

Reed Switches/Direct Mounting Type D-Z73/Z76/Z80

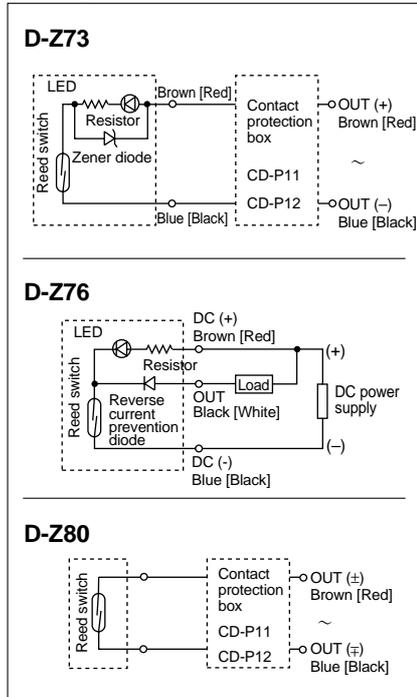


Auto Switch Specifications

With Indicator Light			
Auto switch part no.	D-Z73		D-Z76
Electrical entry direction	In-line		
Applicable load	Relay, PLC		IC circuit
Load voltage	24VDC	100VAC	4 to 8VDC
Maximum load current or current range	5 to 40mA	5 to 20mA	20mA
Contact protection circuit	None		
Internal voltage drop	2.4V or less		0.8V or less
Indicator light	Red LED lights up when ON		
Without Indicator Light			
Auto switch part no.	D-Z80		
Electrical entry direction	In-line		
Applicable load	Relay, PLC, IC circuit		
Load voltage	24V $\overline{\text{DC}}$ or less	48V $\overline{\text{DC}}$	100V $\overline{\text{DC}}$
Maximum load current	50mA	40mA	20mA
Contact protection circuit	None		
Internal resistance	1 Ω or less (including lead wire length of 3m)		

Auto Switch Internal Circuits

Lead wire colors inside [] are old colors prior to conformity with IEC standards.



- Note) 1. The load is an induction load
 2. The lead wire length to the load is 5m or more
 3. The load voltage is 100VAC

Use a contact protection box in any of the above situations, as the life of the contacts may otherwise be reduced. Refer to page 23 for detailed specifications of the contact protection boxes.

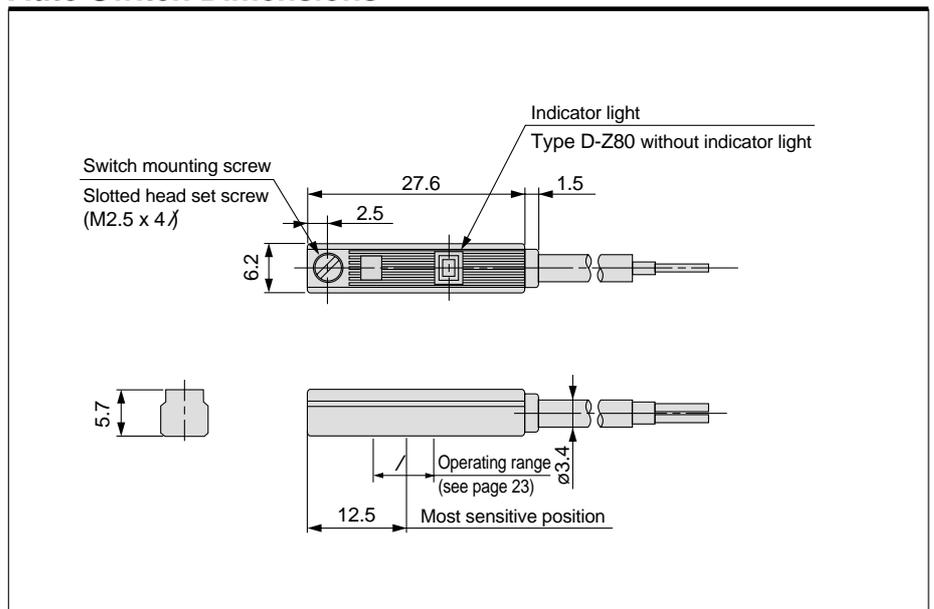
- Leakage current..... None
 - Operating time..... 1.2ms
 - Lead wires..... Heavy duty oil resistant vinyl cord, ϕ 3.4, 0.2mm², 2 wire (Brown, Blue [Red, Black])
 3 wire (Brown, Black, Blue [Red, White, Black]), 0.5m*
 - Impact resistance..... 300m/s² (30.6G)
 - Insulation resistance..... 50M Ω or more at 500VDC (between lead wire & case)
 - Withstand voltage..... 1500VAC for 1min. (between lead wire & case)
 - Ambient temperature..... - 10 to 60°C
 - Enclosure..... IEC529 standard IP67, watertight (JISC0920)
- * For a lead wire length of 3m, "L" is shown at the end of the part number. Example) D-Z73L

