



# Retro Ref. Photoelectric Sensors



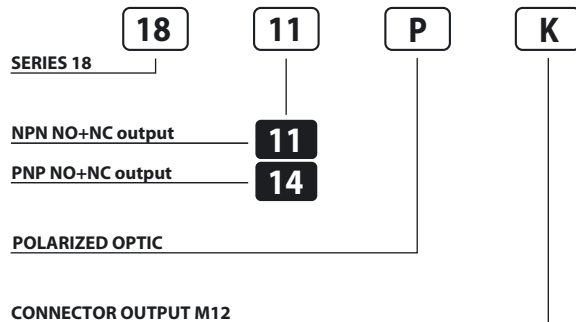
PHOTOELECTRIC SENSORS IN METAL HOUSING 12 ÷ 30 V DC NPN OR PNP OUTPUT

- **Miniature 18 mm tubular**
- **Operation LED visible laterally and at the back**
- **Cable or M12 quick connect models**
- **Long working distances**
- **Fast response time: 2 mS/500 Hz**

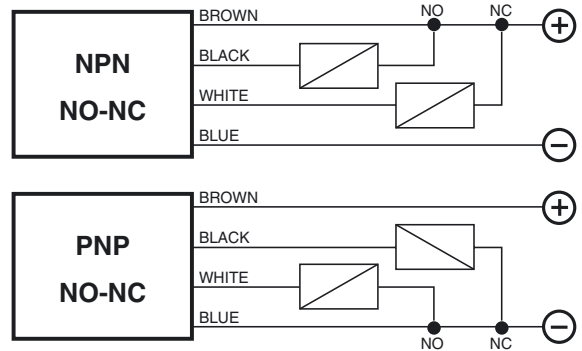
**18 Series**



## Identification code



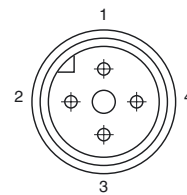
## Wiring diagrams



AVAILABLE	POLARIZED	STANDARD
NOMINAL SWITCHING DISTANCE (Sn)	<b>2 m</b> <sup>(1)</sup>	<b>6 m</b> <sup>(1)</sup>
TOLERANCE	+10/-10 %Sn	
HYSTERESIS	10%	
EMISSION	Red (660 nm)	Infrared (875 nm)
NOMINAL VOLTAGE	12 ÷ 30VDC (-15 /+10%)	
RESIDUAL RIPPLE	≤ 10%	
MAX. OUTPUT CURRENT	200 mA	
ABSORPTION AT 30 VDC	40 mA	
VOLTAGE DROP (Sensor ON)	≤ 1.5V (I = 200 mA)	
OPERATION LED	Yellow	
SWITCHING FREQUENCY	500 Hz	
RESPONSE TIME	2 mS	
START UP DELAY	200 mS	
SHORT CIRCUIT PROTECTION	Present (self-resetting)	
ELECTRIC PROTECTIONS	Against polarity reversal - inductive loads	
TEMPERATURE LIMITS	-10 + +60 °C	
LIGHT IMMUNITY	10.000 Lux <sup>(2)</sup>	
PROTECTION DEGREE	IP 67	
CABLE LENGTH	2 m	
CABLE SECTION	3 x 0.25 mm <sup>2</sup>	
HOUSING MATERIAL	Nickel-plated brass	
WEIGHT - cable output - (connector output)	- 110 g - (55 g)	

## Connection with connector M12 (K)

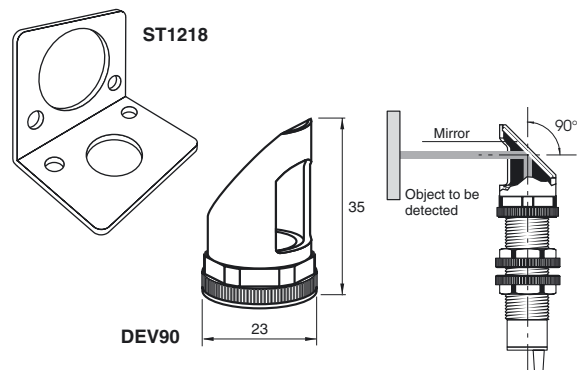
View of quadripole male connector.



