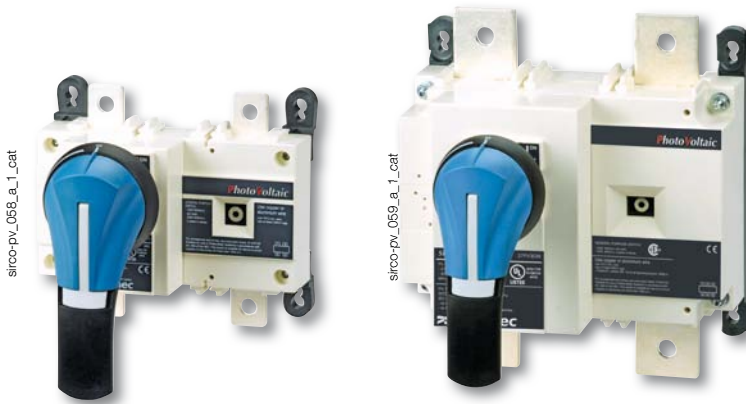


SIRCO PV UL 98B

Load break switches for photovoltaic applications
from 100 to 2000 A, up to 1500 VDC



Function

SIRCO PV UL 98B are manually operated multipolar load break switches. They make and break under load conditions and provide safety isolation for any PV circuit up to 1000 VDC (as per UL 98B standard) and 1500 VDC (as per IEC 60947-3). They comply with NEC Art. 690 (US National Electrical Code) concerning photovoltaic installations. They are compliant for use within solar inverters and enclosures governed by standard UL1741.

Advantages

Performance

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 1500 VDC and current interruption up to 2000 A.

SIRCO PV are extremely durable switches that have been tested and approved for use in the most demanding environments.

They have been designed and tested for all types of applications: connected to earth, floating or bipolar.

Back-to-back double load break switch

The system of back-to-back double switches enables:

- on load operation of two switches with a single handle,
- compact solution when connecting two separate photovoltaic circuits compared with the use of two separate switches,
- easy connection,
- voltages above 1000 VDC are broken by the use of two poles in series.

The solution for

- > Combiner box
- > Recombiner box
- > Inverter



Strong points

- > Patented switching technology
- > Positive break indication
- > Up to 1000 VDC as per characteristics by UL 98B
- > Up to 1500 VDC as per characteristics by IEC 60947-3
- > Suitable for use in accordance with NEC Art. 690

Conformity to standards

- > UL 98B Guide WHVA, file E346418
- > CSA C22.2#4, Class 4651-02, file 112964
- > NEC Art 690 Issue 2011
- > IEC 60947-3



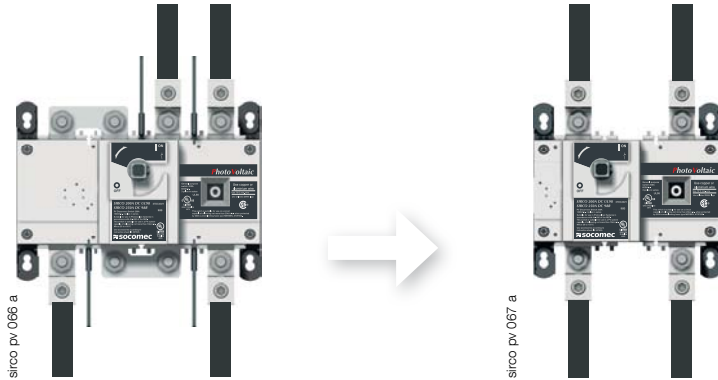
Approvals and certifications⁽¹⁾



(1) Product reference on request.

New patented switching technology to break 500 VDC per pole

Most PV systems today are designed at 1000 VDC. Our new range of switches allows on-load breaking of 1000 VDC on just 2 poles. This innovation provides an extremely compact solution.



Classic solution
 Example of connection of a 1000 VDC disconnect.

New
 With our new range we can break 1000 VDC with 2 poles in series.

Optimise your investment

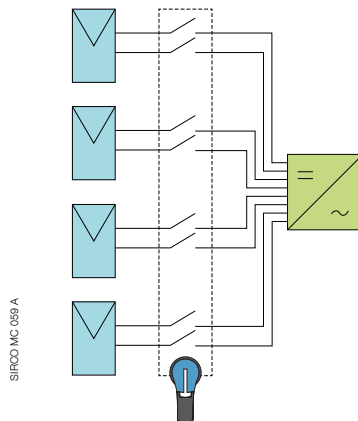
- Limit costs by reducing the number of bridging bars per device.
- Gain time by having a less number of bridging bars to install.
- Reduce the overall heat dissipation of the switch. A 2 pole SIRCO PV switch takes direct advantage of this, leading to possibility to use a smaller enclosure.

Limit potential risk

PV equipment is subject to extreme variation in temperature. Point of connection are therefore subject to potential loosening of connection due to breaking cooling effect. Limiting the number of poles greatly reduces the risk of a loose connection.

Allows to disconnect up to 4 circuits with one switch ("The Worlds first")

A compact and cost effective solution for recombinaer applications. Allows to break up to 24 circuits by respecting the NEC article 690.



4 MPPT switches, 4 circuits are switched together.

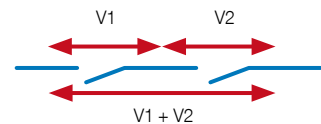


350 A 1000 VDC 4 circuits.

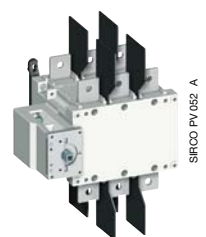
Achieving 1500 VDC characteristics in a compact footprint

SOCOMECS's new technology enables Utilisation at 1500 VDC by connecting three poles in series.

- Each pole of a switch has a maximum voltage breaking capacity. To break a high DC voltage it is necessary to connect poles in series. The global on-load breaking capacity of a switch is determined by multiplying the max voltage breaking capacity per pole by the number of poles in series.
- Paralleling the poles on our double-stack design permits a higher current rating to be achieved.



400 A 1500 VDC



800 A 1500 VDC with a 400 A double stack switch.

SIRCO PV UL 98B

Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

References

1000 VDC - Back plate mounting

Rating (A)	Frame size	No. of poles	Switch body	External handle	Shaft for external handle
1 PV circuit					
100 A	B4	2 P	27PV 2009	S2 type Black 1, 3R, 12 142F 2111 ⁽¹⁾ Red/Yellow 1, 3R, 12 142G 2111 ⁽¹⁾ Black 4, 4X 142D 2111 ⁽¹⁾ Red/Yellow 4, 4X 142E 2111 ⁽¹⁾	200 mm 7.9 inches 1400 1020 320 mm 12.6 inches 1400 1032 400 mm 15.7 inches 1400 1040 ⁽²⁾
200 A	B4		27PV 2019		
250 A	B4		27PV 2024		
325 A	B5		27PV 2032		
400 A	B5		27PV 2039		
600 A	B6	4 P	27PV 4060	S3 type Black 4, 4X 143D 3111 ⁽¹⁾ Red/Yellow 4, 4X 143E 3111 ⁽¹⁾ S4 type Black 4, 4X 144D 3111 ⁽¹⁾ Red/Yellow 4, 4X 144E 3111 ⁽¹⁾	200 mm 7.9 inches 1401 1520 320 mm 12.6 inches 1401 1532 400 mm 15.7 inches 1401 1540 ⁽²⁾
800 A	B7		27DC 4081		
1200 A	B7		27DC 4121		
2000 A	B7 _{DS}	8 P	27DC 4201	V1 type Black 3R, 12 2799 7145	320 mm 12.6 inches 4199 3018
2 PV circuits					
100 A	B4 _{DS}	4 P	27PV 5009	S2 type Black 1, 3R, 12 142F 2111 ⁽¹⁾ Red/Yellow 1, 3R, 12 142G 2111 ⁽¹⁾ Black 4, 4X 142D 2111 ⁽¹⁾ Red/Yellow 4, 4X 142E 2111 ⁽¹⁾	200 mm 7.9 inches 1400 1020 320 mm 12.6 inches 1400 1032 400 mm 15.7 inches 1400 1040 ⁽²⁾
250 A	B4 _{DS}		27PV 5024		
325 A	B5		27PV 4032		
400 A	B5		27PV 4039		
600 A	B6 _{DS}		8 P		
800 A	B7 _{DS}	27DC 8081			
1000 A	B7 _{DS}	27DC 8101			
4 PV circuits					
350 A	B5 _{DS}	8 P	27PV 8039	S3 type Black 4, 4X 143D 3111 ⁽¹⁾ Red/Yellow 4, 4X 143E 3111 ⁽¹⁾	200 mm 7.9 inches 1401 1520 320 mm 12.6 inches 1401 1532 400 mm 15.7 inches 1401 1540 ⁽²⁾

(1) Defeatable handle.

(2) Shaft guide reference 1429 0000 is required for shaft length over 15.7 inches (400mm).

1500 VDC - Back plate mounting

UL 98B certification limit is 1000 VDC, that's why SIRCO PV UL switches are certified by the UL standard up to 1000 VDC and self-certified up to 1500 VDC.

Rating (A)	Frame size	No. of poles	Switch body	External handle	Shaft for external handle
1 PV circuit					
275 A	B5	3 P	27PV 3026	S2 type Black 1, 3R, 12 142F 2111 ⁽¹⁾	200 mm 7.9 inches 1400 1020
325 A	B5		27PV 3032	Red/Yellow 1, 3R, 12 142G 2111 ⁽¹⁾	320 mm 12.6 inches 1400 1032
400 A	B5		27PV 3039	Black 4, 4X 142D 2111 ⁽¹⁾ Red/Yellow 4, 4X 142E 2111 ⁽¹⁾	400 mm 15.7 inches 1400 1040 ⁽²⁾
600 A	B6 _{DS}	8 P	27PV 8060	V1 type Black 3R, 12 2799 7145	320 mm 12.6 inches 4199 3018
800 A	B7 _{DS}		27DC 8081		
1000 A	B7 _{DS}		27DC 8101		
2 PV circuits					
275 A	B5 _{DS}	6 P	27PV 6026	S3 type Black 4, 4X 143D 3111 ⁽¹⁾	200 mm 7.9 inches 1401 1520
350 A	B5 _{DS}		27PV 6039	Red/Yellow 4, 4X 143E 3111 ⁽¹⁾	320 mm 12.6 inches 1401 1532 400 mm 15.7 inches 1401 1540 ⁽²⁾

(1) Defeatable handle.

