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ELEKTRİK MALZEMELERİ
YÜKLENİM SAN. TİC. A.Ş.

LINK BOXES

FOR HIGH VOLTAGE CABLE SYSTEMS




EMELEC

Link Box is the main line of production...

EM Elektrik has a wide technical engineering background in developing and producing Link Boxes for high voltage cable systems. Link Box is the main production activity of EM Elektrik, which have supplied many Link Boxes to clients all over the world.

Beside our standard types of Link Boxes, can be developed and offered different types of Link Boxes according to customer requirements. (Tailor Made)

EM Elektrik can share with customers; his experience know-how, consultancy and commit to work towards the optimal solution. Reliable service and high quality, fast and flexible response, are the other company values of EM Elektrik.

What is the function of Link Box?

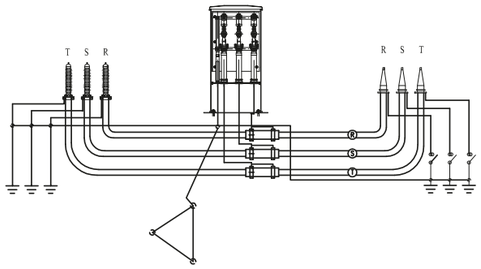
Link Box is electrically and mechanically one of the integral accessories of HV underground/above ground cable bonding system, associated with HV XLPE power cable systems.

Briefly, the bonding system is so designed that the cable sheats are bonded and earthed or with SVL in such way as to eliminate or reduce the circulating sheath currents. Link Boxes are used with cable joints and terminations to provide easy access to shield breaks for test purposes and to limit voltage build-up on the sheath. The Link Box is part of bonding system, which is essential of improving current carrying capacity and human protection.

Bonding diagram

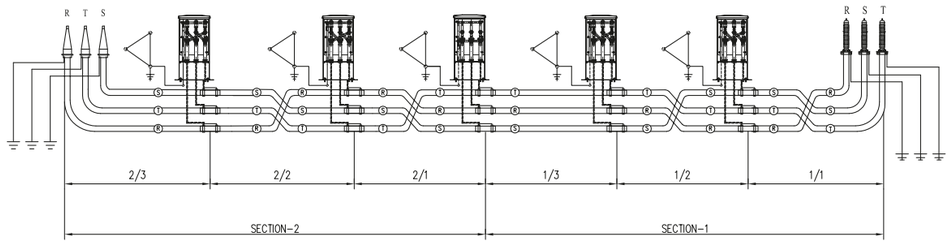
1- Single Bonding Diagram

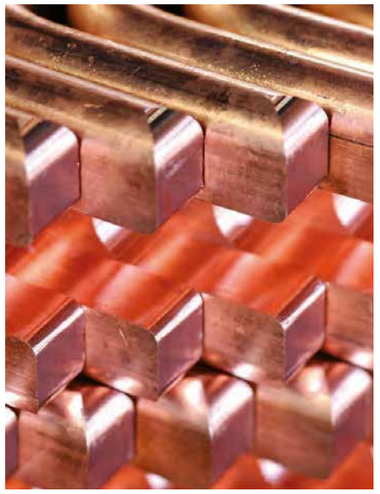
The simplest form of special bonding consists in arranging for the sheaths of the three cables to be connected and grounded at one point only along their length. At all other points, a voltage will appear from sheath to ground that will be a maximum at the farest point from the ground bond. The sheaths must be adequately insulated from the ground. Since there is opened sheath circuit, (except through the sheath voltage limiter) current does not normally flow longitudinally along the sheaths and no sheath circulating current loss occurs.

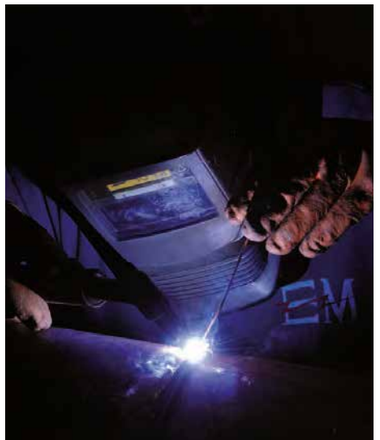


2- Cross Bonding And Transposition

Cross bonding consists essentially in sectionalizing the sheaths into minor sections and cross connecting them so as to approximately neutralize the total induced voltage in three consecutive sections as shown below.







