

**NEW!**

# ***Safety components***

## ***MAC-I limit switches***



### **Features**

The MAC-I limit switches are developed and manufactured according to the rules set out in IEC international publications and EN European standards.

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation
- Able to switch strong currents (10A conventional thermal current)
- Precise operating points (consistency)
- Immune to electromagnetic disturbances
- Electrically separated contacts
- N.C. contacts with positive opening operation
- Extremely compact with optimal air cooling

# MA150 series

## Electrical Connection

Replace the symbol "•" with the required thread:

- 0: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 3: for PG11 Cable Gland
- 4: for M16 x 1,5 Cable Gland
- 5: for M20 x 1,5 Cable Gland



MA150  
90° adjustable  
head

MA150T  
Fully turnable  
head

## Available contact blocks

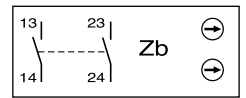
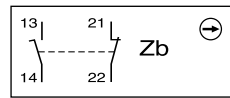
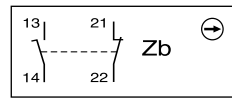
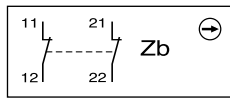
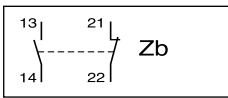
**Z11:** Snap action 1NO + 1NC

**Z02:** Snap action 2 NC

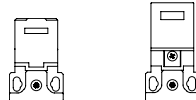
**X11:** Slow action break before  
make 1NO + 1NC

**Y11:** Slow action make before  
break 1NO + 1NC

**W02:** Simultaneous slow action  
2NC



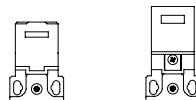
**MA150 series**  
30mm polymeric casing.  
1 cable inlet. IP 65



Contact blocks	↔	↔
Z11 (1NO+1NC)	MA15•T↔Z11	MA15•T↔Z11T
Z02 (2NC)	MA15•T↔Z02	MA15•T↔Z02T
X11 (1NO+1NC)	MA15•T↔X11	MA15•T↔X11T
Y11 (1NO+1NC)	MA15•T↔Y11	MA15•T↔Y11T
W02 (2NC)	MA15•T↔W02	MA15•T↔W02T



**MA150M series**  
30mm metal casing.  
1 cable inlet. IP 66



Contact blocks	↔	↔
Z11 (1NO+1NC)	MA15•T↔Z11M	MA15•T↔Z11MT
Z02 (2NC)	MA15•T↔Z02M	MA15•T↔Z02MT
X11 (1NO+1NC)	MA15•T↔X11M	MA15•T↔X11MT
Y11 (1NO+1NC)	MA15•T↔Y11M	MA15•T↔Y11MT
W02 (2NC)	MA15•T↔W02M	MA15•T↔W02MT

## Ordering Code MA150 (T) series :

**M A 1 5 0 T 8 3 Z 1 1 (T)\***

Electrical connection  
see top of page

Operating keys  
T83, T84, T85  
T86, T87, T88, T90  
(see page 10)

## Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping Slow action contacts (1NO+1NC)
- Y11: Overlapping Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)

\*fully turnable head

## Electrical Connection

Replace the symbol "•" with the required thread:

- 0: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 3: for PG11 Cable Gland
- 4: for M16 x 1,5 Cable Gland
- 5: for M20 x 1,5 Cable Gland



MA160  
90° adjustable  
head

MA160T  
Fully turnable  
head

## Available contact blocks

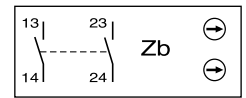
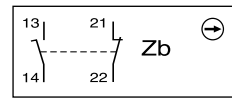
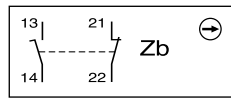
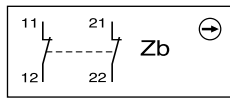
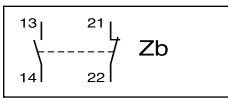
Z11: Snap action 1NO + 1NC

Z02: Snap action 2 NC

X11: Slow action break before  
make 1NO + 1NC

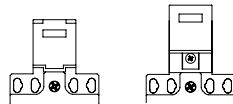
Y11: Slow action make before  
break 1NO + 1NC