Auto Switch Weight Table

Unit: g

Model	Lead wire length 0.5m	Lead wire length 3m
D-Z73	9	49
D-Z76	10	55
D-Z80	9	49

Auto Switch Dimensions



Solid State Switches/Direct Mounting Type D-Y59^A_B, D-Y69^A_B, D-Y7P (V)



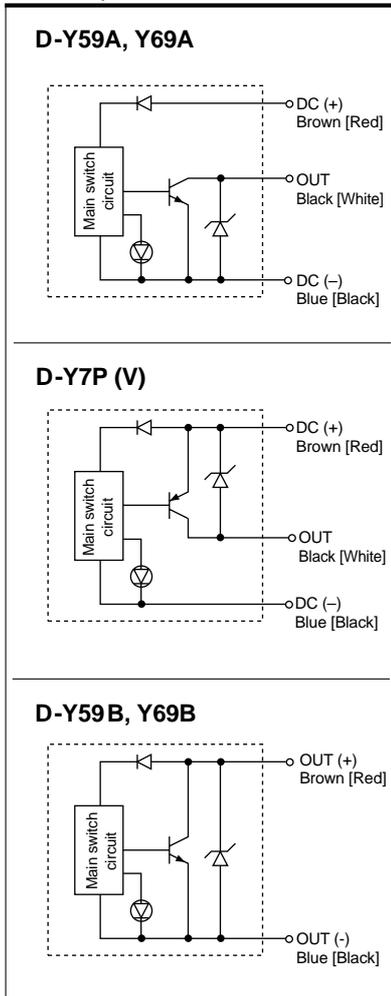
Auto Switch Specifications

D-Y5, D-Y6, D-Y7P, D-Y7PV (With Indicator Light)						
Auto switch part no.	D-Y59A	D-Y69A	D-Y7P	D-Y7PV	D-Y59B	D-Y69B
Electrical entry direction	Perpendicular	In-line	Perpendicular	In-line	Perpendicular	In-line
Wiring	3 wire			2 wire		
Output	NPN type		PNP type		-	
Applicable load	IC circuit, Relay, PLC				24VDC Relay, PLC	
Power supply voltage	5, 12, 24VDC (4.5 to 28VDC)				-	
Current consumption	10mA				-	
Load voltage	28VDC or less		-		24VDC (10 to 28VDC)	
Load current	40mA or less		80mA or less		5 to 40mA or less	
Internal voltage drop	1.5V or less (0.8V or less at load current of 10mA)		0.8V or less		4V or less	
Leakage current	100μA or less at 24VDC				0.8mA or less at 24VDC	
Indicator light	Red LED lights up when ON					

- Operating time..... 1ms or less
- Lead wires..... Heavy duty oil resistant flexible vinyl cord, $\phi 3.4$, 0.15mm², 3 wire (Brown, Black, Blue [Red, White, Black]), 2 wire (Brown, Blue [Red, Black]) 0.5m^{*}
- * For a lead wire length of 3m, "L" is shown at the end of the part number. (Example) D-Y59AL
- Impact resistance..... 1,000m/s² (102G)
- Insulation resistance..... 50MΩ or more at 500VDC (between lead wire & case)
- Withstand voltage..... 1000VAC for 1min. (between lead wire & case)
- Ambient temperature..... - 10 to 60°C
- Enclosure..... IEC529 standard IP67, watertight (JISC0920)

Auto Switch Internal Circuits

Lead wire colors inside [] are old colors prior to conformity with IEC standards.

