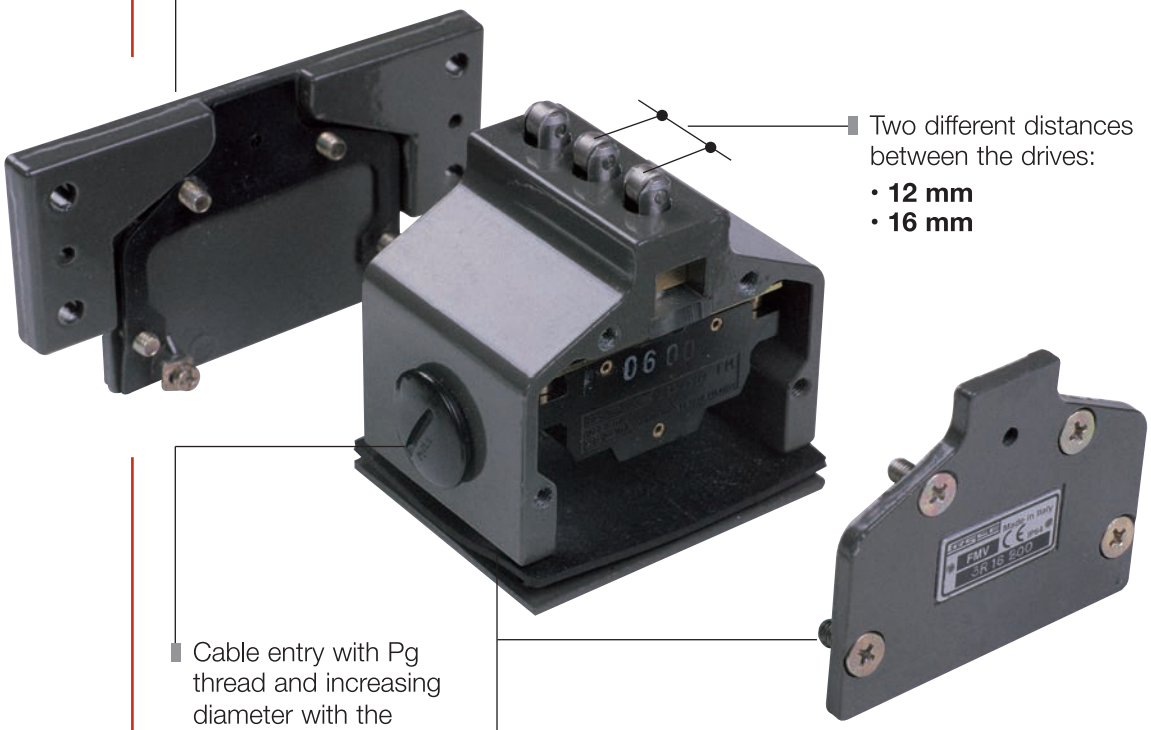
Multiple position switches FMV

General features

The **FMV** series vertical mounting multiple position switches, are an important accessory in the automatic production process for monitoring the moving parts of a machine. Due to their limited dimensions in proportion to the functions performed, the multiple position switches offer the ideal solution to command automatic machines. The body of the multiple position switches is made of die cast metal alloy, while the roller plunger actuators are made of tempered steel.

Two different mounting brackets:

- 100 (130 for the start of the first actuators at 30 mm)
- 200 (230 for the start of the first actuators at 30 mm)



Two different distances between the drives:

- **12 mm**
- **16 mm**

Cable entry with Pg thread and increasing diameter with the number of actuators (Pg 11 / Pg 13.5)

The casing is closed in the lower and upper parts with metal closure plates with gasket and steel screws.