• IP 66 Code Test
First characteristic numeral: 6, protected against access to hazardous parts with adust-tight- IP 6X

Definition: Dust must not enter at all.

Test conditions: The test is carried out in a dust chamber in which talcum powder is being kept suspended in the air by means of a dust distributor or similar device. The enclosure which is being tested is placed in the test chamber while a vacuum pump keeps the pressure in the enclosure below the atmospheric pressure of the environment according to the standard.

Conditions for acceptance: The protection is satisfactory if there is no visible dust deposit within the enclosure after completion of the test.

Test Result: No entering of dust.No dust penetrated into the enclosure during the test.The protection degree IP6X is ensured for the tested link box.

Test object in the dust test chamber after the dust test.

Second characteristic numeral: 6, protected against powerful water jets-IP X6
According to IEC 60529: 1989-11

Test Definition: A strong water jet directed at the enclosure from any direction must not have any harmful effects

Test Conditions: Test with water jet nozzle 12.5 mm diameter inside
Water flow delivery rate (100 ± 5) l/min
Water temperature Not diverge more than 5 K from the temperature of the test object
Distance from nozzle to enclosure surface 2..5- 3 m
Test duration Minimum 3 min (each side 1 min = 6 min)

Conditions for acceptance: Water must not be able to penetrate in such amount into the enclosure, that the operability and/or the safety of the equipment are reduced

Test Result: No water penetrated into the enclosure during the test. The protection degree IPX6 is ensured for the tested link box.

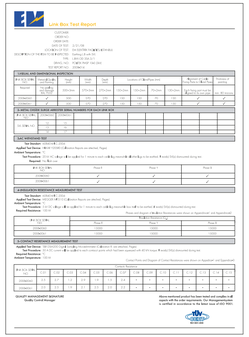
Test object during the test water jet onto front side

Test object during the test water jet onto rear side

Routine Test

All our of link Boxes are tested in our factory before delivered to our customers. Applied tests involve visual and dimensional inspection followed by electrical tests such as, AC/DC Withstand Test, Insulation Resistance Measurement Test, Contact Resistance Measurement Test.

Beside these tests, for underground types (IP 68) water sealing test is also applied. Each Link Box tested with water and subject to 0.3 bar pressure for 15 minutes



Link Box design classification

1- Type of Mounting

Indoor/outdoor wall mounted (IP 66)

Outdoor, pedestal mounted (IP 66)

Underground mounted (IP 68)

2- Type of Screen Bonding

Cross bonding with SVL

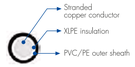
Direct earthing without SVL

Earthing with SVL

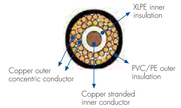
Single Point Bonding with SVL

3- Types of Bonding Cable

Single core



Coaxial (concentric)



Surge arresters: Sheath voltage limiters (SVL)

SVL is protective device to limit induce voltages appearing on the bonded cable system due to short circuit. It is necessary to fit SVL's between the metallic screen and ground inside the link box. The screen seperation of power cable joint (insulated joint) will be protected against possible damages as a result of induced voltages caused by short circuit/break down.

SVL rated voltages are per client specifiification/bonding system design, which can be supplied from well established manufacturers by EM Elektrik.

Type Tests

• All our products were tested at IPH - Berlin Laboratories

Test Product: Cross Bonding Link Box underground use (IP 68).

Required Test Parameter: Internal power arcing 40 kA-0,1 sec.
Required Test Parameter: Short circuit 63 kA-1 sec.
Required Test Parameter: Lighting impulse 40/75 kV - 62,5/125 kV.
Required Test Parameter: DC withstand 25 kV-5 minute.

• Water Immersion Test-IP 68

Test Product: Cross Bonding Link Box earthing through arresters.

Test Procedure: The box assembly shall be immersed in water at ambient temperature and heated up to 60°C for 5 houers. After switching of the heater, water cooled down to the ambient temperature. Total time of water immersion cycle is 20. The water column shal be 3m. above the link box. After removal, there shall be no visible water ingress in the link box.