(2) Shaft guide reference 1429 0000 is required for shaft length over 15.7 inches (400mm).

SIRCO PV UL 98B

Load break switches for photovoltaic applications

from 100 to 2000 A - up to 1500 VDC

Accessories

External operation

Use

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

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

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 locking function using a tool (authorized persons only). The interlocking function is restored when the door is re-closed.

Frame size	Handle type	Handle colour	Nema degree of protection	Reference	
B4 ... B5 B4 _{DS}	S2	Black	1, 3R, 12	142F 2111	
		Red/Yellow		142G 2111	
		Black		142D 2111	
		Red/Yellow		142E 2111	
B5 _{DS} B6	S3	Black	4, 4X	143D 3111	
		Red/Yellow		143E 3111	
B7	S4	Black		144D 3111	
		Red/Yellow		144E 3111	
B6 _{DS} ... B7 _{DS}	V1	Black		1, 3R, 12	2799 7145



S2 type handle



Reinforced S2 type handle⁽¹⁾
(1) Please consult us.



S3 type handle



S4 type handle



V1 type handle

Shaft for external handle

Use

Standard lengths:

- 7.9 in / 200 mm,
- 12.6 in / 320 mm,
- 15.7 in / 400 mm.

Other lengths: please consult us.

19.69 in / 500 mm available.

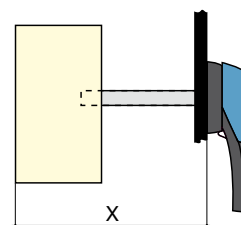
Frame size	Handle type	Dimension (inches)	Dimension X (mm)	Length (inches)	Length (mm)	Reference
B4	S2	6 ... 11.6	150 ... 295	7.9	200	1400 1020
		6 ... 16.3	150 ... 415	12.6	320	1400 1032
		6 ... 19.4	150 ... 495	15.7	400	1400 1040
B5	S2	8 ... 12.9	203 ... 328	7.9	200	1400 1020
		8 ... 17.6	203 ... 448	12.6	320	1400 1032
		8 ... 20.7	203 ... 525	15.7	400	1400 1040
B6	S3	8.70 ... 13.50	220 ... 343	7.9	200	1401 1520
		8.70 ... 18.23	220 ... 463	12.6	320	1401 1532
		8.70 ... 21.38	220 ... 543	15.7	400	1401 1540
B7	S4	12 ... 14.4	305 ... 366	7.9	200	1401 1520
		12 ... 19.1	305 ... 485	12.6	320	1401 1532
		12 ... 22.2	305 ... 564	15.7	400	1401 1540
B4 _{DS}	S2	12 ... 14.3	305 ... 363	7.9	200	1400 1020
		12 ... 19	305 ... 483	12.6	320	1400 1032
		12 ... 22.10	305 ... 561	15.7	400	1400 1040
B5 _{DS}	S3, S4	16 ... 18.4	406 ... 467	7.9	200	1401 1520
		16 ... 23.1	406 ... 589	12.6	320	1401 1532
		16 ... 26.3	406 ... 668	15.7	400	1401 1540
B6 _{DS}	V1	20 ... 28.1	508 ... 714	12.6	320	4199 3018
		20 ... 31.3	508 ... 795	15.7	400	4199 3019
B7 _{DS}	V1	20 ... 28.1	508 ... 714	12.6	320	4199 3018
		20 ... 39.4	508 ... 795	15.7	400	4199 3019



access_144_b_1_cat



access_369_a_1_cat



access_202_a_1_x_cat

S-type handle adapter

Use

For handles S2, S3 and S4.

Dimensions

Increases the distance between the handle grip and the door by 12 mm, for better handling.

Colour	Nema degree of protection	To be ordered in multiples of	Reference
Black	1, 3R, 12	10	1493 0000



access_187_a_3_cat

Alternative S-type handle cover colours

Use

For handles S2, S3 and S4.

Other colours: please consult us.

Handle colour	Handle type	To be ordered in multiples of	Reference
Light grey	S2, S3	50	1401 0001
Dark grey	S2, S3	50	1401 0011
Light grey	S4	50	1401 0031
Dark grey	S4	50	1401 0041



access_198_a_3_cat

Auxiliary contact

Use

Pre-break and signaling of positions 0 and I:
- 1 to 2 NO/NC auxiliary contacts,
- 1 to 2 low level NO/NC auxiliary contacts.

Electrical characteristics

A300.

NO/NC contact

Frame size	Position AC	Type	Reference
B4 ... B7	1 contact	NO/NC	2799 0021
	2 contacts		2799 0022
B4 _{DS} ... B7 _{DS}	1 contact		4159 0021

Low level NO/NC auxiliary contacts

Frame size	Position AC	Type	Reference
B4 ... B7	1 contact	NO/NC	2799 0121
	2 contacts		2799 0122
B4 _{DS} ... B7 _{DS}	1 contact		4159 0022



access_076_a_1_cat

Terminal screen

Use

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

Frame size	No. of poles	Position	Pack	Reference
B4	2 P	Top	1 unit	2798 3021
	2 P	Bottom	1 unit	2798 8021
B5	3 P	Top	1 unit	2798 3041
	3 P	Bottom	1 unit	2798 8041
B5	4 P	Top or bottom	1 unit	2798 4041
B6	4 P	Top or bottom	1 unit	2798 4061
B4 _{DS}	2 P	Top or bottom	1 unit	4158 3021
B5 _{DS}	6 P	Top or bottom	1 unit	4158 3041
	8 P	Top or bottom	1 unit	4158 4041
B6 _{DS}	8 P	Top and bottom	2 units	2798 8061
B7 _{DS}	8 P	Top or bottom	1 unit	2798 4121



access_079_a_1_cat

SIRCO PV UL 98B

Load break switches for photovoltaic applications

from 100 to 2000 A - up to 1500 VDC

Accessories (continued)

Bridging bars for connecting poles in series

Use

The bridging bars will make easy the connection of the poles in series, allowing the following configurations⁽¹⁾.

⁽¹⁾ Other connections: refer to mounting instructions.

1000 VDC

Switch Reference	Frame size	Rating (A)	Quantity of bridging bar kits to be order per switch		Fig. of one bridging bar kit	Bridging bar kit Reference
			Not connected to earth	Connected to earth		
1 PV circuit						
27PV 2009	B4	100	N/A	1	1	2709 1020
27PV 2019	B4	200	N/A	1	1	2709 1020
27PV 2024	B4	250	N/A	1	1	2709 1020
27PV 2032	B5	325	N/A	1	2	2709 1041
27PV 2039	B5	400	N/A	2	2	2709 1041
27PV 4060	B6	600	2	3	6	2709 0062
27PV 4081	B7	800	2	3	7	2709 0081
27PV 4121	B7	1200	2	3	8	2709 0121
27PV 4201	B7 _{DS}	2000	6	6 ⁽¹⁾	8	2709 0121
2 PV circuits						
27PV 5009	B4 _{DS}	100	N/A	2	1	2709 1020
27PV 5024	B4 _{DS}	250	N/A	2	1	2709 1020
27PV 4032	B5	325	N/A	2	3	2709 0027
27PV 4039	B5	400	N/A	2	4	2709 0045
27PV 8060	B6 _{DS}	600	4	6	6	2709 0062
27PV 8081	B7 _{DS}	800	4	6	8	2709 0121
27PV 8101	B7 _{DS}	1000	4	6	8	2709 0121
4 PV circuits						
27PV 8039	B5 _{DS}	350	N/A	4	5	2709 0046

1500 VDC

Switch Reference	Frame size	Rating (A)	Quantity of bridging bar kits to be order per switch		Fig. of one bridging bar kit	Bridging bar kit Reference
			Not connected to earth	Connected to earth		
1 PV circuit						
27PV 3026	B5	275	1	2	3	2709 0027
27PV 3032	B5	325	1	2	3	2709 0027
27PV 3039	B5	400	1	2	4	2709 0045
27PV 8060	B6 _{DS}	600	6	6 ⁽²⁾	6	2709 0062
27PV 8081	B7 _{DS}	800	6	6 ⁽¹⁾	8	2709 0121
27PV 8101	B7 _{DS}	1000	6	6 ⁽¹⁾	8	2709 0121
2 PV circuits						
27PV 6026	B5 _{DS}	275	2	4	3	2709 0027
27PV 6039	B5 _{DS}	350	2	4	4	2709 0045

⁽¹⁾ Please order paralleling kit to connect back and front switches, see paralleling connection kit.

⁽²⁾ Paralleling kit is needed to connect back and front switches, please consult us

Bridging bars for connecting poles in series (continued)

Figures are showing the content of 1 piece of a bridging bar kit, some configuration will require 2 kits per series and some bridging bar kits are composed of one or several pieces as heat sinks.

