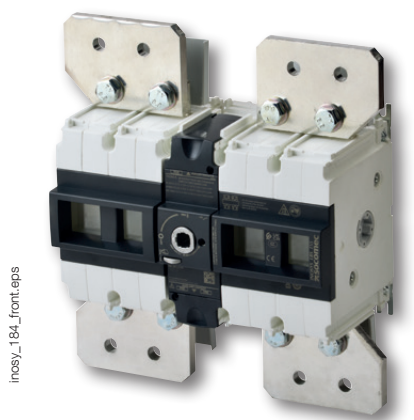


INOSYS LBS DC ESS

Load break switches for DC and ESS applications
from 800 to 1600 A, up to 1500 VDC



The solution for

- > Energy
- > Industry

Strong points

- > High short circuit resistance in DC and ESS applications
- > High-performance switching in a small volume
- > Safe operation
- > Designed for harsh environments
- > Easier to install
- > Modular solution for flexible configuration

Conformity to standards

- > IEC 60947-3



- > DC-21B & DC-PV2



- > UL98B



- > CCC

Function

INOSYS ESS LBS is a range of load break switches that can be controlled manually. These switches can be operated manually using the handle to disconnect all or part of an electrical installation. They ensure on-load opening and closing and safe disconnection of all direct current low voltage electrical circuits up to 1500 VDC. They can also be used for emergency disconnection applications. They have been designed specifically to withstand high short circuit conditions in DC and ESS applications.

Advantages

High short circuit resistance in DC and ESS applications

INOSYS LBS load break switches have been designed specifically to withstand high short circuit conditions in DC and ESS applications. Tested in applications with and without fuses, to offer maximum safety in all fault conditions.

High-performance switching in a small volume

INOSYS LBS load break switches incorporate patented technology that provides a breaking capacity of 750 VDC per pole, providing 1500 VDC with only 2 poles, and significantly limiting power dissipation. And they come in an exceptionally compact enclosure.

Safe operation

- Direct position indication on the bar and visible contacts with arc fault containment.
- The opening and closing of the switch is fully independent of the operating speed, to ensure safe use in all conditions.
- High temperature resistance: no derating up to 55°C, operational from -40 to +70°C.

Designed for harsh environments

- Vibration tested (13.2 to 100 Hz at 0.7 g).
- Impact tested (15 g during three cycles).
- Humid temperature tested (2 cycles, 55°C with 95% humidity).
- Salt spray tested (3 cycles with storage humidity, 40°C, 93% humidity after each cycle).

Easier to install

- Wiring: as the switch is not polarized, it allows all types of wiring and connections.
- Easy access without tools to integrate auxiliary contacts (located in the control unit).
- The mechanism may be placed at the centre or the left (in the factory) to address installation requirements.

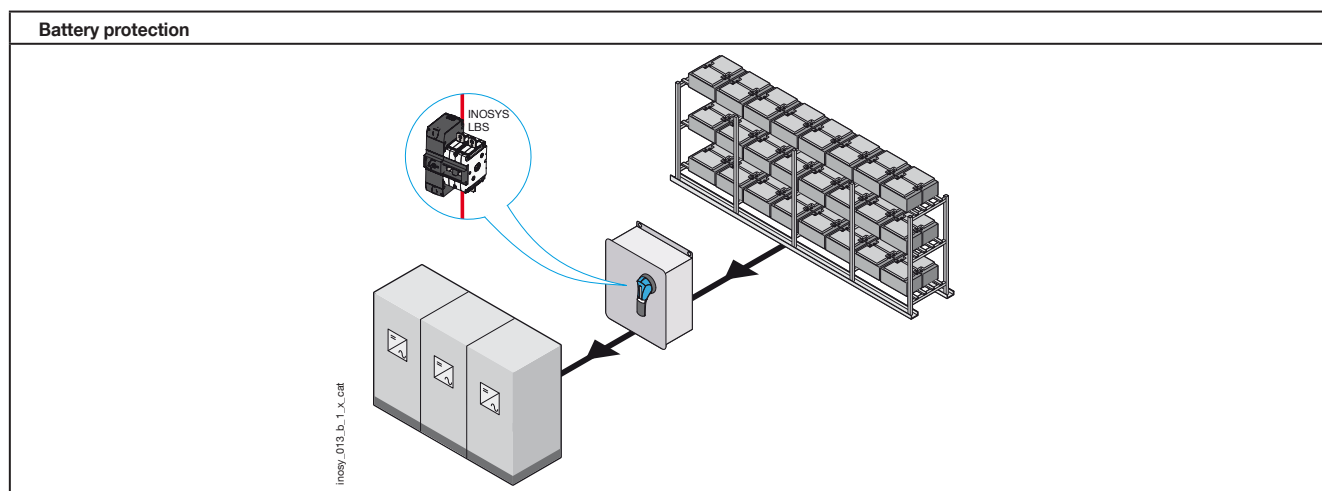
Modular solution for flexible configuration

- Single or double-pole switch.
- The same switch can be used for installation with grounded or insulated networks, merely by changing the wiring configuration.