MOUNTING SYSTEM	WALL / GANTRY / STRUCTURE TYPE (IP 66)					
1 Description	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Three Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Single Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)	Three Phase Cross Bonding Link Box with SVL for Coaxial Cable (Joint Loc.)	Three Phase Earthing Link Box for Coaxial Cable (Joint Loc.)
2 Type	LB.W.E.3.1	LB.W.3SA.3.1	LB.W.E.1.1	LB.W.1SA.1.1	LB.W.CB.3SA.3.1	LB.W.E.3.1
3 Protection Class	IP66	IP66	IP66	IP66	IP66	IP66
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	N/A	Optional	N/A	Optional	Optional	N/A
7 Conductor Fixing	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon	Coaxial Flexcon	Coaxial Flexcon
8 Drawing No	04.08.02 / 08.08.03	04.08.03 / 08.08.04	04.08.05 / 08.11.06	04.08.04 / 10.05.01	05.04.08	05.04.09
9 Dimensions (mm)	550 x 570 x 270 / 650 x 740 x 390	550 x 570 x 270 / 650 x 740 x 390	550 x 350 x 270 / 600 x 420 x 390	550 x 350 x 270 / 600 x 420 x 390	590 x 590 x 368	590 x 590 x 368
10 Bonding Cable Cross Section	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95+95 - 1x400+400mm^2	1x95+95 - 1x400+400mm^2
11 AC Impulse Test	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Earth / 40 kV Phase-Earth 75 kV Phase-Earth	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth
12 Short Circuit Test	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec.	50 kA 1 sec.
13 Internal Power Arcing	20 kA 0,1 sec. / 20 kA 0,1 sec.	20 kA 0,1 sec. / 20 kA 0,1 sec.	20 kA 0,1 sec. / 20 kA 0,1 sec.	20 kA 0,1 sec. / 20 kA 0,1 sec.	20 kA 0,1 sec.	20 kA 0,1 sec.

MOUNTING SYSTEM	WALL / GANTRY / STRUCTURE TYPE (IP 66)				
1 Description	Three Phase Single Bonding Link Box for Coaxial Cable (Joint Loc.)	Single Phase Link Box for Single Cable (Termination Loc.)	Single Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Three Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)
2 Type	LB.W.SB.3SA.3.1	LB.W.E.1.1	LB.W.1SA.1.1	LB.W.E.3.1	LB.W.3SA.3.1
3 Protection Class	IP66	IP66	IP66	IP66	IP66
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	N/A	N/A	Optional	N/A	Optional
7 Conductor Fixing	Coaxial Flexcon	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon
8 Drawing No	05.05.05	12.10.01 / 12.10.03	12.10.02 / 12.10.04	12.10.06 / 12.10.08	12.10.07
9 Dimensions (mm)	590 x 590 x 368	550 x 350 x 270 / 550 x 400 x 370	550 x 350 x 270 / 550 x 400 x 370	550 x 630 x 270 / 640 x 630 x 380	550 x 570 x 270
10 Bonding Cable Cross Section	1x95+95 - 1x400+400mm^2	1x95 - 1x400mm^2 / 1x300 - 1x500mm^2	1x95 - 1x400mm^2 / 1x300 - 1x500mm^2	1x95 - 1x400mm^2 / 1x300 - 1x500mm^2	1x95 - 1x400mm^2
11 AC Impulse Test	40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase
12 Short Circuit Test	50 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec.
13 Internal Power Arcing	20 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.	35 kA 0,1 sec.