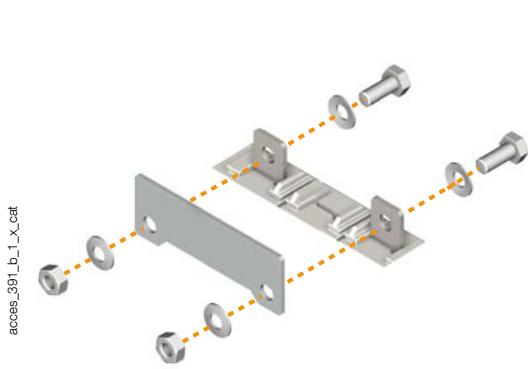


Fig. 1

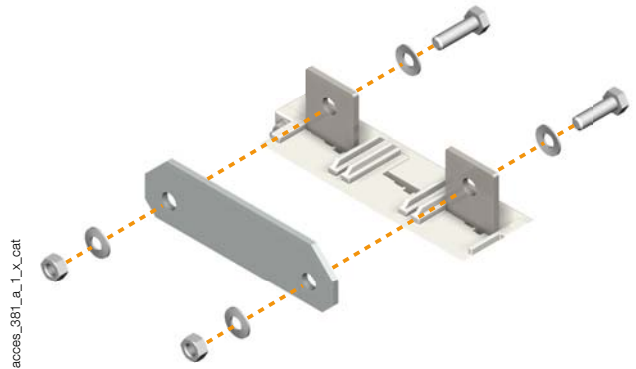


Fig. 2

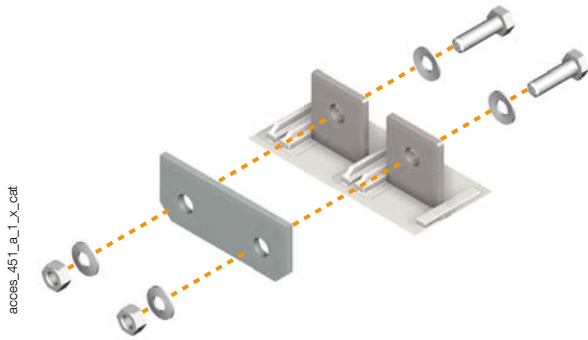


Fig. 3

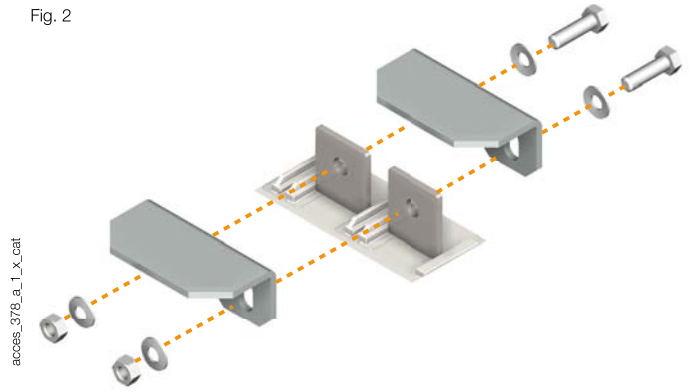


Fig. 4

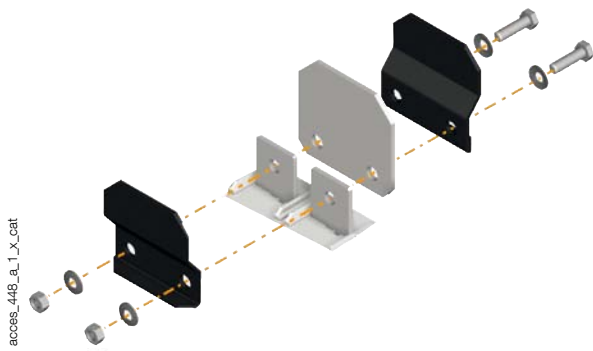


Fig. 5

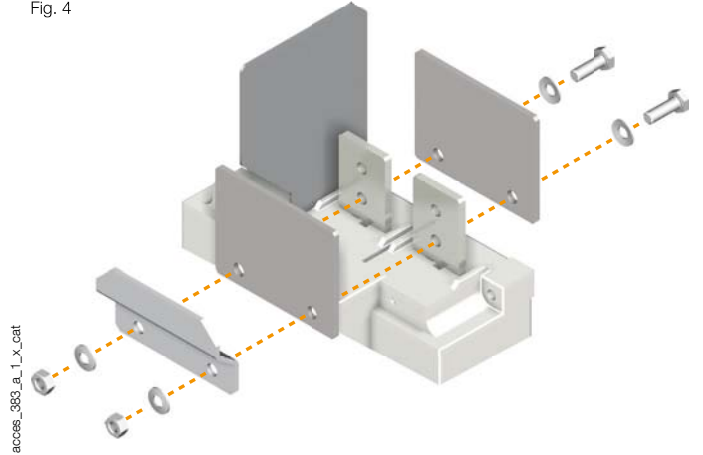


Fig. 6

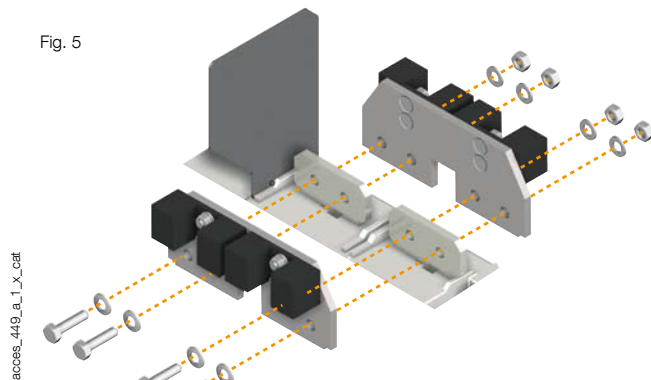


Fig. 7

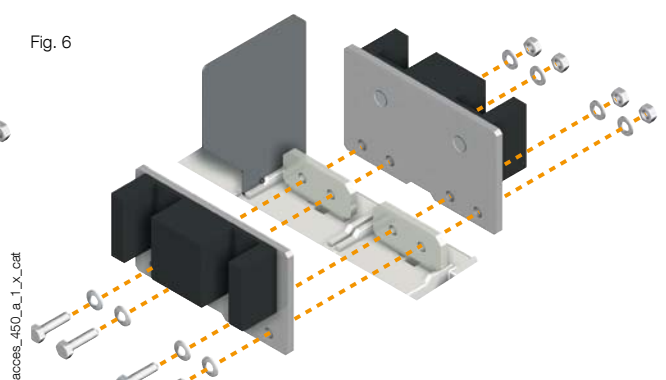


Fig. 8

SIRCO PV UL 98B

Load break switches for photovoltaic applications

from 100 to 2000 A - up to 1500 VDC

Accessories (continued)

Cage terminals

Use

Connection of bare copper cables onto the terminals (without lugs).

Optional fan out kit for ratings of 800 to 1200 A for connecting several cables to the switch.

Frame size	Rating max (A)	Number and size of cables	Max. number of connections per terminal	Type of cable	Quantity	Reference
B4 - B4 _{DS}	100 ... 250	1 conductor (#6-300MCM)	1	Cu / Al	2 lugs	3954 2020
		2 conductors (#4-2/0)	1	Cu / Al	2 lugs	3954 2025
B5 - B5 _{DS}	325 ... 400	1 conductor (#4-600MCM)	1	Cu / Al	2 lugs	3954 2040
		2 conductors (#6-350MCM)	1	Cu / Al	2 lugs	3954 2041
B6 - B6 _{DS}	600	2 conductors (#2-600MCM)	1	Cu / Al	2 lugs	3954 2060
B7	800 ... 1200	2 conductors (#2-600MCM)	2	Cu / Al	2 lugs	3954 2060
		2 conductors (#2-600MCM)	3 ⁽¹⁾	Cu / Al	3 lugs	3954 3060
B7 _{DS}	2000	2 conductors (#2-600MCM)	2 ⁽²⁾	Cu / Al	2 lugs	3954 2060
		2 conductors (#2-600MCM)	3 ⁽³⁾	Cu / Al	3 lugs	3954 3060



ul_032_a

(1) Order a fan out kit reference 2709 1203 for connecting 3 connectors per terminal (6 in total for the switch).

(2) 2 connectors per terminal with the connection kit 2729 1200.

(3) 3 connectors per terminal with the connection kits 2729 1201 and 2709 1202.

Copper bar connection kits

Use

To allow connection between the two power terminals from a same pole for 2000 A ratings (Fig. 1, Fig. 2 and Fig. 3).

For 600 A, please consult us.

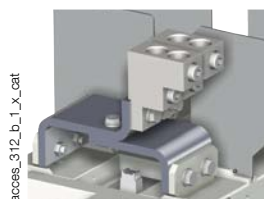
Top or bottom flat connection

Frame size	Rating (A)	Figure	Quantity to order per pole	Number of terminals	Reference
B7 _{DS}	800 ... 1000	1	1	2	2729 1200
		2	1	3	2729 1202
	2000	1	1	2	2729 1200
		2	1	3	2729 1202

Top or bottom edgewise connection

Frame size	Rating (A)	Figure	Quantity to order per pole	Number of terminals	Reference
B7 _{DS}	800 ... 2000	3	1	3	2729 1201

