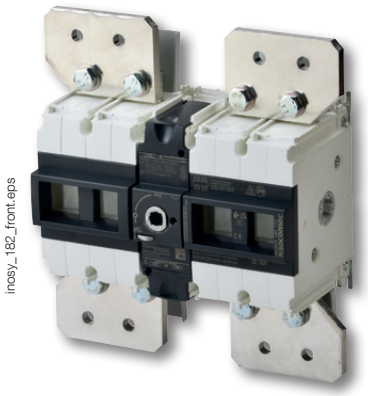
INOSYS LBS DC UL ESS

Load break switches for DC and ESS applications

800 to 1200 A, up to 1500 VDC



The solution for

- Energy
- Industry

Strong points

- High short circuit withstand for DC and ESS applications
- High-performance power switching in a compact frame
- Safe & reliable operation
- Designed for harsh environments
- Easy to install
- Modular solution for flexible configuration

Conformity to standards

- UL 98B
  Guide WHVA
  File E346418
- IEC 60947-3,
  DC-21B & DC-PV2
- CCC

Function

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

Advantages

High short circuit withstand for DC and ESS applications

INOSYS ESS LBS load break switches have been specifically designed to withstand high short circuit conditions in DC and ESS applications. Tested in both fused and nonfused applications to ensure maximum safety in all fault conditions.

High-performance power switching in a compact frame

INOSYS ESS LBS load break switches incorporate patented technology that provides a breaking capacity of 750 VDC per pole, providing 1500 VDC in just 2 poles, and significantly limiting power dissipation. All in an exceptionally compact device.

Safe & reliable operation

- Direct position indication on the bar and visible contact with containment of the electrical arc.
- The opening and closing of the switch is fully independent from the speed of operation, ensuring safe operation under all conditions.
- High temperature withstand: no derating up to 131° F (55 °C), functional from -40 to +122 °F (-40 to +50 °C).

Designed for harsh environments

- Vibration testing (from 13.2 to 100 Hz at 0.7 g).
- Shock testing (15 g during three cycles).
- Humid temperature testing (2 cycles, 131°F/55°C with 95% humidity level).
- Salt mist testing (3 cycles with humidity storage, 104°F/40°C, 93% humidity after
- each cycle).

Easy to install

- Wiring: as the switch is non-polarized all types of wiring and connections are possible.
- Easy access without tools to integrate auxiliary contacts (located within the switch footprint).
- Mechanism can be centred or left aligned (in the factory) to accommodate installation requirements.

Modular solution for flexible configuration

- Single or dual polarity switching.
- The same switch can be used for installation with either grounded or floating networks by choosing the wiring configuration.

General characteristics

- High short circuit withstand for DC and ESS applications.
- Range from 800A to 1200A.
- Up to 1500 VDC.
- High-performance switching in a compact design.
- Easy integration.
- Reinforced safety with visible contact indication.
- Efficient with low power-loss.

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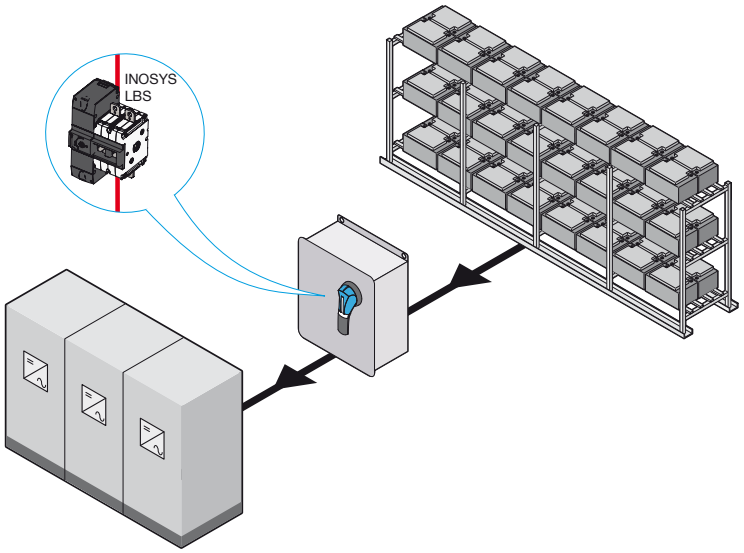
Typical applications: local safe disconnection for ESS applications

