M18 AC Photoelectric Switches MV

Compact ø18 x 80 mm barrel type photoelectric switches for AC operation

- Diffuse, retro-reflective, polarised, through-beam optical fibre models and background suppression
- 16m and 32m through-beam types
- Wide AC supply voltage 20-240VAC
- IP67 plastic housing
- Rear mounted LED operation indicator
- Low leakage triac output with transient protection
- Plug-in models for use with low voltage
- UL and CUL approved

Options and ordering codes

MV	2	/	A	0	-	0	A

AC multivoltage photoelectric switches ø18mm — **MV**

10cm diffuse	2
20cm diffuse	4
40cm diffuse	6
50mm sensing background suppression	0
100mm sensing background suppression	1
4m retro-reflective	C
3m polarised retro-reflective	P
Transmitter	E
16m standard receiver	R
32m long distance receiver	D
Optical fibre	F

A	NO output state
0	Transmitter

A	Standard cable exit
E	M12 plastic plug*

0	Plastic housing

Please contact IMO for details of the many other options available, including the MQ range which gives right angle viewing with no loss of performance

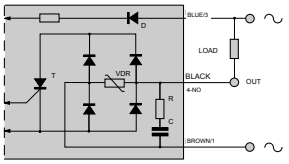
Add suffix 'UR' for UL approved models

*Plug exit E for 24VAC supply only

Output circuit

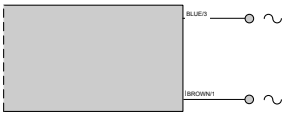
TRIAC output

MV*/*0-** model



Transmitter

MVE/00-** model



■ PARALLEL connection

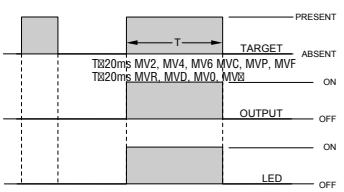
In the parallel connection of more outputs it is necessary to consider the maximum leakage current (1.5mA to 240 VAC) referred to load and supply values for computing the maximum number of sensors which may be connected.

Note: in order to ensure a long life of the output stage it is necessary to avoid short circuits. Further, the load current should never exceed the specifications value.

Timing chart

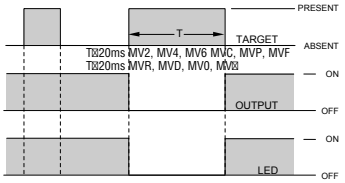
NO output (normally open)

MV*/A0-** model



NC output (normally closed)

MV*/C0-** model



M18 AC Photoelectric Switches MV

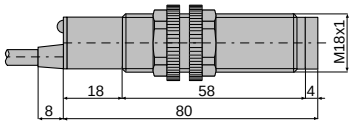
continued

Specification

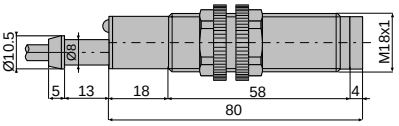
Type	diffuse			b/supp		retro-reflective	polarised	through-beam		optical fibre
Models	MV2	MV4	MV6	MV0	MV1	MVC	MVP	MVE-MVR	MVE-MVD	MVF
Sensing range	10cm[1]	20cm[1]	40cm[2]	50mm	100mm	4m[3]	3m[3]	16m[4]	32m[4]	20-400mm
Emission	infra-red						red	infrared		red
Hysteresis	10%									
Repeatability	5%									
Tolerance	+15% - 5% of the sensing range									
Supply voltage	20 - 240 VAC									
Frequency	50 - 60 Hz									
Max consumption	MVR/MVD, 15mA rms Other models 30mA rms									
Response time	20ms			20ms		20ms		20ms		20ms
Output type	TRIAC - NO or NC									
Load current	300 mA RMS (at 50˚C)									
Residual output voltage	3V max. IL = 300 mA									
Leakage current	1.5 mA RMS max (V supply = 240VAC)									
Non-repeating current peak	6 A (Ton = 10ms)									
Minimum load current	5 mA RMS									
Time before switch operation	200 ms									
LED status indicator	yes (at the rear)									
Insulation resistance	>1000M Ohm to 1000VDC									
Dielectric strength	2000VAC 50Hz for 1 Minute									
Noise immunity	1000V (IEC 801-4, II)									
Protection degree	IEC IP67									
Materials	housing: polyamide (nylon), lenses - acrylic, cable exit: polycarbonate									
Operating temperature	-25˚ + 70˚C (without freeze)									
Interference by external light	3000 lux (artificial light), 10000 lux (sunlight)									
Tightening torque	1 Nm (10kgcm), (plastic housing); 40Nm (408 kgcm), (metal housing)									
Ambient humidity	35-85% r.h.									
Weight (approx.)	90 gr.			90 gr.		90 gr.		175 gr.		90 gr.

