

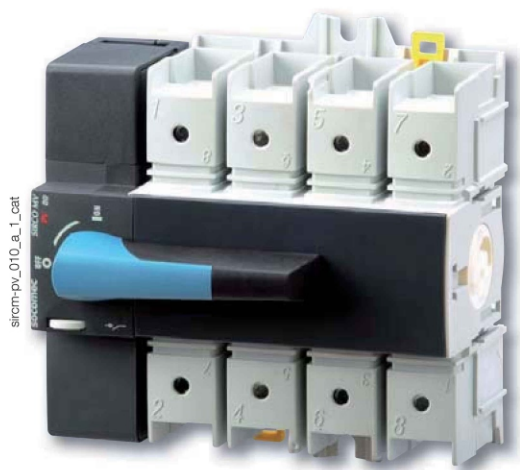


SIRCO MV PV



Load break switches for photovoltaic applications
for use up to 1000 VDC from 63 to 160 A

Load break switches



SIRCO MV PV 1000 V - 80 A
direct operation

Function

SIRCO MV PV are manually operated multipolar load break switches. They make and break under load conditions and provide optimum safety isolation for any PV circuit.

Advantages

Modular device

SIRCO MV PV are devices which are DIN-rail or backplate mountable and can be integrated into a modular panel with a 45 mm front cut-out.

Patented switching technology

SIRCO MV PV benefit from proven breaking technology based on a system of double break contacts with arc extinguishing chambers.

What you need to know

A photovoltaic electrical installation is an application that requires switching devices which fully meet the needs of operational reliability and operational safety intervention for this type of installation.

According to IEC 60364 (Part 7-7-12), the characteristics must withstand overcurrents up to 1.25 times the rated short-circuit current (I_{sc} , S_{tc}).

To date, as there is no specific standard regarding 'switchgear for PV installation', the manufacturer can only refer to IEC 60947 and related utilisation categories depending on the type of loads and normal overload conditions.

The utilisation category DC21 defines a device withstand capacity up to 1.5 times the rated current of the installation, with a time constant L/R 1 ms, which is significantly above the requirements by the standard IEC 60364-7-712 and PV needs on the basis of these criteria.

However, the manufacturer has the responsibility to propose, according to his expertise, devices meeting the specific requirements of these applications, even if they are not necessarily defined in standards.

The solution for

- > Residential buildings.
- > Buildings.
- > Solar parks.



Strong points

- > Modular device.
- > Patented switching technology.
- > Performance - 1000 VDC.

Conformity to standards

- > IEC 60947-3
- > IEC 60364-4-410
- > IEC 60364-7-712



Approvals and certifications⁽¹⁾



(1) Product reference on request.

A complete solution

- > **SUNSYS IFB** (Intelligent Field Box). Smart connection box to link solar panels to the inverter.



References

SIRCO MV PV 800 VDC - DIN rail or back plate mounting

Rating (A)	Circuit type	No. of poles	Switch body	Direct handle	External front handle	Shaft for external front handle	Auxiliary contact	Bridging bar
63 A	Single PV circuit	3 P	22PV 3106	Blue M0b 2299 5042 ⁽¹⁾ Blue M0 type 2299 5022	S0 Type Black IP55 1491 0111 ⁽¹⁾⁽²⁾ Black IP65 1493 0111 ⁽²⁾ Red / Yellow IP65 1494 0111 ⁽²⁾	S0 type 150 mm 1409 0615 200 mm 1409 0620 320 mm 1409 0632	1 contact NC+NO 2299 0001 ⁽³⁾ 1 contact 2 NC 2299 0011 ⁽³⁾ 1 contact NO 3999 0701 1 contact NC 3999 0702	1 piece 2209 0016
80 A		3 P	22PV 3108					
100 A		3 P	22PV 3110					
125 A		3 P	22PV 3012					
160 A		3 P	22PV 3016					

(1) Standard.

(2) Defeatable handle.

(3) Signalling contact only.

SIRCO MV PV 1000 VDC - DIN rail or back plate mounting

Rating (A)	Circuit type	No. of poles	Switch body	Direct handle	External front handle	Shaft for external front handle	Auxiliary contact	Bridging bar
63 A	Single PV circuit	4 P	22PV 4106	Blue M0b 2299 5042 ⁽¹⁾ Blue M0 type 2299 5022	S0 Type Black IP55 1491 0111 ⁽¹⁾⁽²⁾ Black IP65 1493 0111 ⁽²⁾ Red / Yellow IP65 1494 0111 ⁽²⁾	S0 type 150 mm 1409 0615 200 mm 1409 0620 320 mm 1409 0632	1 contact NC+NO 2299 0001 ⁽³⁾ 1 contact 2 NC 2299 0011 ⁽³⁾ 1 contact NO 3999 0701 1 contact NC 3999 0702	2 pieces 2209 2016
80 A		4 P	22PV 4108					
100 A		4 P	22PV 4110					
125 A		4 P	22PV 4012					
160 A		4 P	22PV 4016					

(1) Standard.

