Lectrobar

OPTIMUM DESIGN

LECTRO Busduct System

[Series LSB II/ 300A - 6400A]

Providing Efficient Distribution of Electrical Power with Minimum Power Loss

Since 1975

Certified DEKRA

KEMA KEUR

Introduction

Lectro has manufactured and installed hundreds of thousands of meters of busducts for large and small projects since 1975, both for the domestic market and for exports around the globe.

The production takes place in a state of the art facility, using latest generation precision techniques including CNC, automation systems and robotics. Lectro products have been type tested by DEKRA laboratories of the Netherlands.

Lectro busduct systems contain high quality components and are trusted for their high safety factor and long life.

Lectro newest range, The «series LSB II» busduct provide currents from 300A to 6400A.

We pride ourselves in delivering systems which exceed the expectation of our customers, both in terms of quality and in the level of customer service we provide.



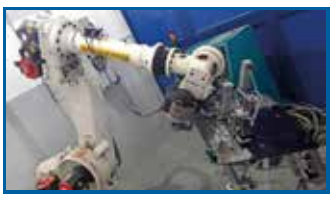













Lectrobar
OPTIMUM DESIGN

Busducts

Advantages of Busduct Over Cables

» Flexibility:
Reusable, Expandable

- Tap-off units enable the drawing down of additional power to be easy and compact
- Modular design of busducts means that the distribution supply can be easily changed
- Can be easily dismantled, relocated and reused

» Efficiency:
Cost Savings

- Half the man-hours:
  Installation requires only half the time as compared to conventional methods resulting in considerable savings on installation costs
- Zero shut downs:
  Continuity can be maintained as servicing times are really short and needs no operational shutdowns

» Less space

- Thanks to the sandwich design, busducts have very compact cross sectional sizes and occupy far less space compared to cables

Applications of Busducts

» Multiple Loads

- Feeding multi-loads distributed throughout a building / manufacturing facility is easy and time saving with busducts
- Conveniently placed tap-offs ensure that plugs can be installed and removed safely in no time
- For higher ampere ratings, 'bolted on' tap-offs provide up to 1600A protection at every joint

» Vertical Riser

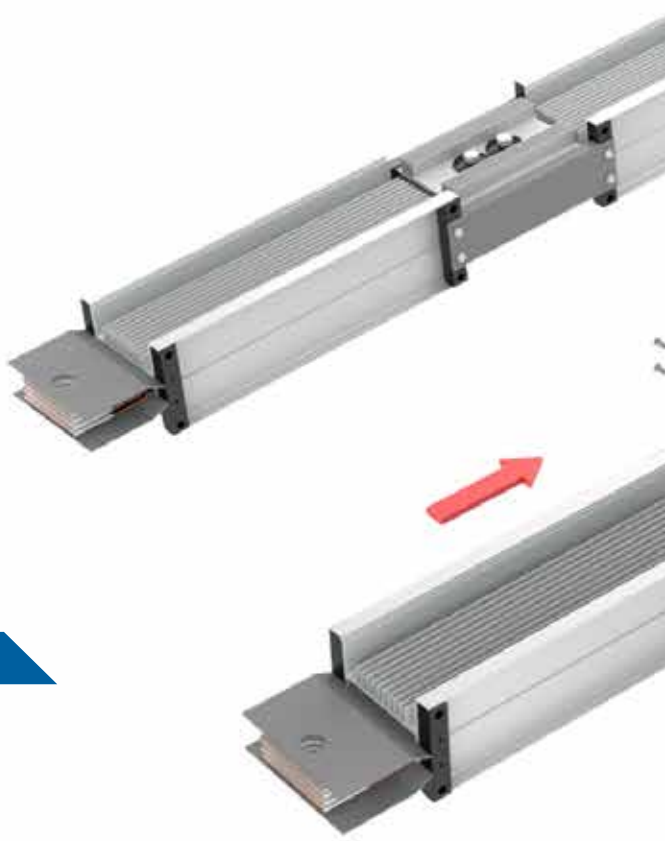
- The efficient method to feed high rise buildings, as distribution to different floors is achieved through convenience tap-offs

» Service Entrance and Single Load

- From the utility transformer to the main switchboard (service entrance), busduct provides the most hassle free feeding solution
- Normally used for feeding load concentrated in one area, feeder busduct is the choice of connection for a switchboard to switchboard tie / switchboard to remote Motor Control Center / switchboard to single load.

Lectrobar Busducts - Unique Features

Since 1975, Lectrobar has manufactured thousands of meters of installed busducts. State of the art ISO certified manufacturing facility has their products type tested by DEKRA of Netherlands. Lectrobar busducts are trusted for their high safety factor & long life span.



Safe and Versatile Design

- Meet the requirement of IEC 61 - 439
- Tested and approved by different accredited laboratories
- Fully type tested at DEKRA testing facility, Netherlands
- Manufactured in an ISO 9001/2000 certified facility to ensure highest quality control
- Product certified for KEMA KEUR Mark
- Since 1975 in the market

Tin Coated High Purity Copper Bars

- Oxygen free copper
- High purity:better or equal to %99.99
- High conductivity: better than %99.95
- Good contact

True Sandwich for Both Feeder and Plug-in

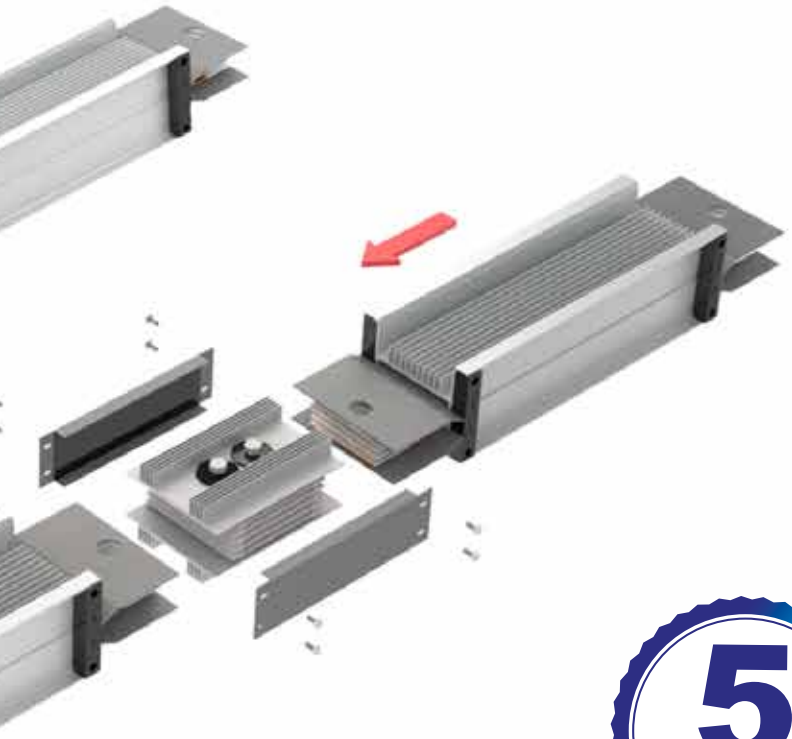
- No need to separate or flare the bars at the outlet
- High short circuit withstand for both feeder and plug-in
- Low impedance and low voltage drop
- No flame smoke or gas propagation in the housing «Chimney Effect»