W02: Simultaneous slow action  
2NC



### MA160 series

50mm polymeric casing.  
2 cable inlets. IP 65



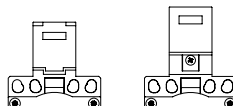
#### Contact blocks

	↻	↻
Z11 (1NO+1NC)	MA16•T↻Z11	MA16•T↻Z11T
Z02 (2NC)	MA16•T↻Z02	MA16•T↻Z02T
X11 (1NO+1NC)	MA16•T↻X11	MA16•T↻X11T
Y11 (1NO+1NC)	MA16•T↻Y11	MA16•T↻Y11T
W02 (2NC)	MA16•T↻W02	MA16•T↻W02T



### MA160M series

50mm metal casing.  
3 cable inlets. IP 66



#### Contact blocks

	↻	↻
Z11 (1NO+1NC)	MA16•T↻Z11M	MA16•T↻Z11MT
Z02 (2NC)	MA16•T↻Z02M	MA16•T↻Z02MT
X11 (1NO+1NC)	MA16•T↻X11M	MA16•T↻X11MT
Y11 (1NO+1NC)	MA16•T↻Y11M	MA16•T↻Y11MT
W02 (2NC)	MA16•T↻W02M	MA16•T↻W02MT

## Ordering Code MA160 (T) series :

**M A 1 6 0 T 8 3 Z 1 1 (T)\***

Electrical connection  
see top of page

Operating keys  
T83, T84, T85  
T86, T87, T88, T90  
(see page 10)

### Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping Slow action contacts (1NO+1NC)
- Y11: Overlapping Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)

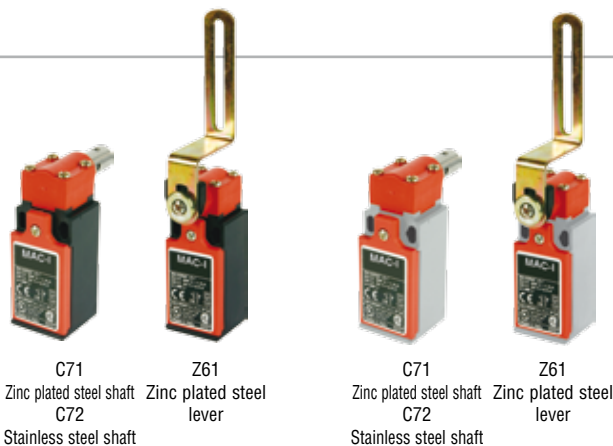
\*fully turnable head

# SLC & SLZ series

## Electrical Connection

Replace the symbol "•" with the required thread:

- 1: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 3: for PG11 Cable Gland
- 4: for M16 x 1,5 Cable Gland
- 5: for M20 x 1,5 Cable Gland



## Available contact blocks

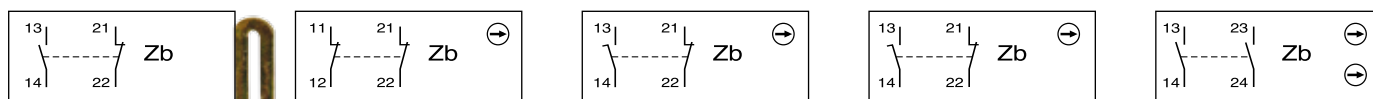
**Z11:** Snap action 1NO + 1NC

**Z02:** Snap action 2NC

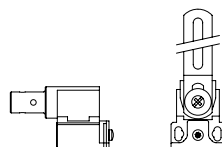
**X11:** Slow action break before make 1NO + 1NC

**Y11:** Slow action make before break 1NO + 1NC

**W02:** Simultaneous slow action 2NC



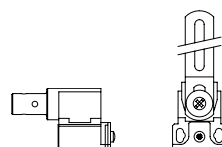
SLC & SLZ series  
30mm polymeric casing.  
1 cable inlet. IP 65



Contact blocks	↻	↻
Z11 (1NO+1NC)	SL•C7•Z11	SL•Z61Z11
Z02 (2NC)	SL•C7•Z02	SL•Z61Z02
X11 (1NO+1NC)	SL•C7•X11	SL•Z61X11
Y11 (1NO+1NC)	SL•C7•Y11	SL•Z61Y11
W02 (2NC)	SL•C7•W02	SL•Z61W02



