



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_{tc}).

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.

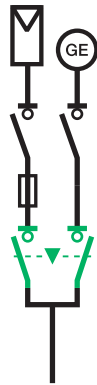
Example: Switching from DC to AC photovoltaic grid.

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.

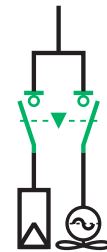
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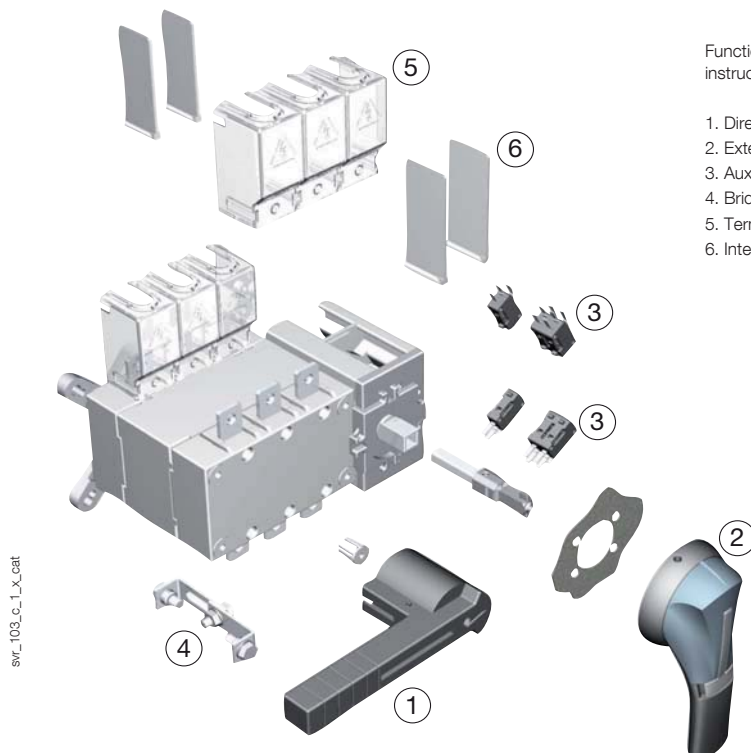
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comut_037_a_1_x_cat



Functional diagram



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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 3020 | Black 4199 5012 | S2 type Black IP55 1421 2113 Black IP65 1423 2113 ⁽¹⁾ | 200 mm 1400 1020 320 mm 1400 1032 ⁽¹⁾ | 2 P 4109 2025 | 2 nd contact NO/NC 4109 0021 ⁽²⁾ | 3 P 1509 3025 4 P 1509 4025 | | | |
| | 4 P | 41PV 4020 | | | | | | | | | |
| 250 A | 3 P | 41PV 3025 | | | S3 type Black IP65 1433 3113 | 200 mm 1401 1520 320 mm 1401 1532 ⁽¹⁾ | | 2 P 4109 2063 | | 3 P 1509 3063 ⁽³⁾ 4 P 1509 4063 ⁽³⁾ | 3 P 2694 3051 ⁽⁴⁾ 4 P 2694 4051 ⁽⁴⁾ |
| | 4 P | 41PV 4025 | | | | | | | | | |
| 400 A | 3 P | 41PV 3040 | | | | | | | | | |
| | 4 P | 41PV 4040 | | | | | | | | | |
| 500 A | 3 P | 41PV 3050 | | | | | | | | | |
| | 4 P | 41PV 4050 | | | | | | | | | |
| 630 A | 3 P | 41PV 3063 | | | | | | | | | |
| | 4 P | 41PV 4063 | | | | | | | | | |

(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 5012 |



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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 ⁽¹⁾ | Handle type | Reference |
|-------------|----------------------------|-------------|-----------|
| 200 ... 250 | IP55 | S2 type | 1421 2113 |
| 200 ... 250 | IP65 | S2 type | 1423 2113 |
| 400 ... 630 | IP65 | S3 type | 1433 3113 |

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



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S2 type handle



access_151_La_2_cat

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 ⁽¹⁾ | 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 |



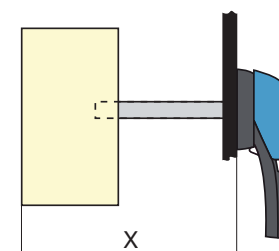
Type 10x10

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Type 10x12

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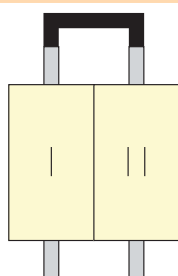
Accessories (continued)

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 |



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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 ⁽¹⁾ | 1 piece | 2609 0025 |
| 200 ... 250 | 4 ⁽¹⁾ | 2 pieces | 2609 2025 |
| 400 ... 630 | 2 ⁽¹⁾ | 1 piece | 2609 0063 |
| 400 ... 630 | 4 ⁽¹⁾ | 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.