[1] referred to 100x100mm white matt paper; [2] referred to 200x200mm white matt paper; [3] with ø80mm reflector (RL110 supplied separately); [4] minimum detectable target ø7.5mm

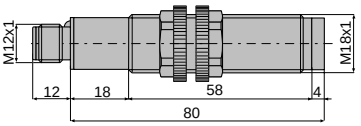
Dimensions (mm)



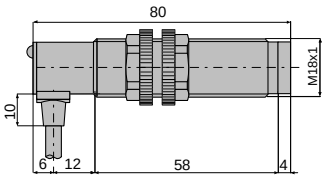
■ Standard cable exit – Option A (MV*/*0-*A model)



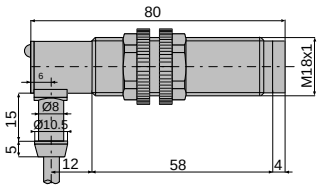
■ Standard cable exit with sheath gripping tang – Option B (MV*/*0-*B model)



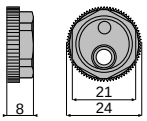
■ M12 plastic plug exit – Option E (MV*/*0-*E)



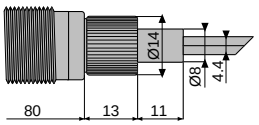
■ Right angle cable exit – Option C (MV*/*0-*C model)



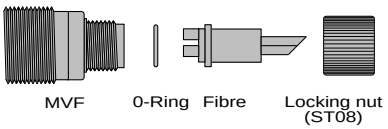
■ Right angle cable exit with sheath gripping tang – Option D (MV*/*0-*D model)



■ Locking nut – plastic



■ Optical fibre MVF/*0-** type with OF/S** fibre



■ Optical fibre assembly

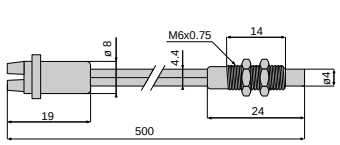
M18 AC Photoelectric Switches MV

continued

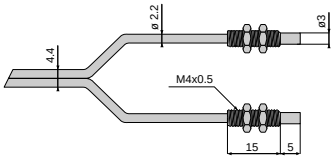
Dimensions (mm) continued

Red LED showing the output state on MV2, MV4, MV6, MVC, MVP, MVR, MVD, MVF models;
MVE model equipped with LED showing the presence of power supply.

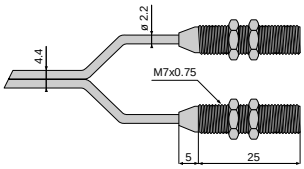
Cable: ø4.7mm, 2m length, 0.34mm2 conductor section PVC material



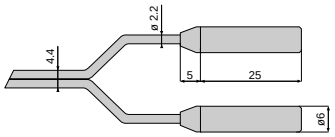
■ OF/SC1 model - diffuse



■ OF/SR1 model - through-beam



■ OF/SR2 model - through-beam



■ OF/SR3 model - through-beam

Each model is also available with fibre length of 1m (OF/S**-1 model) and 2m (OF/S**-2 model)