(2) Defeatable handle.

(3) Signalling contact only.

Accessories

Direct operation handle

M0b type direct handle		
Rating (A)	Handle colour	Reference
63 ... 160	Blue	2299 5042 ⁽¹⁾

(1) Standard.

M0 tpe compact direct operation handle		
Rating (A)	Handle colour	Reference
63 ... 160	Blue	2299 5022



M0b handle

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M0 handle

access_2185_a_2_cat

External operation handle

Use

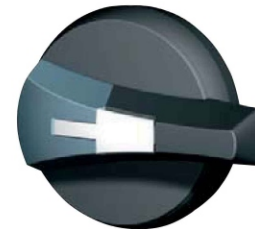
Door interlocked external operation handles include an escutcheon, are padlockable and must be utilised with an extension shaft.

In a combiner box, located close to the solar cell strings, or located close to the inverter, we recommend the use of a door interlocked external handle for safety.

Example

The locking function of the enclosure in the "ON" position will force the operator to safely disconnect and isolate the solar cell strings prior to any intervention.

Opening the door when the switch is on "ON" position is possible by defeating the interlocking function with the use of a tool (authorised persons only). The interlocking function is restored when the door is re-closed.



S0 type handle

access_2179_a_2_cat

S0 type handle - Front operation I - 0				
Rating (A)	Handle	Handle colour	External IP ⁽¹⁾	Reference
63 ... 160	S0 type	Black	IP55	1491 0111 ⁽²⁾
63 ... 160	S0 type	Black	IP65	1493 0111 ⁽²⁾
63 ... 160	S0 type	Red/Yellow	IP65	1494 0111 ⁽²⁾

S1 type handle - Front operation I - 0				
Rating (A)	Handle	Handle colour	External IP ⁽¹⁾	Reference
63 ... 160	S1 type	Black	IP55	1411 2111 ⁽²⁾
63 ... 160	S1 type	Black	IP65	1413 2111 ⁽²⁾
63 ... 160	S1 type	Red/Yellow	IP65	1414 2111 ⁽²⁾

(1) IP: protection degree according to IEC 60529 standard.

(2) Defeatable handle.



S1 type handle

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Shaft for external handle

Use

Standard lengths:

- 150 mm
- 200 mm

- 320 mm

- 400 mm

Other lengths: Please consult us.

For SIRCO MV PV			
Rating (A)	Handle type	Length (mm)	Reference
63 ... 160	S0 type	150 mm	1409 0615
63 ... 160	S0 type	200 mm	1409 0620
63 ... 160	S0 type	320 mm	1409 0632
63 ... 160	S1 type	200 mm	1401 0620
63 ... 160	S1 type	320 mm	1401 0632
63 ... 160	S1 type	400 mm	1401 0640



Shaft for S0 type handle for SIRCO MV PV 63 ... 160 A

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Auxiliary contact

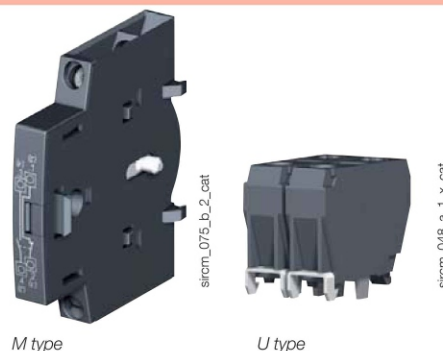
Use

M-type

Signalisation of positions 0 and I by NO+NC or 2 NO auxiliary contacts. They can be mounted on the right side on the SIRCO MV PV. Up to 2 auxiliary contact modules can be installed.

U-type

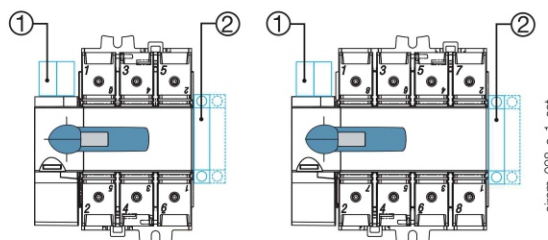
Pre-break and signalisation by NO or NC auxiliary contact.
Max 2 auxiliary contacts.