Fig. 1

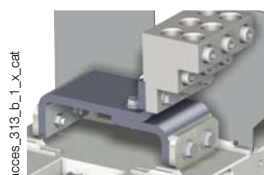


access_312_b_1_x_cat

Fig. 3



Fig. 2



access_313_b_1_x_cat

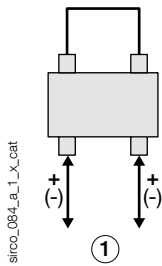
access_314_b_1_x_cat

Pole connections in series

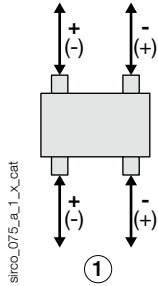
1 PV circuit - 1000 VDC

B4-B5 - 2 P

Connected to earth

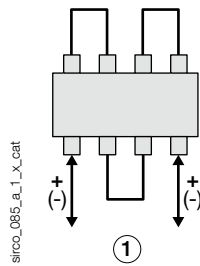


Not connected to earth

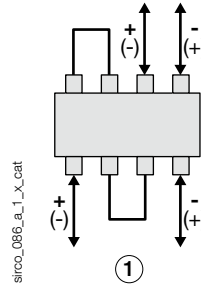


B6-B7 - 4 P

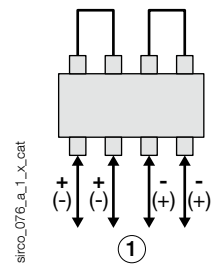
Connected to earth



Not connected to earth

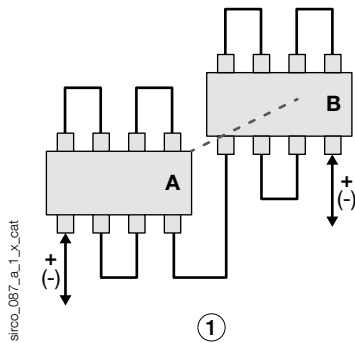


Not connected to earth

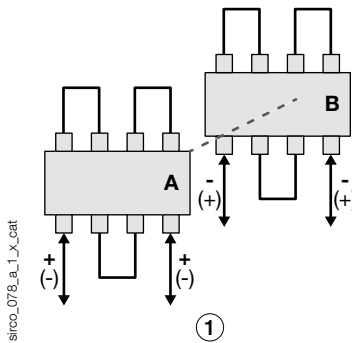


B7_{DS} - 8 P

Connected to earth



Not connected to earth

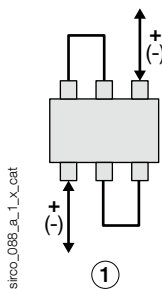


A. Front switch.
 B. Rear switch.
 1. Circuit 1.

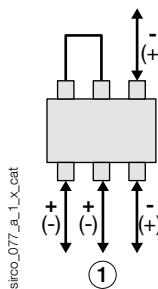
1 PV circuit - 1500 VDC

B4-B5 - 3 P

Connected to earth

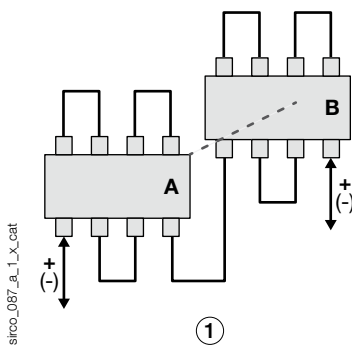


Not connected to earth

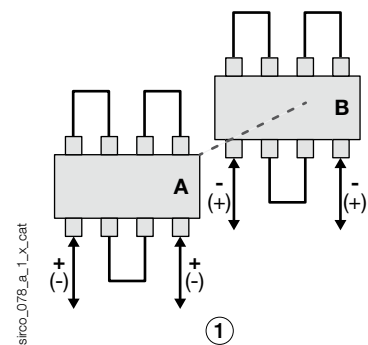


B6_{DS}-B7_{DS} - 8 P

Connected to earth



Not connected to earth



A. Front switch.
 B. Rear switch.
 1. Circuit 1.

SIRCO PV UL 98B

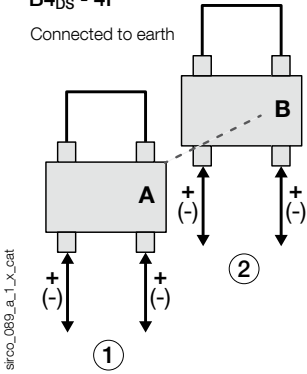
Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

Pole connections in series (continued)

2 PV circuit - 1000 VDC

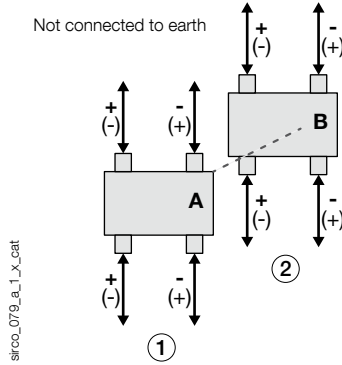
B4_{DS} - 4P

Connected to earth



siroco_089_a_1_x_cat

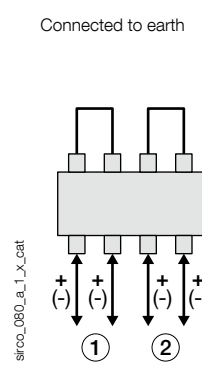
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siroco_079_a_1_x_cat

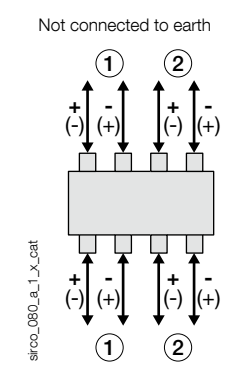
B5 - 4P

Connected to earth



siroco_080_a_1_x_cat

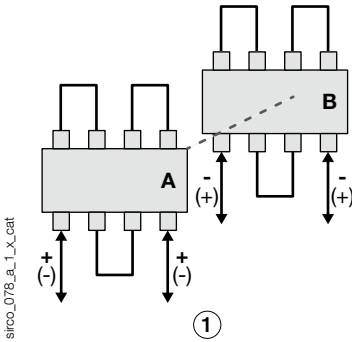
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siroco_080_a_1_x_cat

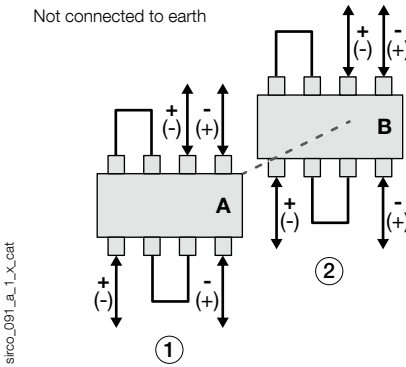
B5_{DS}-B7_{DS} - 8P

Connected to earth

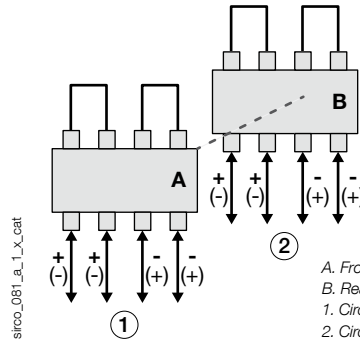


siroco_078_a_1_x_cat

Not connected to earth



siroco_091_a_1_x_cat



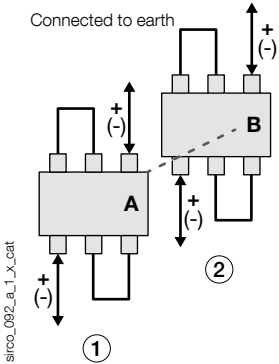
siroco_081_a_1_x_cat

A. Front switch.
B. Rear switch.
1. Circuit 1.
2. Circuit 2.

2 PV circuits - 1500 VDC

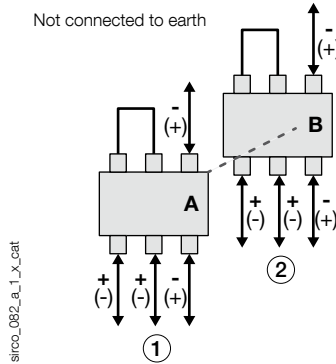
B5_{DS} - 6P

Connected to earth



siroco_092_a_1_x_cat

Not connected to earth



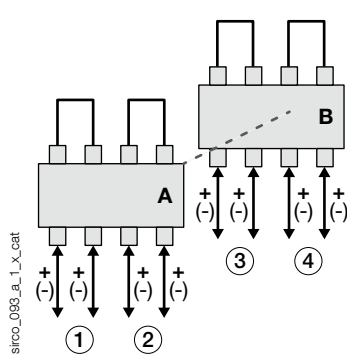
siroco_092_a_1_x_cat

A. Front switch.
B. Rear switch.
1. Circuit 1.
2. Circuit 2.

4 PV circuits - 1000 VDC

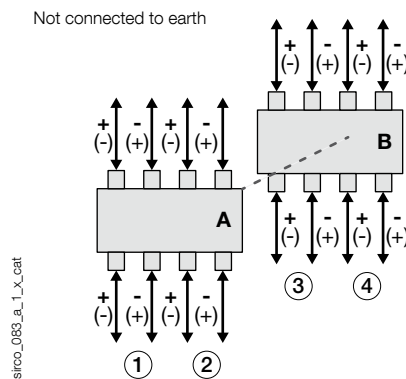
B5_{DS} - 8P

Connected to earth



siroco_093_a_1_x_cat

Not connected to earth



siroco_093_a_1_x_cat

A. Front switch.
B. Rear switch.
1. Circuit 1.
2. Circuit 2.
3. Circuit 3.
4. Circuit 4.

Characteristics

Compliance to UL 98B and IEC 60947-3 standards

SIRCO PV UL 98B switches comply with both UL 98B and IEC 60947-3 standards. As acceptance test criteria are different depending on one or the other standard, the same product can be referred to with two different ratings, identified in the characteristic table as follows:

- "Rating" for characteristics as per standard UL 98B.
- "Rated current" for characteristics as per standard IEC 60947-3.

UL 98B										
Rating (A)		100 A				200 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	100	2 P	2 P	B4	200	2 P	2 P	B4	
2 circuits	600 VDC	100	1 P	2 P	B4	130	1 P	2 P	B4	
2 circuits	1000 VDC	100	2 P	4 P	B4 _{DS}	200	2 P	4 P	B4 _{DS}	
4 circuits	600 VDC	100	1 P	4 P	B4 _{DS}	130	1 P	4 P	B4 _{DS}	
Short-circuit capacity at 1000 VDC (any circuit breaker)										
Prospective short-circuit current (kA rms DC)		10 ⁽¹⁾				10 ⁽¹⁾				
Connection terminals										
Min. connection wire range/ AWG		#6				#6				
Max. connection wire range/ AWG		300MCM				300MCM				
Mechanical characteristics										
Durability (number of operating cycles)		10 000				10 000				
Operating effort (lbs.in/Nm)		88.5/10				88.5/10				
Auxiliary contact										
Electrical characteristics		A300				A300				
IEC 60947-3										
Rated current I _n		160 A				250 A				
Thermal current at 40°C (A)		160				250				
Thermal current at 50°C (A)		160				250				
Thermal current at 60°C (A)		160				250				
Rated insulation voltage U _i (V)		1500				1500				
Rated impulse withstand voltage U _{imp} (kV)		12				12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	160	2 P	2 P	B4	250	2 P	2 P	B4
1 circuit	1500 VDC	DC-21 B	160	4 P	4 P	B4 _{DS}	250	4 P	4 P	B4 _{DS}
2 circuits	1000 VDC	DC-21 B	160	2 P	4 P	B4 _{DS}	250	2 P	4 P	B4 _{DS}
4 circuits	600 VDC	DC-21 B	125	1 P	4 P	B4 _{DS}	160	1 P	4 P	B4 _{DS}

(1) Without fuse during 50 ms.