SLC & SLZ series  
30mm metal casing.  
1 cable inlet. IP 66



Contact blocks	↻	↻
Z11 (1NO+1NC)	SL•C7•Z11M	SL•Z61Z11M
Z02 (2NC)	SL•C7•Z02M	SL•Z61Z02M
X11 (1NO+1NC)	SL•C7•X11M	SL•Z61X11M
Y11 (1NO+1NC)	SL•C7•Y11M	SL•Z61Y11M
W02 (2NC)	SL•C7•W02M	SL•Z61W02M

## Ordering Code SLC / SLZ (M) series :

**SL1C71Z11 (M)**

Electrical connection  
see top of page

Shaft SLC type  
C71, C72

Lever SLZ type  
Z61

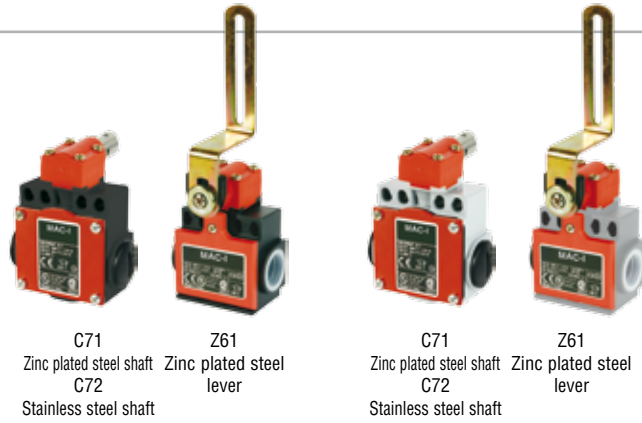
## Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping Slow action contacts (1NO+1NC)
- Y11: Overlapping Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)

### Electrical Connection

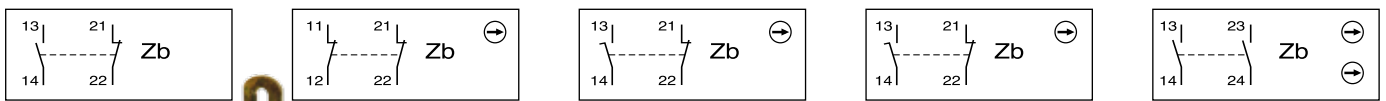
Replace the symbol "•" with the required thread:

- 1: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 3: for PG11 Cable Gland
- 4: for M16 x 1,5 Cable Gland
- 5: for M20 x 1,5 Cable Gland

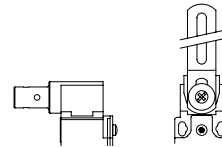


### Available contact blocks

- Z11:** Snap action 1NO + 1NC
- Z02:** Snap action 2NC
- X11:** Slow action break before make 1NO + 1NC
- Y11:** Slow action make before break 1NO + 1NC
- W02:** Simultaneous slow action 2NC

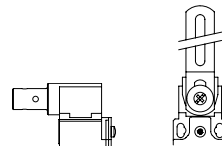


**SLC & SLZ series**  
50mm polymeric casing.  
2 cable inlet. IP 65



Contact blocks	↔	↔
Z11 (1NO+1NC)	SL•5C7•Z11	SL•5Z61Z11
Z02 (2NC)	SL•5C7•Z02	SL•5Z61Z02
X11 (1NO+1NC)	SL•5C7•X11	SL•5Z61X11
Y11 (1NO+1NC)	SL•5C7•Y11	SL•5Z61Y11
W02 (2NC)	SL•5C7•W02	SL•5Z61W02

**SLC & SLZ series**  
50mm metal casing.  
3 cable inlet. IP 66



Contact blocks	↔	↔
Z11 (1NO+1NC)	SL•5C7•Z11M	SL•5Z61Z11M
Z02 (2NC)	SL•5C7•Z02M	SL•5Z61Z02M
X11 (1NO+1NC)	SL•5C7•X11M	SL•5Z61X11M
Y11 (1NO+1NC)	SL•5C7•Y11M	SL•5Z61Y11M
W02 (2NC)	SL•5C7•W02M	SL•5Z61W02M

### Ordering Code SLC / SLZ (M) series :

**SL 15 C 7 1 Z 1 1 (M)**

Electrical connection  
see top of page

Shaft SLC type  
C71, C72

Lever SLZ type  
Z61

### Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping Slow action contacts (1NO+1NC)
- Y11: Overlapping Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)

# SLF series

## Electrical Connection

Replace the symbol "•" with the required thread:

- 1: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 3: for PG11 Cable Gland
- 4: for M16 x 1,5 Cable Gland
- 5: for M20 x 1,5 Cable Gland

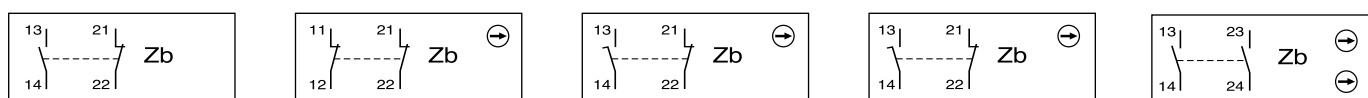


**F96**  
Pull wire without reset for simple stop

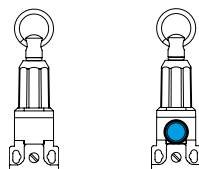
**F98**  
Pull wire with reset for emergency stop

## Available contact blocks

- Z11:** Snap action 1NO + 1NC    **Z02:** Snap action 2NC    **X11:** Slow action break before make 1NO + 1NC    **Y11:** Slow action make before break 1NO + 1NC    **W02:** Simultaneous slow action 2NC



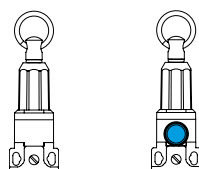
**SLF series**  
30mm metal casing  
1 cable inlet. IP 66



Contact blocks	↻	↻
Z11 (1NO+1NC)	SL•F96Z11M	SL•F98Z11M
Z02 (2NC)	SL•F96Z02M	SL•F98Z02M
X11 (1NO+1NC)	SL•F96X11M	SL•F98X11M
Y11 (1NO+1NC)	SL•F96Y11M	SL•F98Y11M
W02 (2NC)	SL•F96W02M	SL•F98W02M



**SLF series**  
50mm metal casing.  
3 cable inlet. IP 66



Contact blocks	↻	↻
Z11 (1NO+1NC)	SL•F596Z11M	SL•F598Z11M
Z02 (2NC)	SL•F596Z02M	SL•F598Z02M
X11 (1NO+1NC)	SL•F596X11M	SL•F598X11M
Y11 (1NO+1NC)	SL•F596Y11M	SL•F598Y11M
W02 (2NC)	SL•F596W02M	SL•F598W02M

## Ordering Code SLF (M) series :

**SL 1 F 9 6 Z 1 1 (M)**

Electrical connection  
see top of page

Metal casing  
F96 = 30mm, pull wire w.o. reset  
F98 = 30mm, pull wire with reset  
F596 = 50mm, pull wire w.o. reset  
F598 = 50mm, pull wire with reset

Contact blocks  
Z11: Snap action contacts (1NO+1NC)  
Z02: Snap action contacts (2NC)  
X11: Non overlapping Slow action contacts (1NO+1NC)  
Y11: Overlapping Slow action contacts (1NO+1NC)  
W02: Slow action contacts (2NC)



## Electrical Connection

Replace the symbol "•" with the required thread:

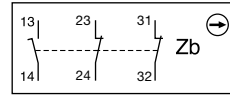
- 1: for PG 13,5 Cable Gland
- 2: for 1/2" NPT Cable Gland  
(with adapter in MA150 and MA160 series)
- 5: for M20 x 1,5 Cable Gland



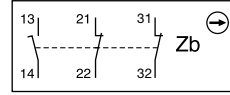
**F97**  
Pull wire without reset for simple stop

**F99**  
Pull wire with reset for emergency stop

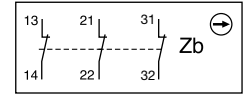
**X21:** Slow action break before make 2NO + 1NC



**X12:** Slow action break before make 1NO + 2NC



**W03:** Simultaneous slow action 3NC



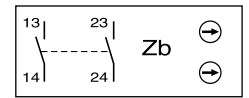
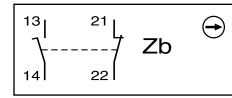
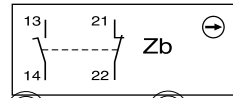
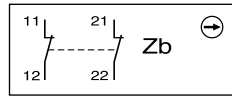
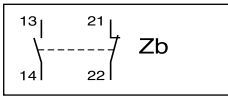
## Available contact blocks

