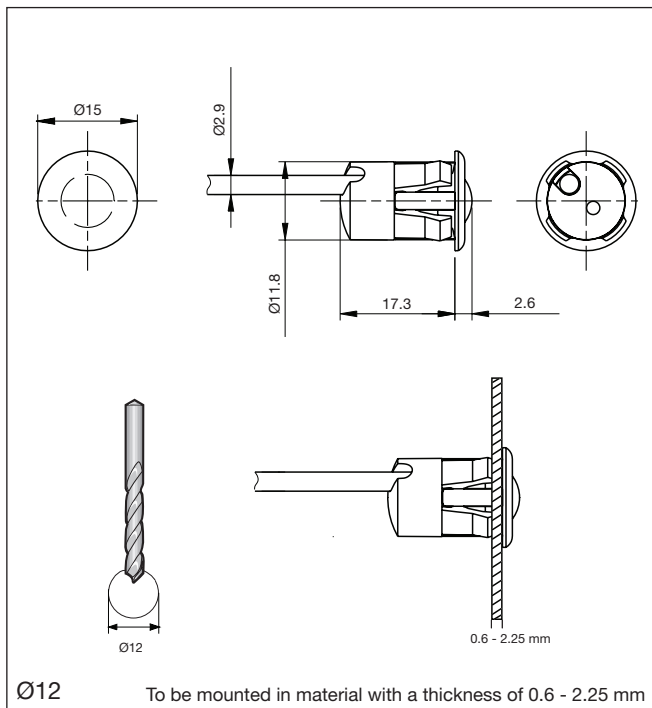
## Detection Diagram



## Excess Gain

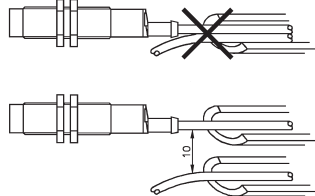


## Dimensions

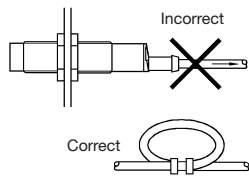


## Installation Hints

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

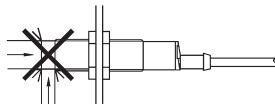


Relief of cable strain



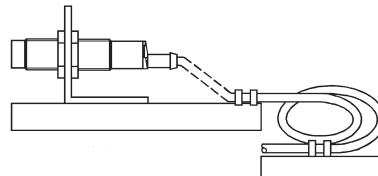
The cable should not be pulled

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

## Delivery Contents

- Amplifier, MPF..
- Installation instruction
- **Packaging:** cardboard box