



# SIRCORDER PV

## Changeover switches for photovoltaic applications from 200 to 630 A

Changeover  
switches



### The solution for

- > Energy management.
- > Continuity of supply for PV applications.



### Strong points

- > Stable positions.
- > Secured breaking.
- > Patented safety disconnection.

### Conformity to standards

- > IEC 60947-3



### A compact solution.

- > The products are available in enclosures.

### Function

SIRCORDER PV switches are manual multipolar changeover switches with positive break indication. They ensure source inversion or changeover under load of two photovoltaic installation circuits.

### Advantages

#### Stable positions

SIRCORDER PV switches have three stable positions which are not affected by voltage drops or vibrations.

#### Secured breaking

Simultaneous upstream and downstream isolation and positive break indication.

#### Patented safety disconnection

A glass fibre reinforced polyester break chamber with an arc extinguishing system provides a patented safety disconnection system offering rapid extinguishing of the electric arc up to 1000 VDC and current interruption up to 630 A.

### 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 ( $I_{sc}$ ,  $S_{ic}$ ).

To date, as there is no specific standard regarding 'switchgear for PV installation', the manufacturer can only refer to IEC 60947 and related use 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 1ms, 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.

## Application

The choice of the material cannot be separated from the concept of energy management.

Many applications may require continuous power supply during a PV generator fault, when an isolated site has been electrified, in developing countries, in telecommunications or pumping. SIRCOVER PV changeover switches ensure source inversion or switching under load between two circuits.

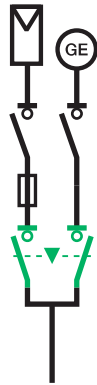
Example: Switching from DC to AC photovoltaic grid.

**Source transfer:** manual changeover between two photovoltaic sources or a photovoltaic source and a generator set.

**Equipment earthing** as for a string of photovoltaic panels.

**Load inverter :** switching the power supply from one load to another in order to guarantee continuous power supply during maintenance operations.

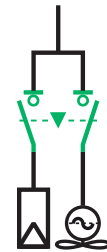
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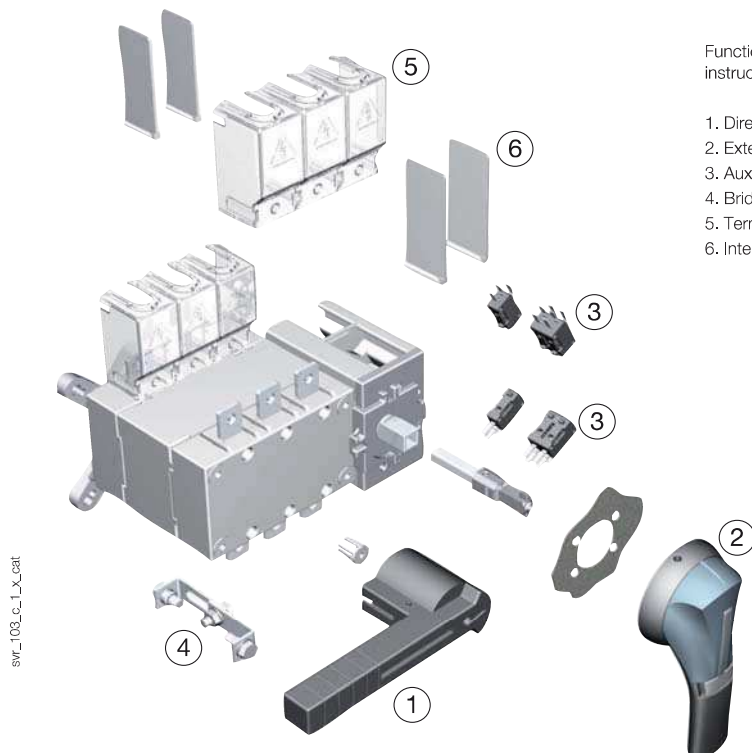
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## Functional diagram



Functional diagram (for further details see the installation instructions supplied with the product).

1. Direct front operation
2. External front operation
3. Auxiliary contacts
4. Bridging bar.
5. Terminal shrouds.
6. Inter-phase barrier.

