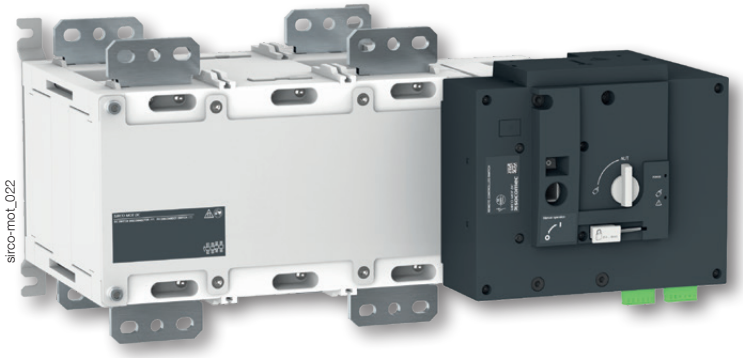
SIRCO MOT DC/SIRCO MOT DC ESS

Motorised load break switches for DC applications
from 250 to 3600 A, up to 1500 VDC



SIRCO MOT DC
4 x 2000 A

The solution for

- Photovoltaic inverters and recombiner boxes (PV)
- Energy Storage System (ESS)
- Rail Infrastructure
- Marine Distribution and microgrids
- Data centre

Strong points

- High performance switching
- Application tested design
- Reduced total cost of ownership

Conformity to standards

- IEC 60947-3
- GB/T 14048.3
- UL 98B

Function

SIRCO MOT DC and **SIRCO MOT DC ESS** motorised load break switches incorporate patented technology, providing a breaking capacity at 1500 VDC with just 2 poles, significantly limiting power dissipation. This broad range covers ratings from 250 to 3600 A, 1500 VDC.

Advantages

High performance switching
SIRCO MOT DC and SIRCO MOT DC ESS motorised load break switches incorporate patented technology, providing a breaking capacity at 1500 VDC with just 2 poles, significantly limiting power dissipation.
This broad range covers ratings from 250 to 3600 A, 1500 VDC.

Application tested design
Designed and tested for several DC applications, with proven performance in the harshest of environments. The arc extinguishing system provides safe disconnection, rapid arc extinguishing and current interruption.

- Tested against high short circuit systems with and without fuse protection to ensure complete system protection above 210 kA.
- Proven against severe environmental factors including: “Annex Q level C according to IEC” salt spray tested, high temperature and altitude, humidity cycle tested.

Reduced total cost of ownership
Developed with user cost savings in mind, the product features improvements which ensure a lower total cost of ownership.

- Flexible wiring configurations allow for simple in and out wiring, and by not using series bridging bars, cost savings can be achieved.
- Multiple circuit design allows for configurations of one 3600 A or two 1600 A circuits for greater flexibility.
- One design for both IEC and UL products providing the same base design for customers with IEC or UL machines.
- Compact solution with reduced footprint and weight improves sustainability with reduced packaging, transportation and installation costs.

General characteristics

- Up to 1500 VDC from 250 to 3600 A.
- Patented switching technology up to 1500 VDC in 2 poles.
- Remotely operated product (motor control).
- 2 stable positions (I, 0).
- High short-circuit option available.

References

1000 VDC

Rating (A) / Frame size	No. of poles No. of circuits	Switch body	Bridging bars for series or parallel pole connection[1]	Inter phase barrier[2]
250 A / B4	4 P 1 circuit	19PV **4025**	2609 **2025**	2998 **0024**
400 A / B4		19PV **4038**	2609 **2025**	2998 **0024**
630 A / B5		19PV **4064**	2609 **0080**	2998 **0014**
1000 A / B6		19PV **4100**	2609 **1100**	Included
1250 A / B6		19PV **4120**	2609 **1100**	
1600 A / B7		19PV **4160**	2609 **1160**	
2000 A / B7		19PV **4200**	2609 **1160**	

(1) Bridging bars only connect 2 poles in series, see wiring diagram for amount of series connections required
(2) Interphase barriers are in sets for top or bottom side. If both required, order two sets.

1500 VDC

Rating (A) / Frame size	No. of poles No. of circuits	Switch body	Bridging bars for series or parallel pole connection[1]	Inter phase barrier[2]
250 A / B5	3 P 1 circuit	19PV**3026**	2609 **0027**	2998 **0024**
400 A / B5		19PV**3041**	2609 **0027**	2998 **0024**
630 A / B5	4 P 1 circuit	19PV**4064**	2609 **0027**	2998 **0014**
1000 A / B6ds	6 P 1 circuit	19PV**6101**	2609 **1100** 4109 **0120**[1]	
2 x 1600 A / B7ds	4P 2 circuit	18DC**4360**	-	
2000 A / B7ds	4 P 1 circuit	18DC**4200**	1909 **0001**	Not Required
2000 A / B7ds (UL)		19DC**4200**	1909 **0001**	Not Required
2500 A / B7ds		18DC**4250**	1909 **0001**	Not Required
3200 A / B7ds		18DC**4320**	1909 **0001**	Not Required
3600 A / B7ds		18DC**4360**	1909 **0001**	Not Required

(1) Bridging bars only connect 2 poles in series, see wiring diagram for amount of series connections required
(2) Interphase barriers are in sets for top or bottom side. If both required, order two sets

1500 VDC High Short Circuit

Rating (A) / Frame size	No. of poles No. of circuits	Switch body	Bridging bars for connecting poles in series[1]	Inter phase barrier[2]
2 x 1600 A / B7ds	4 P 2 circuit	18ES**4360**	-	
2000 A / B7ds	4 P 1 circuit	18ES**4200**	1909 **0001**	Not Required
2000 A / B7ds (UL)		19ES**4200**	1909 **0001**	Not Required
2500 A / B7ds		18ES**4250**	1909 **0001**	Not Required
3200 A / B7ds		18ES**4320**	1909 **0001**	Not Required
3600 A / B7ds		18ES**4360**	1909 **0001**	Not Required

(1) Bridging bars only connect 2 poles in series, see wiring diagram for amount of series connections required
(2) Interphase barriers are in sets for top or bottom side. If both required, order two sets.

Accessories

Bridging bars

Use

The bridging bars will make easy the connection of poles in series or parallel, allowing the following configurations:
- Bottom/Bottom
- Top/Top
- Top/Bottom
- Bottom/Top

Connection diagrams:
see “Pole series connections”.

Bridging bar 250 A

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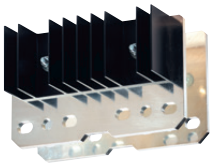
Rating (A) /Frame size	Number of poles of the device in series	Pack	Reference
250 ... 400 / B4	2	2 pieces	2609 **2025**
630 ... 800 / B5			2609 **0080**
1000 ... 1250 / B6			2609 **0027**
1000 / B6ds	3	1 piece	2609 **1100** 4109 **0120**
1600 ... 2000 / B7	2	2 pieces	2609 **1160**
2000 (UL) / B7ds (1)	2	1 piece	1909 **0001**
up to 3600 / B7ds (2)	2		1909 **0001**

(1) UL B7ds requiers 4 pcs (2) IEC B7ds requires 8 pcs



Bridging bar 2000 ... 3200 A

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Auxiliary contact

Use

Pre-break and signalisation of position I:
1 to 2 NO/NC auxiliary contacts
(1 as standard).
Low level auxiliary contacts: please consult us.

Connection to the control circuit

By 6.35 mm fast-on terminal.

Electrical characteristics

30 000 operations.

acces_065_a_1_cat

Characteristics

Rating (A)	Nominal current (A)	Operating current I_e (A) 250 VAC AC-13	400 VAC AC-13	24 VDC AC-13	48 VDC AC-13
250 ... 3200	16	12	8	14	6

svr_058_a_1_cat

References

NO/NC changeover contact

Frame size	Rating (A)	Contact(s)	Reference
B4 ... B5	250 ... 800	2nd	1999 **1002**
B6 ... B7	1000 ... 2000	2nd	1999 **1032**
B7ds	1600 ... 3200	2nd	1999 **1032**

Terminal screens

Use

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

Frame size	Rating (A)	No. of poles	Position	Reference
B4	250 ... 400	4 P	top or bottom	1509 **4025**
B5	630 ... 800	4 P	top or bottom	1509 **4063**
B6	1000 ...1250	4 P	top or bottom	1509 **4080**
B7	1600 ... 2000	4 P	top or bottom	1509 **4160**

acces_207_a_2_cat

Accessories (continued)

Available for selected 1000 VDC products, contact us for specific requirements

Inter phase barrier

Use

Safety isolation between the terminals. For SIRCO MOT DC, the inter phase barriers allow insulation between pole connected in series.

Frame size	Rating (A)	No. of poles	Pack	Reference
B4	250 ... 400	4 P	3 pieces	2998 **0024**
B5	630 ... 800	4 P	3 pieces	2998 **0014**
B6 ... B8	1000 ... 3200	4 P	-	included

Available for selected 1000 vdc products, contact us for specific requirements

acces_036_a_2_cat

Terminal shrouds

Use

Protection against direct contact with terminals or connecting parts.

Not compatible for terminals with bridging bars connected.

Advantage of terminal shrouds

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

Frame size	Rating (A)	No. of poles	Position	Reference
B4	250 ... 400	4 P	top or bottom	2694 **4021**
B5	630 ... 800	4 P	top or bottom	2694 **4051**

acces_206_a_2_cat

2 position padlocking (I - 0)

Use

Enables padlocking in position I (product can be padlocked in position 0 as standard).

Factory fitted.

Frame size	Rating (A)	Reference
B4 ... B5	250 ... 800	9599 **0003**
B6 ... B8	1000 ... 3200	9599 **0004**

atys_854_a_1_cat

Accessories (continued)

Key handle interlocking system

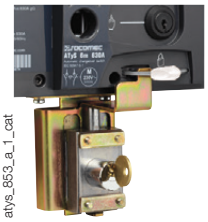
Use

Motorised and manual operations can be locked in position 0 using a RONIS EL11AP lock.

Factory fitted.

As standard, locking in position 0.

Optional padlocking in 2 positions: Locking in position 0 and I.



Frame size	Rating (A)	Reference
B4 … B5	250 … 800	9599 **1006**
B6 … B8	1000 … 3200	9599 **1004**

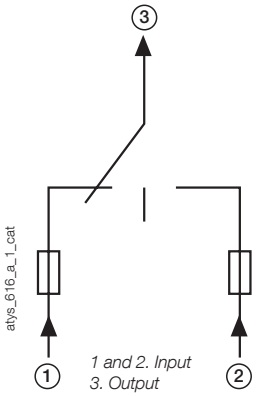
Double power supply - DPS

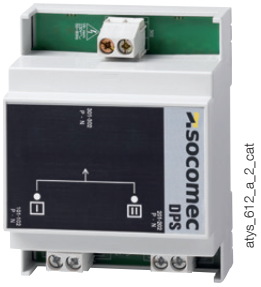
Use

Allows a SIRCO MOT to be supplied by two 230 VAC, 50/60 Hz networks.

Input

- The input is considered “active” from 200 VAC.
- Maximum voltage: 288 VAC.
- Internal protection: each input is fuse protected 3.15 A.
- Connection on terminals: max. 6 mm^2.
- Modular device: 4 module width.





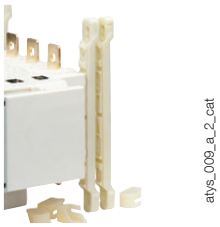
Description of accessories	Reference
DPS	1599 **4001**

Mounting spacers

Use

Increases the distance between the rear power terminals and the backplate by 10 mm.

This accessory may also be used to replace the original mounting spacers.

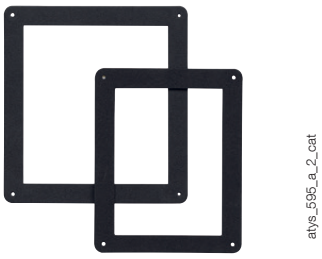


Frame size	Rating (A)	Description of accessories	Reference
B3 … B5	125 … 630	1 set of 2 spacers	1509 **0001**

Door protective surround

Use

When direct access to the SIRCO MOT front face (mode selection, manual operation, display…) is required, the door surround can be utilised to provide a clean and safe finish to the panel's cut-out.



Frame size	Rating (A)	Reference
B3 … B5	125 … 630	1529 **0012**
B6 … B8	800 … 3200	1529 **0080**

Characteristics according to IEC 60947-3

250 A to 2000 A at 1000 VDC

Thermal current I_{th} at 40°C*	250	400	630	1000	1250	1600	2000
Rated voltage	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
Rated insulation voltage Ui (V)	1200	1200	1200	1200	1200	1200	1200
Rated impulse withstand voltage Uimp (kV)	12	12	12	12	12	12	12
Frame size	B4	B4	B5	B6	B6	B7	B7

** For higher ambient temperature values, consult us*

Thermal current I_{th} at 40°C*			250	400	630	1000	1250	1600	2000
Rated voltage	**Utilisation category**	**Ambient temperature (°C)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
1000 VDC	DC-21 B	40	250	400	630	1000	1250	1600	2000
1000 VDC	DC-21 B	50	250	400	630	1000	1250	1600	1800
1000 VDC	DC-21 B	60	250	400	560	1000	1125	1600	1600
1000 VDC	DC-21 B	70	250	400	540	950	1050	1520	1520

Short circuit capacity

Rated short time withstand current I_{cw} 1s (kA rms)	IEC 60947-3	10	10	10	10	10	10	10
Rated short-circuit making capacity I_{cm} (kA peak)	IEC 60947-4	10	10	10	10	10	10	10

**For Rated conditional short-circuit current Iq: Please consult us.*

Power Supply

Power supply. 230 VAC min. / max. (VAC)	166/332	166/332	166/332	166/332	166/332	166/332	166/332

Control supply power demand

Power supply 230 VAC inrush / nominal (VA)	276/115	276/116	176/150	460/184	460/184	460/230	460/230

Connection

Rigid Cu cable cross-section (mm^2)	120	240	2 x 185	2 x 240	2 x 240	-	-
Maximum Cu busbar width (mm)	32	32	50	63	63	100	100
Tightening torque min/max (Nm)	20/26	40/45	40/45	40/45	40/45	40/45	40/45

Mechanical characteristics

Durability (number of operating cycles) (1)	8000	5000	5000	4000	4000	3000	3000
Weight of a 4 pole device (kg)	7	8	14	33	33	42	42

(1) Improved endurances: please consult us.

Characteristics according to IEC 60947-3

250 A to 3600 A at 1500 VDC

Thermal current I_{th} at 40°C*	250	400	630	1000	2 x 1600	2000	2500	3200	3600
Rated voltage	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
Rated insulation voltage Ui (V)	1500	1500	1500	1500	1500	1500	1500	1500	1500
Rated impulse withstand voltage Uimp (kV)	12	12	12	12	12	12	12	12	12
Frame size	B5	B5	B5	B6	B7ds	B7ds	B7ds	B7ds	B7ds

Thermal current I_{th} at 40°C*			250	400	630	1000	2 x 1600	2000	2500	3200	3600
Rated voltage	**Utilisation category**	**Ambient temperature (°C)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
1500 VDC	DC-21 B	40	250	400	630	1000	2 x 1600	2000	2500	3200	3600
1500 VDC	DC-21 B	50	250	400	600	1000	2 x 1600	2000	2500	3200	3500
1500 VDC	DC-21 B	60	250	400	537	988	2 x 1400	2000	2500	3200	3200
1500 VDC	DC-21 B	70	250	360	470	862	2 x 1200	2000	2500	2900	2900
Short circuit capacity											
Rated short time withstand current I_{cw} 1s (kA rms)		IEC 60947-3, GB/T 14048.3	10	10	10	10	20	45	45	45	45
Rated short-circuit making capacity I_{cm} (kA peak)		IEC 60947-3, GB/T 14048.3	10	10	10	10	20	45	45	45	45

** for higher ambient temperature values, consult us*

Short circuit capacity (ESS range)											
Rated conditional short-circuit current I_q (kA rms)		IEC 60947-3, GB/T 14048.3	-	-	-	-	105	210	210	210	210
Power Supply											
Power supply. 230 VAC min. / max. (VAC)			166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332
Control supply power demand											
Power supply 230 VAC inrush / nominal (VA)			276/115	276/116	176/150	460/184	460/184	460/230	460/230	460/230	460/230
Connection											
Rigid Cu cable cross-section (mm^2)			120	240	2 x 185	-	-	-	-	-	-
Maximum Cu busbar width (mm)			32	40	40	63	63	100	100	100	100
Tightening torque min/max (Nm)			40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Mechanical characteristics											
Durability (number of operating cycles)			8000	5000	5000	4000	6500	6500	6500	6500	6500
Weight of a 4 pole device (kg)			13	13	15	37	34	34	34	34	34

Characteristics according to UL 98B and IEC 60947-3

2000 A at 1500 VDC (B7ds UL)

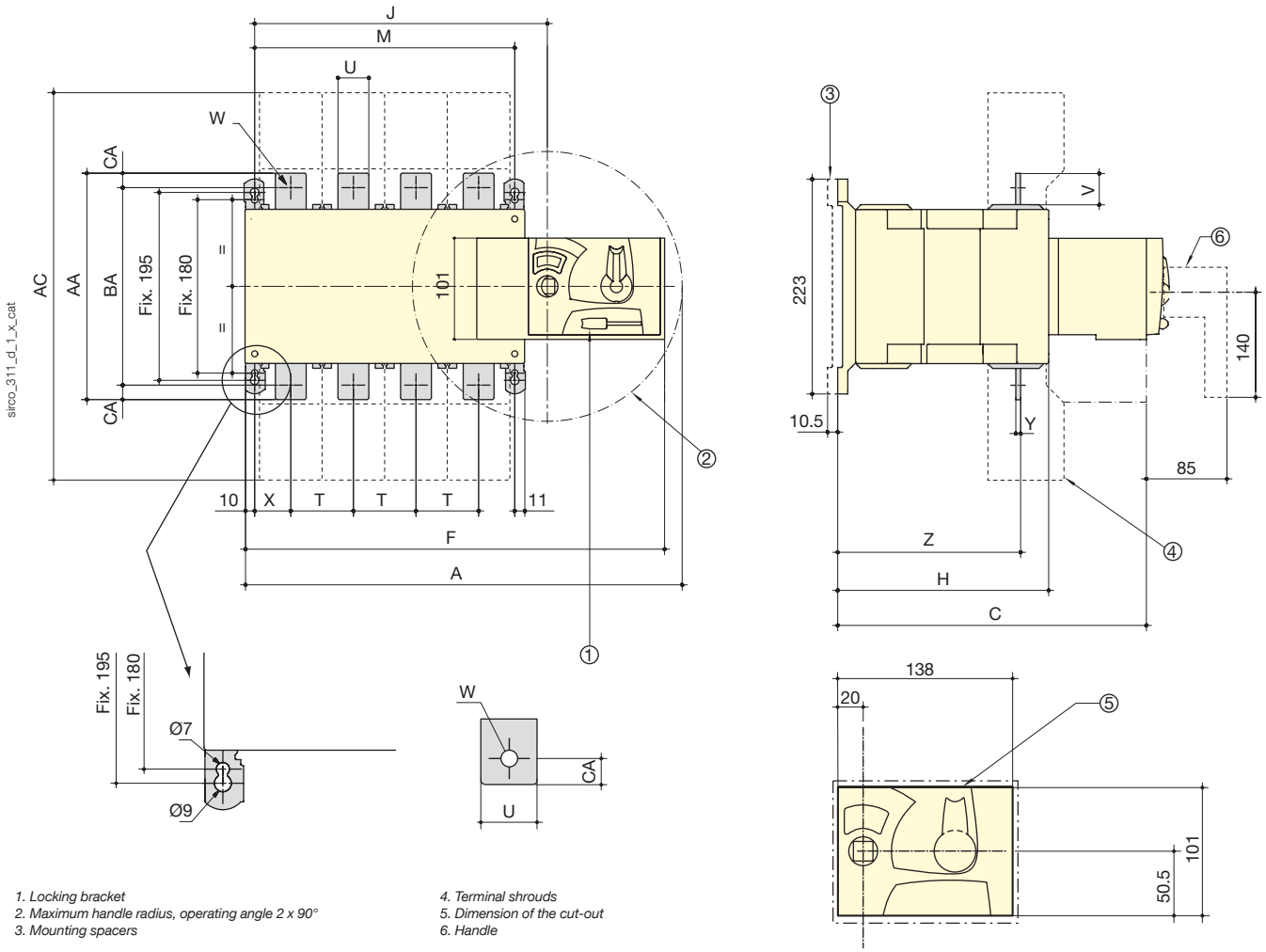
Thermal current I_{th} at 40°C*								2000			
Rated voltage	**Utilisation category**	**Ambient temperature (°C)**						**(A)**			
1500 VDC	UL 98B	40	-	-	-	-	-	2000	-	-	-
1500 VDC	DC-21 B	40	-	-	-	-	-	-	-	3200	-
1500 VDC	DC-21 B	50	-	-	-	-	-	-	-	3200	-
1500 VDC	DC-21 B	60	-	-	-	-	-	-	-	3200	-
1500 VDC	DC-21 B	70	-	-	-	-	-	-	-	2900	-

** For higher ambient temperature values, consult us*

Short circuit capacity											
Prospective short-circuit current (kA rms DC) (kA rms)		UL 98B	-	-	-	-	-	10	-	-	-
Short circuit capacity (ESS range)											
Rated conditional short-circuit current I_q (kA rms)		IEC 60947-3, GB/T 14048.3	-	-	-	-		210		210	

Dimensions (mm)

250 to 630 A / B4 to B5 / 1000 VDC

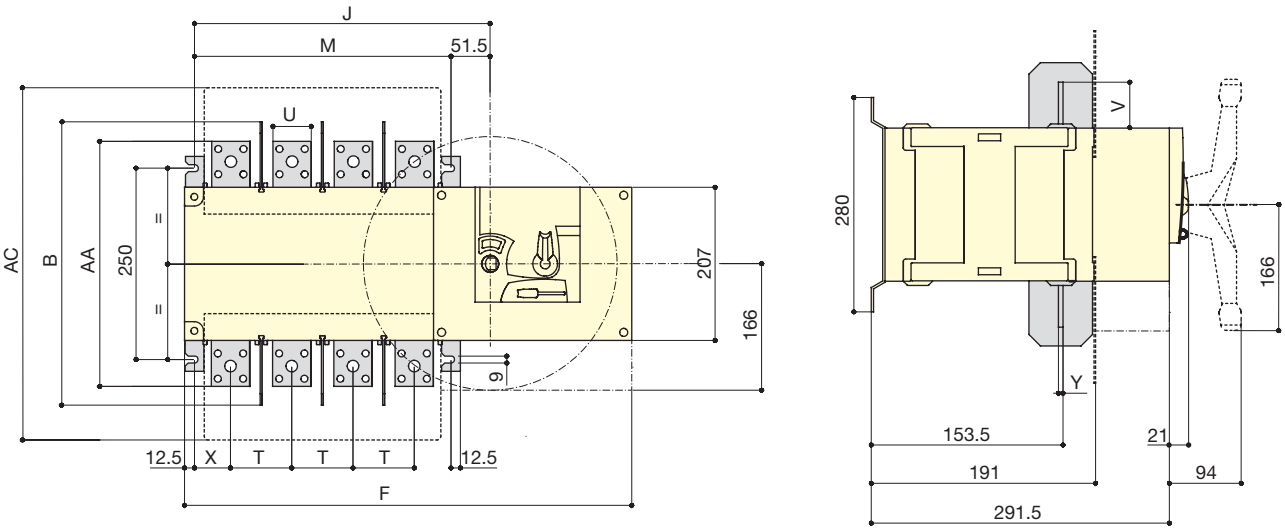


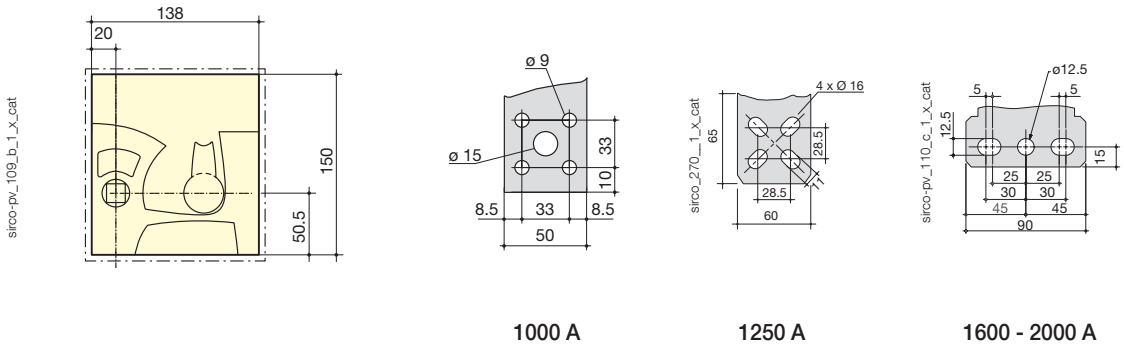
1. Locking bracket
2. Maximum handle radius, operating angle 2 x 90°
3. Mounting spacers
4. Terminal shrouds
5. Dimension of the cut-out
6. Handle

Rating (A) / Frame size	Overall dimensions		Terminal shrouds	Switch body			Switch mounting	Connection									
	A 4p.	C	AC	F 4p.	H	J	M 4p.	T	U	V	W	X 4p.	Y	Z	AA	BA	CA
250 / B4	395	244.5	280	378	153	245	210	50	25	30	11	33	3.5	134.5	160	130	15
400 / B4	395	244.5	280	378	153	245	210	50	35	35	11	33	3.5	134.5	170	140	15
630 / B5	459	320.5	400	437	221	304	270	65	45	50	13	37.5	5	190	260	220	20

Dimensions (continued)

1000 to 2000 A / B6 to B7 / 1000 VDC



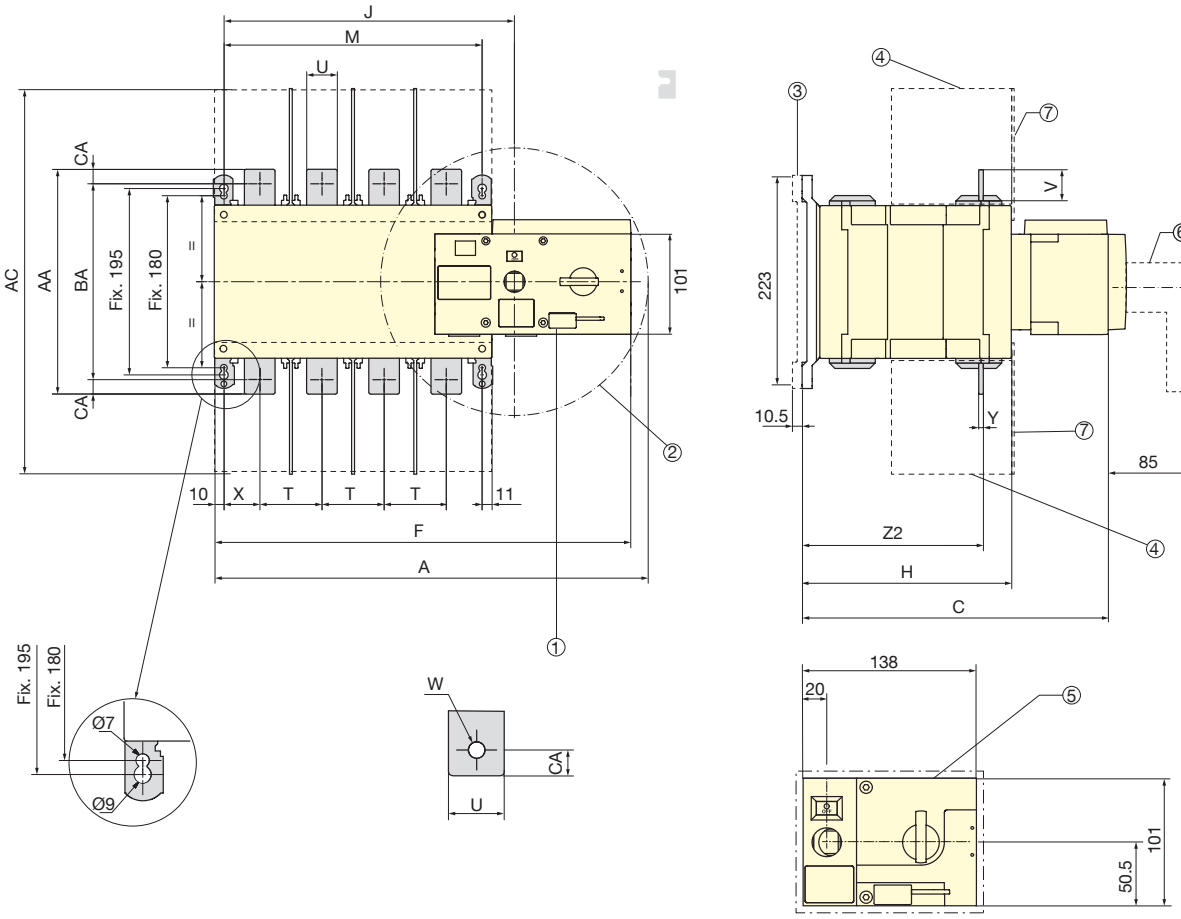


1000 A | 1250 A | 1600 - 2000 A

Rating (A) / Frame size	Overall dimensions	Terminal shrouds	Switch body		Switch mounting	Connection					
	B	AC	F 4p.	J 4p.	M 4p.	T	U	V	X	Y	AA
1000 / B6	370	461	584	387	335	80	50	60.5	60	7	321
1250 / B6	370	461	584	387	335	80	60	65	60	7	330
1600 / B7	380	531	716	518.5	467	120	90	44	53	8	288
2000 / B7	380	531	716	518.5	467	120	90	44	53	8	288

Dimensions (mm) (continued)

250 to 630 A / B5 / 1500 VDC



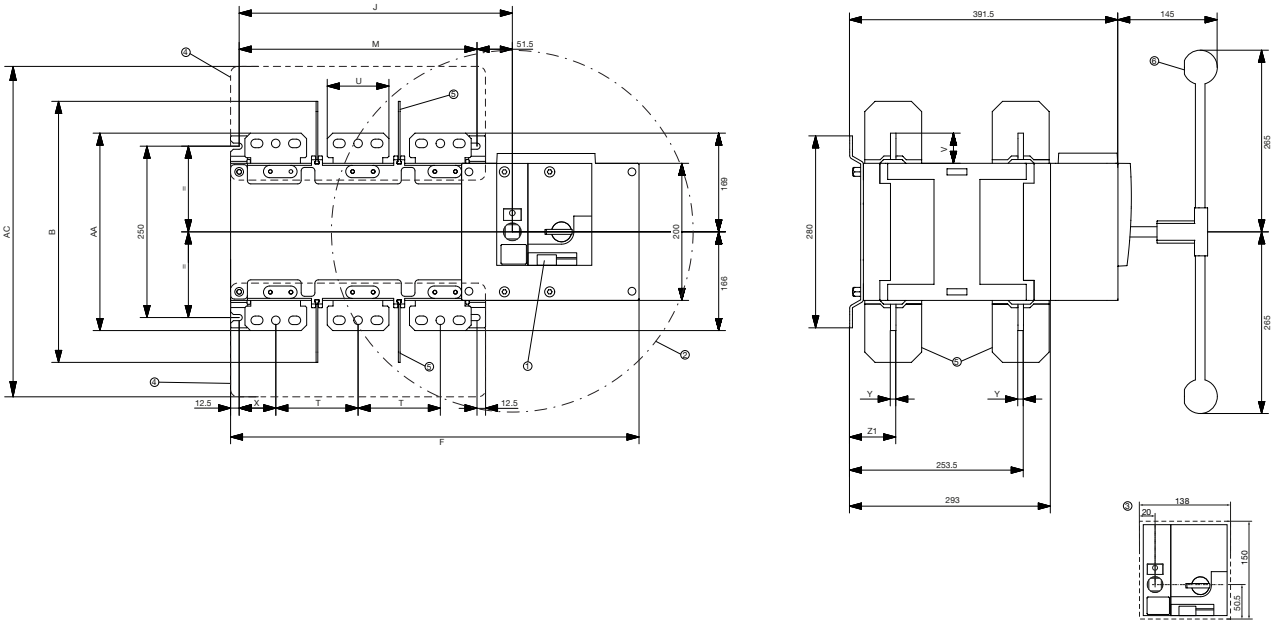
1. Padlocking Facility: Locking bracket for up to 3 padlocks of dia. 4 – 8mm
2.Emergency manual operation: Maximum operating radius with an operating angle of 90°
3. Mounting stand off with spacer accessory
4. Phase Barriers
5. Flush mounting cutout dimensions for front door
6. Emergency removable handle
7. Terminal screens

CAUTION To consider the space required for manual operation and writing. (When using the emergency handle).

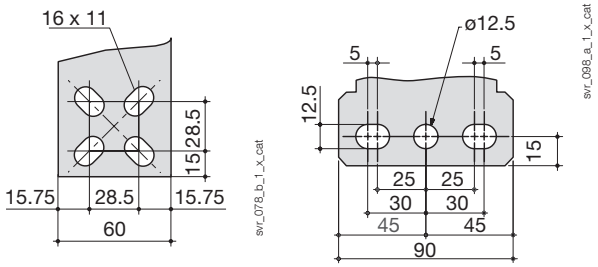
Rating (A) / Body size / Nb of pole	Overall dimensions		Terminal shrouds					Switch mounting	Connection									
	A	C	AC	F	H	J	J1	M	T	U	V	W	X	Y	Z2	AA	BA	CA
250/B5 - 3 pole	394	321	400	377	221	244	34	210	65	45	50	13	42.5	5	190	260	220	20
400/B5 - 3 pole	394	321	400	377	221	244	34	210	65	45	50	13	42.5	5	190	260	220	20
630/B5 - 4 pole	459	321	400	437	221	304	34	270	65	45	50	13	37.5	5	190	260	220	20

Dimensions (mm) (continued)

1000 A / B6ds / 1500 VDC



1000 A



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2. Emergency manual operation: Maximum operating radius with an operating angle of 90°
3. Flush mounting cutout dimensions for front door
4. Terminal screens
5. Phase Barriers
6. Emergency removable handle

CAUTION

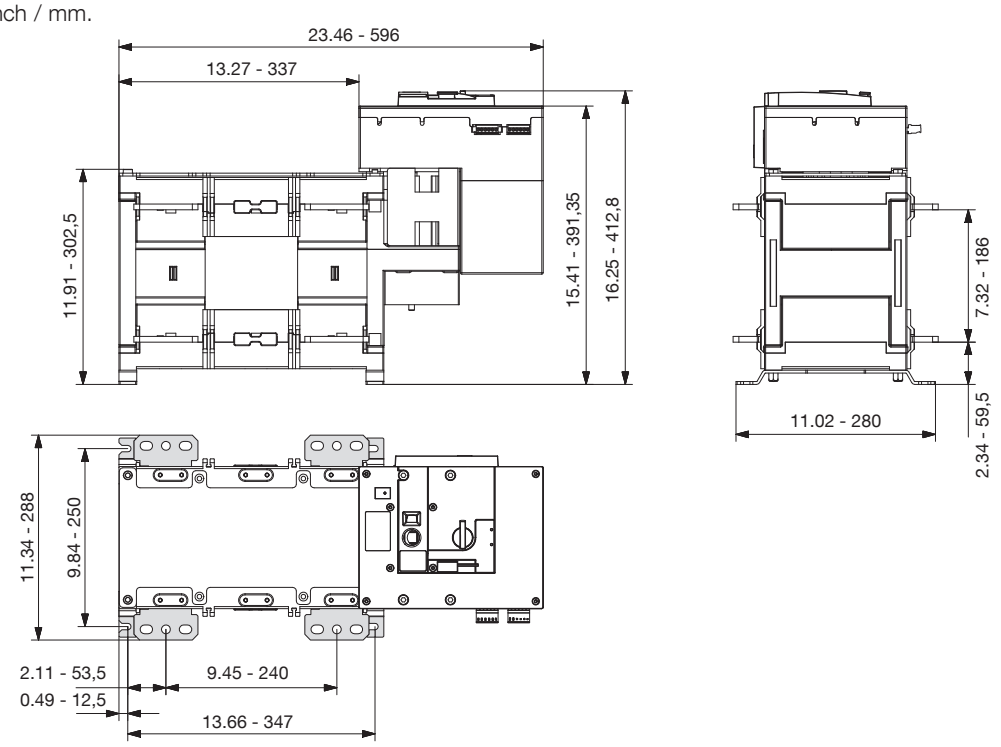
To consider the space required for manual operation and writing. (When using the emergency handle).

Rating (A) / Body size	Overall dimensions	Terminal screens	Body				Switch mounting		Connection						
	B	AC	F 3p.	F 4p.	J 3p.	J 4p.	M 3p.	M 4p.	T	U	V	X	Y	Z1	AA
1000/B6	370	461	504	584	307	387	255	335	80	60	65	47.5	7	66.5	330

Dimensions (continued)

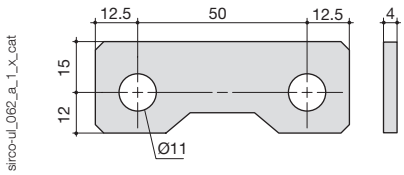
2000 to 3600 A / B7ds / 1500 VDC

Dimensions in inch / mm.

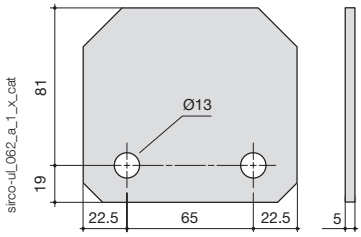


Bridging bar

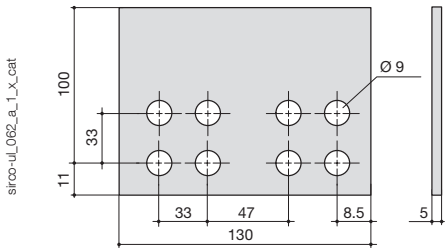
250 - 400 A (1000 V)



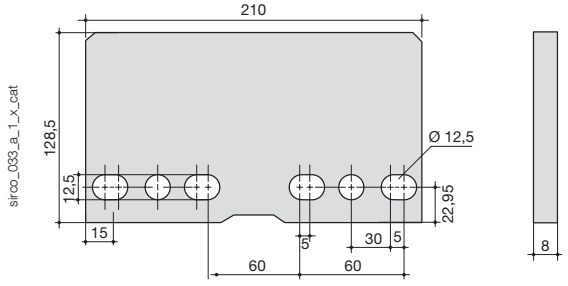
630 - 800 A (1000 V)



1000 - 1250 A (1000 V)

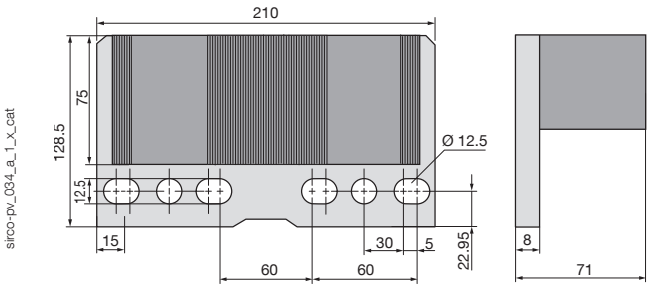


1600 A (1000 V)



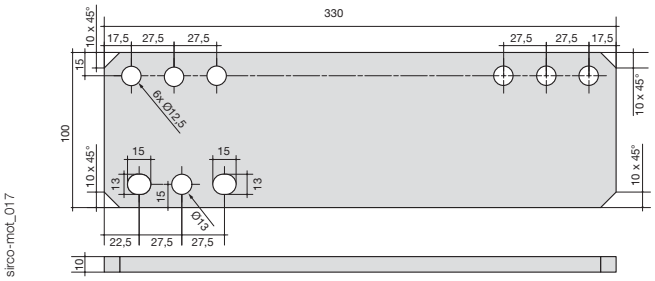
Dimensions (continued)

2000 - (1000 V)



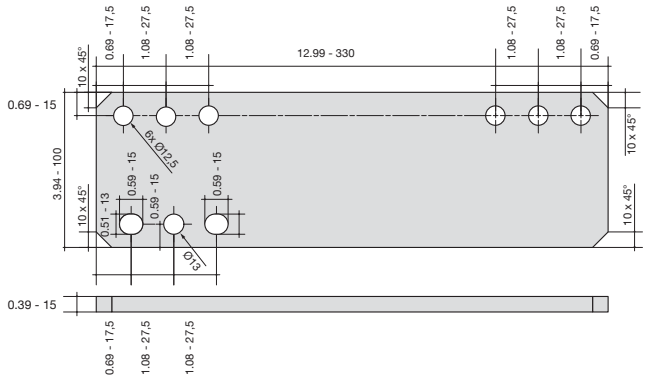
1800 - 3600 A (1500 V) - IEC

Dimensions in mm.



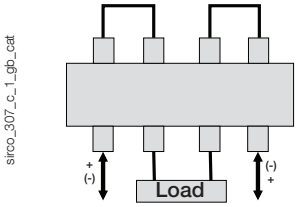
2000 A (1500 V) - UL

Dimensions in inch / mm.



Pole series connections 1000 VDC (1)

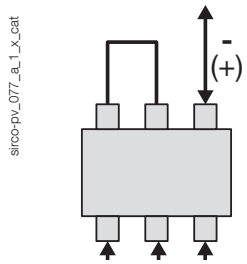
4 poles - bottom / bottom



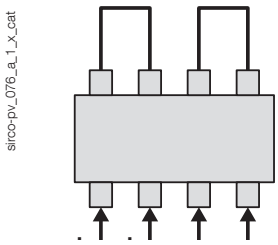
(1) Other connections: refer to mounting instructions

Pole series connections 1500 VDC

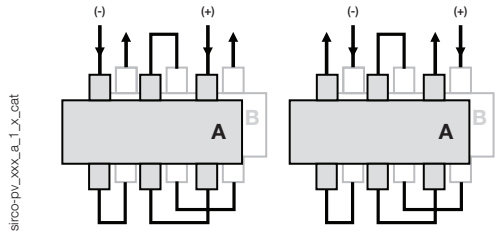
3 Pole connections - 250 - 400 A



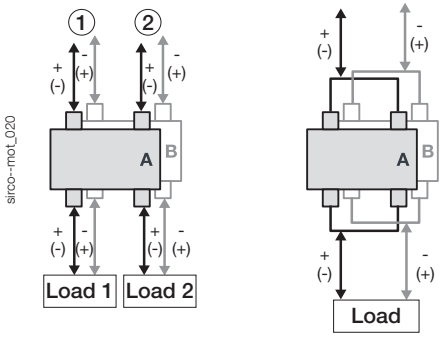
4 Pole connections - 630 A



6 Pole connections - 1000 A



2 + 2 Pole (4 Pole) connections



Two circuits up to 1600 A
One circuit up to 3600 A (IEC) & 2000 A (UL)