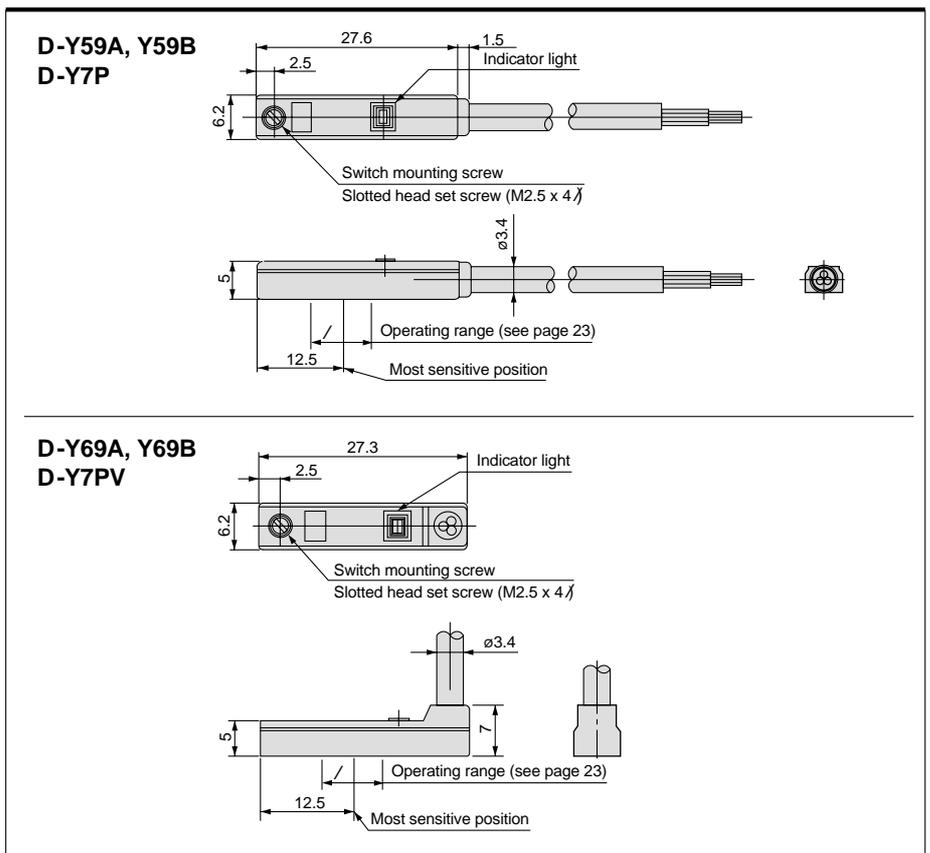


Weight Table

Unit: g

Model	Lead wire length	
	0.5m	3m
D-Y59A, Y69A, Y7P	10	53
D-Y59B, Y69B, Y7PV	9	50

Dimensions



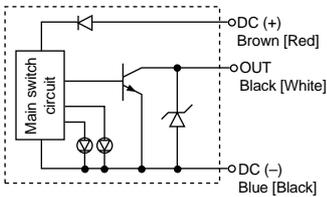
2 Color Indication Type Solid State Switches D-Y7NW/Y7PW, D-Y7BW



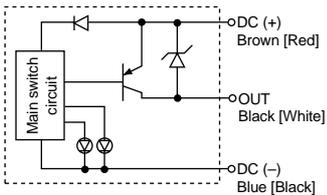
Auto Switch Internal Circuits

Lead wire colors inside [] are old colors prior to conformity with IEC standards.