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## References

### SIRCOVER PV I-0-II

Rating (A)	No. of poles	Switch body	Direct handle	External handle	Shaft for external handle	Bridging bar	Auxiliary contact	Terminal screens	Terminal shrouds	
200 A	3 P	41PV <b>3020</b>	Black 4199 <b>5012</b>	S2 type Black IP55 1421 <b>2113</b> Black IP65 1423 <b>2113</b> <sup>(1)</sup>	200 mm 1400 <b>1020</b> 320 mm 1400 <b>1032</b> <sup>(1)</sup>	2 P 4109 <b>2025</b>	2 <sup>nd</sup> contact NO/NC 4109 <b>0021</b> <sup>(2)</sup>	3 P 1509 <b>3025</b> 4 P 1509 <b>4025</b>		
	4 P	41PV <b>4020</b>								
250 A	3 P	41PV <b>3025</b>			S3 type Black IP65 1433 <b>3113</b>	200 mm 1401 <b>1520</b> 320 mm 1401 <b>1532</b> <sup>(1)</sup>		2 P 4109 <b>2063</b>	3 P 1509 <b>3063</b> <sup>(3)</sup> 4 P 1509 <b>4063</b> <sup>(3)</sup>	3 P 2694 <b>3051</b> <sup>(4)</sup> 4 P 2694 <b>4051</b> <sup>(4)</sup>
	4 P	41PV <b>4025</b>								
400 A	3 P	41PV <b>3040</b>								
	4 P	41PV <b>4040</b>								
500 A	3 P	41PV <b>3050</b>								
	4 P	41PV <b>4050</b>								
630 A	3 P	41PV <b>3063</b>								
	4 P	41PV <b>4063</b>								

(1) Standard.

(2) 2 pieces: one for position I and one for position II.

(3) 2 pieces: one for top side and another for bottom side

(4) To shroud switch top and bottom 2 references required.

## Accessories

### Direct operation handle

Rating (A)	Handle colour	Handle type	Reference
200 ... 630	Black	Single lever	4199 <b>5012</b>



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### External operation handle

#### Use

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

Rating (A)	External IP <sup>(1)</sup>	Handle type	Reference
200 ... 250	IP55	S2 type	1421 <b>2113</b>
200 ... 250	IP65	S2 type	1423 <b>2113</b>
400 ... 630	IP65	S3 type	1433 <b>3113</b>

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



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S2 type handle



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S3 type handle

## S-type handle adapter

### Use

Enables S type handles to be fitted in place of existing older style SOCOMEC handles. Adapter can also be utilised as a spacer to increase the distance between the panel door and the handle lever.

### Dimensions

Adds 12 mm to the depth.

Handle colour	External IP <sup>(1)</sup>	To be ordered in multiples of	Reference
Black	IP65	1	1493 0000

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



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## Alternative S-type handle cover colours

### Use

For single lever handles type S2 and S3. Other colours: Please consult us.

Colour	To be ordered in multiples of	Handle	Reference
Light grey	50	S2, S3 type	1401 0001
Dark grey	50	S2, S3 type	1401 0011



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## Shaft guide for external operation

### Use

To guide the shaft extension into the external handle.

This accessory enables the handle to engage the extension shaft with a misalignment of up to 15 mm. Required for a shaft length over 320 mm.



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Description	Reference
Shaft guide	1429 0000

## Shaft for external handle

### Use

Standard lengths:

- 200 mm,
- 320 mm.

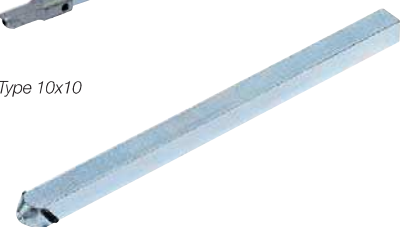
Other lengths: Please consult us.

Rating (A)	Length (mm)	Dimension X (mm)	Type	Reference
200 ... 250	200	210 ... 310	10 x 10	1400 1020
200 ... 250	320	210 ... 430	10 x 10	1400 1032
400 ... 630	200	425 ... 577	15 x 12	1401 1520
400 ... 630	320	425 ... 697	15 x 12	1401 1532



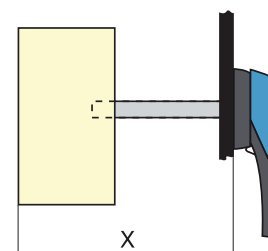
Type 10x10

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Type 10x10

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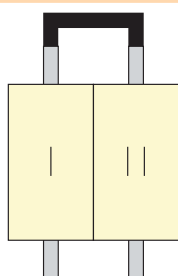
from 200 to 630 A

## Accessories (continued)

### Bridging bars

#### Use

For creating a common connection between switches I & II, on the top or bottom side of the SIRCOVER, to enable, for example, the load to be fed from either incoming source (I or II).