MOUNTING SYSTEM	PARTIAL DISCHARGE (PD) TYPE (IP 68)			PEDESTAL TYPE (IP 66)				
1 Description	Three Phase Cross Bonding Link Box with SVL for Single Cable (Joint Loc.)	Three Phase Cross Bonding Link Box with SVL for Coaxial Cable (Joint Loc.)	PD Sensor Terminal Box	Three Phase Earthing Link Box with SVL for Coaxial Cable (Joint Loc.)	Three Phase Earthing Link Box for Coaxial Cable (Joint Loc.)	Three Phase Cross Bonding Link Box with SVL for Coaxial Cable (Joint Loc.)	Three Phase Cross Bonding Link Box for Coaxial Cable (Joint Loc.)	Three Phase Cross Bonding Link Box for Single Cable (Termination Loc.)
2 Type	LB.U.PD.CB.3SA.3.1	LB.U.PD.CB.3SA.3.1	LB.U.PDM.4.0	LB.P.CB.3SA.3.1	LB.P.3.1	LB.P.CB.3SA.3.1	LB.P.E.3.1	LB.P.E.3.1
3 Protection Class	IP68	IP68	IP68	IP66	IP66	IP68	IP68	IP68
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	N/A	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	Optional	Optional	N/A	Optional	N/A	Optional	N/A	N/A
7 Conductor Fixing	Coaxial Flexcon	Coaxial Flexcon	N/A	Coaxial Flexcon	Coaxial Flexcon	Coaxial Flexcon	Coaxial Flexcon	Conductor Flexcon
8 Drawing No	09.06.02	14.01.02	08.11.10	04.08.06	04.09.01	12.10.27 / 12.10.29	12.10.26 / 12.10.28	12.10.24 / 12.10.25
9 Dimensions (mm)	670 x 670 x 334	670 x 670 x 334	330 x 480 x 184	810 x 630 x 370	810 x 630 x 370	900 x 630 x 370 / 900 x 630 x 370	900 x 630 x 370 / 900 x 630 x 370	900 x 630 x 370 / 900 x 630 x 370
10 Bonding Cable Cross Section	1x95+95 - 1x400+400mm^2	1x95+95 - 1x400+400mm^2	N/A	1x95+95 - 1x400+400mm^2	1x95+95 - 1x400+400mm^2	1x95+95 - 1x400+400mm^2 / 1x300+300 - 1x500+500mm^2	1x95+95 - 1x400+400mm^2 / 1x300+300 - 1x500+500mm^2	1x95-400mm^2 / 1x300-500mm^2
11 AC Impulse Test	40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth 75 kV Phase-Phase	N/A	40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth	40 kV Phase-Earth 60 kV Phase-Phase / 40 kV Phase-Earth 60 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth / 40 kV Phase-Earth
12 Short Circuit Test	50 kA 1 sec.	50 kA 1 sec.	N/A	50 kA 1 sec.	50 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 50 kA 1 sec.
13 Internal Power Arcing	40 kA 0,1 sec.	40 kA 0,1 sec.	N/A	20 kA 0,1 sec.	20 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.	35 kA 0,1 sec. / 35 kA 0,1 sec.

KEY WORD TABLE

LB	Link Box
W	Wall
U	Underground
P	Pedestal
E	Earthing
SB	Single Point Bonding
CB	Cross Bonding
SA	Surge Arrester (SVL)
PD	Partial Discharge Sensor

MOUNTING SYSTEM	UNDERGROUND TYPE (IP 68)					
1 Description	Three Phase Cross Bonding Link Box for Coaxial Cable (Joint Loc.)	Three Phase Cross Bonding Link Box for Coaxial Cable (Joint Loc.)	Three Phase Single Bonding Link Box with SVL for Coaxial Cable (Joint Loc.)	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Three Phase Cross Bonding Link Box with SVL for Coaxial Cable (Joint Loc.)	Three Phase Earthing Link Box for Single Cable (Termination Loc.)
2 Type	LB.U.CB.3SA.3.1	LB.U.E.3.1	LB.U.SB.3SA.3.1	LB.U.E.3.1	LB.U.CB.3SA.6.1	LB.U.E.6.1
3 Protection Class	IP68	IP68	IP68	IP68	IP68	IP68
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	Optional	N/A	Optional	N/A	Optional	N/A
7 Conductor Fixing	Coaxial Flexcon	Coaxial Flexcon	Coaxial Flexcon	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon
8 Drawing No	04.09.06 / 10.07.01	04.09.07 / 10.07.02	04.07.04 / 12.08.01	06.06.02 / 11.10.09	08.01.06 / 11.10.06	08.01.07 / 11.10.07
9 Dimensions (mm)	670 x 670 x 334 / 670 x 670 x 334	670 x 670 x 334 / 670 x 670 x 334	670 x 670 x 354 / 670 x 670 x 354	530 x 650 x 310 / 670 x 820 x 334	670 x 670 x 389 / 530 x 650 x 310	670 x 670 x 389 / 670 x 670 x 389
10 Bonding Cable Cross Section	1x95+95 - 1x400+400mm^2 / 1x300+300 - 1x500+500mm^2	1x95+95 - 1x400+400mm^2 / 1x300+300 - 1x500+500mm^2	1x95+95 - 1x400+400mm^2 / 1x300+300 - 1x500+500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2
11 AC Impulse Test	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 60 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 60 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth
12 Short Circuit Test	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.
13 Internal Power Arcing	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.