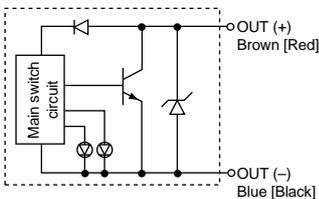
D-Y7NW(V), 3 wire NPN output



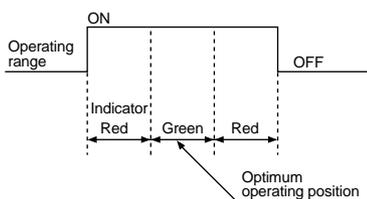
D-Y7PW(V), 3 wire PNP output



D-Y7BW(V), 2 wire



Indicator lights/Display method



Auto Switch Specifications

D-Y7□W, D-Y7□WV (With Indicator Light)						
Auto switch part nos.	D-Y7NW	D-Y7NWV	D-Y7PW	D-Y7PWV	D-Y7BW	D-Y7BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	3 wire				2 wire	
Output	NPN type		PNP type		-	
Applicable load	IC circuit, Relay, PLC				24VDC Relay, PLC	
Power supply voltage	5, 12, 24VDC (4.5 to 28VDC)				-	
Current consumption	10mA or less				-	
Load voltage	28VDC or less		-		24VDC (10 to 28VDC)	
Load current	40mA or less		80mA or less		5 to 40mA	
Internal voltage drop	1.5V or less (0.8V or less at load current of 10mA)		0.8V or less		4V or less	
Leakage current	100μA or less at 24VDC				0.8mA or less at 24VDC	
Indicator light	Operating position Red LED lights up Optimum operating position Green LED lights up					

- Operating time 1ms or less
- Lead wires Heavy duty oil resistant flexible vinyl cord, $\phi 3.4$, 0.15mm², 3 wire (Brown, Black, Blue [Red, White, Black]), 2 wire (Brown, Blue [Red, Black]) 0.5m*
- * For a lead wire length of 3m, "L" is shown at the end of the part number. (Example) D-Y7NWL
- Impact resistance 1,000m/s² (102G)
- Insulation resistance 50MΩ or more at 500VDC (between lead wire & case)
- Withstand voltage 1000VAC for 1min. (between lead wire & case)
- Ambient temperature -10 to 60°C
- Enclosure IEC529 standard IP67, watertight (JISC0920)

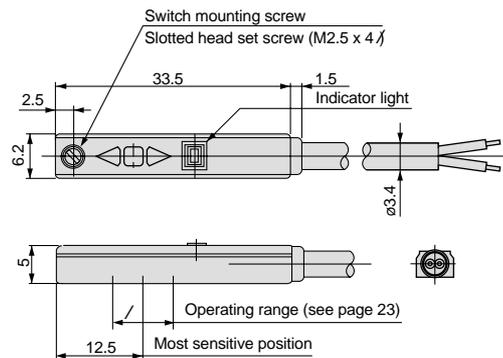
Auto Switch Weight Table

Unit: g

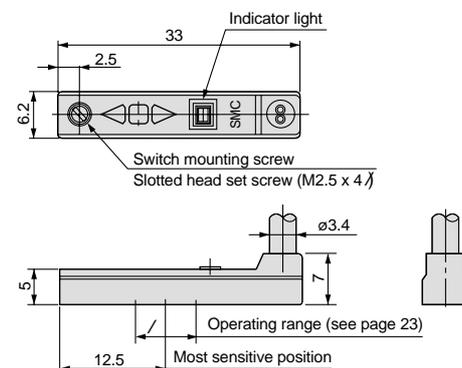
Model	Lead wire length	
	0.5m	3m
D-Y7N, Y7P	11	54
D-Y7B	9	50