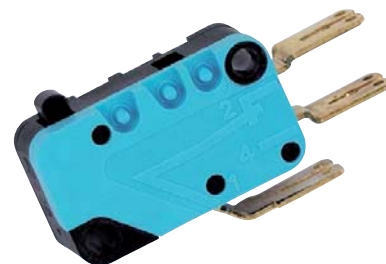
Characteristics

| Rating (A) | Nominal current (A) | Operating current I _o (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 st /2 nd | 4109 0021 |



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svr_058_a_1_cat

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 ⁽¹⁾ |
| 400 ... 630 | 4 P | top / bottom | 2694 4051 ⁽¹⁾ |

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



access_206_a_2_cat

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 |



access_207_a_2_cat

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 ⁽¹⁾ |
| 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 ⁽¹⁾ |
| 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 |

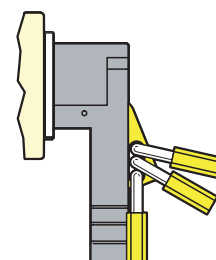


Fig. 1

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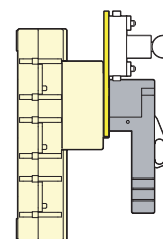


Fig. 2

access_001_a_1_X_cat

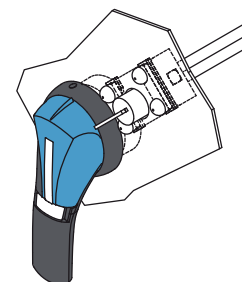


Fig. 3

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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 ²) | 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

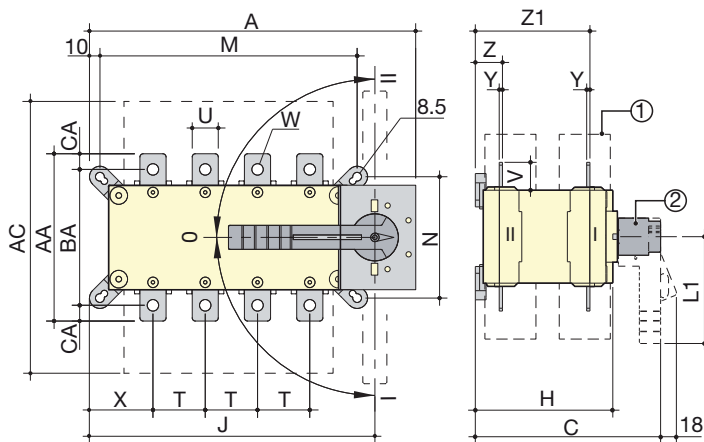
| | | | | | |
|--|-------|-------|------|------|------|
| Durability (number of operating cycles) ⁽¹⁾ | 10000 | 10000 | 5000 | 5000 | 5000 |
| Weight of a 3 pole device (kg) | 3,8 | 3,8 | 9 | 9 | 9 |
| Weight of a 4 pole device (kg) | 4,6 | 4,6 | 11 | 11 | 11 |

(1) Improved endurance: Please consult us.

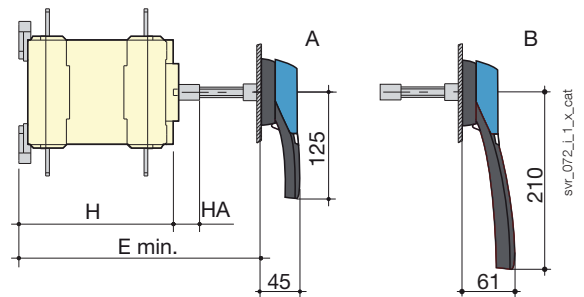
Dimensions

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.