Rating (A)	No. of poles	Section (mm)	Mounting	Reference
200 ... 250	1 P	25 x 2,5	client	4109 0025
200 ... 250	2 P	25 x 2,5	client	4109 2025
400 ... 630	1 P	50 x 5	client	4109 0063
400 ... 630	2 P	50 x 5	client	4109 2063

### Bridging bars for connecting poles in series

#### Use

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

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

Connection diagrams: See "Poles connections in serie", page 365.

Rating (A)	Number of poles of the device in series	Pack	Reference
200 ... 250	2 <sup>(1)</sup>	1 piece	2609 0025
200 ... 250	4 <sup>(1)</sup>	2 pieces	2609 2025
400 ... 630	2 <sup>(1)</sup>	1 piece	2609 0063
400 ... 630	4 <sup>(1)</sup>	2 pieces	2609 2063

(1) on one source

### Auxiliary contact

#### Use

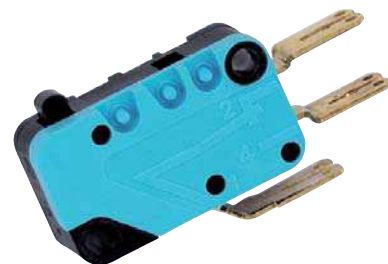
Pre breaking and signalling of positions I and II: 1 or 2 NO/NC auxiliary contacts in each position. Low level auxiliary contacts: please consult us.

#### Connection to the control circuit

6.35 mm fast-on terminal.

#### Electrical characteristics

30 000 operations.



#### Characteristics

Rating (A)	Nominal current (A)	Operating current I <sub>o</sub> (A)			
		250 VAC AC-13	400 VAC AC-13	24 VDC AC-13	48 VDC AC-13
200 ... 630	16	12	8	14	6

#### References

##### NO/NC changeover contact

Rating (A)	Contact(s)	Reference
200 ... 630	1 <sup>st</sup> /2 <sup>nd</sup>	4109 0021

### Terminal shrouds

#### Use

Protection against direct contact with terminals or connecting parts.

#### Advantage

Perforations allow remote thermographic inspection without the need to remove the shrouds.

Rating (A)	No. of poles	Position	Reference
400 ... 630	3 P	top / bottom	2694 3051 <sup>(1)</sup>
400 ... 630	4 P	top / bottom	2694 4051 <sup>(1)</sup>

(1) To shroud switch top and bottom 2 references required.



## Terminal screens

### Use

Top and bottom protection against direct contact with terminals or connection parts.

Rating (A)	No. of poles	Position	Pack	Reference
200 ... 250	3 P	top / bottom	1	1509 3025
200 ... 250	4 P	top / bottom	1	1509 4025
400 ... 630	3 P	top / bottom	2	1509 3063
400 ... 630	4 P	top / bottom	2	1509 4063



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## Key handle interlocking system

### Use

Using padlock (not supplied). This device is factory mounted in the direct or external operation handle and allows the use of up to 3 padlocks.

### Locking:

- a special handle which receives the lock bolt on SIRCOVER CD 125 to CD 630 A (Fig. 2)

The interlocking positions are either determined as standard or configured by the user by removing the pre-formed tabs. Padlocking and locking can be combined.

Padlocking in position I, 0 or II			
Rating (A)	Operation	Figure	Reference
200 ... 250	external	1	1423 2813

Locking using RONIS EL11AP lock in position 0 (not supplied)			
Rating (A)	Operation	Figure	Reference
200 ... 630	direct	2	4109 1006 <sup>(1)</sup>
200 ... 630	external	3	1499 7701

(1) Specific handle included.

Locking using RONIS EL11AP lock in positions I, 0, II (not supplied)			
Rating (A)	Operation	Figure	Reference
200 ... 630	direct	2	4109 1002 <sup>(1)</sup>
200 ... 250	external	3	1499 7701

(1) Specific handle included.

Locking using type K CASTELL lock (not supplied)			
Rating (A)	Operation	Figure	Reference
200 ... 630	external	3	1499 7702

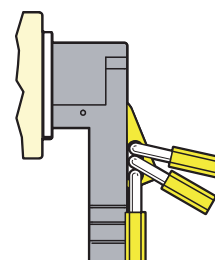


Fig. 1

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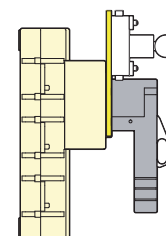


Fig. 2

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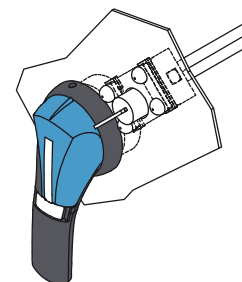


Fig. 3

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## Other specific accessories

- Low level auxiliary contacts.