Auto Switch Dimensions

D-Y7□W



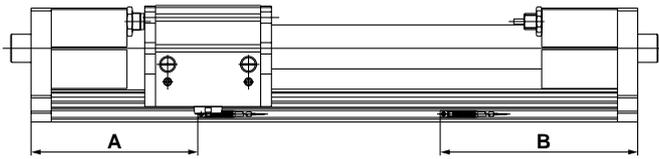
D-Y7□WV



Series MF

Auto Switch Mounting Positions

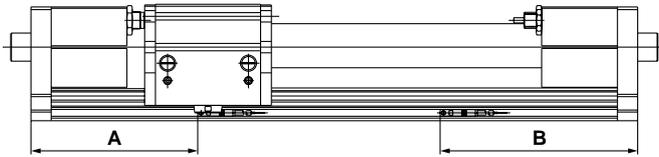
D-Z7□, D-Z80



(mm)

Mounting position	MF□15	MF□32
A	103.5	124.5
B	134.5	149.5
Operating range (Note)	8	

D-Y5, D-Y6, D-Y7P(V)

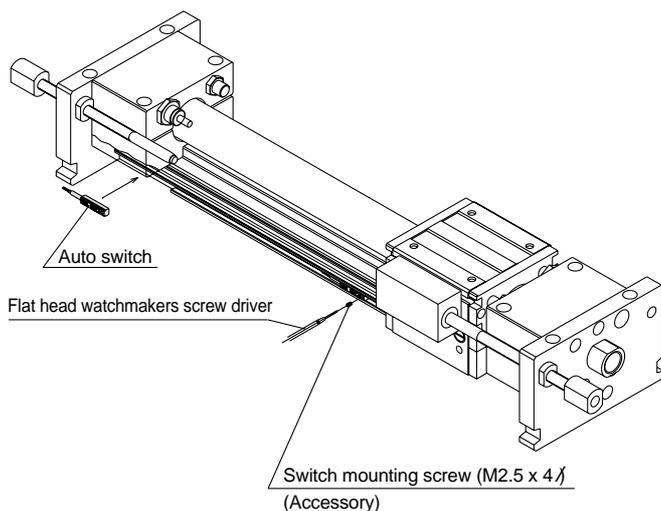


(mm)

Mounting position	MF□15	MF□32
A	103.5	124.5
B	134.5	149.5
Operating range (Note)	3	

Note) The operating range is a standard including hysteresis, but is not guaranteed (variation $\pm 30\%$). There may be large changes depending on the ambient environment.

Auto Switch Mounting



⚠ Caution

When tightening the auto switch mounting screw, use a flat head watchmakers screw driver with a handle about 5 to 6mm in diameter. Tighten the screw to a torque of about 0.05 to 0.1N·m. As a rule, it can be turned approximately 90° past the position at which tightening can be felt.

Contact Protection Boxes/CD-P11, CD-P12

(Applicable switch models)

D-Z73, Z80

The above auto switches do not have built-in contact protection circuits.

1. The load is an induction load.
2. The lead wire length to the load is 5m or more.
3. The load voltage is 100V or 200VAC.

Use a contact protection box in any of the above situations, as the life of the contacts may otherwise be reduced (they stay ON continuously).

Contact Protection Box Specifications

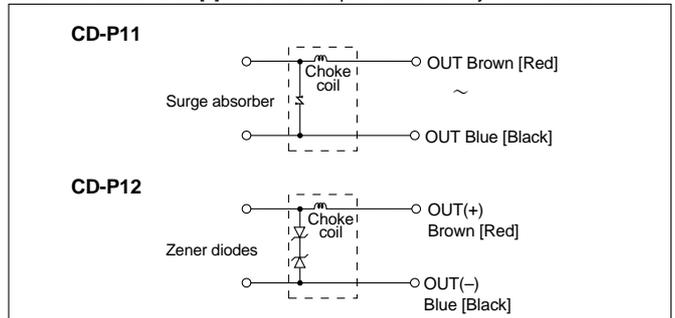
Part No.	CD-P11		CD-P12
Load voltage	100VAC or less	200VAC	24VDC
Max. load current	25mA	12.5mA	50mA