### CONTACTS CONFIGURATION

Available (NO + NC)	Contacts numbers			
	1	2	3	4
+	NC	-	NO	

## Accessories



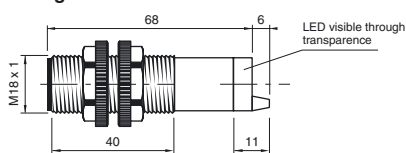
<sup>(1)</sup> Determined with CT04S reflector.

<sup>(2)</sup> Determined with halogen tungsten lamp 3000 °K.

Note: for a proper use see norms at pages 14, 15, 16, 17 and 18.

## Dimensions (mm)

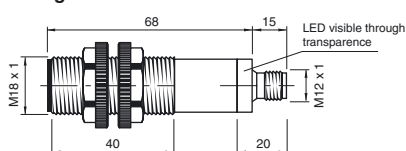
### Configuration with cable



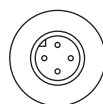
### Configuration with cable - Back view



### Configuration with connector K



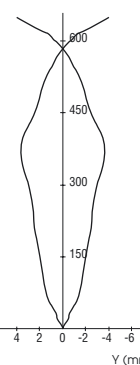
### Configuration with connector K Back view



## Characteristic curves

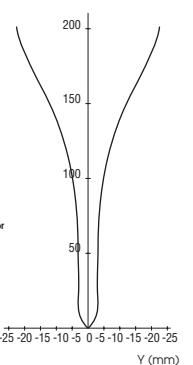
### RETRO REFLECTIVE

Distance X (cm)



### POLARIZED RETRO REFLECTIVE

Distance X (cm)





# Retro Ref. Photoelectric Sensors



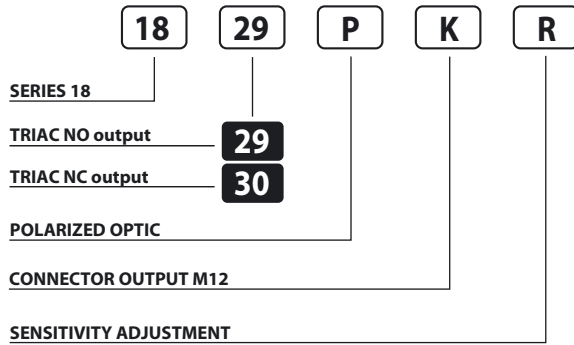
PHOTOELECTRIC SENSORS IN PLASTIC HOUSING 24 ÷ 230 V AC TRIAC NO AND NC OUTPUT

- Short housing
- Leakage <math>< 1.5 \text{ mA}</math> @ 220 V AC
- Cable or M12 quick connect models
- Models with 9-turn pot

18 Series



## Identification code



"K" and "R" not available in the same model.

AVAILABLE	POLARIZED	STANDARD
NOMINAL SWITCHING DISTANCE (Sn)	1 m <sup>(1)</sup>	3 m <sup>(1)</sup>
TOLERANCE	+10/-10 %Sn	
HYSTERESIS	10%	
EMISSION	Red (660 nm)	Infrared (875 nm)
NOMINAL VOLTAGE	24 ÷ 230VAC (-15 / +10%)	
MAINS FREQUENCY	50 ÷ 60 Hz	
MAX. OUTPUT CURRENT	150 mA	
LEAKAGE CURRENT	≤ 1.5mA (at 220VAC)	
ABSORPTION	1 W	
VOLTAGE DROP (Sensor ON)	< 2.5 V	
OPERATION LED	Yellow	
SWITCHING FREQUENCY	10 Hz	
RESPONSE TIME	100 mS	
START UP DELAY	300 mS	
ELECTRIC PROTECTIONS	Against inductive loads	
TEMPERATURE LIMITS	-10 ÷ +60 °C	
LIGHT IMMUNITY	5.000 Lux <sup>(2)</sup>	
PROTECTION DEGREE	IP 67 (IP 65 for models with sensitivity adjustment)	
CABLE LENGTH	2 m	
CABLE SECTION	3 x 0.35 mm <sup>2</sup>	
HOUSING MATERIAL	Housing: nylon loaded with fiberglass - Lenses: methacrylate	
WEIGHT - cable output -	120 g	