M type			
Rating (A)	Contact(s)	Contact type	Reference
63 ... 160	1 contact	NO + NC	2299 0001 ⁽¹⁾
63 ... 160	1 contact	2 NC	2299 0011 ⁽¹⁾

(1) Signalling contact only.

U type			
Rating (A)	Contact(s)	Contact type	Reference
63 ... 160	1 AC	NO	3999 0701
63 ... 160	1 AC	NC	3999 0702



M type

Auxiliary contact configurations for SIRCO MV PV

- Maximum 2 "U" type auxiliary contacts.
- Maximum 2 "M" type auxiliary contacts modules (4 A/C).

Terminal shrouds

Use

Top and bottom protection against direct contact with the connection parts (set of 2 units).

Advantage

Perforations allow remote thermographic inspection without the need to remove the shrouds. The terminal shrouds also provide phase separation.

For SIRCO MV PV			
Rating (A)	No. of poles	Position	Reference
63 ... 160	3 P	top and bottom	2294 3016
63 ... 160	4 P	top and bottom	2294 4016

Bridging bars for connecting poles in series

Use

The bridging bars facilitate the connection of poles in series, allowing the below configurations:

- Bottom/Bottom
- Top/Top
- Top/Bottom
- Top/Bottom

Connection diagrams, See "Poles connections in serie", page 115.

For SIRCO MV PV		
Rating (A)	Pack	Reference
63 ... 160	1 piece	2209 0016
63 ... 160	2 pieces	2209 2016

Enclosed switches

Our SIRCO MV PV can be delivered enclosed, please consult us. Close to the installation, they guarantee:

Disconnection under DC load between the inverters and PV generators (necessary according to the IEC 60364-712 standard).

For local safety disconnection, SOCOMEC - a leader on the market - offers the widest range of enclosed switches. Whatever the level of safety is, we are able to meet all your requirements (disconnection, switching for mechanical maintenance, emergency breaking).

- Enclosed solar load break switches
- Enclosed fuse combination switches
- Enclosed changeover switches
- Complete integrated equipment

Available on request:

- Enclosures made of steel or stainless steel sheet metal (painted for sea environments or brushed), or insulating materials
- Specific colours (enclosure paint, handle)
- Specific dimensions
- Specific connections: class II quick connectors

For any request of customised products, please consult us.

Characteristics according to IEC 60947-3

63 to 160 A

Thermal current I_{th} at 40°C		63 A	80 A	100 A	125 A	160 A
Rated insulation voltage U_i (V)		1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp} (kV)		8	8	8	8	8

Rated operational currents I_e (A)		63 A	80 A	100 A	125 A	160 A
Rated voltage	Utilisation category	Circuit type	No. of poles	Number of pole(s) in series per polarity	(A)	(A)
800 VDC	DC-21 B	Single PV circuit	3 P	2 P + and 1 P -	63	80
1000 VDC	DC-21 B	Single PV circuit	4 P	2 P + and 2 P -	63	80

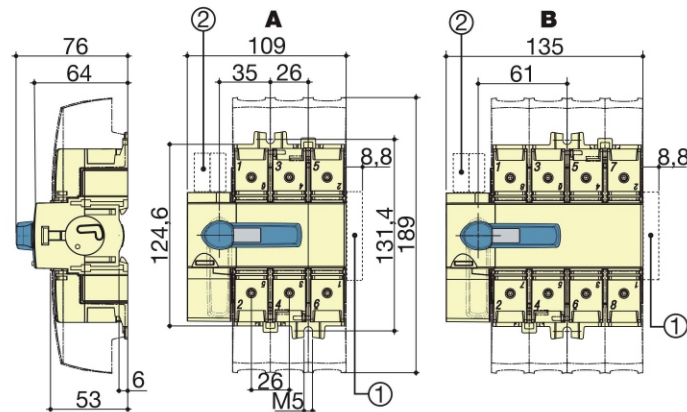
Connection		63 A	80 A	100 A	125 A	160 A
Maximum Cu rigid cable cross-section (mm ²)		70	70	70	70	70
Tightening torque min (Nm)		4	4	4	4	4
Tightening torque max (Nm)		5	5	5	5	5

Mechanical characteristics		63 A	80 A	100 A	125 A	160 A
Operating effort (Nm)		4.2	4.2	4.2	4.2	4.2
Weight of a 3 pole device (kg)		0.7	0.7	0.7	0.7	0.7
Weight of a 4 pole device (kg)		0.9	0.9	0.9	0.9	0.9