**Z11:** Snap action 1NO + 1NC    **Z02:** Snap action 2NC

**X11:** Slow action break before make 1NO + 1NC

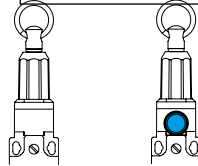
**Y11:** Slow action make before break 1NO + 1NC

**W02:** Simultaneous slow action 2NC



### SLF series

40mm aluminium casing.  
1 cable inlet. IP 66

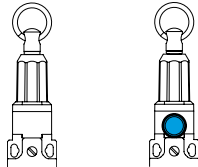


#### Contact blocks

	⊖	⊖
Z11 (1NO+1NC)	SL•F97Z11A	SL•F99Z11A
Z02 (2NC)	SL•F97Z02A	SL•F99Z02A
X11 (1NO+1NC)	SL•F97X11A	SL•F99X11A
Y11 (1NO+1NC)	SL•F97Y11A	SL•F99Y11A
W02 (2NC)	SL•F97W02A	SL•F99W02A
X21 (2NO+1NC)	SL•F97X21A	SL•F99X21A
X12 (1NO+2NC)	SL•F97X12A	SL•F99X12A
W03 (3NC)	SL•F97W03A	SL•F99W03A

### SLF series

60mm aluminium casing.  
3 cable inlet. IP 66



#### Contact blocks

	⊖	⊖
ZZ11 (1NO+1NC)	SL•F697Z11A	SL•F699Z11A
Z02 (2NC)	SL•F697Z02A	SL•F699Z02A
X11 (1NO+1NC)	SL•F697X11A	SL•F699X11A
Y11 (1NO+1NC)	SL•F697Y11A	SL•F699Y11A
W02 (2NC)	SL•F697W02A	SL•F699W02A
X21 (2NO+1NC)	SL•F697X21A	SL•F699X21A
X12 (1NO+2NC)	SL•F697X12A	SL•F699X12A
W03 (3NC)	SL•F697W03A	SL•F699W03A

## Ordering Code SLF (A) series :

**SL1F97Z11(A)**

Electrical connection  
see top of page

### Metal casing

F97 = 40mm, pull wire w.o. reset  
F99 = 40mm, pull wire with reset  
F697 = 60mm, pull wire w.o. reset  
F699 = 60mm, pull wire with reset

### Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping  
Slow action contacts (1NO+1NC)
- Y11: Overlapping  
Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)
- X21: Slow action break before make contacts (2NO+ 1NC)
- X12: Slow action break before make contacts (1NO+2NC)
- W03: Simultaneous slow action contacts (3NC)

# MAP/MAM/MDP/MDM series

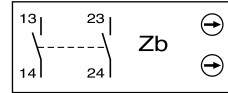
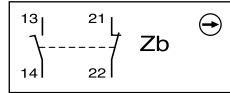
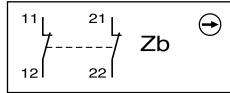
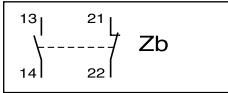
## Available contact blocks

**Z11:** Snap action 1NO + 1NC

**Z02:** Snap action 2NC

**X11:** Slow action break before make 1NO + 1NC

**W02:** Simultaneous slow action 2NC



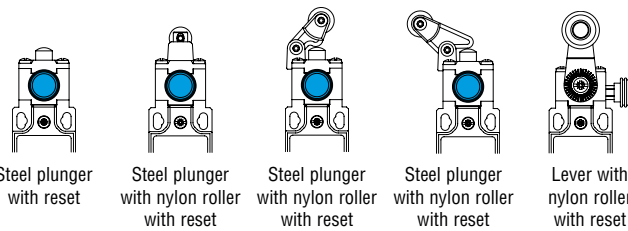
## MAP\_R series

### 30mm polymeric limit switches - IP 65 - 1 cable inlet



#### Cable inlets

- AP1: PG 13.5
- AP2: 1/2" NPT (with adapter)
- AP3: PG 11
- AP4: M 16 x 1.5
- AP5: M 20 x 1.5



Contact blocks	R11	R13	R31	R32	R41
Z11 Snap action contacts (1NO + 1NC)	MAP•R11Z11	MAP•R13Z11	MAP•R31Z11	MAP•R32Z11	MAP•R41Z11
Z02 Snap action contacts (2NC)	MAP•R11Z02	MAP•R13Z02	MAP•R31Z02	MAP•R32Z02	MAP•R41Z02
X11 Non overlapping Slow action contacts (1NO + 1NC)	MAP•R11X11	MAP•R13X11	MAP•R31X11	MAP•R32X11	MAP•R41X11
W02 Slow action contacts (2NC)	MAP•R11W02	MAP•R13W02	MAP•R31W02	MAP•R32W02	MAP•R41W02