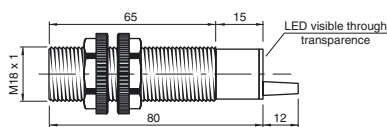
<sup>(1)</sup> Determined with CT04S reflector.

<sup>(2)</sup> Determined with halogen tungsten lamp 3000 °K.

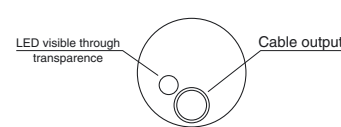
Note: for a proper use see norms at pages 14, 15, 16, 17 and 18.

## Dimensions (mm)

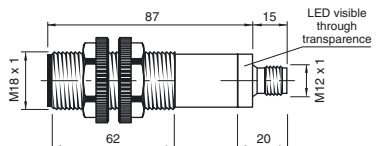
### Configuration with cable



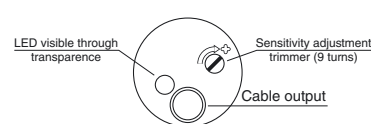
### Configuration with cable - Back view



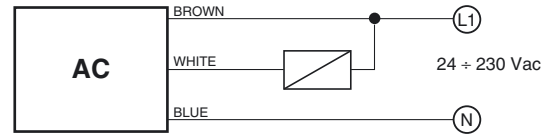
### Configuration with connector K (metal housing)



### Configuration with sensitivity adjustment

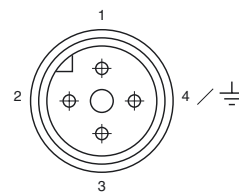


## Wiring diagrams



**WARNING:** Short circuit in the output is not possible. Wrong supply cables connections can irreparably damage the detector. Therefore sensors whose output status is short-circuited will not be substituted under warranty.

## Connection with connector M12 (K)



View of quadripole male connector.

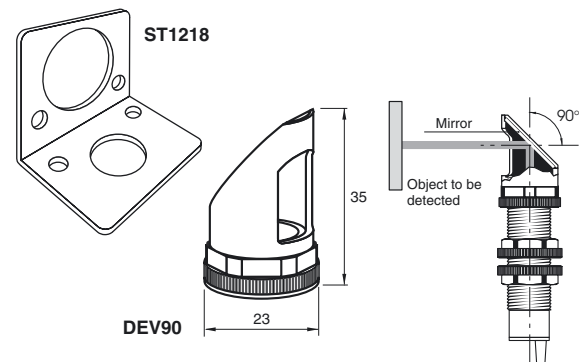
### CONTACTS CONFIGURATION

Output	Contacts numbers			
	1	2	3	4
(NO or NC)	L		N	NO/NC

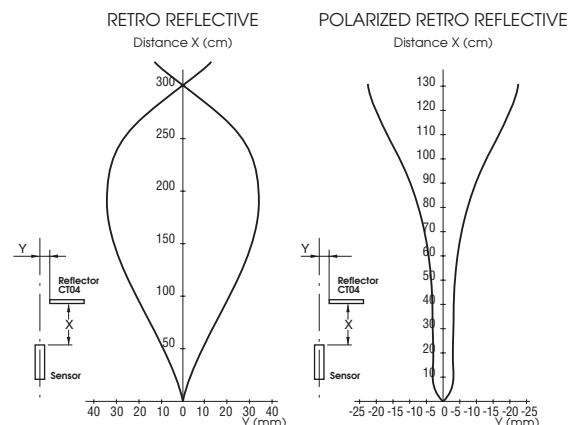
### CONNECTIONS IN PARALLEL

In parallel connections with multiple outputs, the maximum leakage current (<math>< 1.5 \text{ mA}</math> at 220 VAC) referring to the load and the supply should be taken into account when calculating the max. quantity of connectable sensors. It is important in this connection that the sensors are connected at the same phase.