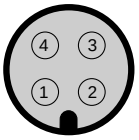
Optical fibre

type	diffuse(2)	through-beam	through-beam	through-beam
models	OF/ SC1	OF/ SR1	OF/ SR2	OF/ SR3
sensing range (1)	20mm	40mm	400mm	400mm
fibre head	M6x0.75	M4x0.5	M7x0.75	Ø6mm unthreaded
fibre	500mm standard length - 1mm Ø active fibre			
operating temperature	- 10° +70 ° C			
materials	fibre: methacrylate - sheath: polyethylene - fibre head: aluminium			

(1)referred to MVF photoelectric switch – (2)can be used in retro-reflective version also

Connectors

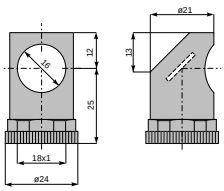
M12



Accessories

Type	Code
Swing mount bracket	ST02
Axial mount bracket	ST18-A
Right-angle mount bracket	ST18-C
Antidust front	ST30
Right angle beam adapter	ST03
Shutter	STOS*
Protective front	ST50
Reflectors	see RL leaflet
Right angle beam adapter for OF/SR2 fibre	ST28

Right angle beam adapter ø18mm



material ABS

For directing the photoelectric detection at 90° to the photoelectric switch optical axes for ø18mm* sensors.

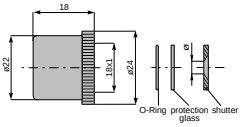
This accessory consists of an internal threaded body to be screwed on the optical head of the photoelectric switch.

The mirror inside the body is set at 45° to the optical axes of the sensor allowing detection at 90°.

The sensitivity loss is approx. 20-30%.

*Not for diffuse types.

Shutter ø18mm

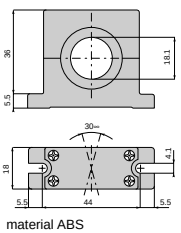


material anodized aluminium – glass

This accessory, available for through-beam photoelectric switches ø18mm, reduces the emitted beam allowing the detection of small targets (down to 1mm). The shutter consists of a threaded ring nut, a protection glass, an O-ring and an aperture to be screwed on the optical head of both transmitter and receiver.

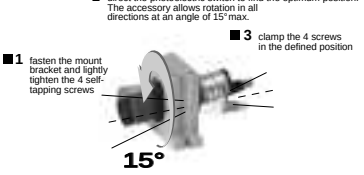
Shutter code	STOS2	STOS3	STOS4	STOS6	STOS8
Ø shutter aperture (mm)	2	3	4	6	8
MVE/MVR sensing range (m)	0.8	1.8	3.2	6.5	N/A
Ø min, detectable object (mm)	1	1.5	2	3	N/A
MVR/MVD sensing range (m)	1.5	3.5	6.5	15	26
Ø min. detectable object (mm)	1	1.5	2	3	4

Swing mount bracket ø18mm



material ABS

For easy mounting and alignment of retro-reflective and through-beam photoelectric switches ø18mm:

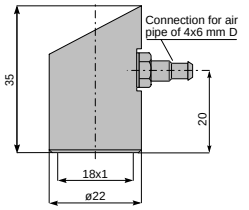


M18 AC Photoelectric Switches MV

continued

Accesories continued

Antidust front ø18mm (ST3Ø model)



material anodized aluminium

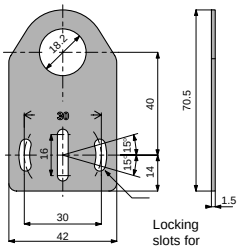
This is used to prevent dust or other deposits on the lenses of photoelectric switches ø18mm*, thus ensuring constant detection is maintained. It consists of a threaded body with a side air inlet pipe.

The sensitivity loss is approx. 30%.

Air inlet

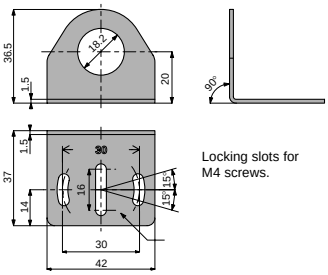
*not for diffuse types

Axial mount bracket (ST18-A model)



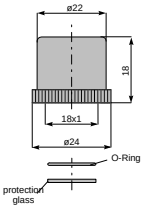
Locking slots for M4 screws.