High Insulation Tested at 2500V for 1 Minute

- Two insulation layers used
- Main insulation Teflon Coated Fiberglass 250°C working temperature and 5000V breakdown
- All insulation used better than class H
- Working temperature 50° C, No deration required

Grounding and Neutral Flexibility

- Integral casing ground as standard, 50% additional ground bar, 100% ground bar available
- 100% , 200% (Full), 50% (Half) neutral available
- No need for earth bar, the aluminum housing ground conductor is carried through the joint



Two Bolt Patent Joint Design

- More than two tons pressure on overlapping busbars at each bolt
- Adjacent phases separated with non-flammable (V - 0) PBT UL listed (RTI : 140°C, 23kV/mm)
- Joint alignment with two bolts instead of one in the single bolt to ensure correct installation even with non skilled labour
- Maintenance free joint using special heat treated spring steel conical shape washers
- Unique design for the joint to make its temperature less than the rest of the busduct

5 YEARS WARRANTY

Aluminum Casing

- Excellent heat dissipation
- Significant reduction in reactance and magnetic flux leakage
- Proper ground return path
- Dust and water protection
- Special coating for better heat dissipation

Space Saving Accessories

- Corner elbows, tees, crosses, & reducers etc
- Maximum Layout flexibility
- Optimum utilization of space

Transformer Box

- Enclose flexible joint and transformer bushing
- Protect the system from the entry of any foreign body
- Easy check on transformer oil leakage without de-energizing the system

Single Window from Design to Delivery

- Exact design, layout & selection aided by support of engineering team
- Detailed drawing in one week from receiving the order
- Lower carbon footprint with shorter shipping time to Middle East, Africa & Europe Markets

Design & Construction

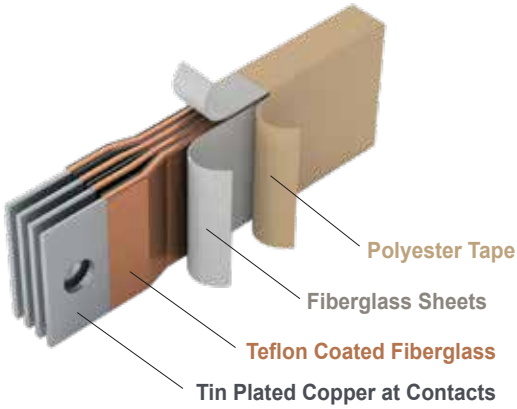
Lectrobar busducts have a sandwich type non-ventilated configuration. The non-ventilated housing design excludes potential points of penetration by moisture and dust.

Busbars for plug-in applications, have full size welded conductor tabs. This design extends the contact surfaces outside of the busduct casing and into the plug-in outlet. By this design, true sandwich configuration is maintained throughout the entire busduct length for both feeder and plug-in. This will eliminate the need to seperate or flare the conductor bars at the plug-in opening.

Maintaining a true sandwich design eliminates potential pathways for the propagation of flame, smoke and gas through the busduct casing, commonly referred as the 'chimney effect'. The sandwich structure with low impedance ensures low voltage drop and thus, enables the cost-effective transmission of large amount of power even at long distances.

Busbar and Insulation

Lectrobars are fabricated from high strength pure electrolytic copper with suitable cross section tin coated at contacts (conductivity better than 99.5%). Tin coating provides surface protection and good contact.



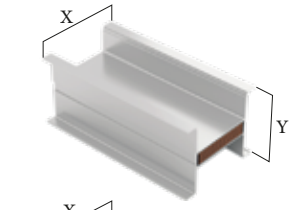
Shown is a section of Lectro busduct insulation consisting of two different insulation materials. Conductors are insulated with Teflon Coated Fiberglass films (10 mil* thickness, 5000 V, 250°C) and layered with Fiberglass sheets. After assembly all the bars are wrapped together with polyester tape. The result is an insulation system that is virtually impervious to the stress of normal operation. The insulation system is tested after assembly with 2500 Volt for one minute. This test is intended to confirm the integrity of the insulation system and helps ensure the highest quality busduct possible. All the insulation materials are rated as class H (minimum) non-flammable hence, no internal fire barrier is needed. Upon request, the bars can be insulated with cycloaliphatic epoxy resin class B 130°C.

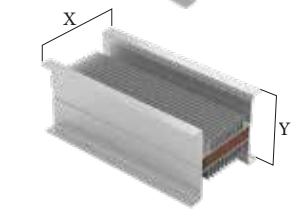
Design & Construction

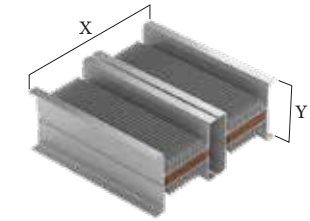
Lectrobar is constructed with extruded aluminum profile. The non-magnetic aluminum housing ensures excellent heat dissipation, a significant reduction in reactance and magnetic flux leakage. Both, the new casing design and the special casing coating ensure the best heat dissipation possible from the system. This allows the system to work without derating up to 50°C. Standard casing is IP54. On request IP55, IP65 and IP67 casings can also be supplied.

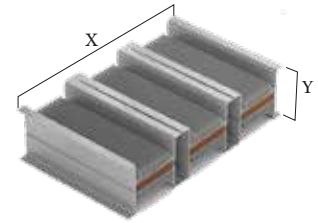
Aluminum casing provides an excellent ground return path. DC resistance /meter of the casing is less than 0.03 milliohm.

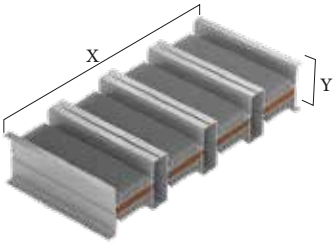
Hence, integral housing ground is standard and provides full cross section grounding. The system ground continuity is maintained through each joint by the ground path end blocks and joint covers. In addition, the housing ground conductor is carried through the joint. This design ensures that the integrity of the ground path is maintained by the same mechanical pressure used to maintain the continuity of the conductive path (Casing tested as earth at DEKRA Netherlands). An internal ground bus adds no benefit with this method. It adds only unnecessary cost to the system. However, for applications where the clients insist on 50% or 100% earth bar, Lectro can provide it as an optional.