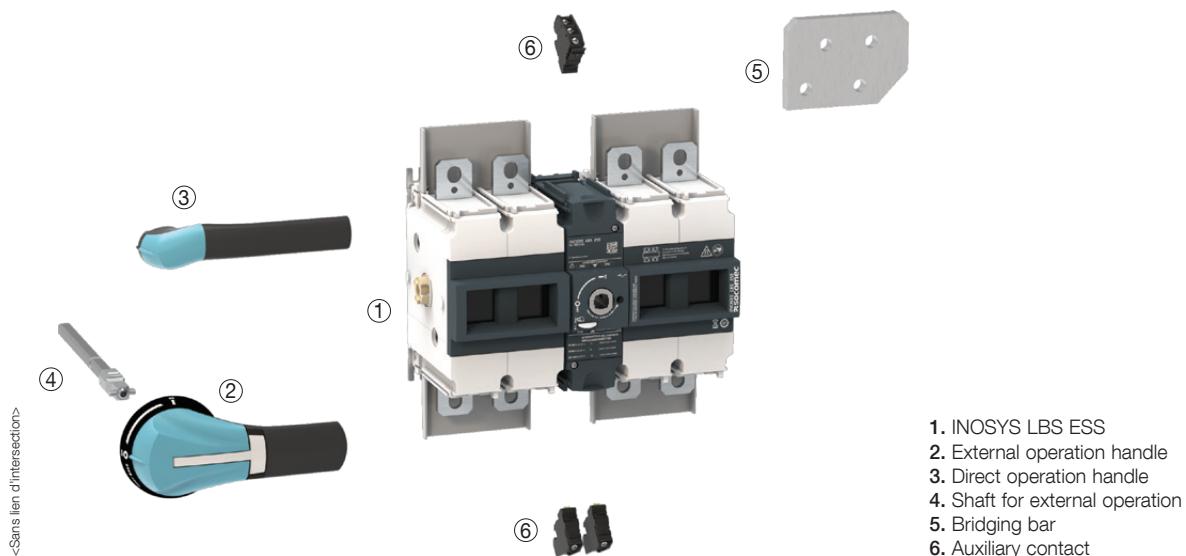
General characteristics

- High short circuit resistance in DC and ESS applications.
- Range 800 to 1600 A.
- Up to 1500 VDC.
- High-performance switching with a compact design.
- Easy integration.
- Reinforced safety with visible breaking indication.
- High efficiency with low power loss.

Typical applications: local safe disconnection for ESS applications



Overview



References

1500 VDC - high rating

Rating (A)	Frame size	No. of poles per circuit	Switch body ⁽¹⁾	External operation	Aux. Contact	Bridging bar
800 A	F3	4P (2P // 2P)	86E2 2081	Shaft 320 mm 1400 1032 Handle type S2L Black IP 65 14AF 2111	NO/NC 8499 0001	8409 1600
1000 A			86E2 2100			
1250 A			86E2 2125			
1400 A			86E2 2140			
1600 A			86E2 2160			

(1) The switches are supplied without accessories.

Accessories

Direct operation handle

Frame size	Handle type	Handle colour	Reference
F3	E3	Black	8499 5032



E3 handle

access_400_a_1_cat

External operation handle

Use

The external control handles include a breastplate and can be padlocked. External handles should be used with a shaft extension.

Note: We recommend using IP55 for indoor and IP65 for outdoor applications.

Example of use:

When the handle is locked in the "ON" position, the operator must make sure to disconnect and isolate the circuit before accessing the board and carrying out maintenance work.

You can open the door when the switch is in the "ON" position by bypassing the lock function with a specially designed tool (authorised persons only). The lock is automatically re-applied when the door is closed.



Handle type S2

access_150_eps

Frame size	Handle type	Handle colour	Protection degree	Front operation Reference	Side operation Reference ⁽²⁾
F3	S2L ⁽¹⁾	Black	IP65	14AF 2111	14AA 2111
F3	S2L ⁽¹⁾	Red	IP65	14AE 2111	

⁽¹⁾ S2L handles have an extended socket; please see the section on dimensions.

⁽²⁾ Only compatible with left mechanism version.