Technical data

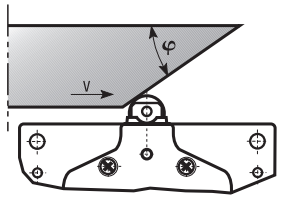
						TYPE	FMV
Maximum operating frequency						operat./hour [1]	1800
Insulation resistance					500 V DC	MΩ	100
Dielectric strenght					50/60 Hz for 1'	V AC	2000 [2]
Rated insulation voltage		Ui	IEC947-5-1			V AC	500
Rated thermal current		Ithe	IEC947-5-1			A	10
Rated operating current	Category AC15	Ie	IEC947-5-1/EN60947-5-1		24V	A	10
	A300				125V	A	10
					230 V	A	6
					400 V	A	4
Contact resistance			IEC255-7 cat.3		initial value	mΩ	25
Short circuit protective devices			IEC269 (IEC947-5-1)				
			fuse type gL or gG			A	10
Pollution degree			IEC947-5-1			A	3
Protection degree			EN 60529				IP64
Protection against electric shock					metal	class	I
Vibration resistance			IEC68-2-6			mm	0,35 ± 15%
							(10 ÷ 55 Hz ± 1 Hz)
Shock resistance			IEC68-2-27		11ms	g	30
Mechanical life						cycles	30.000.000
Electric life			at 250V AC 6A with resistance				
			load cosφ=1			cycles	500.000
			at 250V AC 6A with inductive				
			load coφ=0,4			cycles	500.000
Terminals			Type				Screw with combined notch
							and retractable plate
							(notch Ph. Size 1)
			Screw				M3,5
			Material				Steel class 8,8 / Galvanized
			Max. screw tightening torque			Ncm (Kg cm)	120 (12,24)
			Max connecting capacity		rigid cable	mm²	2x1,5
					flexible cable	mm²	2x1,5
					with prod terminal		1x1,5
Terminal numbering							In accordance with EN50013
Air ambient temperature					operational	°C	-10 ÷ +70
							(without formation of ice)
Relative umidity					operational		95% max

[1] One operation cycle means two movements, one to close and one to open as required by EN 60947-5

[2] Between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts

Operating characteristics

Roller side travel

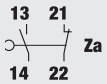


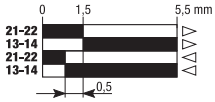
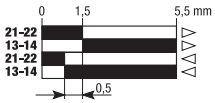
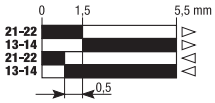
Drive cam operating parameters	
φ	V max (m/s)
30°	1
20°	1,5

Drive forces	
Minimum command force	10 N
Minimum force on lateral travel	18 N

Start 30
Pitch 12

Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R12130	2 R	0,421	1	
FMV3R12130	3 R	0,523	1	
FMV4R12130	4 R	0,621	1	

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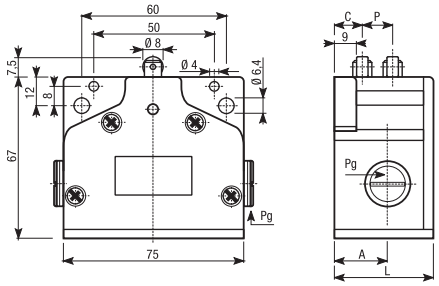


Characteristics

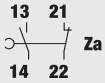
Distance between the actuators 12 mm, start 30 mm

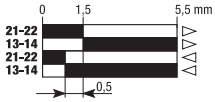
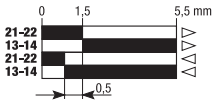
Code	No. of actuators	P	C	L	Pg	A
FMV2R12130	2	12	30	54	11	30
FMV3R12130	3	12	30	66	13,5	35
FMV4R12130	4	12	30	78	13,5	35

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

Start 30
Pitch 12

Vertical mounting bracket 200

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV3R12230	3 R	0,563	1	
FMV4R12230	4 R	0,662	1	

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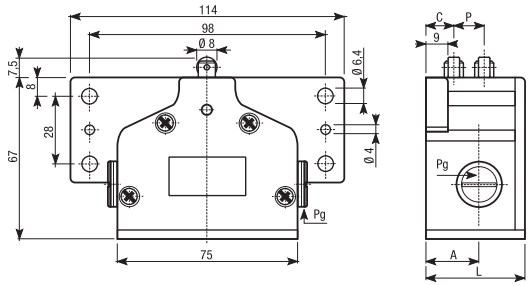


Characteristics

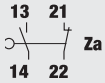
Distance between the actuators 12 mm, start 30 mm

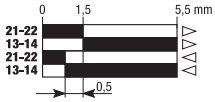
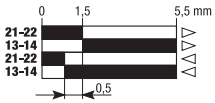
Code	No. of actuators	P	C	L	Pg	A
FMV3R12230	3	12	30	66	13,5	35
FMV4R12230	4	12	30	78	13,5	35

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

Start 30
Pitch 16

Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R16130	**2 R**	0,470	1	
FMV3R16130	**3 R**	0,584	1	