Ampere Rating (A)	Busducts	X (mm)	Y (mm)	Weight (Kg)
300	LSBIIC3FNHFI030SL3	78	140	4.5
450	LSBIIC3FNHFI045SL3	90	140	7.0
750	LSBIIC3FNHFI075SL3	110	140	9.4
800	LSBIIC3FNHFI080SL3	140	140	13.5
1000	LSBIIIC3FNHFI100SL3	180	140	14.5
1200	LSBIIC3FNHFI120SL3	160	140	16.5
1300	LSBIIC3FNHFI130SL3	180	140	21.3
1600	LSBIIC3FNHFI160SL3	180	140	27.0
2250	LSBIIC3FNHFI225SL3	325	140	35.6
2500	LSBIIC3FNHFI250SL3	365	140	43.0
3650	LSBIIC3FNHFI365SL3	365	140	64.0
3200	LSBIIC3FNHFI320SL3	490	140	53.4
4800	LSBIIC3FNHFI480SL3	550	140	76.9
4400	LSBIIC3FNHFI440SL3	655	140	71.2
5000	LSBIIC3FNHFI500SL3	735	140	85.3
6400	LSBIIC3FNHFI640SL3	735	140	98.2

Types of Busducts

Feeder Busducts

1000A & 1200A & 1300A & 1600A

2250A & 2500A & 3500A

300 A, 450A, 700A, 800A

3200A & 4800A

4000A & 5000A & 6400A

Ampere Rating (A)	Feeder Busducts
300A	LSBIIC3FNHFI030SL3
450A	LSBIIC3FNHFI045SL3
750A	LSBIIC3FNHFI075SL3
800A	LSBIIC3FNHFI080SL3
1000A	LSBIIIC3FNHFI100SL3
1200A	LSBIIC3FNHFI120SL3
1300A	LSBIIC3FNHFI130SL3
1600A	LSBIIC3FNHFI160SL3
2250A	LSBIIC3FNHFI225SL3
2500A	LSBIIC3FNHFI250SL3
3200A	LSBIIC3FNHFI320SL3
3650A	LSBIIC3FNHFI365SL3
4400A	LSBIIC3FNHFI440SL3
4800A	LSBIIC3FNHFI480SL3
5000A	LSBIIC3FNHFI500SL3
6400A	LSBIIC3FNHFI640SL3

Standard length 3000 mm

Types of Busducts

Plug - in Busducts

300 A, 450A, 700A, 800A

1000A & 1200A & 1300A & 1600A

2250A & 2500A & 3500A

Ampere Rating (A)	Plug-in Busducts
300A	LSBIIC3FNHPI030OSL3
450A	LSBIIC3FNHPI045OSL3
750A	LSBIIC3FNHPI075OSL3
800A	LSBIIC3FNHPI080OSL3
1000A	LSBIIIC3FNHPI100OSL3
1200A	LSBIIC3FNHPI120OSL3
1300A	LSBIIC3FNHPI130OSL3
1600A	LSBIIC3FNHPI160OSL3
2250A	LSBIIC3FNHPI225OSL3
2500A	LSBIIC3FNHPI250OSL3
3200A	LSBIIC3FNHPI320OSL3
3650A	LSBIIC3FNHPI365OSL3
4400A	LSBIIC3FNHPI440OSL3
4800A	LSBIIC3FNHPI480OSL3
5000A	LSBIIC3FNHPI500OSL3
6400A	LSBIIC3FNHPI640OSL3

3200A & 4800A

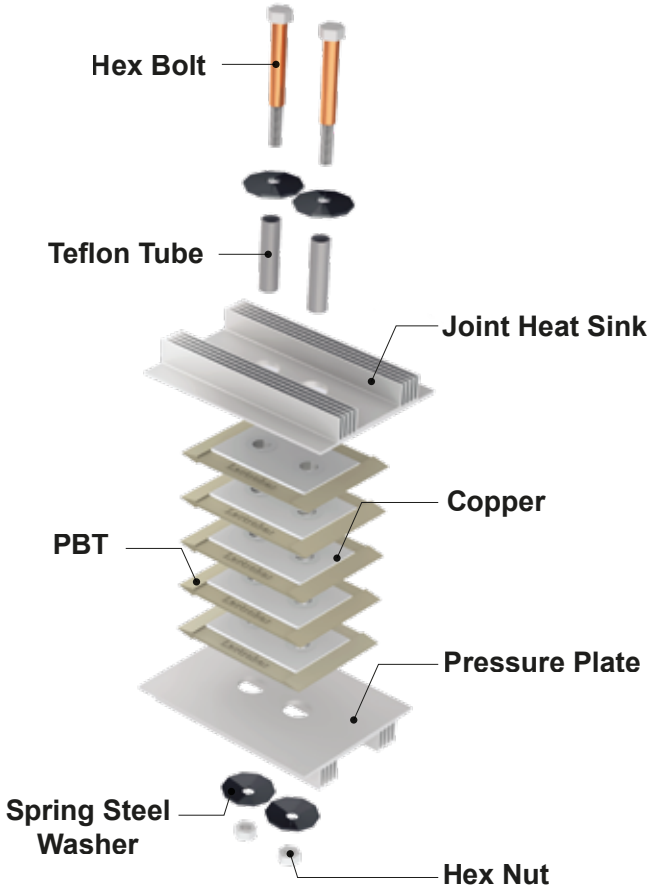
4000A & 5000A & 6400A

Standard length 3000 mm

Innovations

Joints:

Joints in all ratings are of a two bolt patent design, which can be checked for tightness without de-energizing the system. This design ensures excellent contact between each set of the busbars and the joint. This method exerts more than two tons of pressure on overlapping bus bars at each bolt. This force is distributed over the contact area by two pairs of large diameter spring steel conical shape washers. These washers ensure maintenance free joint.



Joint alignment is made by two bolts instead of one bolt in the single bolt design. This design ensures the correct installation of the busduct joint even with non skilled labor. The joint temperature is less than rest of the busduct due to the specially designed heat sinks and contact surface. Figure A shows the contact resistance at different torque with the washers. The tightening torque of joint bolt does not run down after initial accomodation, and is maintained at a level that ensures stability of contact resistance and temperature rise.

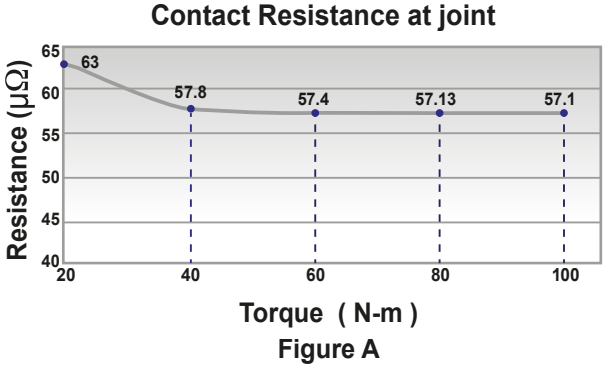
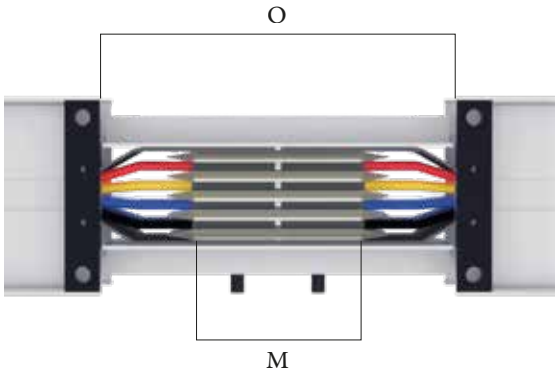


Figure A

Innovations

The bolts are insulated with Teflon Coated Fiberglass and passed through the joint in a Teflon tube to eliminate any problems arising from joint bolts. Joint blocks are used to ensure parallel joints of bars and complete mechanical jointing using non-flammable (V-0) Polybutylene Terephthalate UL listed (RTI :140°C,Dielectric Strength 23kV/mm).