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## Characteristics according to IEC 60947-3

### 200 to 630 A

Thermal current $I_{th}$ at 40°C	200 A	250 A	400 A	500 A	630 A
Rated insulation voltage $U_i$ (V)	1200	1200	1200	1200	1200
Rated impulse withstand voltage $U_{imp}$ (kV)	8	8	12	12	12

### Rated operational currents $I_e$ (A)

Rated voltage	Utilisation category	Number of poles of the device	Number of pole(s) in series per polarity	(A)	(A)	(A)	(A)	(A)
750 VDC	DC-21 B	3 P	2 P + and 1 P -	200	250	400	500	630
1000 VDC	DC-21 B	4 P	2 P + and 2 P -	200	250	400	500	630

### Connection

Rigid Cu cable cross-section (mm <sup>2</sup> )	95	120	240	2 x 150	2 x 185
Maximum Cu busbar width (mm)	32	32	32	40	40
Tightening torque min (Nm)	20	20	20	40	40

### Mechanical characteristics

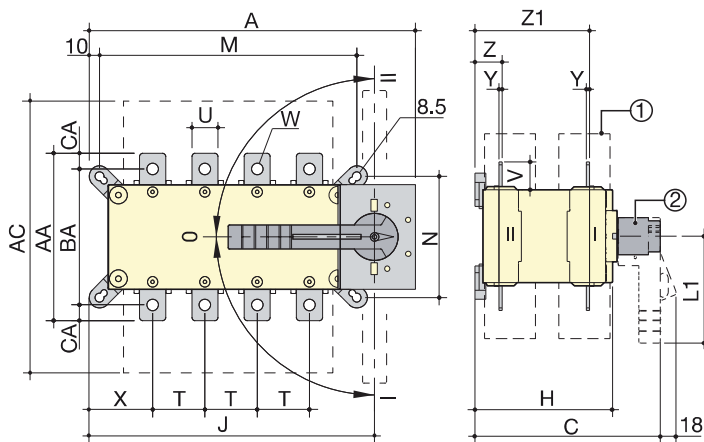
Durability (number of operating cycles) <sup>(1)</sup>	10000	10000	5000	5000	5000
Weight of a 3 pole device (kg)	3,8	3,8	9	9	9
Weight of a 4 pole device (kg)	4,6	4,6	11	11	11

(1) Improved endurances: Please consult us.

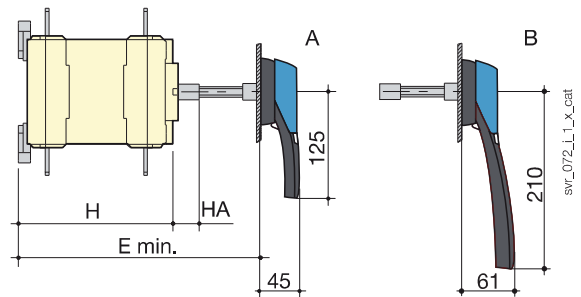
## Dimensions

### SIRCOVER 200 to 630 A

#### Direct front operation



#### External front operation



A. S2 type handle for external operation: 200 to 400 A.  
B. S3 type handle for external operation: 500 to 630 A.

1. Terminal shrouds.  
2. Direct handle operation:

- 200 to 400 A: L1 = 140 mm.  
- 500 to 630 A: L1 = 210 mm.

Rating (A)	Overall dimensions				Terminal shrouds	Switch body				Switch mounting				Connection										
	A 3p.	A 4p.	C	E min	AC	H	HA	J 3p.	J 4p.	M 3p.	M 4p.	N	T	U	V	W	X 3p.	X 4p.	Y	Z	Z1	AA	BA	CA
200	262	312	218	208 ... 436	280	148	25	223	273	196	246	116	50	25	30	11	61	61	3,5	30	124	160	130	15
250	262	312	218	208 ... 436	280	148	25	223	273	196	246	116	50	25	30	11	61	61	3,5	30	124	160	130	15
400	319	379	295	285 ... 514	400	225	25	272	332	246	306	176	65	45	50	13	70.5	65.5	5	43	180	260	220	20
500	319	379	295	285 ... 514	400	225	25	272	332	246	306	176	65	45	50	13	70.5	65.5	5	43	180	260	220	20
630	319	379	295	285 ... 514	400	225	25	272	332	246	306	176	65	45	50	13	70.5	65.5	5	43	180	260	220	20