Battery protection



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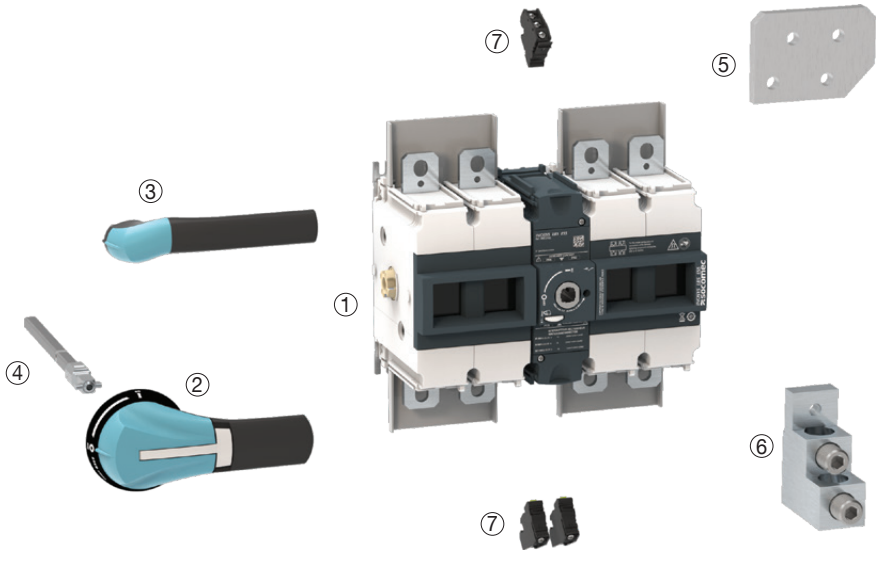
Overview



<Sans lien d'intersection>

1. INOSYS LBS ESS
2. External operation handle
3. Direct operation handle
4. Shaft for external operation
5. Bridging bar
6. Lugs
7. Auxiliary contact

References

1500 VDC - high rating

Rating (A)	Frame size	No. of poles per circuit	Switch body (1)	External operation	Aux. Contact	Bridging bar (2)
800 A	F3	4P (2P // 2P)	87E2 **2081**	Shaft 12.6 in / 320 mm 1400 **1032** Handle type S2L Black 3R, 12 - 4, 4X 14AD **2111**	NO/NC 8499 **0001**	8409 **1600**
1000 A			87E2 **2100**			
1200 A			87E2 **2120**			

(1) The switches are supplied without accessories.
(2) For isolated networks.

Accessories

Direct operation handle

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

E3 handle

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Door interlocked external operation handle

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

Example
As the handle is interlocked in the “ON” position the operator must safely disconnect and isolate the circuit prior to accessing the panel for maintenance procedures.
Opening the door when the switch is in the “ON” position can only be done by defeating the interlocking function with the use of a dedicated tool (authorized personnel only). The interlocking function is restored when the door is re-closed.

S2 type handle

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Frame size	Handle type	Handle colour	Degree of protection	Front operation	Lateral operation
				Reference	Reference(2)
F3	S2L(1)	Black	3R,12	14AF **2111**	
F3	S2L(1)	Black	4,4X	14AD **2111**	14AJ **2111**
F3	S2L(1)	Red	4,4X	14AE **2111**	

(1) S2L handles have an extended grip; please refer to the dimensions section.
(2) only comptatible with left mechanism version.

Shaft for external handle

Frame size	Handle type	Length (in/mm)	Reference
F2 - F3	S2, S2L	7.87/200	1400 **1020**
F2 - F3	S2, S2L	12.6/320	1400 **1032**
F2 - F3	S2, S2L	15.75/400	1400 **1040**

Other lengths: please consult us.

Shaft for S2 and S2L type handle

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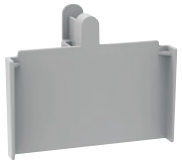
Isolation plate

Use

This isolation plate ensure safety for the customer.

Characteristics

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



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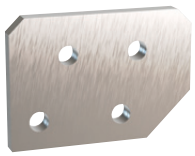
Description	Quantity to order	Reference
Isolation plate	2	8499 **1000** (1)

(1) Kit includes 2 identical isolation plates

Bridging bar

Use

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



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1500 VDC - 1 circuit

Frame Size	Rating (A)	No. of poles	Quantity to be ordered	Reference
F3	800 ... 1200	4P (2P // 2P)	2	8409 **1600**

Accessories (continued)

Auxiliary contact

Use

The function of the auxillary contact depends on where it is mounted on the mechanism.

Characteristics

Changeover type: NO/NC, IP2X with front operation (cover tap screwed).
10,000 operations.
Maximum 3 per switch.