Shaft for external handle

Frame size	Handle type	Length (mm)	Reference
F2 - F3	S2, S2L	200	1400 1020
F2 - F3	S2, S2L	320	1400 1032
F2 - F3	S2, S2L	400	1400 1040

Other lengths: please consult us.



Shaft for S2 and S2L type handle

access_401_a_1_cat

Isolation plate

Use

This isolation plate ensure safety for the customer.

Characteristics

Products above 800A are supplied from factory with isolation plates. For replacement purposes, quantity to order should be 2 kits.

Description	Quantity to order	Reference
Isolation plate	2	8499 1000 ⁽¹⁾

⁽¹⁾ Kit includes 2 identical isolation plates



access_596_eps

Auxiliary contact

Use

Provide information about the position and pre-break depending on installation location.

Characteristics

Switching type: NO/NC,
IP2X with front control (screw cap).
10 000 operations.
Max. 3 per switch.

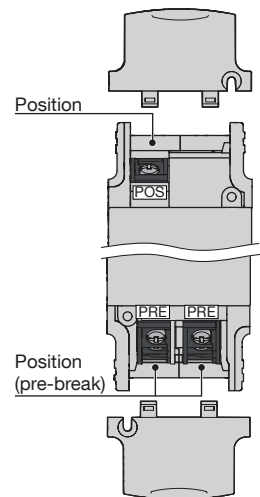
Frame size	Connection type	Type	Reference
F2 - F3	Screws	Standard NO/NC	8499 0001
F2 - F3	Screws	Low level NO/NC	8499 0002

Characteristics

Type of auxiliary contact	Min. current (A)	I _{th} (A)	Operating current I _e (A)			
			24 VDC	48 VDC	230 VAC	440 VAC
			DC-14	DC-14	AC-15	AC-15
Standard	12.5 mA / 24 V	16	1	0.2	4	4
Low level	1 mA / 4 V	16	1	0.2	2	1



access_402_a_1_cat



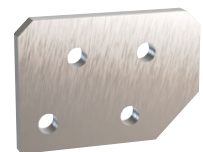
access_465_a_1_gb_cat

Bridging bar

Use

The bridging bars enable the poles to be connected in parallel, allowing the following configurations for 1500 VDC.

1500 VDC – 1 circuit				
Frame Size	Rating (A)	No. of poles	Quantity to be ordered	Reference
F3	1600	4P / 2P	2	8409 1600



access_590_eps

Characteristics

Characteristics according to IEC 60947-3

Rated current I_n		800	1000	1250	1400	1600
		(A)	(A)	(A)	(A)	(A)
Rated insulation voltage U_i (V)		1500	1500	1500	1500	1500
Rated impulse voltage U_{imp} (kV)		12	12	12	12	12
Frame Size		F3	F3	F3	F3	F3
Rated voltage	Ambient temperature (°C)	(A)	(A)	(A)	(A)	(A)
1500 VDC	40	800	1000	1250	1400	1600
1500 VDC	50	800	1000	1250	1400	1480
1500 VDC	60	720	900	1120	1260	1330
1500 VDC	70	650	810	1010	1130	1200
1500 VDC	80	580	730	910	1020	1080
Rated voltage	Utilization category	(A)	(A)	(A)	(A)	(A)
1500 VDC	DC-21 B	800	1000	1250	1400	1600
1500 VDC	PV1	800	1000	1250		
1500 VDC	PV2	800	1000			

Short circuit capacity

Rated short time withstand current I_{cw} 0.1s (kA rms)	IEC 60947-3	63	63	63	63	63
Rated short-circuit making capacity I_{cm} (kA peak)	IEC 60947-3	63	63	63	63	63

Short circuit capacity (ESS range)

Rated conditional short-circuit current I_{q} (kA rms) ⁽¹⁾	IEC 60947-3, GB/T 14048.3	120kA at (I/r) 0.5ms. 80kA at 3ms.	120kA at (I/r) 0.5ms. 80kA at 3ms.	120kA at (I/r) 0.5ms. 80kA at 3ms.	120kA at (I/r) 0.5ms. 80kA at 3ms.	120kA at (I/r) 0.5ms. 80kA at 3ms.
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Connection

Maximum Cu busbar width (mm)	2 x 5 x 50	2 x 5 x 60	2 x 5 x 80	2 x 5 x 100	2 x 5 x 100
Tightening torque min (Nm)	35	35	35	35	35
Tightening torque max (Nm)	42.4	42.4	42.4	42.4	42.4