Double head bolts are used as optional. One head breaks at the required torque so no need for torque wrenches. Smart bolts can be used also as optional for critical sites. Using smart bolts results in less fatigue for installers, no repeated torque wrench calibration, no sample re-tightening, no turn-of-nut confirmation required. Installers can easily identify and focus on loose bolts to re-tighten. The ability to visually inspect fasteners also creates safer working conditions particularly in elevated structures and areas exposed to hazardous materials.

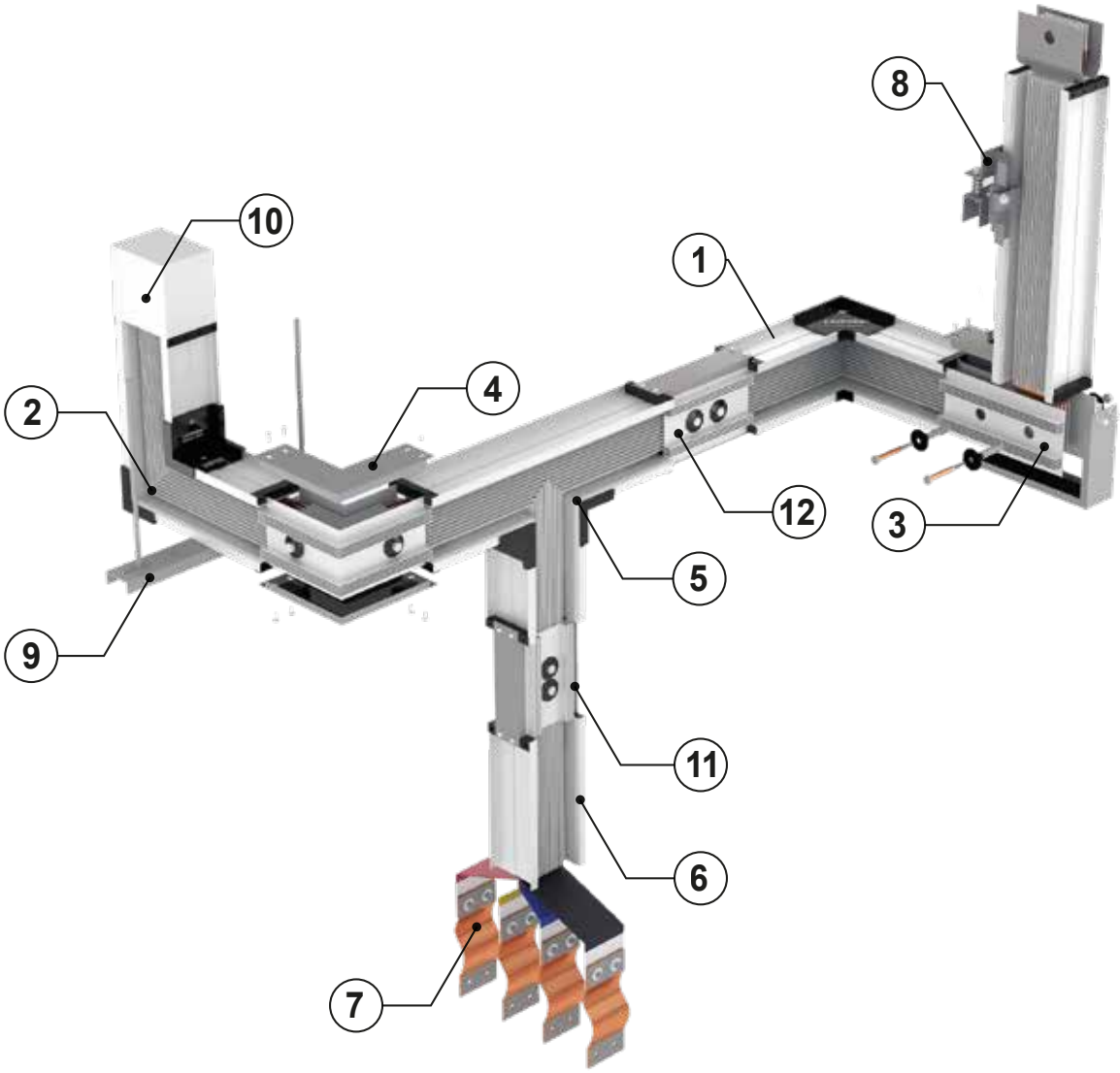


Ampere Rating (A)	No	M (in mm)	O (in mm)
300	1	90	180
450	1	90	180
750	1	100	240
800	1	120	250
1000	1	120	250
1200	1	120	250
1300	1	120	250
1600	1	120	250
2250	2	120	250
2500	2	120	250
3200	3	120	250
3650	2	120	250
4400	4	120	250
4800	3	120	250
5000	4	120	250
6400	4	120	250

