Power^{IT} Compact Secondary Substations, CSS

Low Voltage Switchboard, LVS2

LVS – ABB's New Low Voltage Switchboard for Power^{IT} CSS

LVS2 is a freestanding low voltage switchboard, as it is designed with a framework. The switchboard consists of the frame made of 1,5 mm galvanized steel, a base plate with the busbars for fuse lists mounting as well as a plate for cable support and system earthing. At the top of the switchboard it is possible to mount measuring equipment and other apparatus at a DIN rail, which is covered by a 1,5 mm painted steel plate. The cover colour is RAL 7035.

The base plate ① is manufactured of a 2 mm Rilsan-coated steel plate. The Rilsan-coating increases the personnel safety as it minimizes the risk of one-phased earth faults and flash-overs.

Busbars
The busbars ② are available in lengths of 5, 8, 13, 16 and 20 modules (1 module = 100 mm). The rated current depends on the type of busbar selected – please see table 1 for details. In order to easily expand the switchboard with more fuse lists the DIN normed busbars are mounted with insert nuts. The fuse lists are also easily mounted on Kabeldon and Z-busbars.

Incoming Feeder
As standard for DIN and Z busbars the incoming feeder is a disconnector with back connection ③ at the middle of the busbar. The back connection minimizes the mechanical stress at cables and fuse lists. Direct connection is standard for Kabeldon busbars, where the cables are mounted on the busbar with clamps. This is also possible for Z-busbars. For DIN normed busbars direct connection is made with side connection. Furthermore, load break switch type OETL or MCCB type IsoMax with back connection can be selected as incoming feeder for the DIN normed busbars.

System Earthing and Cable Support
LVS2 is available with three types of earthing system:

- 4-wire system with the neutral busbar connected to the frame, i.e. the neutral and earth busbars are combined in a PEN busbar.
- 4-wire system with insulated neutral busbar and no earth busbar.
- 5-wire system with insulated neutral busbar and separate earth busbar.

Neutral and PEN busbars ④ are supplied with stud bolts for DIN normed busbars.

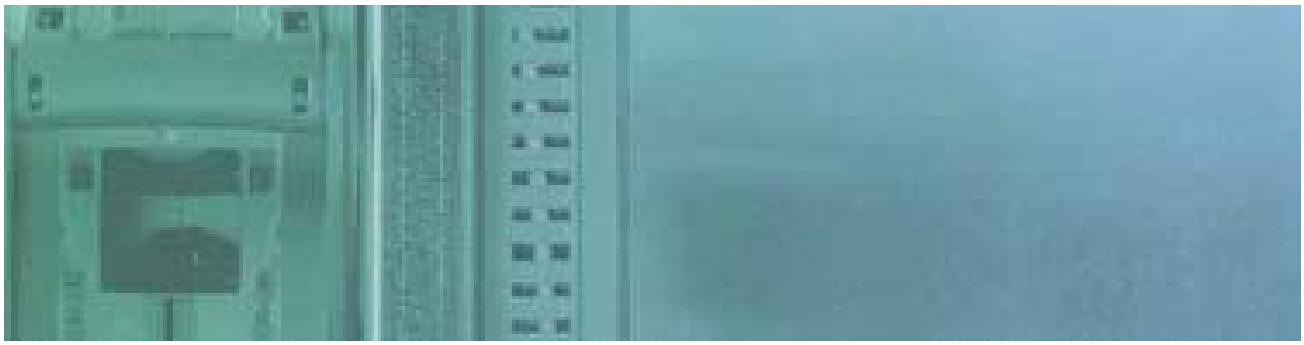
The busbars are mounted on a 2 mm galvanized plate with integrated cable support ⑤. Strips or cable clamps are used to fasten the cables.