SIRCO PV UL 98B

Load break switches for photovoltaic applications

from 100 to 2000 A - up to 1500 VDC

Characteristics (continued)

as per standards UL 98B and IEC 60947-3

UL 98B										
Rating		250 A				275 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	250	2 P	2 P	B4	275	2 P	2 P	B5	
2 circuits	600 VDC	130	1 P	2 P	B4	215	1 P	2 P	B5	
2 circuits	1000 VDC	250	2 P	4 P	B4 _{DS}	275	2 P	4 P	B5	
4 circuits	600 VDC	130	1 P	4 P	B4 _{DS}	215	1 P	4 P	B5	
4 circuits	1000 VDC	-	-	-	-	215	2 P	8 P	B5 _{DS}	
6 circuits	600 VDC	-	-	-	-	215	1 P	6 P	B5 _{DS}	
8 circuits	600 VDC	-	-	-	-	215	1 P	8 P	B5 _{DS}	
Short-circuit capacity at 1000 VDC (any circuit breaker)										
Prospective short-circuit current (kA rms DC)		10 ⁽¹⁾				10 ⁽¹⁾				
Connection terminals										
Min. connection wire range/ AWG		#6				2x#6				
Max. connection wire range/ AWG		300MCM				600MCM				
Mechanical characteristics										
Durability (number of operating cycles)		10 000				6 000				
Operating effort (lbs.in/Nm)		88.5/10				128.3/14.5				
Auxiliary contact										
Electrical characteristics		A300				A300				
IEC 60947-3										
Rated current I _n		315 A				275 A				
Thermal current at 40°C (A)		315				275				
Thermal current at 50°C (A)		315				275				
Thermal current at 60°C (A)		315				275				
Rated insulation voltage U _i (V)		1500				1500				
Rated impulse withstand voltage U _{imp} (kV)		12				12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	315	2 P	2 P	B4	275	2 P	2 P	B5
1 circuit	1500 VDC	DC-21 B	315	4 P	4 P	B4 _{DS}	275	3 P	3 P	B5
2 circuits	1000 VDC	DC-21 B	315	2 P	4 P	B4 _{DS}	275	2 P	4 P	B5
4 circuits	600 VDC	DC-21 B	160	1 P	4 P	B4 _{DS}	275	1 P	4 P	B5
4 circuits	1000 VDC	DC-21 B	-	-	-	-	275	2 P	8 P	B5 _{DS}
6 circuits	600 VDC	DC-21 B	-	-	-	-	275	1 P	6 P	B5 _{DS}
8 circuits	600 VDC	DC-21 B	-	-	-	-	275	1 P	8 P	B5 _{DS}

(1) Without fuse during 50 ms.

as per standards UL 98B and IEC 60947-3

UL 98B										
Rating		325 A				350 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	325	2 P	2 P	B5	-	-	-	-	
2 circuits	600 VDC	215	1 P	2 P	B5	-	-	-	-	
2 circuits	1000 VDC	325	2 P	4 P	B5	350	3 P	6 P	B5 _{DS}	
4 circuits	600 VDC	215	1 P	4 P	B5	-	-	-	-	
4 circuits	1000 VDC	325	2 P	8 P	B5 _{DS}	350	2 P	8 P	B5 _{DS}	
6 circuits	600 VDC	215	1 P	6 P	B5 _{DS}	215	1 P	6 P	B5 _{DS}	
8 circuits	600 VDC	215	1 P	8 P	B5 _{DS}	215	1 P	8 P	B5 _{DS}	
Short-circuit capacity at 1000 VDC (any circuit breaker)										
Prospective short-circuit current (kA rms DC)			10 ⁽¹⁾			10 ⁽¹⁾				
Connection terminals										
Min. connection wire range/ AWG			2x#6			2x#6				
Max. connection wire range/ AWG			600MCM			600MCM				
Mechanical characteristics										
Durability (number of operating cycles)			6 000			6 000				
Operating effort (lbs.in/Nm)			128.3/14.5			128.3/14.5				
Auxiliary contact										
Electrical characteristics			A300			A300				
IEC 60947-3										
Rated current In			400 A			500 A				
Thermal current at 40°C (A)			400			500				
Thermal current at 50°C (A)			400			500				
Thermal current at 60°C (A)			400			500				
Rated insulation voltage U _i (V)			1500			1500				
Rated impulse withstand voltage U _{imp} (kV)			12			12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	400	2 P	2 P	B5	-	-	-	-
2 circuits	1000 VDC	DC-21 B	400	2 P	4 P	B5	500	3 P	6 P	B5 _{DS}
4 circuits	600 VDC	DC-21 B	275	1 P	4 P	B5	-	-	-	-
4 circuits	1000 VDC	DC-21 B	400	2 P	8 P	B5 _{DS}	500	2 P	8 P	B5 _{DS}
6 circuits	600 VDC	DC-21 B	275	1 P	6 P	B5 _{DS}	275	1 P	6 P	B5 _{DS}
8 circuits	600 VDC	DC-21 B	275	1 P	8 P	B5 _{DS}	275	1 P	8 P	B5 _{DS}

(1) Without fuse during 50 ms.

SIRCO PV UL 98B

Load break switches for photovoltaic applications

from 100 to 2000 A - up to 1500 VDC

Characteristics (continued)

as per standards UL 98B and IEC 60947-3

UL 98B										
Rating		400 A				600 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	400	2 P	2 P	B5	600	4 P	4 P	B6	
2 circuits	600 VDC	215	1 P	2 P	B5	600	3 P	6 P	B6 _{DS}	
2 circuits	1000 VDC	400	2 P	4 P	B5	600	4 P	8 P	B6 _{DS}	
4 circuits	600 VDC	215	1 P	4 P	B5	-	-	-	-	
Short-circuit capacity at 1000 VDC (any circuit breaker)										
Prospective short-circuit current (kA rms DC)		10 ⁽¹⁾				10 ⁽¹⁾				
Connection terminals										
Min. connection wire range/ AWG		2x#6				2x#2				
Max. connection wire range/ AWG		600MCM				2 x 600MCM				
Mechanical characteristics										
Durability (number of operating cycles)		6 000				6 000				
Operating effort (lbs.in/Nm)		128.3/14.5				327.5/37				
Auxiliary contact										
Electrical characteristics		A300				A300				
IEC 60947-3										
Rated current I _n		500 A				800 A				
Thermal current at 40°C (A)		500				800				
Thermal current at 50°C (A)		500				800				
Thermal current at 60°C (A)		500				800				
Rated insulation voltage U _i (V)		1500				1200				
Rated impulse withstand voltage U _{imp} (kV)		12				12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	500	2 P	2 P	B5	800	4 P	4 P	B6
1 circuit	1500 VDC	DC-21 B	500	3 P	3 P	B5	800	8 P	8 P	B6 _{DS}
2 circuits	1000 VDC	DC-21 B	275	1 P	4 P	B5	800	4 P	8 P	B6 _{DS}
4 circuits	600 VDC	DC-21 B	275	1 P	4 P	B5	-	-	-	-

(1) Without fuse during 50 ms.

(2) 1200 VDC for B6.

as per standards UL 98B and IEC 60947-3

UL 98B										
Rating		800 A				1200 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	800	4 P	4 P	B7	1200	4 P	4 P	B7	
2 circuits	600 VDC	800	3 P	6 P	B7 _{DS}	1200	3 P	6 P	B7 _{DS}	
2 circuits	1000 VDC	800	4 P	8 P	B7 _{DS}	1200	4 P	8 P	B7 _{DS}	
Short-circuit capacity at 1000 VDC (any circuit breaker)										
Prospective short-circuit current (kA rms DC)		10 ⁽¹⁾				10 ⁽¹⁾				
Connection terminals										
Min. connection wire range/ AWG		4x#2				4x#2				
Max. connection wire range/ AWG		6x 600MCM ⁽²⁾				6x 600MCM ⁽²⁾				
Mechanical characteristics										
Durability (number of operating cycles)		3 500				3 500				
Operating effort (lbs.in/Nm)		495.7/56				663.9/75				
Auxiliary contact										
Electrical characteristics		A300				A300				
IEC 60947-3										
Rated current I _n		1000 A				1400 A				
Thermal current at 40°C (A)		1000				1400				
Thermal current at 50°C (A)		1000				1400				
Thermal current at 60°C (A)		1000				1400				
Rated insulation voltage U _i (V)		1200				1200				
Rated impulse withstand voltage U _{imp} (kV)		12				12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	1000	4 P	4 P	B7	1400	4 P	4 P	B7 _{DS}
1 circuit	1500 VDC	DC-21 B	1000	8 P	8 P	B7 _{DS}	1000	8 P	8 P	B7 _{DS}
2 circuits	1000 VDC	DC-21 B	1000	4 P	8 P	B7 _{DS}	1000	4 P	8 P	B7 _{DS}

(1) Without fuse during 50 ms.

(2) Maximum 6 x 600MCM with fan out kit 2729 1203.

(3) 1200 VDC for B7.