Right angle mount bracket (ST18-C model)



Locking slots for M4 screws.

Protective front ø18mm (ST5Ø model)



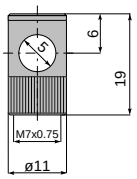
material anodized aluminium – glass

For the protection of the lenses of photoelectric switches ø18mm*. It allows use of the sensor even in particularly aggresive conditions (presence of chemical solvents etc.)

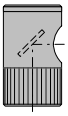
The system consists of a threaded metal body, an O-ring and a protection glass.
The sensitivity loss is approx. 25%.

*not for diffuse types

Right angle beam adapter for OF/SR2 fibre



material aluminium



code ST28

The ST28 accessory is used for directing the photoelectric detection through 90° from the fibre optical axes. It consists of a threaded body to be screwed on the optical head of the sensor.

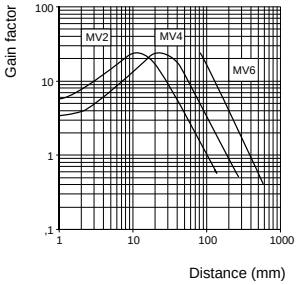
The mirror inside the body is set at 45° to the optical axes allowing detection at 90°. The sensistivity loss is approx. 20-30%.

M18 AC Photoelectric Switches MV

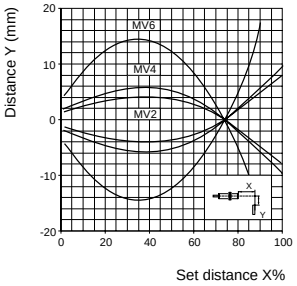
continued

Characteristic curves

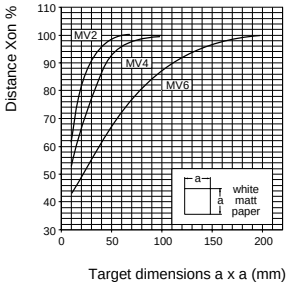
MV2-MV4-MV6 Excess gain



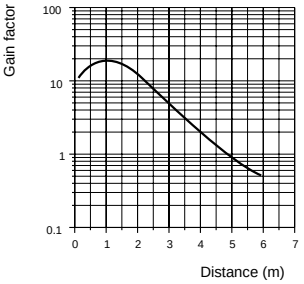
MV2-MV4-MV6 Parallel displacement