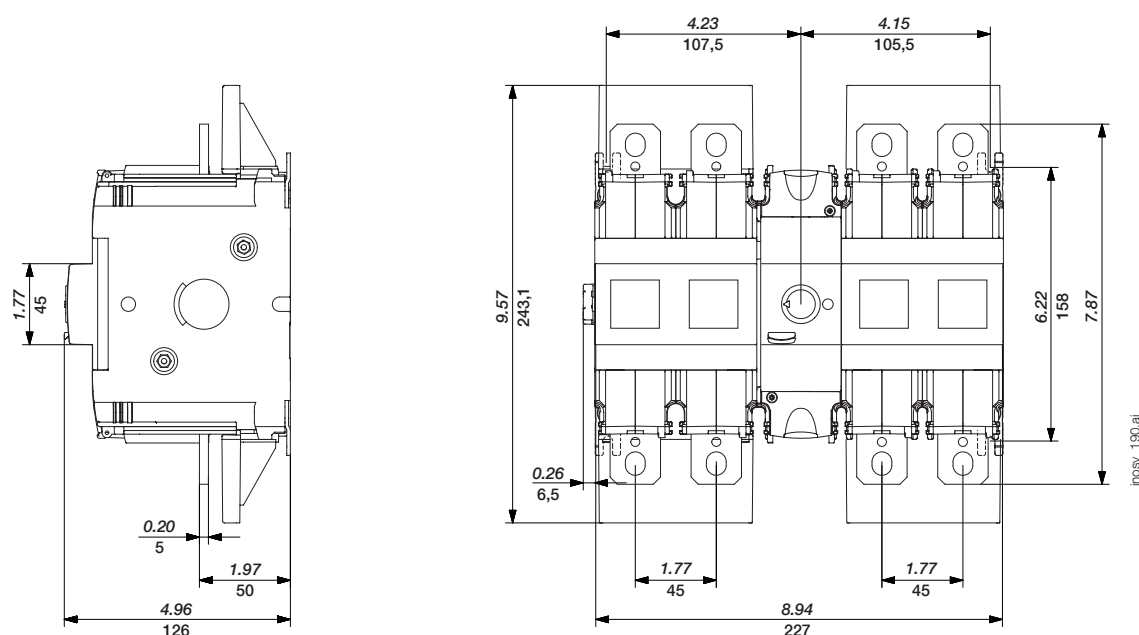
Mechanical characteristics

Durability (number of operating cycles)	8000	8000	8000	8000	8000
Power dissipation per pole (W/pole)	12	18	28	35	46

(1) Tested with fuses. For more information please contact us.

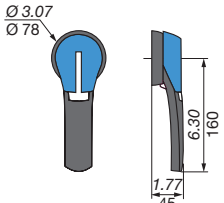
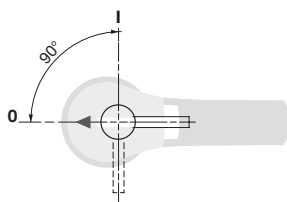
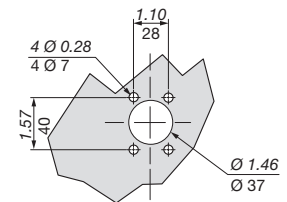
Dimensions (in/mm)

INOSYS LBS ESS



Dimensions for external handles (in/mm)

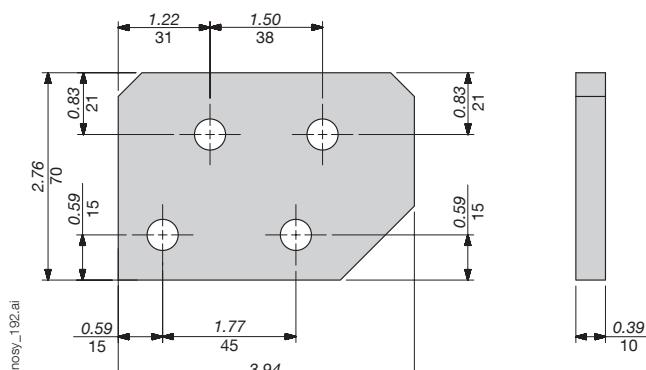
F3 frame size

Handle type	Front operation Direction of operation	Door drilling
S2L type 		

Bridging bars (in/mm)

F3

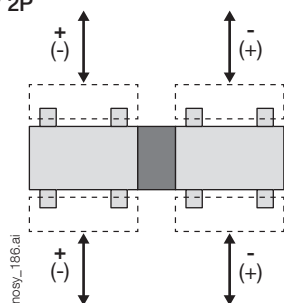
8409 1600



Wiring configuration

1 circuit - 1500 VDC

F3 - 2 P // 2P



Mounting orientation

F3

Only one mounting operation allowed