Dimensions

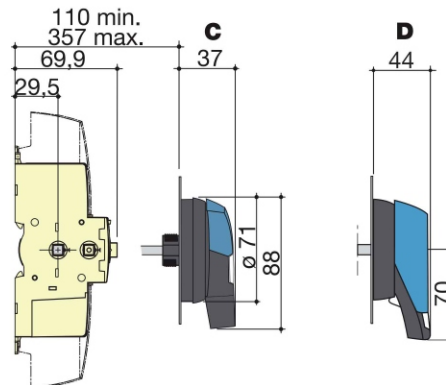
SIRCO MV PV 63 to 160 A

Direct front operation



A. 3 poles
B. 4 poles

External front operation



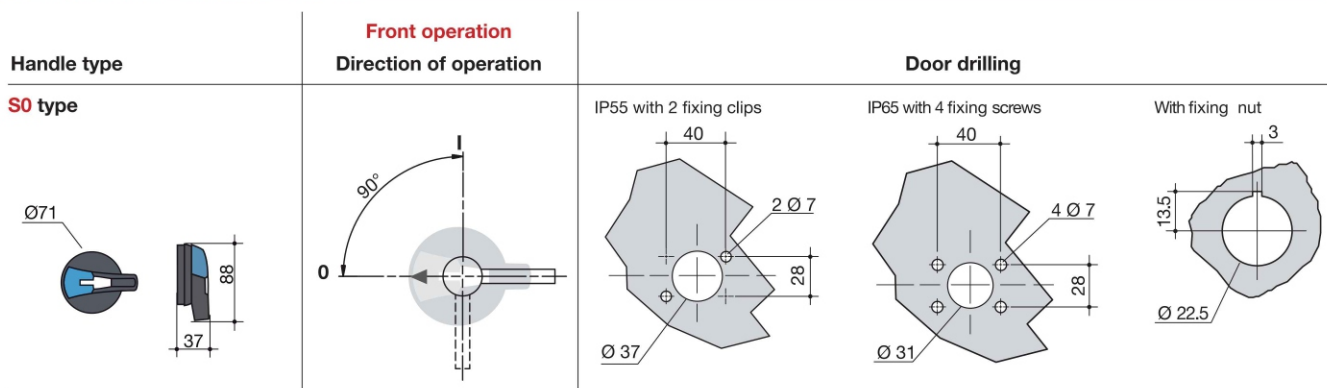
C. S0 type handle
D. S1 type handle

1. Maximum 2 "M" type auxiliary contacts.
2. Maximum 2 "U" type auxiliary contacts

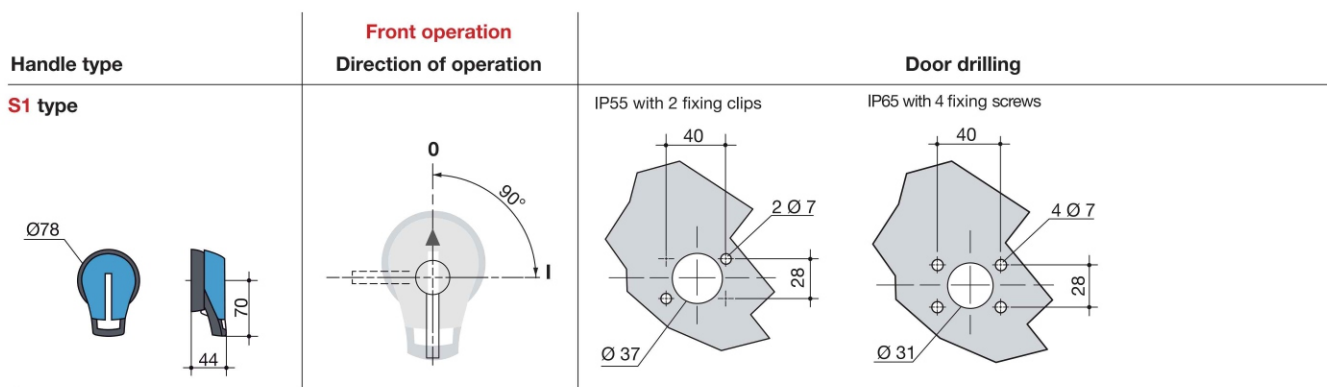
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Dimensions for external handles

SIRCO MV PV 63 to 160 A



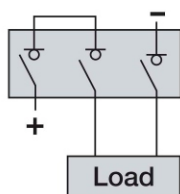
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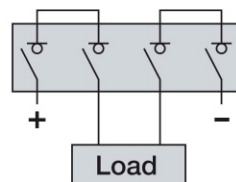
Pole series connection⁽¹⁾

3 poles - bottom / top



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4 poles - bottom / bottom



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⁽¹⁾ Other connections: refer to mounting instructions.