## Accessories



## Characteristic curves





# Retro Ref. Photoelectric Sensors



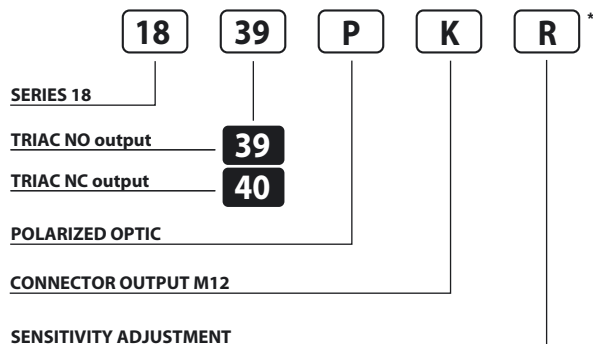
PHOTOELECTRIC SENSORS IN METAL HOUSING 24 ÷ 230 V AC 2 WIRES

- Leakage Typ. 2,5 mA @ 230 V AC
- Models w/o post for simple installation
- Cable or M12 quick connect models

18 Series



## Identification code



\* All models available only with R sensitivity adjustment

AVAILABLE	POLARIZED	STANDARD
NOMINAL SWITCHING DISTANCE (Sn)	1 m	3 m
TOLERANCE	+10/-10%Sn	
HYSTERESIS	3-20%	
EMISSION	Infrared (875 nm)	
NOMINAL VOLTAGE	24 ÷ 230VAC (-15 /+10%)	
MAINS FREQUENCY	50 ÷ 60 Hz	
MAX. OUTPUT CURRENT	500 mA	
LEAKAGE CURRENT (at 230 VAC)	≤ 5mA (Typ. 2,5mA)	
VOLTAGE DROP (Sensor ON)	< 10 (Typ. 7) VAC	
OPERATION LED	Yellow	
SWITCHING FREQUENCY	20 Hz	
RESPONSE TIME	Ton<=20mS-Toff<=30mS	
START UP DELAY	Typ. 100 mS	
TEMPERATURE LIMITS	-10 ÷ +60 °C	
LIGHT IMMUNITY	5000 Lux <sup>(3)</sup>	
PROTECTION DEGREE	IP 67	
CABLE LENGTH	2 m	
CABLE SECTION	2 x 0.35 mm <sup>2</sup>	
HOUSING MATERIAL	Housing: nickel-plated brass - Lenses: methacrylate	
WEIGHT - cable output	120 g	

(1) Determined with a white mat paper (cm 10 x 10).

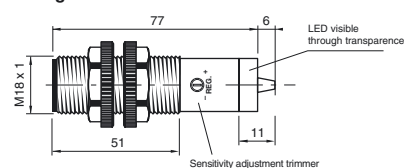
(2) Determined with a white mat paper (cm 20 x 20).

(3) Determined with halogen tungsten lamp 3000° K.

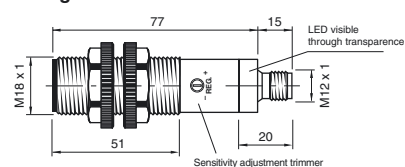
Note: for a proper use see norms at pages 14, 15, 16, 17 and 18.

## Dimensions (mm)

### Configuration with cable



### Configuration with connector K

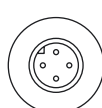


Note: the trimmer just needs one turn.