Smart bolts *

* Upon request

Accessories

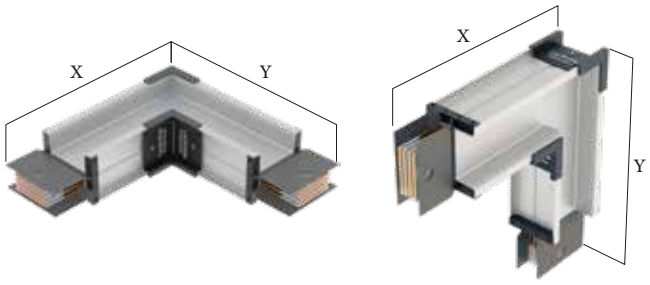
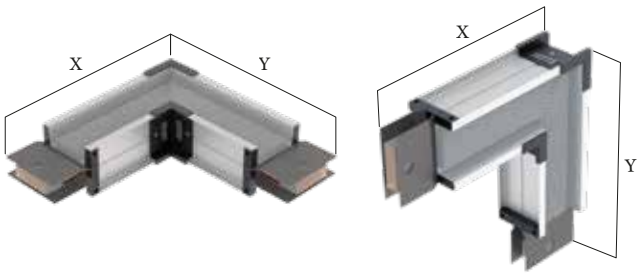
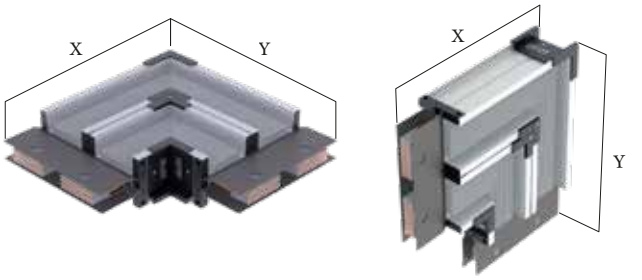
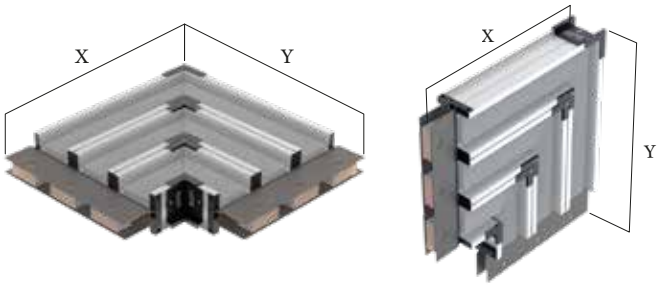
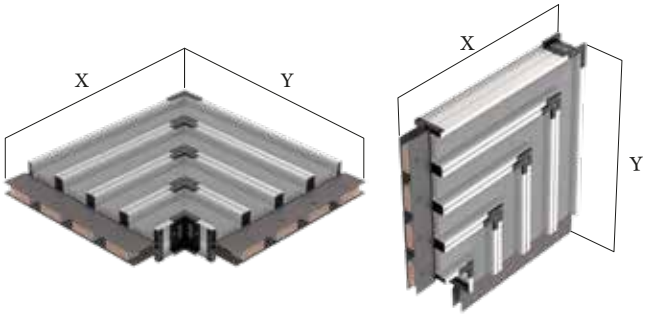


Complete line of 'standard fittings' or 'made to fit' accessories with wide varieties are available to meet every application need.

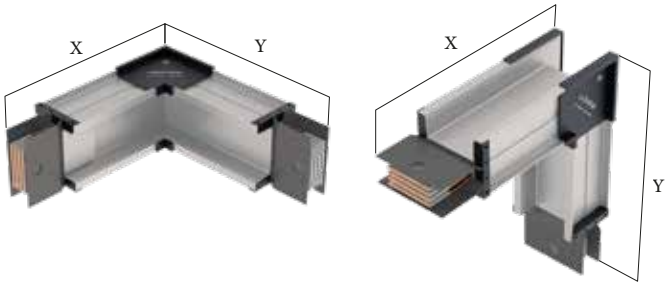
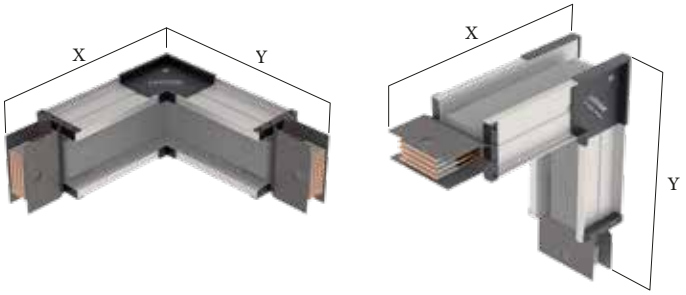
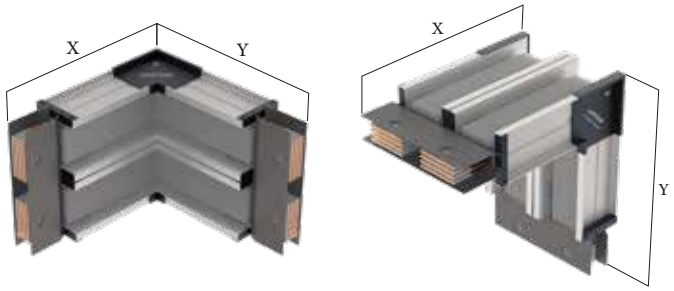
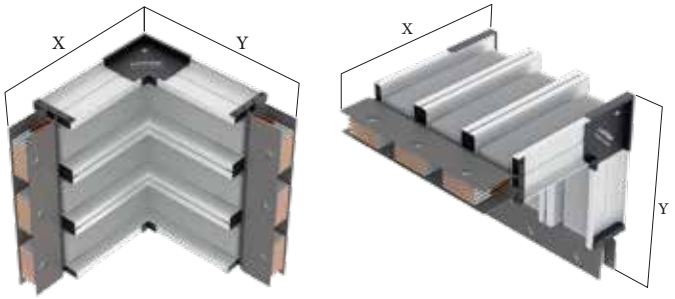
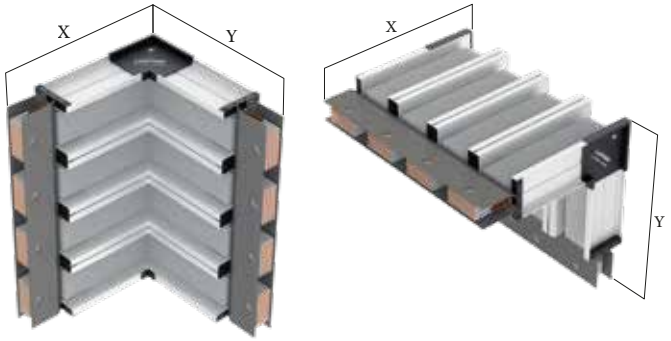
These accessories include :

1. Flat Elbows
2. Edgewise Elbows
3. Corner Flat Elbows
4. Corner Edgewise Elbows
5. Tees and Crosses
6. Transformer and Switchboard Flanges
7. Flexible joints
8. Spring Riser
9. Angle Hanger
10. End Closure
11. Standard Joint
12. Long Joint

Accessories - Flat Elbow

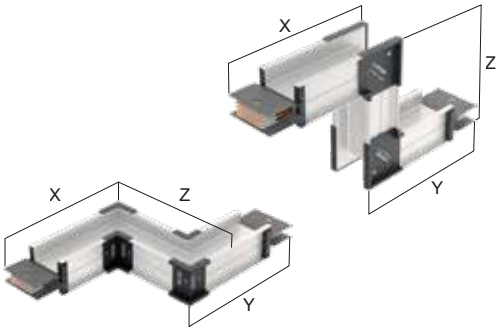
Ampere Rating (A)	Flat Elbow	Min X,Y (mm)	
300	LSBIIC3FNHFI030EF	235	
450	LSBIIC3FNHFI045EF	240	
750	LSBIIC3FNHFI075EF	260	
800	LSBIIC3FNHFI080EF	290	
1000	LSBIIIC3FNHFI100EF	330	
1200	LSBIIC3FNHFI120EF	310	
1300	LSBIIC3FNHFI130EF	330	
1600	LSBIIC3FNHFI160EF	330	
2250	LSBIIC3FNHFI225EF	475	
2500	LSBIIC3FNHFI250EF	515	
3650	LSBIIC3FNHFI365EF	700	
3200	LSBIIC3FNHFI320EF	640	
4800	LSBIIC3FNHFI480EF	700	
4400	LSBIIC3FNHFI440EF	805	
5000	LSBIIC3FNHFI500EF	885	
6400	LSBIIC3FNHFI640EF	885	