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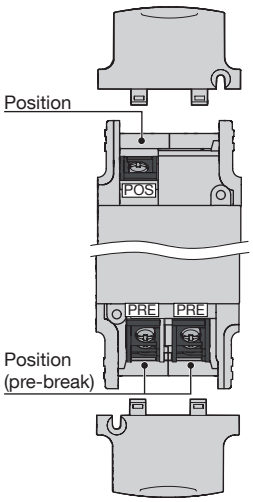
Frame size	Connection type	Type	Reference
F2 - F3	Screw	NO/NC standard	8499 **0001**
F2 - F3	Screw	NO/NC standard	8499 **0002**
F2 - F3	Screw	NC > 600 V	8499 **0002**



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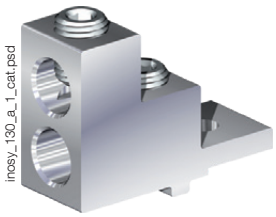
Characteristics

Auxiliary contact type	Min. current (A)	I_{th} (A)	Electrical characteristics per UL 60947-5-1
Standard	12.5 mA / 24 V	10	A300 - R300 - Q150
Low level	1 mA / 4 V	10	A300 - R300 - Q150
> 600 V	10 mA / 24 V	10	A600

Terminal lugs



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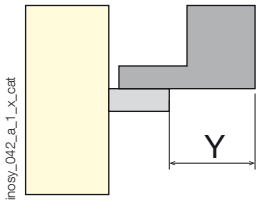

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Frame size	Number and size (min. - max.) of cables	Type of cable	Openings per lug	Quantity per reference	Dimension "Y" (mm/in)	Reference (1)
F3	2 conductors (#2 - 600 KCMIL)	Cu / Al	2	2	69.7 / 2.74	3954 **2060**
F3		Cu / Al		3		3954 **3060**
F3		Cu / Al		4		3954 **4060**

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Characteristics

Characteristics according to UL 98B

Rated current I_n		**800**	**1000**	**1200**
		(A)	**(A)**	**(A)**
Short circuit capacity				
Prospective short-circuit current (kA rms DC) (kA rms)	UL 98B	10	10	10
Mechanical characteristics				
Durability (number of operating cycles)		8000	8000	8000
Power dissipation per pole (W/pole)		14	21	31

Characteristics according to IEC 60947-3

Rated current I_n		**800**	**1000**	**1250**
		(A)	**(A)**	**(A)**
Rated insulation voltage Ui (V)		1500	1500	1500
Rated impulse voltage Uimp (kV)		12	12	12
Frame Size		F3	F3	F3
Rated voltage	**Ambient temperature (°C)**	**(A)**	**(A)**	**(A)**
1500 VDC	40	800	1000	1250
1500 VDC	50	800	1000	1250
1500 VDC	60	720	900	1120
1500 VDC	70	650	810	1010
1500 VDC	80	580	730	910
Rated voltage	**Utilisation category**	**(A)**	**(A)**	**(A)**
1500 VDC	DC-21 B	800	1000	1250
1500 VDC	PV1	800	1000	1250
1500 VDC	PV2	800	1000	
Short circuit capacity				
Rated short time withstand current Icw 0.1s (kA rms)	IEC 60947-3	63	63	63
Rated short-circuit making capacity Icm (kA peak)	IEC 60947-3	63	63	63
Short circuit capacity (ESS range)				
Rated conditional short-circuit current Iq (kA rms) (1)	IEC 60947-3, GB/T 14048.3	120kA at (l/r) 0.5ms. 80kA at 3ms.	120kA at (l/r) 0.5ms. 80kA at 3ms.	120kA at (l/r) 0.5ms. 80kA at 3ms.
Connection				
Rigid Cu cable cross-section (mm2)		4 x 400	4 x 400	4 x 600
Maximum Cu busbar width (mm)		10 x 100	10 x 100	-
Tightening torque min (Nm)		35	35	35

Dimensions (in/mm)