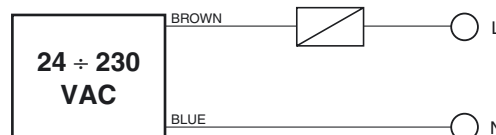
### Configuration with cable - Back view



### Configuration with connector K Back view

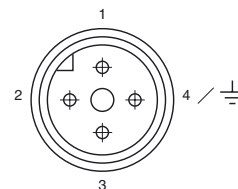


## Wiring diagrams



**WARNING:** Short circuit in the output is not possible. Wrong supply cables connections can irreparably damage the detector. Therefore sensors whose output status is short-circuited will not be substituted under warranty.

## Connection with connector M12 (K)

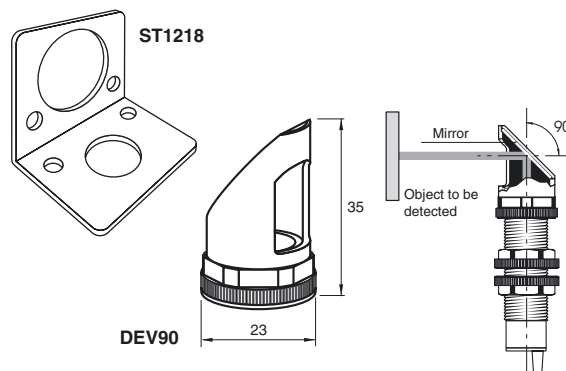


View of quadripole male connector.

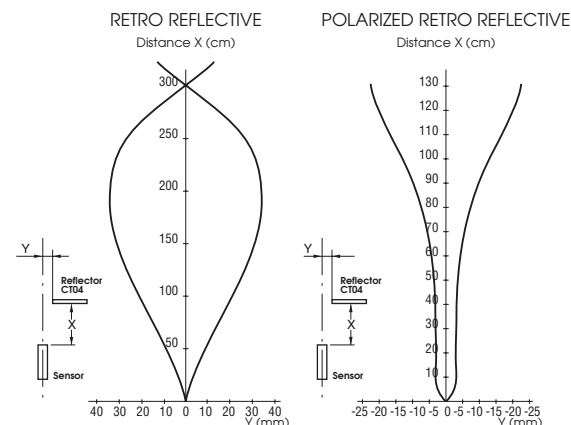
## CONTACTS CONFIGURATION

Output	Contacts numbers			
	1	2	3	4
(NO or NC)	L		N	

## Accessories



## Characteristic curves





# Retro Ref. Photoelectric Sensors



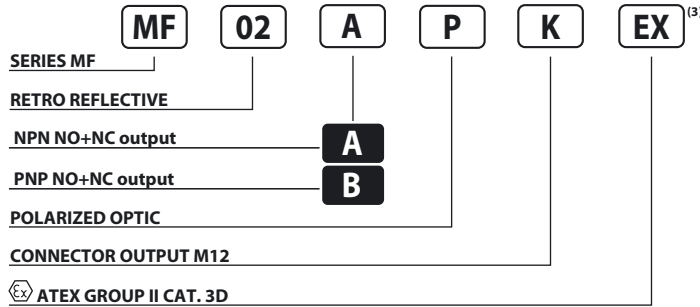
PHOTOELECTRIC SENSORS IN METAL HOUSING 12 ÷ 30V DC NPN/PNP OUTPUT

- Programmable output, NPN/PNP, NC + NO
- Simple one-turn sensitivity
- Cable or M12 quick connect models
- Fast response time: 2 mS / 500 Hz
- Long working distances