Accessories - Edgewise Elbow

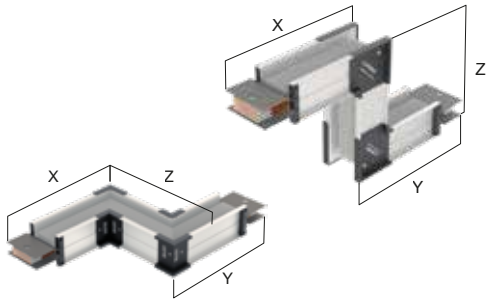
Ampere Rating (A)	Flat Elbow	Min X,Y (mm)	
300	LSBIIC3FNHFI030EE	290	
450	LSBIIC3FNHFI045EE	290	
750	LSBIIC3FNHFI075EE	290	
800	LSBIIC3FNHFI080EE	290	
1000	LSBIIIC3FNHFI100EE	290	
1200	LSBIIC3FNHFI120EE	290	
1300	LSBIIC3FNHFI130EE	290	
1600	LSBIIC3FNHFI160EE	290	
2250	LSBIIC3FNHFI225EE	290	
2500	LSBIIC3FNHFI250EE	290	
3650	LSBIIC3FNHFI365EE	290	
3200	LSBIIC3FNHFI320EE	290	
4800	LSBIIC3FNHFI480EE	290	
4400	LSBIIC3FNHFI440EE	290	
5000	LSBIIC3FNHFI500EE	290	
6400	LSBIIC3FNHFI640EE	290	

Accessories - Offset Elbow

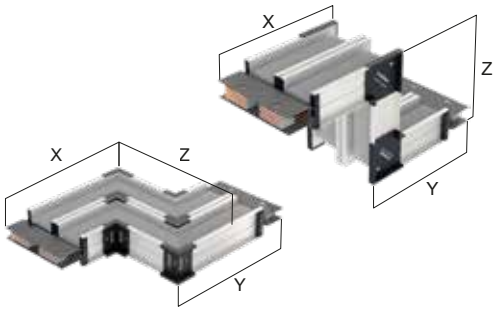
Ampere Rating (A)	Offset Elbow Flat	Min X,Y (mm)	Min Z (mm)	Offset Elbow Edgewise	Min X,Y (mm)	Min Z (mm)
300	**LSBIIC3FNHFI030OF**	**235**	**140**	**LSBIIC3FNHFI030OE**	**290**	**330**
450	LSBIIC3FNHFI045OF	240	140	LSBIIC3FNHFI045OE	290	330
750	LSBIIC3FNHFI075OF	260	160	LSBIIC3FNHFI075OE	290	330
800	LSBIIC3FNHFI080OF	290	190	LSBIIC3FNHFI080OE	290	330



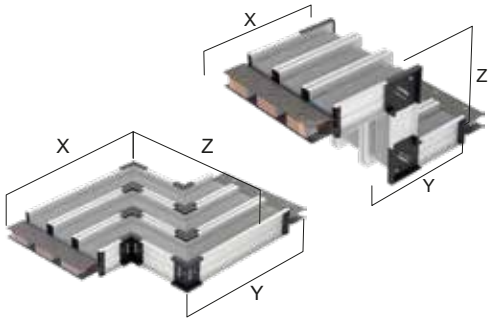
1000	LSBIIIC3FNHFI100OF	330	210	LSBIIC3FNHFI100OE	290	330
1200	LSBIIC3FNHFI120OF	310	210	LSBIIC3FNHFI120OE	290	330
1300	LSBIIC3FNHFI130OF	330	230	LSBIIC3FNHFI130OE	290	330
1600	LSBIIC3FNHFI160OF	330	230	LSBIIC3FNHFI160OE	290	330



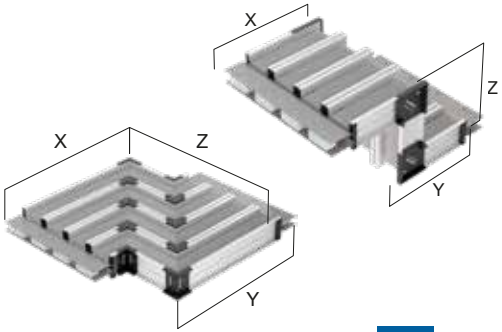
2250	LSBIIC3FNHFI225OF	475	375	LSBIIC3FNHFI225OE	290	330
2500	LSBIIC3FNHFI250OF	415	515	LSBIIC3FNHFI250OE	290	330
3650	LSBIIC3FNHFI365OF	700	600	LSBIIC3FNHFI365OE	290	330



3200	LSBIIC3FNHFI320OF	640	540	LSBIIC3FNHFI320OE	290	330
4800	LSBIIC3FNHFI480OF	700	600	LSBIIC3FNHFI480OE	290	330



4400	LSBIIC3FNHFI440OF	805	705	LSBIIC3FNHFI440OE	290	330
5000	LSBIIC3FNHFI500OF	885	875	LSBIIC3FNHFI500OE	290	330
6400	LSBIIC3FNHFI640OF	885	875	LSBIIC3FNHFI640OE	290	330

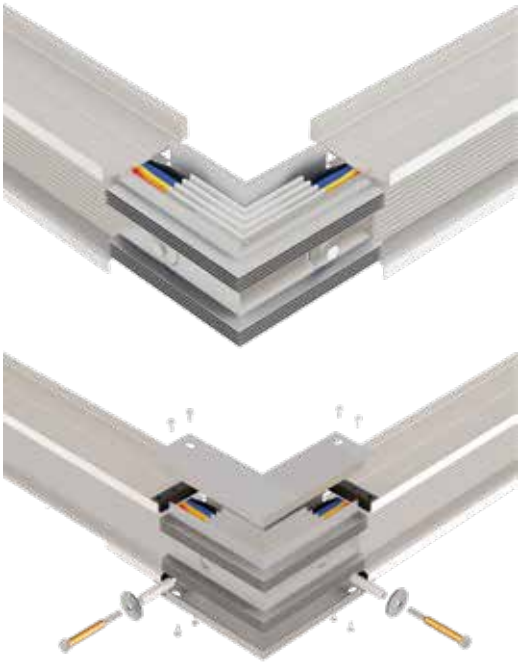


Accessories - Corner Elbow

In addition to these fittings, Lectro offers a space saving corner joint elbow. This elbow has the same construction of Lectro Joints in the form of elbow. Due to its compact design, the corner joint allow optimum utilization of space.