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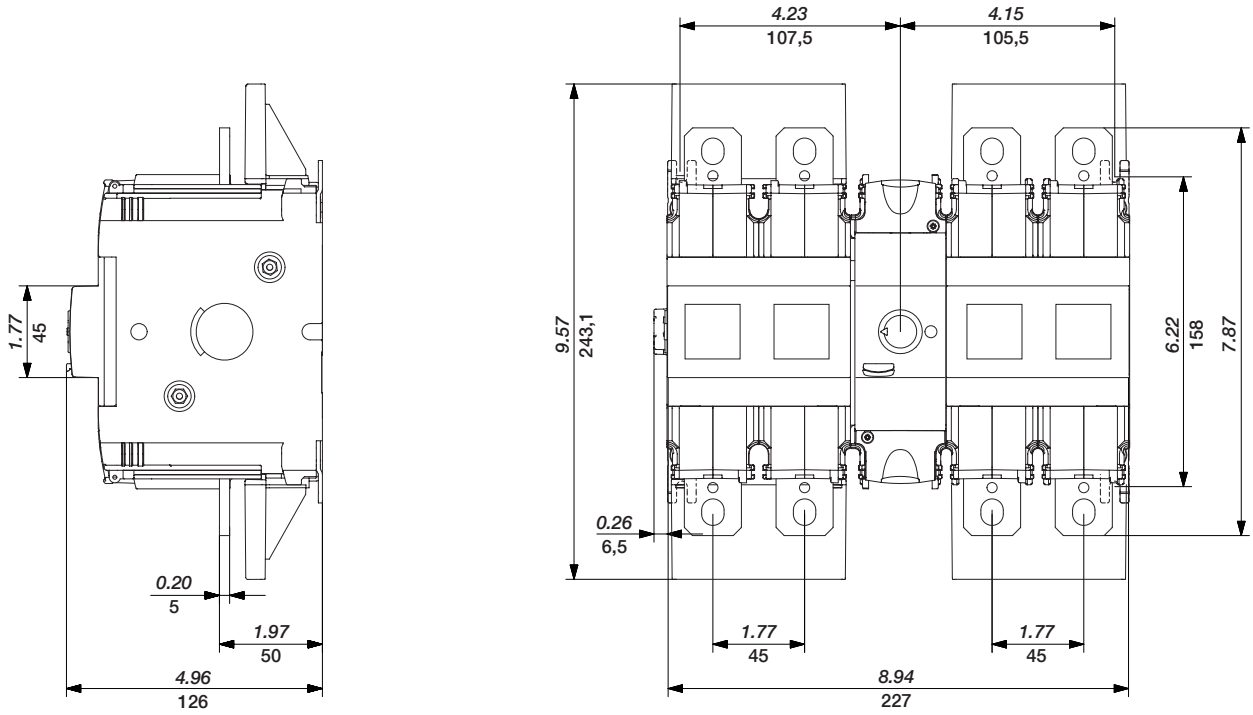

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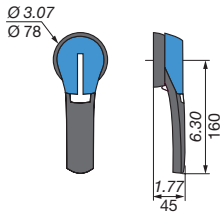
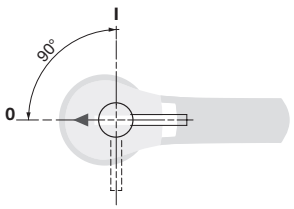
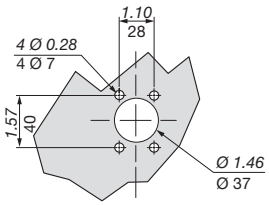
Dimensions for external handles (in/mm)

F3 frame size

Handle type	Front operation Direction of operation	Door drilling
S2L type 		

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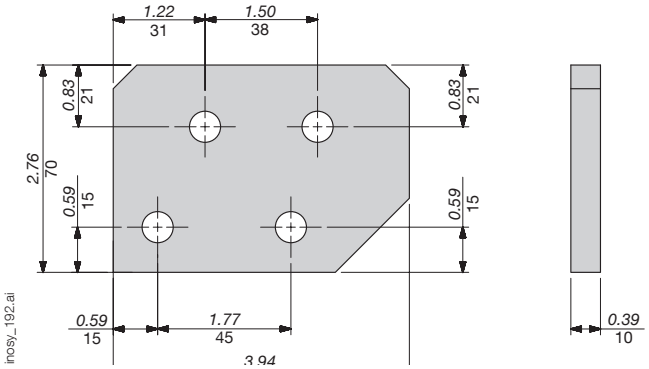
Bridging bars (in/mm)

F3

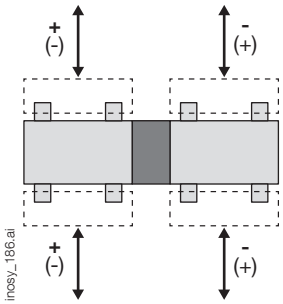
8409 1600



Wiring configuration

1 circuit - 1500 VDC

F3 - 2 P // 2P



Mounting orientation

F3

Only one mounting operation allowed