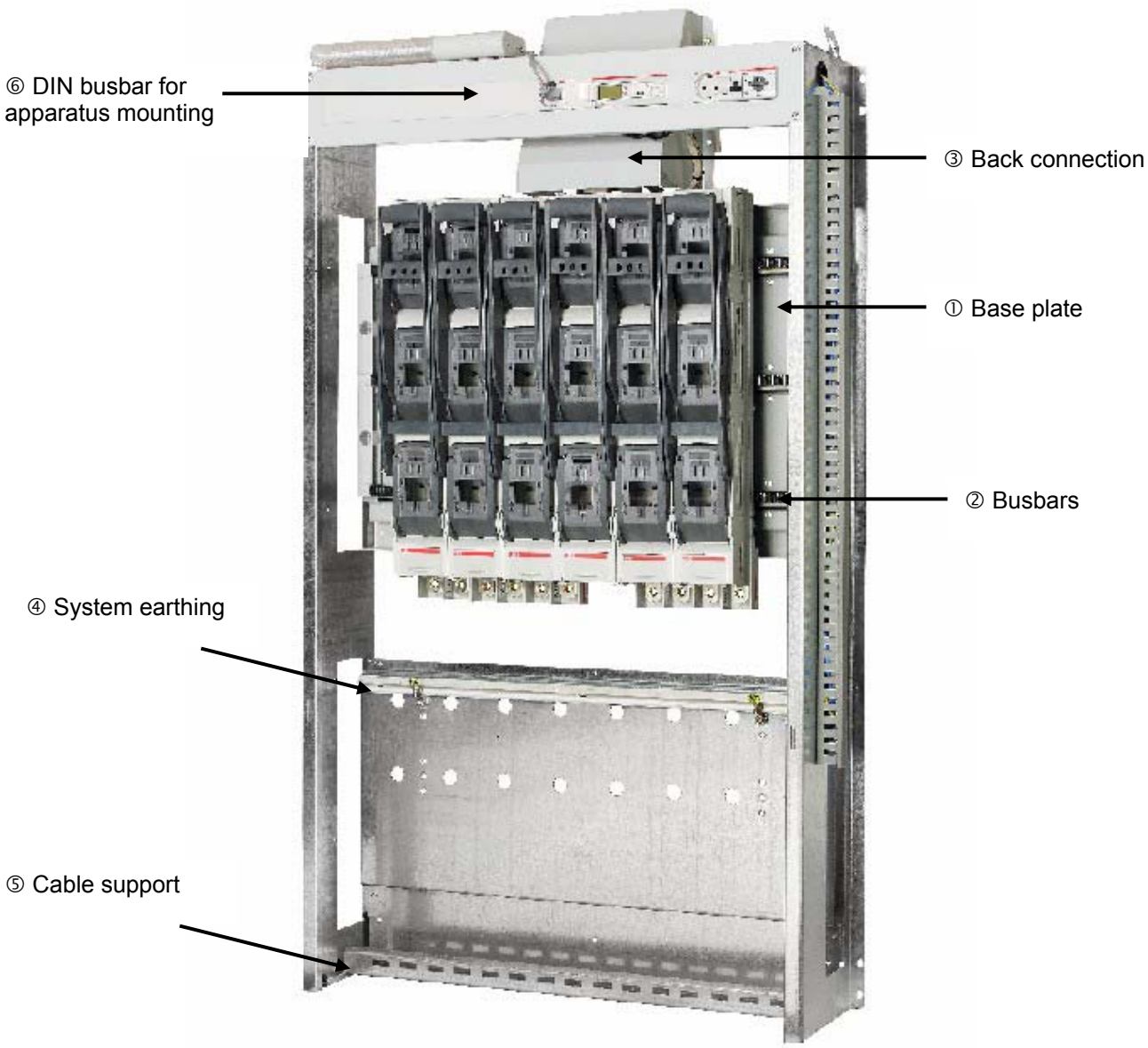
LVS Type Designator
Ex.: LVS2-8M-DIN-1000A

1. LVS2 – indicates the type of switchboard: LVS1, LVS2 or LVS3.
2. 8M – indicates the length of the busbars. The standard lengths of busbars are 5, 8, 13, 16 og 20 modules (1 module is 100 mm).
3. DIN – indicates the type of busbar. The switchboard is available with DIN, Z, and Kabeldon busbar.
4. 1000A – indicates the rated current. This depends on the type of busbar selected.

Busbar Type	5M	8M	13M	16M	20M
DIN	1000 A 1600 A 2500 A	1000 A 1600 A 2500 A	1000 A 1600 A 2500 A	1000 A 1600 A 2500 A	1000 A 1600 A 2500 A
Kabeldon	-	400 A 630 A	630 A 1000 A 1600 A	1000 A 1600 A	1600 A
Z	630 A	630 A	1900 A	1900 A	1900 A

Table 1: Busbar ratings




⑥ DIN busbar for apparatus mounting
③ Back connection
① Base plate
② Busbars
④ System earthing
⑤ Cable support

Add-Ons
As an add-on surge arrester can be selected to LVS2 with InLine fuse lists.

In order to increase the personnel safety a cover of the cables and system earthing can be selected. The cover is made of a 1,5 mm galvanized steel plate with two handles and guides.