MOUNTING SYSTEM	UNDERGROUND - WALL TYPE (IP 68)				
1 Description	Three Phase Universal Link Box with SVL for Single Cable	Three Phase Universal Earthing Link Box	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Three Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)	Four Way Earthing Link Box for Single Cable (Termination Loc.)
2 Type	LB.U/W.3SA.6.0	LB.U/W.E.6.0	LB.W.E.3.1	LB.W.3SA.3.1	LB.W.E.4.1
3 Protection Class	IP68	IP68	IP68	IP68	IP68
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	Optional	N/A	N/A	Optional	N/A
7 Conductor Fixing	Cable Lug	Cable Lug	Conductor Flexcon / Cable Lug	Conductor Flexcon / Cable Lug	Conductor Flexcon / Cable Lug
8 Drawing No	06.09.01	06.09.02	10.04.05 / 10.04.05 Rev. 0E	10.04.06 / 10.04.06 Rev. 0E	10.04.08 / 10.04.08 Rev. 0E
9 Dimensions (mm)	420 x 420 x 290	420 x 420 x 290	500 x 550 x 250 / 500 x 550 x 250	500 x 550 x 250 / 500 x 550 x 250	500 x 700 x 250 / 500 x 700 x 250
10 Bonding Cable Cross Section	1x300mm^2	1x300mm^2	1x95-1x400mm^2 / 1x300mm^2	1x95-1x400mm^2 / 1x300mm^2	1x95-1x400mm^2 / 1x300mm^2
11 AC Impulse Test	40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth
12 Short Circuit Test	50 kA 1 sec.	50 kA 1 sec.	50 kA 1 sec. / 40 kA 1 sec.	50 kA 1 sec. / 40 kA 1 sec.	50 kA 1 sec. / 40 kA 1 sec.
13 Internal Power Arcing	40 kA 0,1 sec.	40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.

MOUNTING SYSTEM	UNDERGROUND - WALL TYPE (IP 68)				
1 Description	Four Way Earthing Link Box with SVL for Single Cable (Termination Loc.)	Three Phase Earthing Link Box for Single Cable (Termination Loc.)	Three Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)	Single Phase Earthing Link Box for Single Cable (Termination Loc.)	Single Phase Earthing Link Box with SVL for Single Cable (Termination Loc.)
2 Type	LB.W.4SA.4.1	LB.W.E.3.1	LB.W.3SA.3.1	LB.W.E.1.1	W.1SA.1.1
3 Protection Class	IP68	IP68	IP68	IP68	IP68
4 Material	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)	Stainless Steel (AISI 304L)
5 Connection Material Link	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
6 SVL	Optional	N/A	Optional	N/A	Optional
7 Conductor Fixing	Conductor Flexcon / Cable Lug	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon	Conductor Flexcon
8 Drawing No	10.04.07 / 10.04.07 Rev. 0E	14.06.03 / 14.06.01	14.06.04 / 14.06.02	13.02.04 / 13.02.02	13.02.03 / 13.02.01
9 Dimensions (mm)	500 x 700 x 250 / 500 x 700 x 250	600 x 550 x 270 / 590 x 590 x 368	600 x 550 x 270 / 590 x 590 x 368	500 x 330 x 270 / 500 x 330 x 270	500 x 330 x 270 / 500 x 330 x 270
10 Bonding Cable Cross Section	1x95-1x400mm^2 / 1x300mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2	1x95-1x400mm^2 / 1x300-1x500mm^2
11 AC Impulse Test	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth 75 kV Phase-Phase	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth	40 kV Phase-Earth 75 kV Phase-Phase / 40 kV Phase-Earth
12 Short Circuit Test	50 kA 1 sec. / 40 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.	50 kA 1 sec. / 63 kA 1 sec.
13 Internal Power Arcing	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.	40 kA 0,1 sec. / 40 kA 0,1 sec.

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