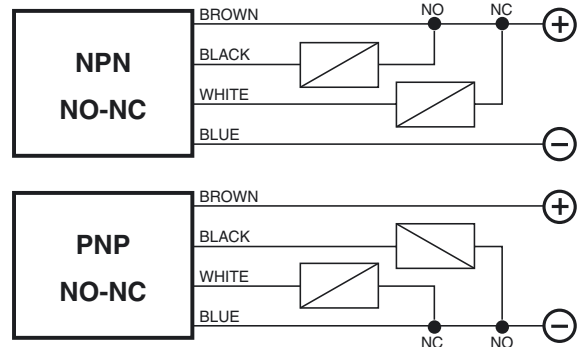
## MF Series



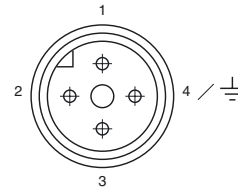
### Identification code



### Wiring diagrams



### Connection with connector M12 (K)

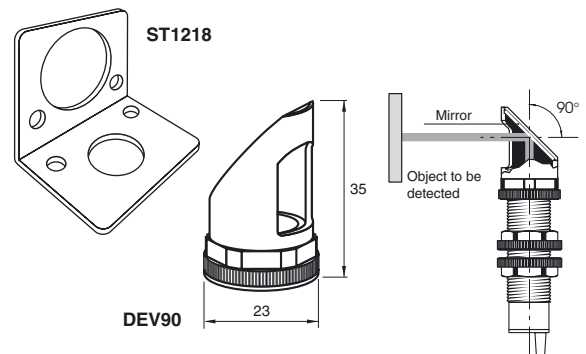


View of quadripole male connector.

#### CONTACTS CONFIGURATION

Output (NO or NC)	Contacts numbers			
	1	2	3	4
	+	NC	-	NO

### Accessories



AVAILABLE	POLARIZED	STANDARD
NOMINAL SWITCHING DISTANCE (Sn)	2 m <sup>(1)</sup>	6 m <sup>(1)</sup>
TOLERANCE	+10/-10 %Sn	
HYSTERESIS	10%	
EMISSION	Red (660 nm)	Infrared (875 nm)
NOMINAL VOLTAGE	12 ÷ 30VDC (-15 /+10%)	
RESIDUAL RIPPLE	≤ 10%	
MAX. OUTPUT CURRENT	200 mA	
ABSORPTION AT 30 VDC	40 mA	
VOLTAGE DROP (Sensor ON)	≤ 1,5 V (I = 100 mA)	
STATUS LED	Yellow	
SENSITIVITY ADJUSTMENT	Trimmer 1 turn	
SWITCHING FREQUENCY	500 Hz	
RESPONSE TIME	2 mS	
START UP DELAY	100 mS	
SHORT CIRCUIT PROTECTION	Present (self-resetting)	
ELECTRIC PROTECTIONS	Against polarity reversal - inductive loads	
TEMPERATURE LIMITS	-10 ÷ +60 °C	
LIGHT IMMUNITY	> 10.000 Lux <sup>(2)</sup>	
PROTECTION DEGREE	IP 67	
CABLE LENGTH	2 m	
CABLE SECTION	4 x 0.25 mm <sup>2</sup>	
HOUSING MATERIAL	Housing: nickel-plated brass - Lenses: methacrylate	
WEIGHT - cable output - (connector output)	- 130 g - (70 g)	

<sup>(1)</sup> Determined with CT04S reflector.

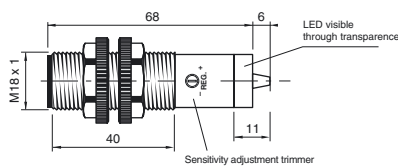
<sup>(2)</sup> Determined with halogen tungsten lamp 3000° K.

<sup>(3)</sup> Device marking Ex II 3D IP67 T6X.

Note: for a proper use see norms at pages 14, 15, 16, 17 and 18.

### Dimensions (mm)

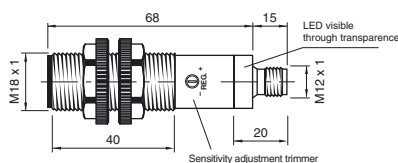
#### Configuration with cable



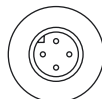
#### Configuration with cable - Back view



#### Configuration with connector K



#### Configuration with connector K Back view



Note: the trimmer just needs one turn.

### Characteristic curves