* Lead wire length.....Switch connection side 0.5m
Load connection side 0.5m

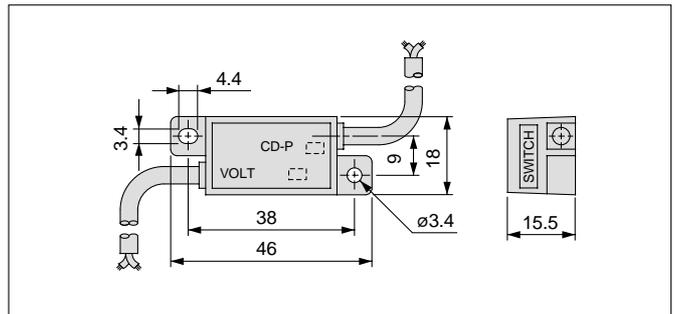


Contact Protection Box Internal Circuits

Lead wire colors inside [] are old colors prior to conformity with IEC standards.



Contact Protection Box/Dimensions



Contact Protection Box/Connection

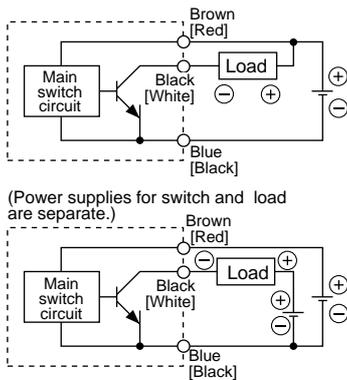
To connect a switch unit and contact protection box, connect the lead wire on the side of the contact protection box marked SWITCH to the lead wire coming out of the switch unit.

In addition, place the switch unit and contact protection box as close together as possible, with a lead wire length of no more than 1 meter.

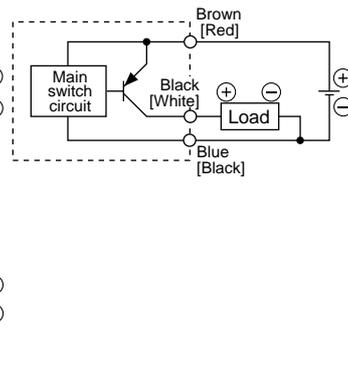
Series MF Auto Switch Connections and Examples