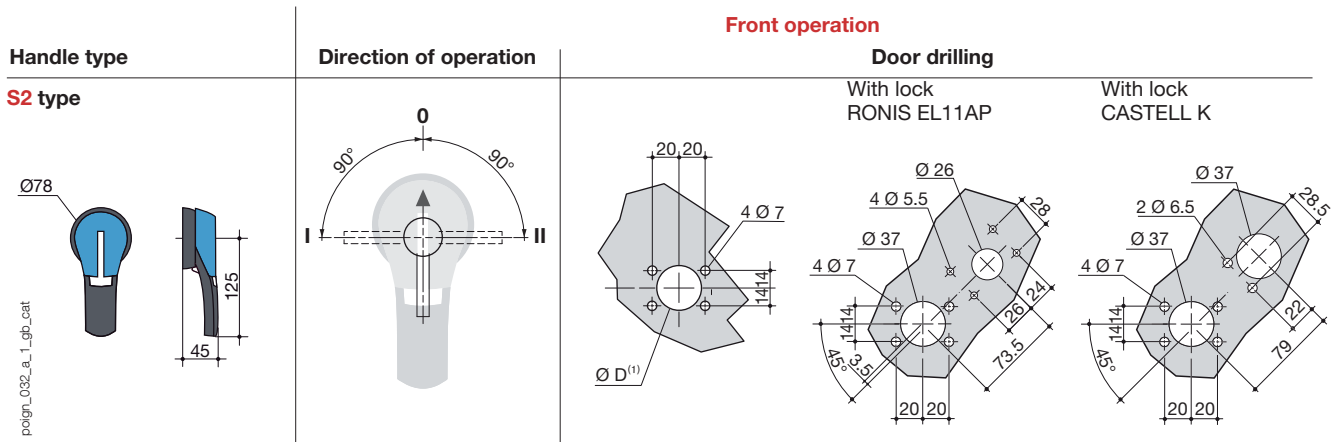
1. Terminal shrouds.
2. Direct handle operation:

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

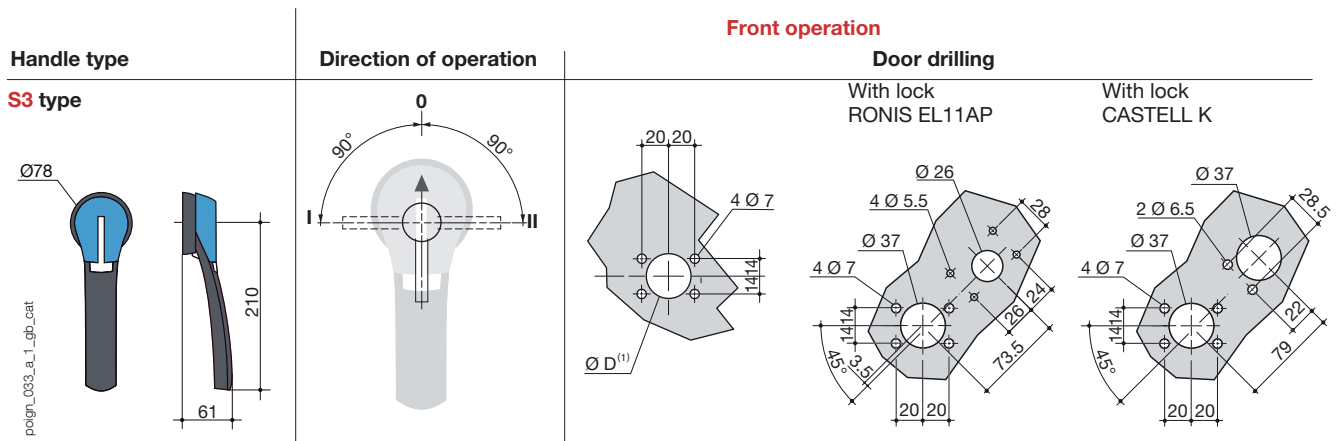
| Rating (A) | Overall dimensions | | | | Terminal shrouds | Switch body | | | | Switch mounting | | | | Connection | | | | | | | | | | |
|------------|--------------------|-------|-----|-------------|------------------|-------------|----|-------|-------|-----------------|-------|-----|----|------------|----|----|-------|-------|-----|----|-----|-----|-----|----|
| | 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 |

Dimensions for external handles

SIRCOVER 200 to 600 A



(1) Ø31 to Ø37: Rear screw mounting Ø37: front clip mounting.

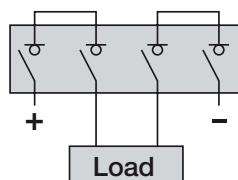
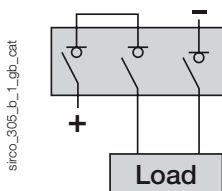


(1) Ø31 to Ø37: Rear screw mounting Ø37: front clip mounting.

Pole connections in series⁽¹⁾

3 poles - bottom / top

4 poles - bottom / bottom



(1) Other connections: refer to mounting instructions