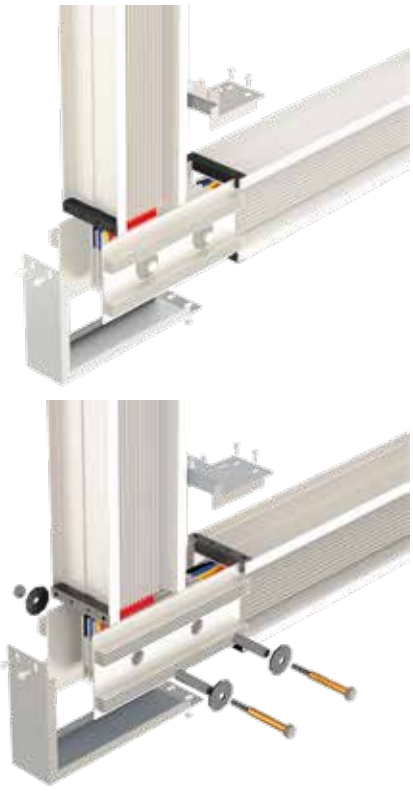
Edgewise: With a minimum leg length of 13 cm for an edgewise elbow, the corner joint elbow can solve any serious path problems and helps to achieve optimum layout with minimal space requirements.

Ampere Rating (A)	Corner Elbow (Edgewise)
300A	LSBIIC3FNHFI030CEE
450A	LSBIIC3FNHFI045CEE
750A	LSBIIC3FNHFI075CEE
800A	LSBIIC3FNHFI080CEE
1000A	LSBIIIC3FNHFI100CEE
1200A	LSBIIC3FNHFI120CEE
1300A	LSBIIC3FNHFI130CEE
1600A	LSBIIC3FNHFI160CEE
2250A	LSBIIC3FNHFI225CEE
2500A	LSBIIC3FNHFI250CEE
3200A	LSBIIC3FNHFI320CEE
3650A	LSBIIC3FNHFI365CEE
4400A	LSBIIC3FNHFI440CEE
4800A	LSBIIC3FNHFI480CEE
5000A	LSBIIIC3FNHFI500CEE
6400A	LSBIIC3FNHFI640CEE



Flat: The space saving flat elbow takes no additional space up to 1600A. It is a regular joint rotated 90 degree. These elbows are constructed with non-flammable Fiberglass 2mm thickness sheets with a 8kV/mm.

Ampere Rating (A)	Corner Elbow (Flat)
300A	LSBIIC3FNHFI030CEF
450A	LSBIIC3FNHFI045CEF
750A	LSBIIC3FNHFI075CEF
800A	LSBIIC3FNHFI080CEF
1000A	LSBIIIC3FNHFI100CEF
1200A	LSBIIC3FNHFI120CEF
1300A	LSBIIC3FNHFI130CEF
1600A	LSBIIC3FNHFI160CEF
2250A	LSBIIC3FNHFI225CEF
2500A	LSBIIC3FNHFI250CEF
3200A	LSBIIC3FNHFI320CEF
3650A	LSBIIC3FNHFI365CEF
4400A	LSBIIC3FNHFI440CEF
4800A	LSBIIC3FNHFI480CEF
5000A	LSBIIC3FNHFI500CEF
6400A	LSBIIC3FNHFI640CEF



Accessories - Tees and Crosses

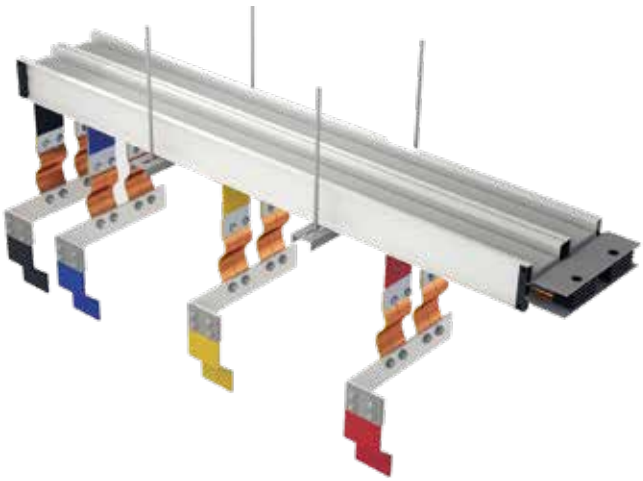
Tees are busduct fittings for connection in three directions.
Crosses are suitable for connection in four directions. Crosses are applied when a bus run must branch off in three directions in the same plane.

Flat

Edgewise

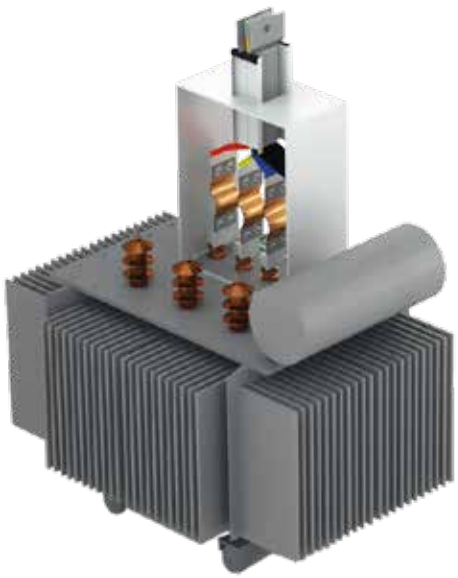
Ampere Rating (A)	T-Elbow Edgewise	T-Elbow Flat	Cross Edgwise	Cross Flat
300	LSBIIC3FNHFI030TE	LSBIIC3FNHFI030TF	LSBIIC3FNHFI030CE	LSBIIC3FNHFI030CF
450	LSBIIC3FNHFI045TE	LSBIIC3FNHFI045TF	LSBIIC3FNHFI045CE	LSBIIC3FNHFI045CF
750	LSBIIC3FNHFI075TE	LSBIIC3FNHFI075TF	LSBIIC3FNHFI075CE	LSBIIC3FNHFI075CF
800	LSBIIC3FNHFI080TE	LSBIIC3FNHFI080TF	LSBIIC3FNHFI080CE	LSBIIC3FNHFI080CF
1000	LSBIIIC3FNHFI100TE	LSBIIIC3FNHFI100TF	LSBIIIC3FNHFI100CE	LSBIIIC3FNHFI100CF
1200	LSBIIC3FNHFI120TE	LSBIIC3FNHFI120TF	LSBIIC3FNHFI120CE	LSBIIC3FNHFI120CF
1300	LSBIIC3FNHFI130TE	LSBIIC3FNHFI130TF	LSBIIC3FNHFI130CE	LSBIIC3FNHFI130CF
1600	LSBIIC3FNHFI160TE	LSBIIC3FNHFI160TF	LSBIIC3FNHFI160CE	LSBIIC3FNHFI160CF
2250	LSBIIC3FNHFI225TE	LSBIIC3FNHFI225TF	LSBIIC3FNHFI225CE	LSBIIC3FNHFI225CF
2500	LSBIIC3FNHFI250TE	LSBIIC3FNHFI250TF	LSBIIC3FNHFI250CE	LSBIIC3FNHFI250CF
3200	LSBIIC3FNHFI320TE	LSBIIC3FNHFI320TF	LSBIIC3FNHFI320CE	LSBIIC3FNHFI320CF
3650	LSBIIC3FNHFI365TE	LSBIIC3FNHFI365TF	LSBIIC3FNHFI365CE	LSBIIC3FNHFI365CF
4400	LSBIIC3FNHFI440TE	LSBIIC3FNHFI440TF	LSBIIC3FNHFI440CE	LSBIIC3FNHFI440CF
4800	LSBIIC3FNHFI480TE	LSBIIC3FNHFI480TF	LSBIIC3FNHFI480CE	LSBIIIC3FNHFI480CF
5000	LSBIIC3FNHFI500TE	LSBIIC3FNHFI500TF	LSBIIC3FNHFI500CE	LSBIIC3FNHFI500CF
6400	LSBIIC3FNHFI640TE	LSBIIC3FNHFI640TF	LSBIIC3FNHFI640CE	LSBIIC3FNHFI640CF