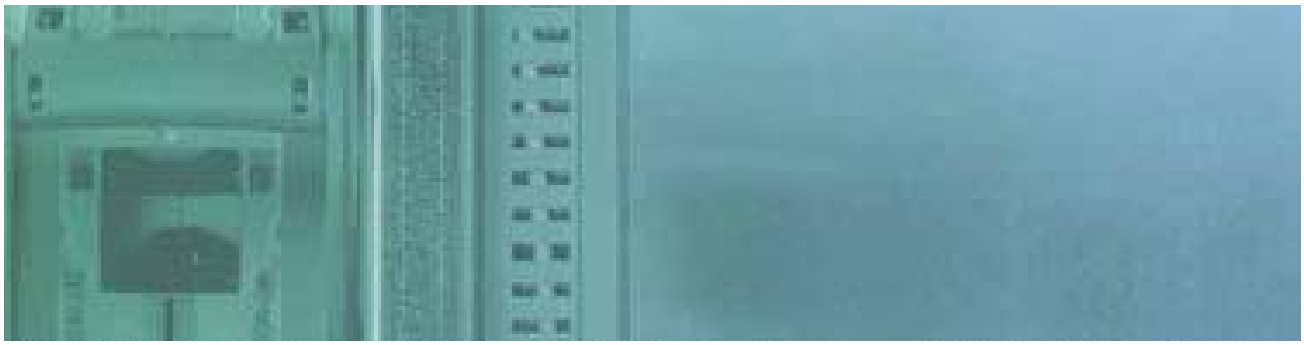
At the DIN rail above the busbars, various apparatus can be mounted. See table 2 below for details.

Apparatus	Description
Multi instrument	1 pc. multi instrument type DAB 13200-210-V 3 pcs. current transformers (1000/5 A, 2000/5 A) The multi instrument measures: Voltage (phase-neutral and phase-phase) Current Frequency (Hz) Active energy consumption (kWh) Reactive energy consumption (kVarh) Total active energy consumption (kWh) Total reactive energy consumption (kVarh) Active power in phase 1, 2 and 3 (P1, P2 and P3) Total active power (Pt)
Analogue measuring	1 pc. volt meter type ABB VLM 1/500 3 pcs. ampere meter type DEIF B45-X 3 pcs. current transformers (500/5 A, 1000/5 A, 1500/5 A, 2000/5 A)
kWh measuring	1 pc. kWh measuring type DAB 13200-210-V incl. measuring terminals and mini circuit breaker 3 pcs. current transformers (1000/5 A, 2000/5 A)
Light	Magnetic hand lamp type STEGO Norden AB SL025 incl. 230 V socket outlet
PIR sensor	Type LeGrand Mosaic
Switch	Type LeGrand Mosaic
Socket outlet	230 V socket outlet
Emergency shutdown	Type Schneider Electric A/S ZB4BS844
Current transformers	The following types of current transformers are available: ABB CT IMSb 500/5 cl. 0,2s 5 VA ABB CT IMSb 1000/5 cl. 0,2s 7,5 VA ABB CT IMSc 1500/5 cl. 0,2s 5 VA ABB CT IMSd 2000/5 cl. 0,2s 7,5 VA

Table 2: Apparatus for mounting at DIN rail.

Test
LVS2 is type tested according to IEC 60 439-1.

Reservations
Some options depend on the type of CSS and busbar selected.
The portfolio is subject to change without further notice



LVS2 Technical Data

Busbar Type	**Unit**	**DIN**	**Kabeldon**	**Z-Busbar**
Standard		IEC60439-1	IEC60439-1	IEC60439-1
Rated voltage U_e	V	690	500	690
Rated current I_n	A	… 2500	400 - 1600	630 - 1900
Rated frequency	Hz	50 - 60	50 - 60	50 - 60
Degree of protection		-	IP2X	IP2X
Rated impulse withstand voltage U_{imp}	kV	>12	>12	>12
Rated insulation voltage U_i	kV	2,5	0,69	2,5
Rated peak withstand current I_{pk}	kA			
- 400 A busbar		-	55	-
- 630 A busbar		-	55	105
- 1000 A busbar		-	**50	-
- 1600 A busbar		*76	**85	-
- 1900 A busbar		-	-	105
- 2500 A busbar		*106	-	-
System earthing		TN-C, TT,TN-S		

*800 mm busbars without fuse lists
**1000 mm busbars without fuse lists

Dimensions	**Unit**	**LVS2**	
Connection		Back	Side
Height	mm	1575	1545
Width	mm	602 902 1402 1702 2102	662 962 1462 1762 2162
Depth	mm		
- without fuse lists		250	250
- with fuse lists		250	250

ABB A/S

Head office:
Meterbuen 33
DK-2740 Skovlunde
Telephone: +45 4450 4450
Fax: +45 4450 4460

Manufacturing Site:
Håndværkervej 23
DK-7000 Fredericia
Telephone: +45 4450 4450
Fax: +45 7594 4321

www.abb.dk
E-mail: abb.dk@dk.abb.com