Basic Wiring

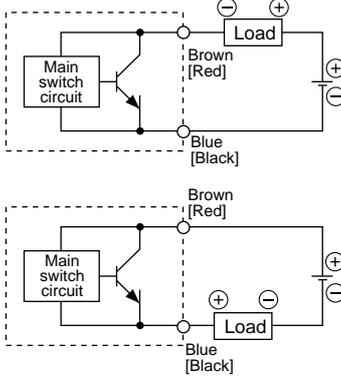
Solid state 3 wire, NPN



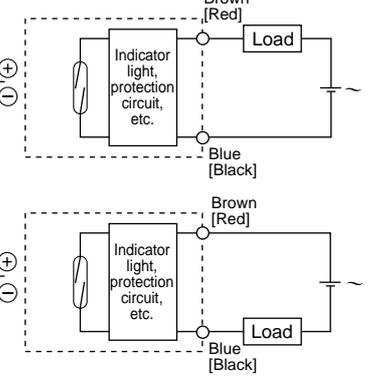
Solid state 3 wire, PNP



2 wire <Solid state>

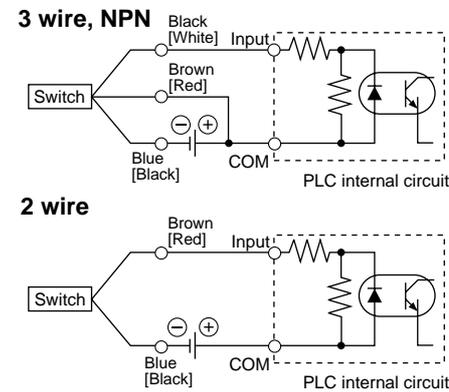


2 wire <Reed switch>

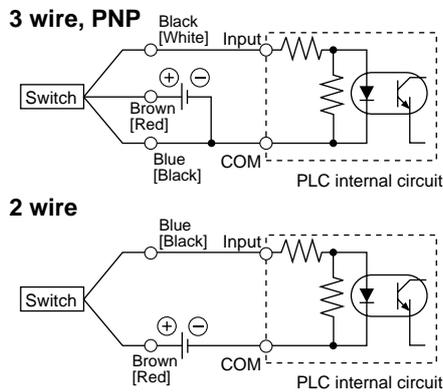


Examples of Connection to PLC

Specification for sink input



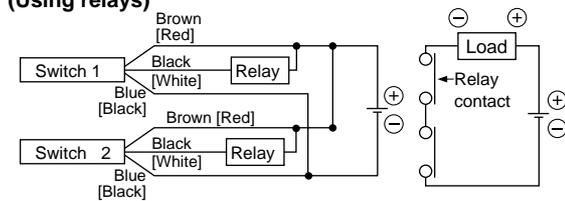
Specification for source input



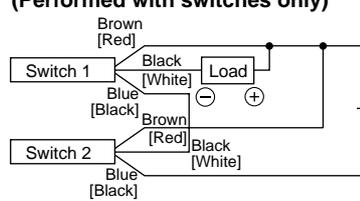
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

Connection Examples for AND (Series) and OR (Parallel)

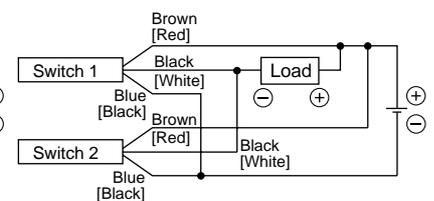
3 wire AND connection for NPN output (Using relays)



AND connection for NPN output (Performed with switches only)

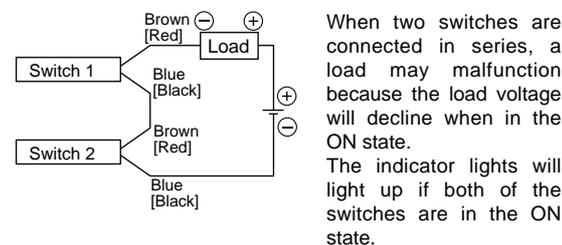


OR connection for NPN output



The indicator lights will light up when both switches are turned ON.

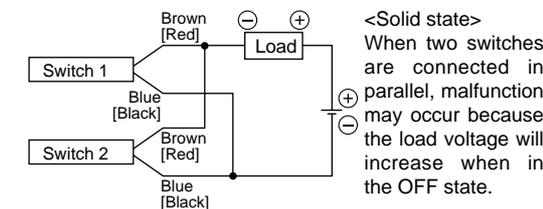
2 wire with 2 switch AND connection



$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24\text{V} - 4\text{V} \times 2 \text{ pcs.} \\ &= 16\text{V} \end{aligned}$$

Example: Power supply is 24VDC
Voltage decline in switch is 4V

2 wire with 2 switch OR connection



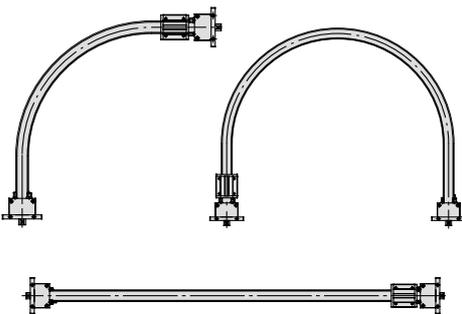
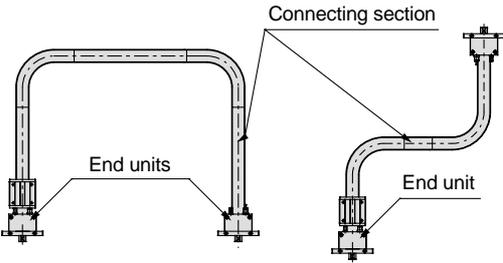
$$\begin{aligned} \text{Load voltage at OFF} &= \text{leakage current} \times 2 \text{ pcs.} \times \text{load impedance} \\ &= 1\text{mA} \times 2 \text{ pcs.} \times 3\text{k}\Omega \\ &= 6\text{V} \end{aligned}$$