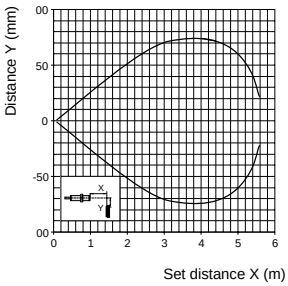
MV2-MV4-MV6 Distance/target size



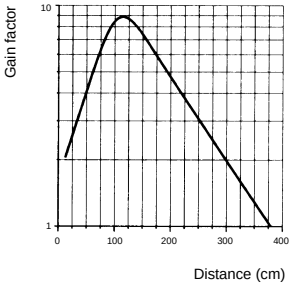
MVC Excess gain



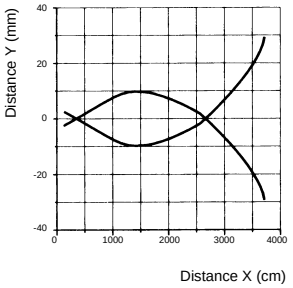
MVC Parallel displacement



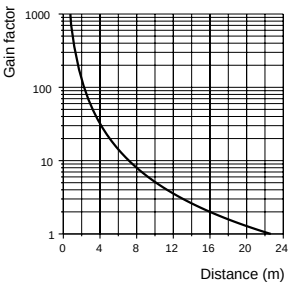
MVP Excess gain



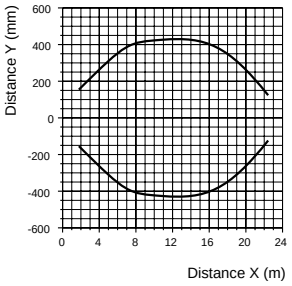
MVP Parallel displacement



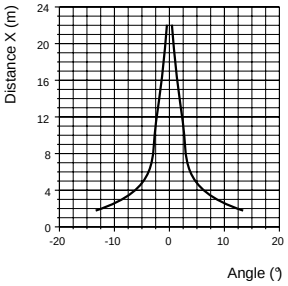
MVE-MVR Excess gain



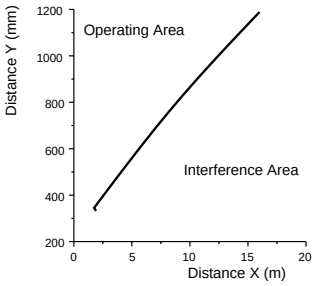
MVE-MVR Parallel displacement



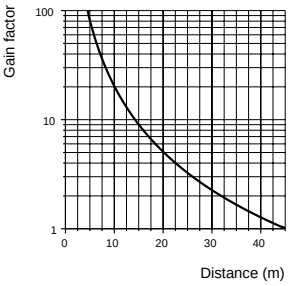
MVE-MVR Angular displacement



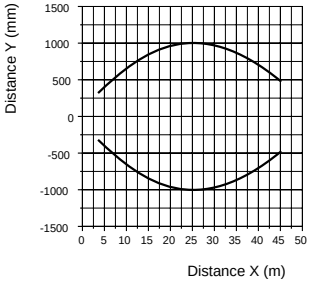
MVE-MVR Mutual interference



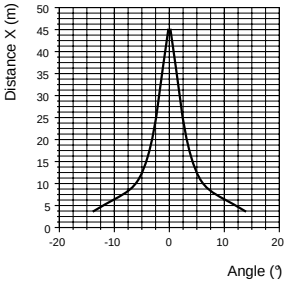
MVE-MVD Excess gain



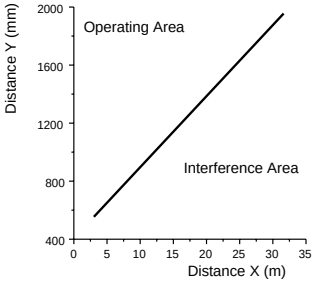
MVE-MVD Parallel displacement



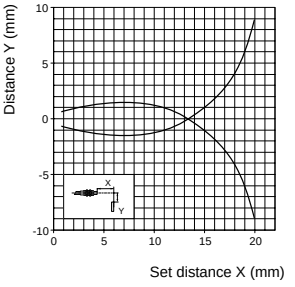
MVE-MVD Angular displacement



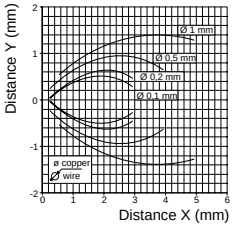
MVE-MVD Mutual interference



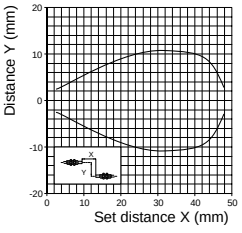
OF/SC1 Parallel displacement



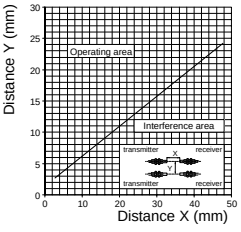
OF/SC1 Min. target displacement



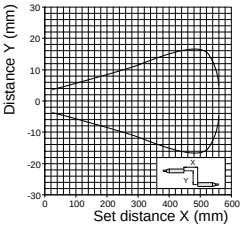
OF/SR1 Parallel displacement



OF/SR1 Mutual interference



OF/SC2-OS/SR3 Parallel displacement



OF/SC2-OS/SR3 Mutual interference