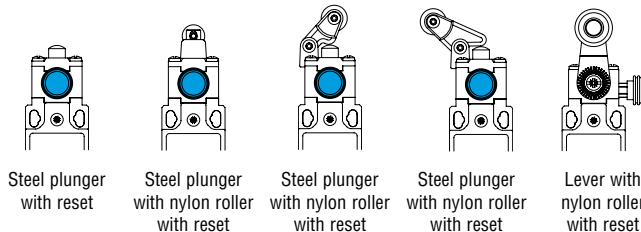
## MAM\_R series

### 30mm metal limit switches - with polymeric working heads - IP 66 - 1 cable inlet



#### Cable inlets

- AM1: PG 13.5
- AM2: 1/2" NPT
- AM3: PG 11
- AM4: M 16 x 1.5
- AM5: M 20 x 1.5



Contact blocks	R11	R13	R31	R32	R41
Z11 Snap action contacts (1NO + 1NC)	MAM•R11Z11	MAM•R13Z11	MAM•R31Z11	MAM•R32Z11	MAM•R41Z11
Z02 Snap action contacts (2NC)	MAM•R11Z02	MAM•R13Z02	MAM•R31Z02	MAM•R32Z02	MAM•R41Z02
X11 Non overlapping Slow action contacts (1NO + 1NC)	MAM•R11X11	MAM•R13X11	MAM•R31X11	MAM•R32X11	MAM•R41X11
W02 Slow action contacts (2NC)	MAM•R11W02	MAM•R13W02	MAM•R31W02	MAM•R32W02	MAM•R41W02

Other versions available on request

## Ordering Code MAP/MAM series :

**M A P 1 R 1 1 Z 1 1**

#### Cable inlets

AP1, AP2, AP3, AP4, AP5  
AM1, AM2, AM3, AM4, AM5  
See product description.

#### Head types

R11, R13, R31, R32, R41

#### Contact blocks

- Z11: Snap action contacts (1NO+1NC)
- Z02: Snap action contacts (2NC)
- X11: Non overlapping Slow action contacts (1NO+1NC)
- W02: Slow action contacts (2NC)



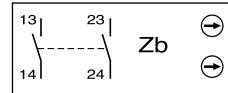
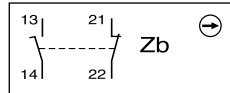
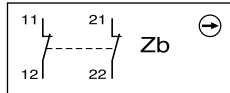
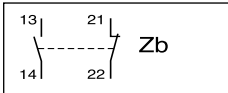
## Available contact blocks

**Z11:** Snap action 1NO + 1NC

**Z02:** Snap action 2NC

**X11:** Slow action break before make 1NO + 1NC

**W02:** Simultaneous slow action 2NC



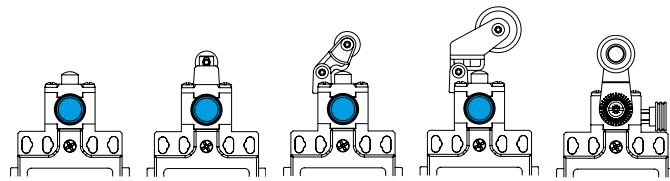
## MDP\_R series

### 50 mm polymeric limit switches - IP 65 - 2 cable inlets



#### Cable inlets

DP1:	PG 13.5
DP2:	1/2" NPT (with adapter)
DP3:	PG 11
DP4:	M 16 x 1.5
DP5:	M 20 x 1.5



#### Contact blocks

	Steel plunger with reset	Steel plunger with nylon roller with reset	Steel plunger with nylon roller with reset	Steel plunger with nylon roller with reset	Lever with nylon roller with reset
	⊖ R11	⊖ R13	⊖ R31	⊖ R38	⊖ R41
Z11 Snap action contacts (1NO + 1NC)	MDP•R11Z11	MDP•R13Z11	MDP•R31Z11	MDP•R38Z11	MDP•R41Z11
Z02 Snap action contacts (2NC)	MDP•R11Z02	MDP•R13Z02	MDP•R31Z02	MDP•R38Z02	MDP•R41Z02
X11 Non overlapping Slow action contacts (1NO + 1NC)	MDP•R11X11	MDP•R13X11	MDP•R31X11	MDP•R38X11	MDP•R41X11
W02 Slow action contacts (2NC)	MDP•R11W02	MDP•R13W02	MDP•R31W02	MDP•R38W02	MDP•R41W02