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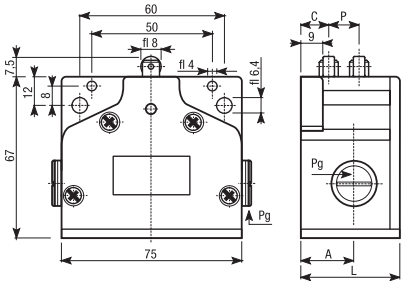


Characteristics

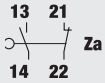
Distance between the actuators 16 mm, start 30 mm

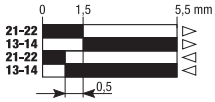
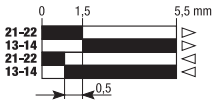
Code	No. of actuators	P	C	L	Pg	A
FMV2R16130	2	16	30	62	11	30
FMV3R16130	3	16	30	78	13,5	35

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

Start 30
Pitch 16

Vertical mounting bracket 200

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV3R16230	**3 R**	0,629	1	
FMV4R16230	**4 R**	0,748	1	

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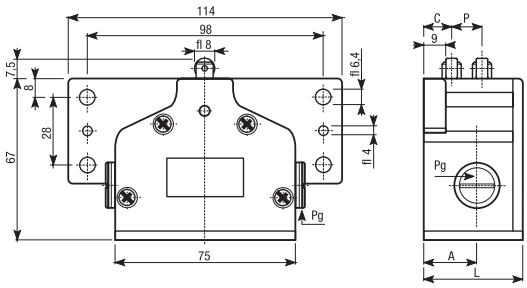


Characteristics

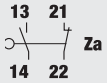
Distance between the actuators 16 mm, start 30 mm

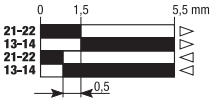
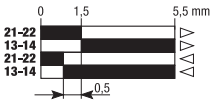
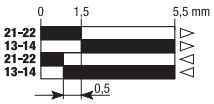
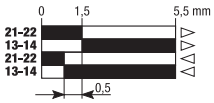
Code	No. of actuators	P	C	L	Pg	A
FMV3R16230	3	16	30	78	13,5	35
FMV4R16230	4	16	30	94	13,5	35

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

Start 12
Pitch 12

Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV1R100	**1 R**	0,266	1	
FMV2R12100	**2 R**	0,363	1	
FMV3R12100	**3 R**	0,455	1	
FMV4R12100	**4 R**	0,528	1	

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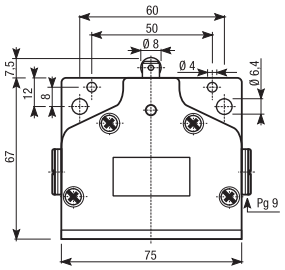
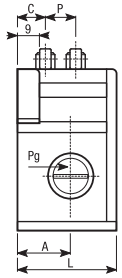
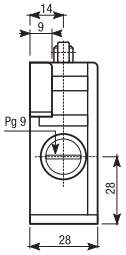






FMV 1R 100

Characteristics

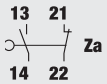
Distance between the actuators 12 mm, start 12 mm

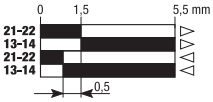
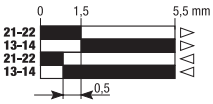
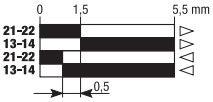
Code	No. of actuators	P	C	L	Pg	A
FMV2R12100	2	12	12	41	11	22
FMV3R12100	3	12	12	53	13,5	30
FMV4R12100	4	12	12	60	13,5	30

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

Start 16
Pitch 16

Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC  	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R16100	2 R	0,405	1	
FMV3R16100	3 R	0,521	1	
FMV4R16100	4 R	0,642	1	

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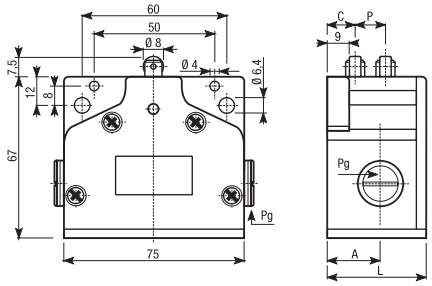

Characteristics

Distance between the actuators 16 mm, start 16 mm

Code	No. of actuators	P	C	L	Pg	A
FMV2R16100	2	16	16	48	11	22
FMV3R16100	3	16	16	64	13,5	30
FMV4R16100	4	16	16	80	13,5	30

Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes