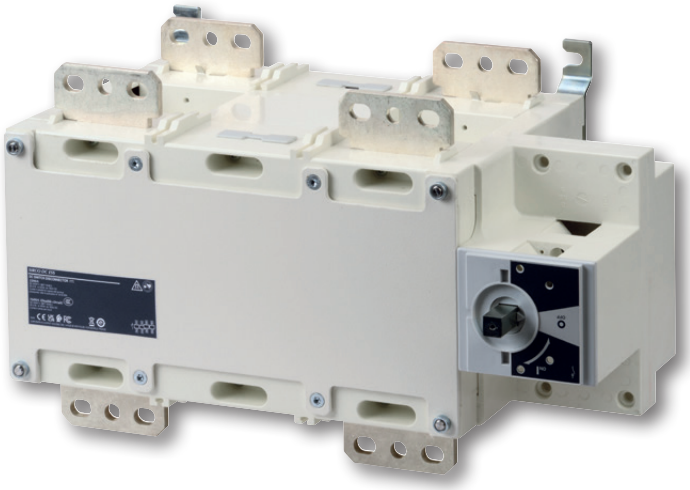
SIRCO DC/SIRCO DC ESS

Load break switches for direct current applications
from 2000 to 3600 A, up to 1500 VDC



sirco_515_front.eps

The solution for

> Energy
> Industry

Strong points

> High-performance switching
> Design tested in application
> Reduced total cost of ownership

Conformity to standards

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

Function

SIRCO DC and **SIRCO DC ESS** units are manual control multipolar load break switches. They provide make and break on load and safety disconnection for all low voltage electrical circuits for direct current applications up to 1500 VDC.

Advantages

High-performance switching

SIRCO DC and SIRCO DC ESS load break switches include a patented technology providing 1500 VDC breaking capacity with only 2 poles, with significant power loss reduction. This range covers nominal values from 2000 to 3600 A, 1500 VDC.

Design tested in application

Designed and tested for numerous direct current applications, with tried-and-tested performance in the most difficult environments.

The arc quenching system provides safe disconnection, arc quenching and quick current interruption.

- Tested against high short-circuit systems with and without fuse protection to provide complete protection for the system above 210 kA.
- Tried-and-tested against severe environmental factors, in particular: “Annex Q level C according to IEC” tested in salt mist, at high temperature and altitude, tested in humidity cycle.

Reduced total cost of ownership

Developed with a view to reducing costs for the user, the product has improvements that ensure the lowest total cost of ownership.

- Flexible connection configurations enable simple input and output connection, with savings made by not using bridging bars in series.
- The multi-circuit design enables configuration of one 3600 A circuit or two 1600 A circuits for greater flexibility.
- A single design for IEC and UL products provides the same base design for customers with IEC or UL machines.
- A compact solution with reduced footprint and weight improves the durability, while reducing packaging, transport and installation costs.

General characteristics

- Up to 1500 VDC, 2000 to 3600 A.
- Patented switching technology up to 1500 VDC on 2 poles.
- High short-circuit option available.

socomec Innovative Power Solutions

References

1500 VDC

Rating (A) / Frame size	No. of poles No. of circuits	Switch body	Bridging bars for series or parallel pole connection(1)
2 x 1600 A / B7ds	4P 2 circuit	26DC **4320**	-
2000 A / B7ds (UL)	4 P 1 circuit	27DC **4200**	1909 **0001**
2500 A / B7ds		26DC **4250**	1909 **0001**
3200 A / B7ds		26DC **4320**	1909 **0001**
3600 A / B7ds		26DC **4360**	1909 **0001**

(1) Bridging bars only connect 2 poles in series, see wiring diagram for amount of series connections required

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)
2 x 1600 A / B7ds	4 P 2 circuit	26ES **4320**	-
2000 A / B7ds (UL)	4 P 1 circuit	27ES **4200**	1909 **0001**
2500 A / B7ds		26ES **4250**	1909 **0001**
3200 A / B7ds		26ES **4320**	1909 **0001**
3600 A / B7ds		26ES **4360**	1909 **0001**

(1) Bridging bars only connect 2 poles in series, see wiring diagram for amount of series connections required

Accessories

Direct operation handle

Frame size	Handle type	Reference
$B7_{DS}$	V0	2799 **7072**



V0 type handle

Door interlocked external operation handle

Use

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

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

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 (authorised persons only).

The interlocking function is restored when the door is re-closed.

Frame size	Handle type	Handle colour	Degree of protection	Reference
$B7_{DS}$	V1	Black	IP65	2799 **7145**



V1 type handle

Accessories (continued)

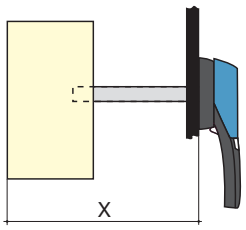
Shaft for external handle

Use
Standard lengths:
320 mm,
- 400 mm.

Other lengths: Please consult us.

Frame size	Handle type	Dimensions X (mm)	Length (mm)	Reference
$B7_{DS}$	V1	425...697	320	4199 **3018**
$B7_{DS}$	V1	425...777	400	4199 **3019**





Bridging bars

Use
The bridging bars will make easy the connection of poles in series or parallel.

Connection diagrams:
see “Pole series connections”.

Rating (A) Frame size	Number of poles of the device in series	Pack	Reference
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



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.

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



References

NO/NC changeover contact			
Frame size	Rating (A)	Contact(s)	Reference
B7ds	1600 ... 3200	2nd	1999 **1032**



Characteristics according to IEC 60947-3

2000 A to 3600 A at 1500 VDC

Thermal current I_{th} at 40°C*			2 x 1600	2000	2500	3200	3600
Rated voltage			**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
Rated insulation voltage Ui (V)			1500	1500	1500	1500	1500
Rated impulse withstand voltage Uimp (kV)			12	12	12	12	12
Frame size			B7ds	B7ds	B7ds	B7ds	B7ds
Thermal current I_{th} at 40°C*			**2 x 1600**	**2000**	**2500**	**3200**	**3600**
Rated voltage	**Utilisation category**	**Ambient temperature (°C)**	**(A)**	**(A)**	**(A)**	**(A)**	**(A)**
1500 VDC	DC-21 B	40	2 x 1600	2000	2500	3200	3600
1500 VDC	DC-21 B	50	2 x 1600	2000	2500	3200	3500
1500 VDC	DC-21 B	60	2 x 1400	2000	2500	3200	3200
1500 VDC	DC-21 B	70	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	20	45	45	45	45
Rated short-circuit making capacity I_{cm} (kA peak)		IEC 60947-3, GB/T 14048.3	20	45	45	45	45
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
Connection							
Rigid Cu cable cross-section (mm^2)			-	-	-	-	-
Maximum Cu busbar width (mm)			63	100	100	100	100
Tightening torque min/max (Nm)			40/45	40/45	40/45	40/45	40/45
Mechanical characteristics							
Durability (number of operating cycles)			6500	6500	6500	6500	6500
Weight of a 4 pole device (kg)			34	34	34	34	34

** for higher ambient temperature values, consult us*

Characteristics according to UL 98B and IEC 60947-3

2000 A at 1500 VDC (B7ds UL)

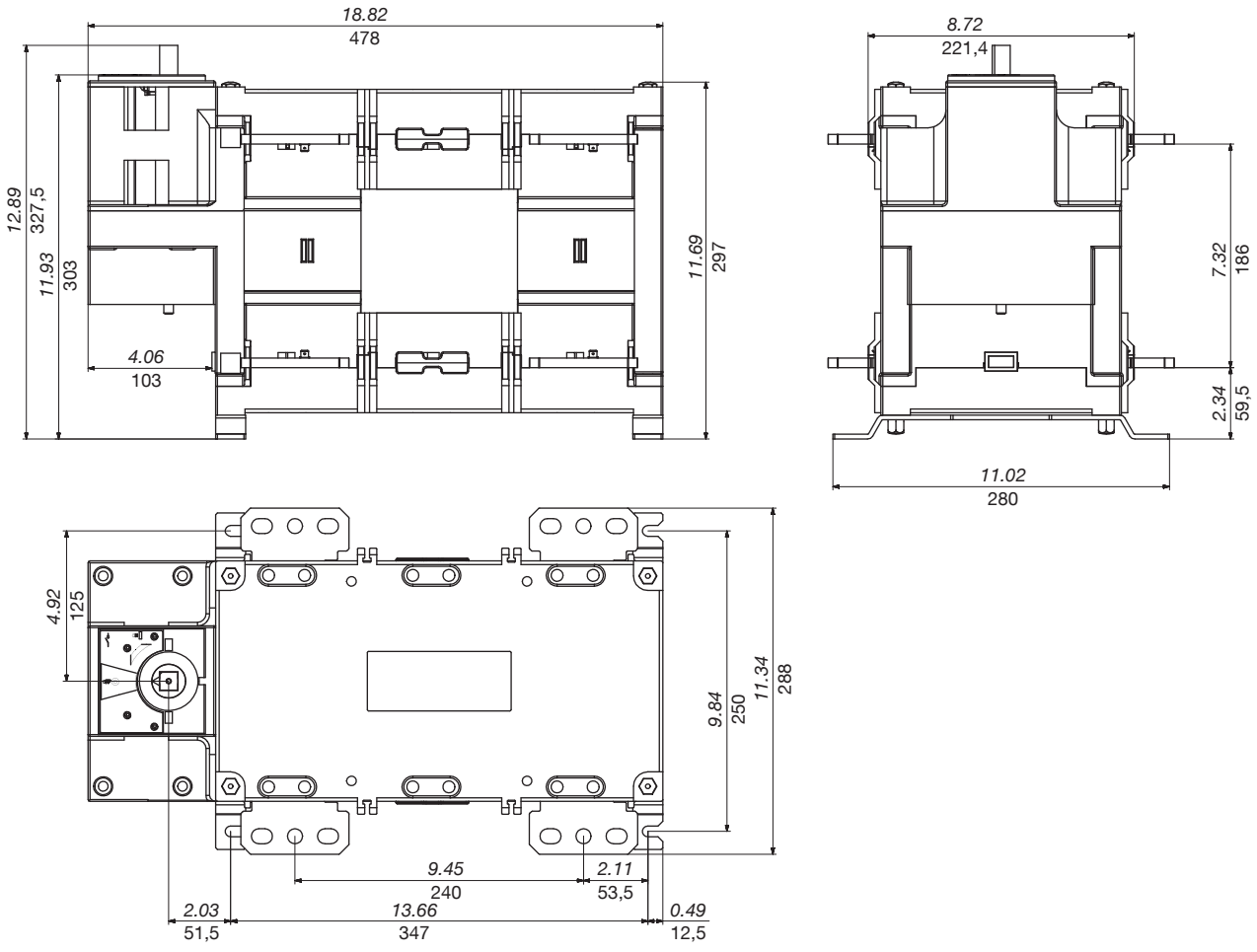
Thermal current I_{th} at 40°C*				2000			
Rated voltage	**Utilisation category**	**Ambient temperature (°C)**		**(A)**			
1500 VDC	UL 98B	40	-	2000	-	-	-
1500 VDC	DC-21 B	40	-	-	-	3200	-
1500 VDC	DC-21 B	50	-	-	-	3200	-
1500 VDC	DC-21 B	60	-	-	-	3200	-
1500 VDC	DC-21 B	70	-	-	-	2900	-
Short circuit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

** For higher ambient temperature values, consult us*

Dimensions

2000 to 3600 A / B7ds / 1500 VDC

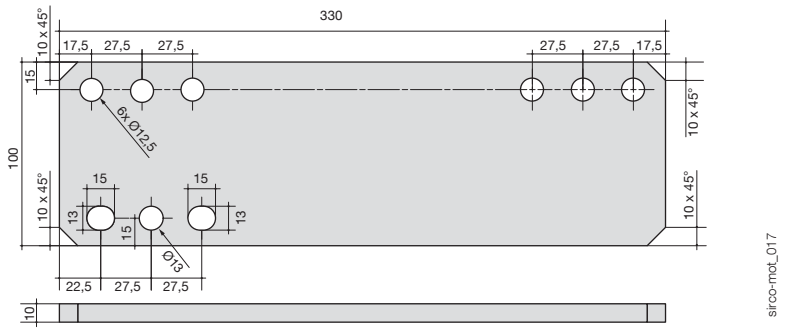
Dimensions in inch / mm.



Dimensions (continued)

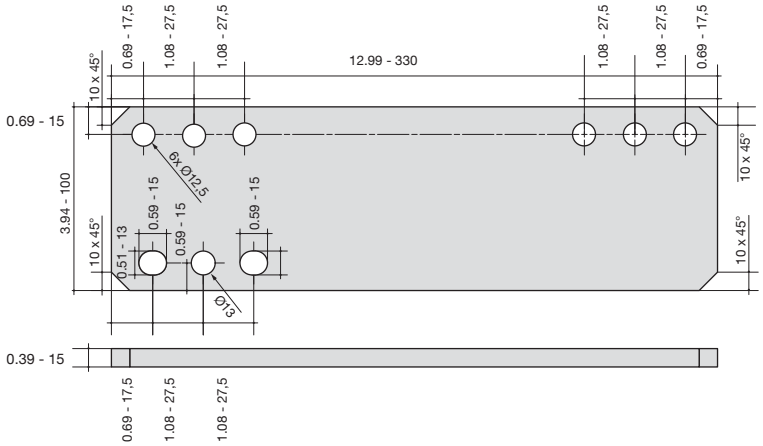
2500 - 3600 A (1500 V) - IEC

Dimensions in mm.



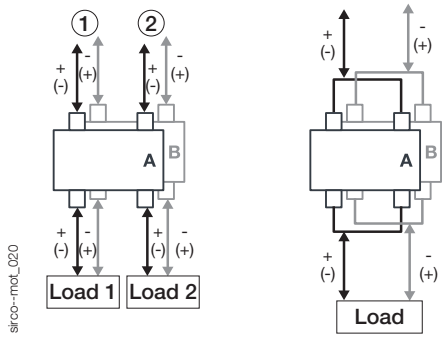
2000 A (1500 V) - UL

Dimensions in inch / mm.



Pole series connections 1500 VDC

2 + 2 Pole (4 Pole) connections



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