Other versions available on request

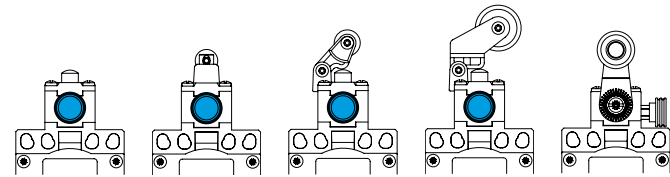
## MDM\_R series

### 50 mm metal limit switches - with polymeric working heads - IP 66 - 3 cable inlets



#### Cable inlets

DM1:	PG 13.5
DM2:	1/2" NPT
DM3:	PG 11
DM4:	M 16 x 1.5
DM5:	M 20 x 1.5



#### Contact blocks

	Steel plunger with reset	Steel plunger with nylon roller with reset	Steel plunger with nylon roller with reset	Steel plunger with nylon roller with reset	Lever with nylon roller with reset
	⊖ R11	⊖ R13	⊖ R31	⊖ R38	⊖ R41
Z11 Snap action contacts (1NO + 1NC)	MDM•R11Z11	MDM•R13Z11	MDM•R31Z11	MDM•R38Z11	MDM•R41Z11
Z02 Snap action contacts (2NC)	MDM•R11Z02	MDM•R13Z02	MDM•R31Z02	MDM•R38Z02	MDM•R41Z02
X11 Non overlapping Slow action contacts (1NO + 1NC)	MDM•R11X11	MDM•R13X11	MDM•R31X11	MDM•R38X11	MDM•R41X11
W02 Slow action contacts (2NC)	MDM•R11W02	MDM•R13W02	MDM•R31W02	MDM•R38W02	MDM•R41W02

Other versions available on request

### Ordering Code MDP/MDM series :

**M D P 1 R 1 1 Z 1 1**

#### Cable inlets

DP1, DP2, DP3, DP4, DP5  
DM1, DM2, DM3, DM4, DM5  
See product description.

#### Head types

R11, R13, R31, R38, R41

#### Contact blocks








Z11: Snap action contacts (1NO+1NC)  
Z02: Snap action contacts (2NC)  
X11: Non overlapping Slow action contacts (1NO+1NC)  
W02: Slow action contacts (2NC)

# MAC-I limit switches specifications & accessoires

## Specifications

						
Type	MAC-I MA 150/160	MAC-I SLC	MAC-I SLF	MAC-I SLZ	MAC-I MA-R	MAC-I MD-R
	limit switch with operating keys	limit switch with shaft lever	limit switch with pull wire	limit switch with steel lever	limit switch with pull button reset	limit switch with pull button reset
Voltage max.	400V					
Permanent current	10A					
Rated operational current (acc. to IEC 947-5-1)	(AC 15) 24V-10A; 230V-3,1A; 380V-1,9A (DC 13) 24V-2,8A; 250V-0,27A					
Standards	CE-UL/CSA					
Protection class (according to IEC 529 and EN 60 529)	IP 65/66					
Contact configuration	1NO + 1NC 2NC					
Operating temperature range	-25°C to 70°C					
Mech. operational life - number of switching cycles	1 x 10 <sup>7</sup>					
Electr. operational life - number of switching cycles	1 x 10 <sup>5</sup>					
Electrical connection	PG13.5 or 1/2"NPT or PG11 or M16x1.5 or M20x1.5					

## Operating keys for MA150/160

							
Description	Bent key	Flat key	Bent key	Flat Key	Shock absorbing bent key	Shock absorbing flat key	Adjustable joint key
Centre distance fixing holes	22mm	22mm	13mm	13mm	15mm	15mm	40mm
Order code	T83	T84	T85	T86	T87	T88	T90

## Accessories

MOR 05 	FUN 05 	OCC 08 	RED 05 
Rope clamp	Rope Ø 5mm	Stay bolt	Rope eye

You can find further information on our homepage: [www.panasonic-electric-works.com](http://www.panasonic-electric-works.com)