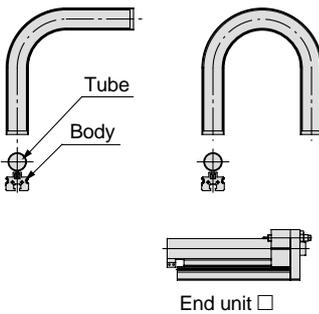
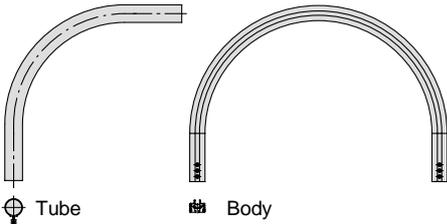
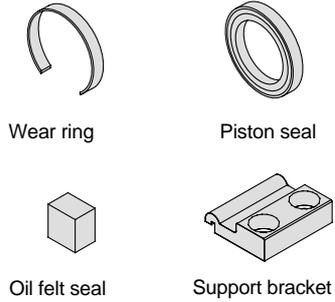
Example: Load impedance is 3kΩ
Leakage current from switch is 1mA

<Reed switch>
Because there is no current leakage, the load voltage will not increase when turned OFF, but due to the number of switches in the ON state, the indicator lights will sometimes get dark or not light up, because of dispersion and reduction of the current flowing to the switches.

Series MF Model Selection

Types of Units and Parts

Type of units and parts	Type of units	
Catalog pages	Single units P.1 to P.9	Combination Units P.11 to P.18
Content	<ul style="list-style-type: none"> • 2 types are available, curved type and straight type. • Mounting and piping methods are the same as for existing products. 	<ul style="list-style-type: none"> • 2 types of construction are available. 2 dimensional structures are created by combining curved and straight type units, and long strokes are created by combining straight type units only.
Configuration		
Model	<p>MF Bore size </p> <ul style="list-style-type: none"> • 3-dimensional transfer: Single units 	<p>MFT Bore size </p> <ul style="list-style-type: none"> • 3-dimensional transfer: Combination units

Type of parts		
Set parts P.11 to P.14	Parts P.16	Spare parts P. 4, 5 Optional parts P. 2 Connecting parts Note 1)
<ul style="list-style-type: none"> • Parts for combination units. • These consist of combinations of cylinder tube and body parts, and "combination units" are made by linking these set parts. • Curved units, straight units, maintenance units and end units, etc. are available. • Set parts can also be used as service parts (for unit replacement of cylinder tubes and bodies). 	<ul style="list-style-type: none"> • Service parts. • These are service parts for each of the cylinder tubes and bodies included in the set parts. 	<p>Spare parts ... Service parts (seal list) consisting of various seals and wear rings, etc.</p> <p>Optional parts ... Support brackets for attaching cylinders are available as optional parts.</p> <p>Connecting parts ... Required for connection of the set parts.</p>
		
<p>MFT Bore size</p> <p>• 3-dimensional transfer: Connecting units (set parts)</p>	<p>Cylinder tube</p> <p>MFP T Bore size G</p> <p>Body</p> <p>• 3-dimensional transfer: Parts</p>	<p>■ Spare parts</p> <p>MF Bore size — PS</p> <p>• 3-dimensional transfer: single unit Spare parts</p> <p>■ Optional parts</p> <p>MF-S32 $\frac{A}{B}$ (side support) $\frac{A}{B}$</p> <p>MY-S \square $\frac{A}{B}$ (support bracket) $\frac{A}{B}$</p> <p>■ Connecting parts</p> <p>MFT $\frac{15}{32}$ — CP</p> <p>• Connecting parts</p>

Note 1) Since the connecting parts (MFT $\frac{15}{32}$ -CP) are required for connection of the set parts, order in accordance with the number of connecting sections (unit joints).
 Note 2) Connecting parts are also available for the cylinder tube section and body section parts only.

Model MFPT $\frac{15}{32}$ -CP (For cylinder tube)
 Cylinder tube ↓ Connecting parts ↓

Model MFPG $\frac{15}{32}$ -CP (For body)
 Body ↓ Connecting parts ↓