SIRCO PV UL 98B

Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

Characteristics (continued)

as per standards UL 98B and IEC 60947-3

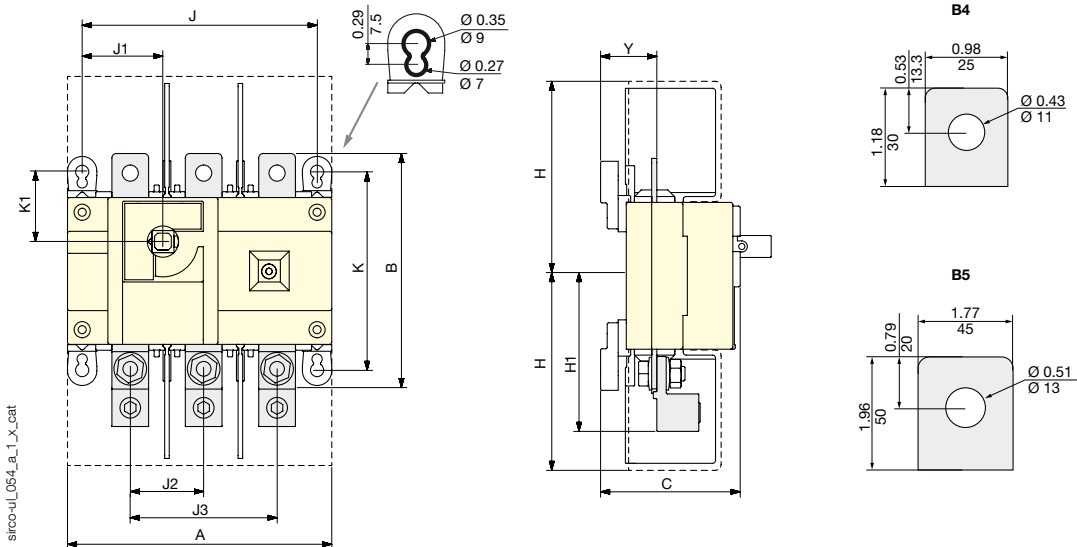
UL 98B						
Rating		2000 A				
Number of circuits	Rated voltage	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size	
1 circuit	1000 VDC	2000	8 P	8 P	B7 _{DS}	
Short-circuit capacity at 1000 VDC (any circuit breaker)						
Prospective short-circuit current (kA rms DC)		10 ⁽¹⁾				
Connection terminals						
Min. connection wire range/ AWG		4x#2				
Max. connection wire range/ AWG		6x 600MCM ⁽²⁾				
Mechanical characteristics						
Durability (number of operating cycles)		3 500				
Operating effort (lbs.in/Nm)		663.9/75				
Auxiliary contact						
Electrical characteristics		A300				
IEC 60947-3						
Rated current I _n		2200 A				
Thermal current at 40°C (A)		2200				
Thermal current at 50°C (A)		1850				
Thermal current at 60°C (A)		1600				
Rated insulation voltage U _i (V)		1200				
Rated impulse withstand voltage U _{imp} (kV)		12				
Number of circuits	Rated voltage	Utilisation category	(A)	Number of pole(s) in series per polarity	Number of pole(s) of the device	Frame size
1 circuit	1000 VDC	DC-21 B	2200	8 P	8 P	B7 _{DS}

(1) Without fuse during 50 ms.

(2) Maximum 6 x 600MCM with fan out kit 2729 1203.

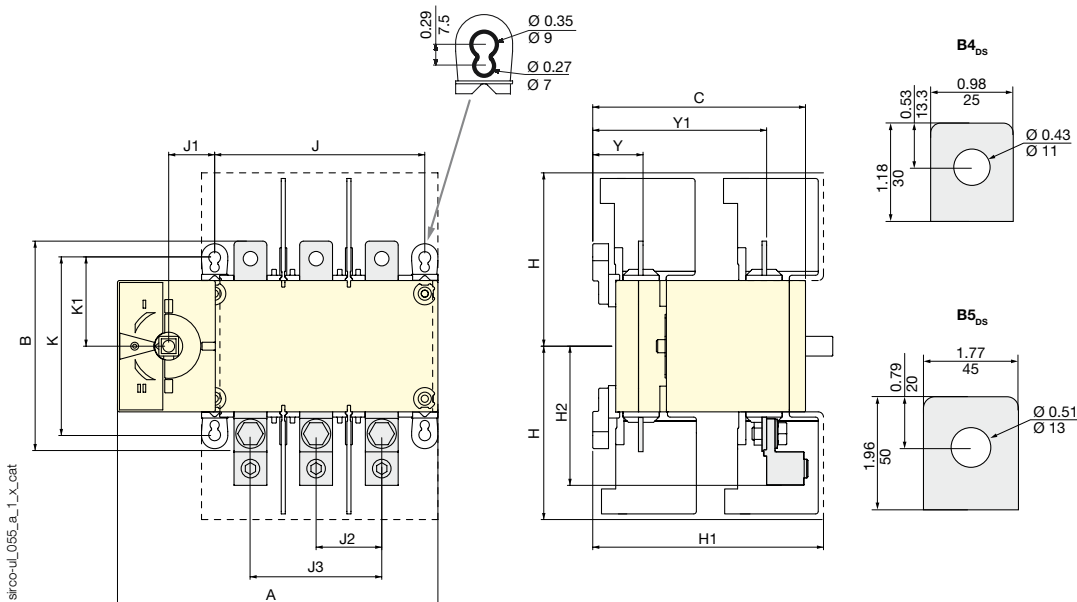
Dimensions (in/mm)

B4-B5



Frame size	No. of poles	Unit	A	B	C	H	H1 max.	J	J1	J2	J3	K	K1	Y
B4	2 P	inches	7.08	6.30	3.74	5.21	4.21	6.30	2.16	-	3.94	5.31	1.89	1.51
		mm	180	160	95	132.5	107	160	55	-	100	135	48	38.5
B5	2 P	inches	9.05	10.23	5.04	8	6.53	8.26	2.95	-	5.12	7.67	2.65	2.08
		mm	230	260	128	203	166	210	75	-	130	195	67.5	53
B5	3 P	inches	9.05	10.23	4.98	8	6.53	8.26	2.95	2.56	-	7.67	2.65	2.02
		mm	230	260	126.5	203	166	210	75	65	-	195	67.5	51.5
B5	4 P	inches	11.41	10.23	4.98	8	6.53	10.63	5.31	2.56	-	7.67	2.65	2.02
		mm	290	260	126.5	203	166	270	135	65	-	195	67.5	51.5

B4_{DS}-B5_{DS}



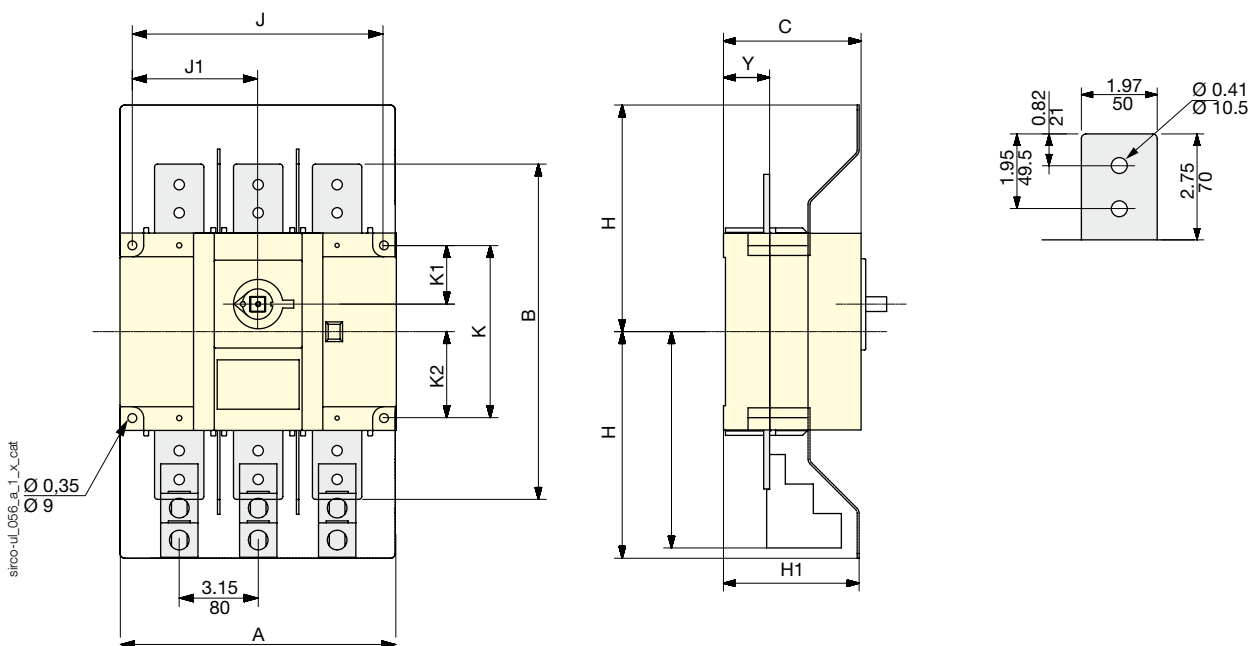
Frame size	No. of poles	Unit	A	B	C	H	H1	H1 max.	J	J1	J2	J3	K	K1	Y	Y1
B4 _{DS}	4 P	inches	9.60	6.30	6.37	5.08	6.93	4.21	6.30	1.37	-	3.93	5.31	2.65	1.51	5.21
		mm	244	160	162	129	176	107	160	35	-	100	135	67.5	38.5	132.5
B5 _{DS}	6 P	inches	11.85	10.23	9.39	8	6.51	6.53	6.26	1.37	2.56	-	7.67	2.70	2.02	7.44
		mm	301	260	238.5	203	165.5	166	210	35	65	-	195	68.5	51.5	189
B5 _{DS}	8 P	inches	14.21	10.23	9.39	8	6.51	6.53	10.63	1.37	2.56	-	7.67	2.70	2.02	7.44
		mm	361	260	238.5	203	165.5	166	270	35	65	-	195	68.5	51.5	189

SIRCO PV UL 98B

Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

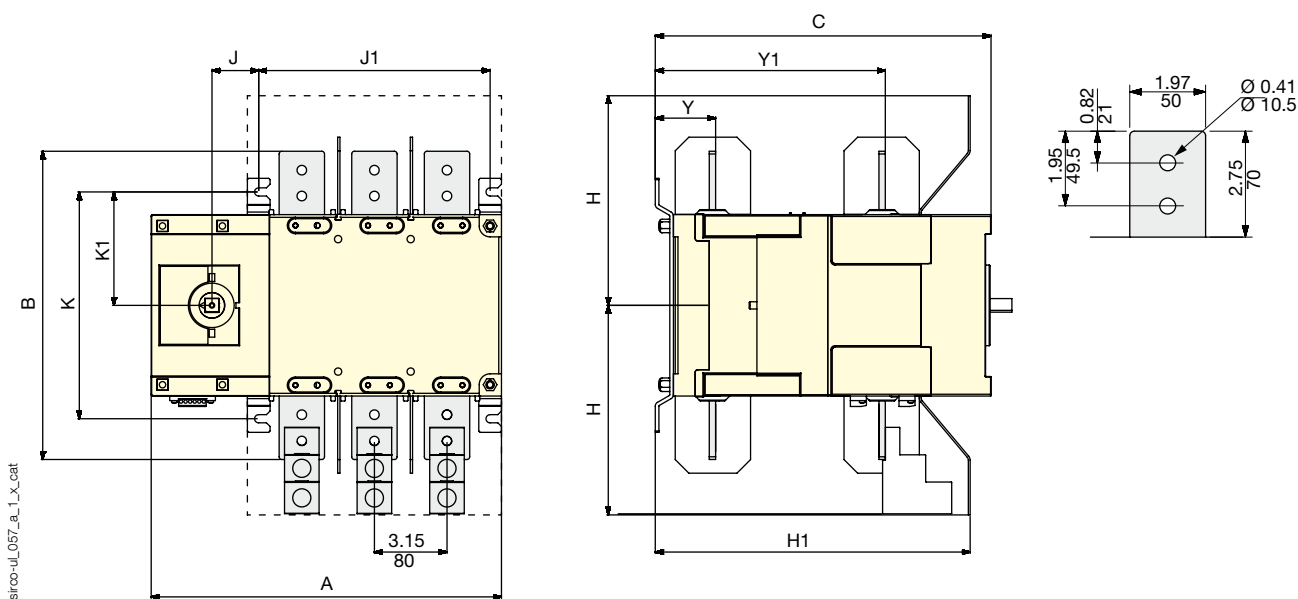
Dimensions (in/mm) (continued)

B6



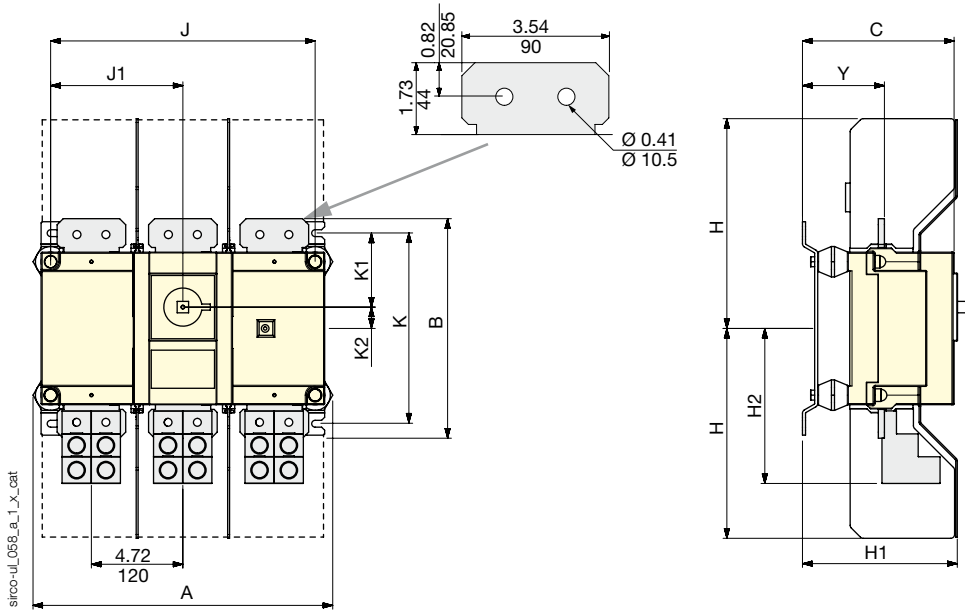
Frame size	No. of poles	Unit	A	B	C	H	H1	J	J1	K	K1	K2	Y
		inches	24.80	13.38	5.47	10.63	5.70	13.19	6.59	6.88	2.34	1.10	1.83
		mm	630	340	139	270	145	335	167.5	175	59.5	28	46.5

B6_{DS}



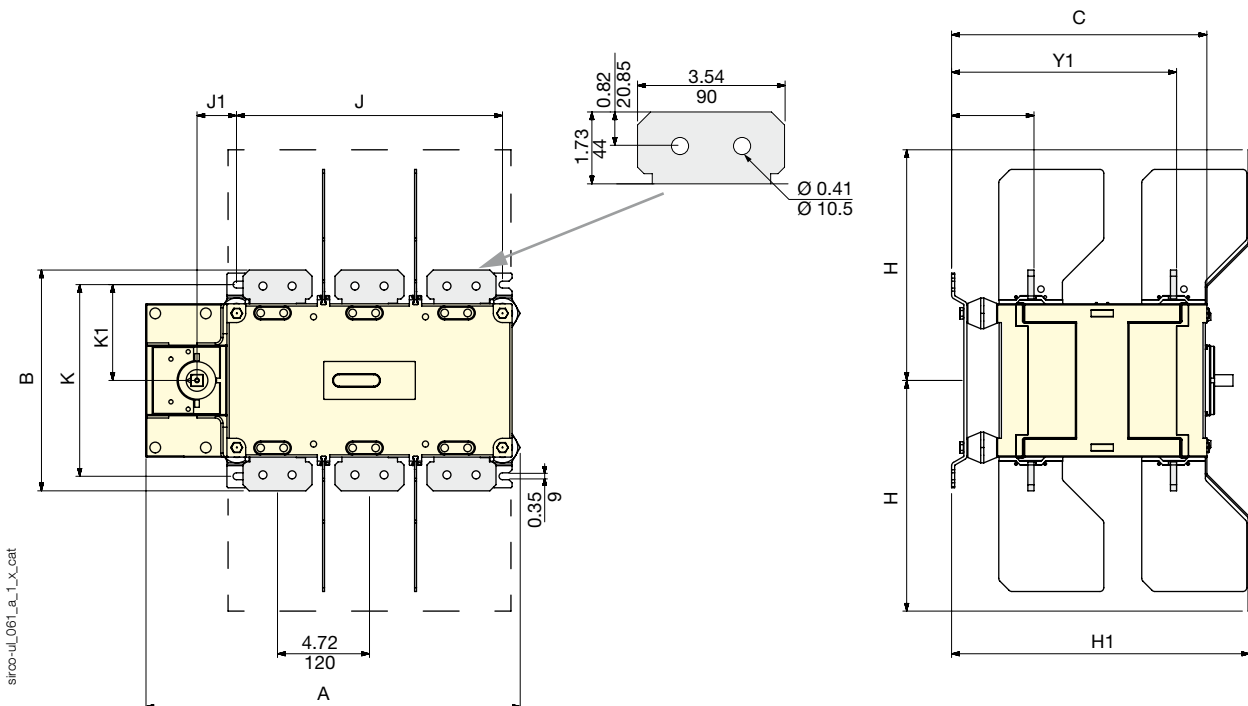
Frame size	No. of poles	Unit	A	B	C	H	H1	J	J1	K	K1	Y	Y1
		inches	18.34	13.38	14.56	10.63	13.66	13.18	2.02	9.84	4.92	2.61	9.98
		mm	466	340	370	270	347	335	51.5	250	125	66.5	253.5

B7



Frame size	No. of poles	Unit	A	B	C	H	H1	H2	J	J1	K	K1	K2	Y
B7	4 P	inches	20.19	11.33	7.97	11.89	8.30	8.01	18.38	9.19	9.84	3.82	1.10	4.23
		mm	513	288	200	302	211	203.5	467	233.5	250	97	28	107.5

B7DS



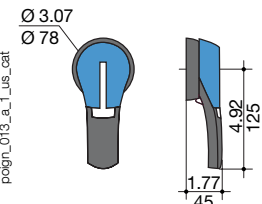
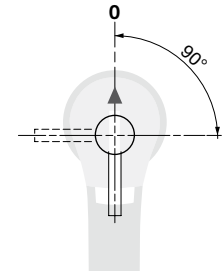
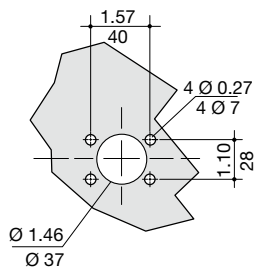
Frame size	No. of poles	Unit	A	B	C	H	H1	J	J1	K	K1	Y	Y1
B7DS	8 P	inches	23.95	11.33	13.11	11.85	15.31	18.38	2.02	9.84	4.92	4.23	11.55
		mm	608.5	288	333	301	389	467	51.5	250	125	107.5	293.5

SIRCO PV UL 98B

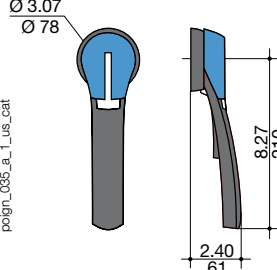
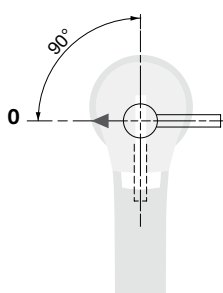
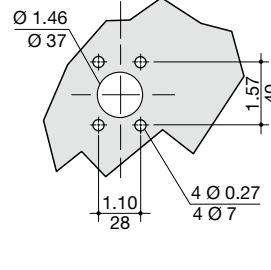
Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

Dimensions for external handles (in/mm)

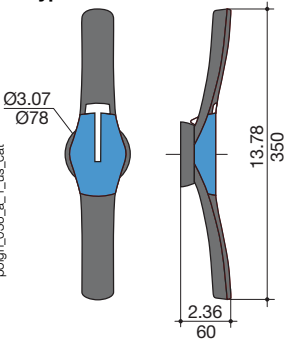
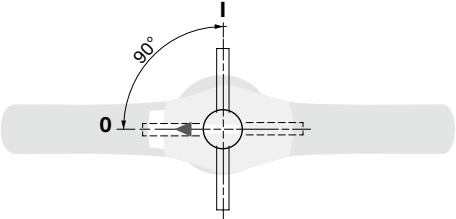
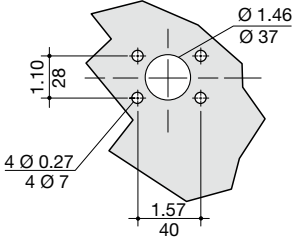
B4 - B4_{DS} - B5

Handle type	Front operation Direction of operation	Door drilling
<p>S2 type</p>  <p>poign_013_a_1_us_cat</p>		

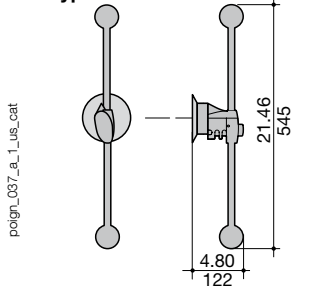
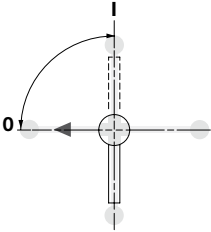
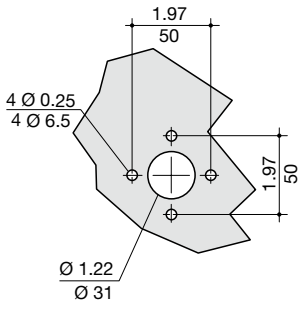
B5_{DS} - B6

Handle type	Front operation Direction of operation	Door drilling
<p>S3 type</p>  <p>poign_065_a_1_us_cat</p>		

B7

Handle type	Front operation Direction of operation	Door drilling
<p>S4 type</p>  <p>poign_036_a_1_us_cat</p>		

B6_{DS} - B7_{DS}

Handle type	Front operation Direction of operation	Door drilling
<p>V1 type</p>  <p>poign_037_a_1_us_cat</p>		

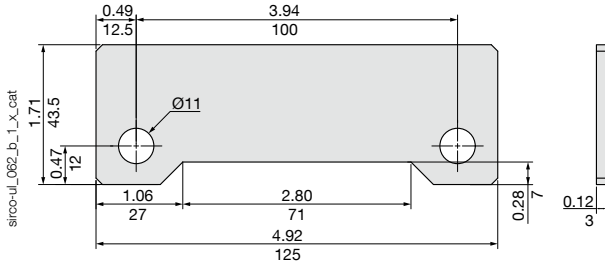
SIRCO PV UL 98B

Load break switches for photovoltaic applications
from 100 to 2000 A - up to 1500 VDC

Bridging bars (in/mm)

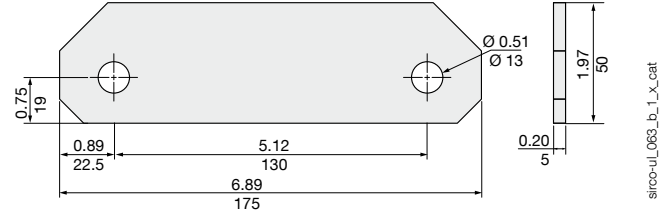
B4 - B4_{DS}

2709 1020



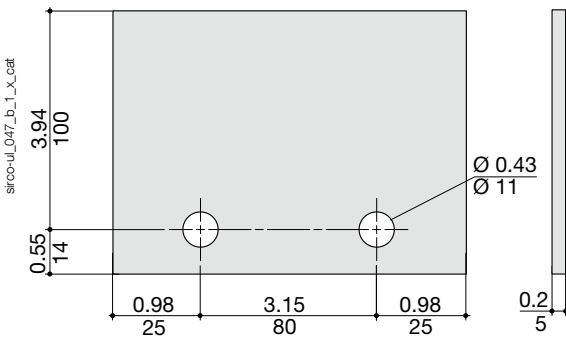
B5 - B5_{DS}

2709 1041

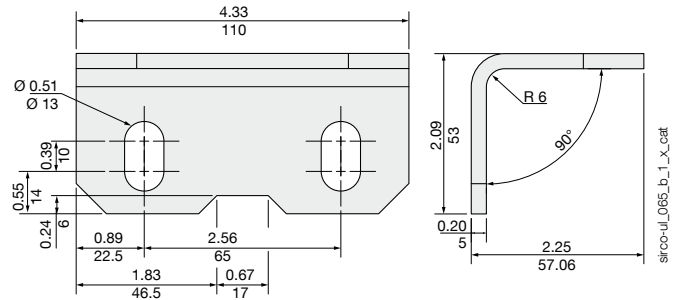


B6 - B6_{DS}

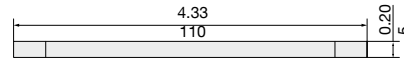
2709 0062



2709 0045

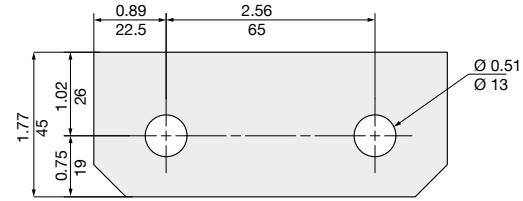
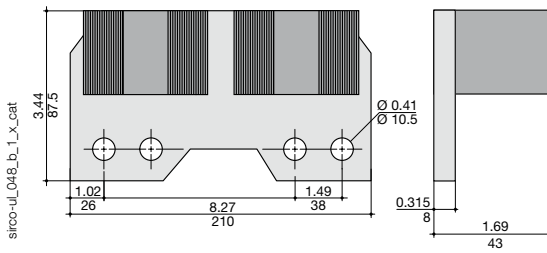


2709 0027



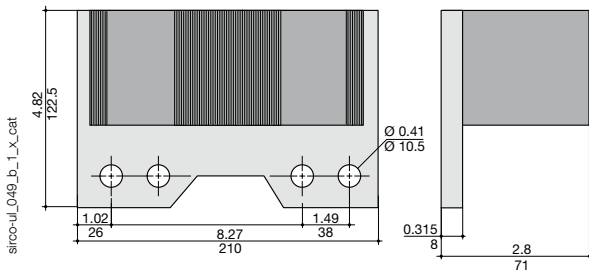
B7

2709 0081



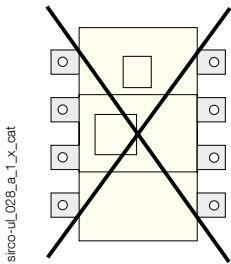
B7 - B7_{DS}

2709 0121



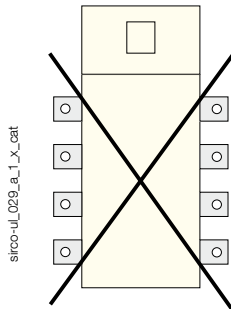
Mounting orientation

All frames



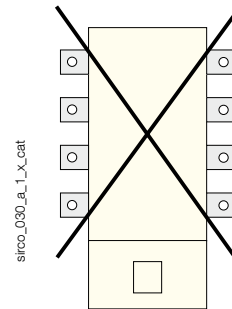
sirco-ul_028_a_1_x_cat

B4_{DS} - B5_{DS}



sirco-ul_029_a_1_x_cat

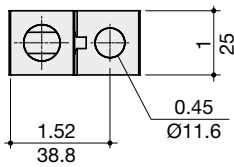
B6_{DS} - B7_{DS}



sirco_030_a_1_x_cat

Terminal lugs (in/mm)

100 to 250 A

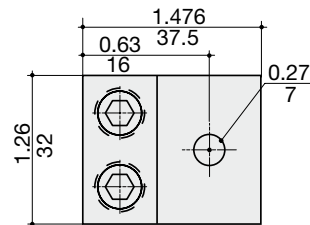


sirco_115_b_1_us_cat

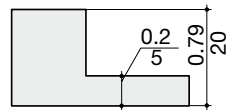


300MCM

100 to 250 A

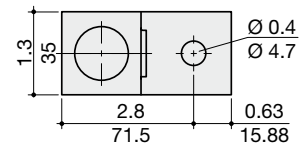


sirco-ul_038_a_1_us_cat



2/0

400 A

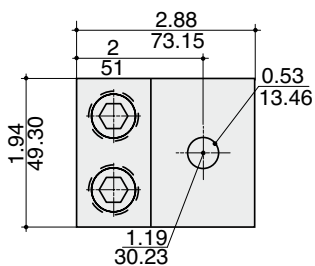


sirco-ul_010_a_1_us_cat

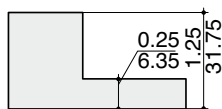


600MCM

400 A

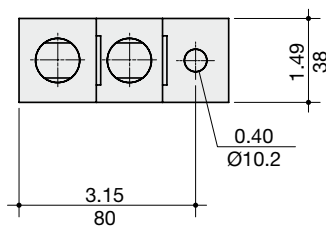


sirco-ul_026_b_1_us_cat

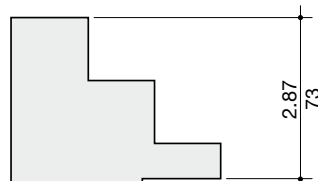


2 x 350MCM

600 to 2000 A



sirco_116_b_1_us_cat



2 x 600MCM