Accessories - Transformer Connection

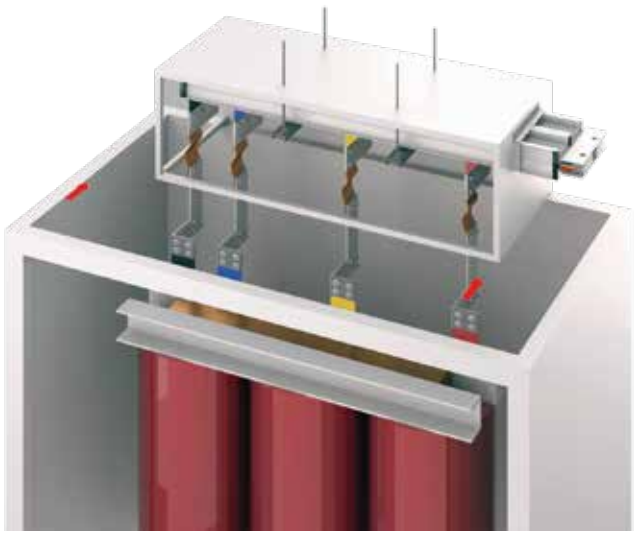


Transformer Box

The transformer connection is equipped with the necessary flexible joints and is totally enclosed in an IP43 box that is uniquely provided by Lectrobar. The box is equipped with a Plexi Glass door to allow the check of the presence of an oil leak without de-energizing the system. The flexible connection is used to allow for busduct expansion and contraction on the low voltage spades.



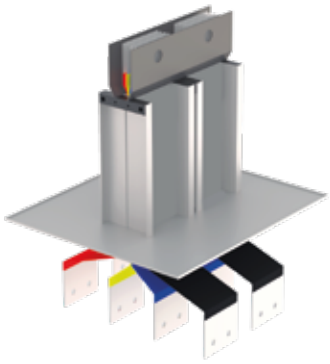
Connection with oil type transformer



Connection with dry type transformer

Transformer & Swichboard Flanges

Both Lectro feeder and plug-in busduct can be connected on both sides of transformer and switchboard by a coordinated system in simple and easy way which saves 20% of switchboard size. Also, it guarantees safe connection in minimum installation time. Lectro busduct enters the switchboard or leaves the transformer by special attachment which is tailored according to the dimension and design of both transformer and switchboard. Cut out dimensions and drilling plans are provided with the customer drawings. For proper coordination between busduct and other equipment, detailed drawings including orientation, room plan and height, distance between transformer bushing, transformer and switchboard dimensions should be given. Lectro design and planning group will prepare all necessary drawings and coordination.

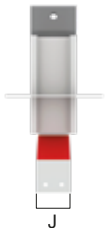
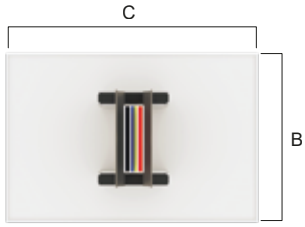
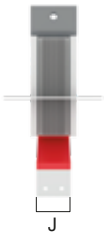
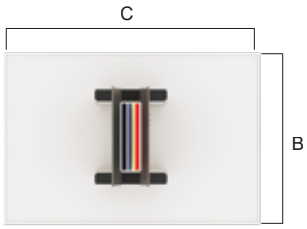
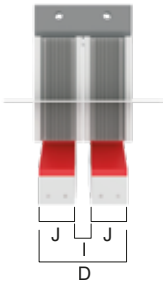
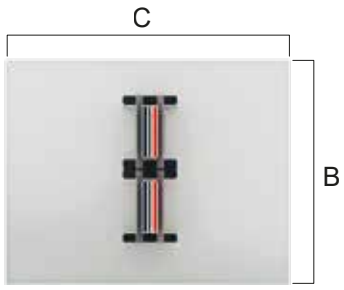
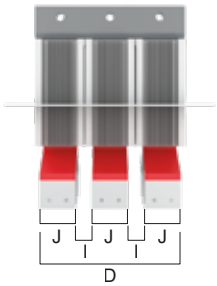
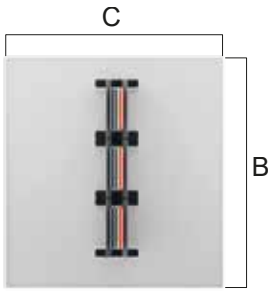
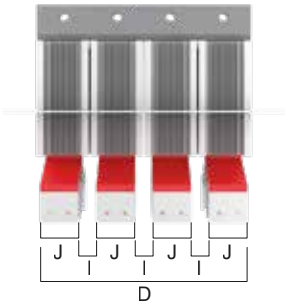
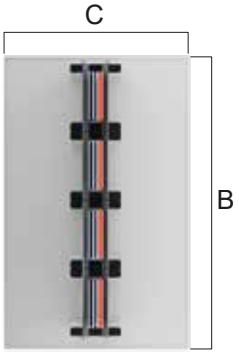


Transformer Flange Oil Type		
Ampere Rating (A)	Oil Type	
300A	LSBIIC3FNHFI030	TFOT
450A	LSBIIC3FNHFI045	TFOT
750A	LSBIIC3FNHFI075	TFOT
800A	LSBIIC3FNHFI080	TFOT
1000A	LSBIIIC3FNHFI100	TFOT
1200A	LSBIIC3FNHFI120	TFOT
1300A	LSBIIC3FNHFI130	TFOT
1600A	LSBIIC3FNHFI160	TFOT
2250A	LSBIIC3FNHFI225	TFOT
2500A	LSBIIC3FNHFI250	TFOT
3200A	LSBIIC3FNHFI320	TFOT
3650A	LSBIIC3FNHFI365	TFOT
4400A	LSBIIC3FNHFI440	TFOT
4800A	LSBIIC3FNHFI480	TFOT
5000A	LSBIIC3FNHFI500	TFOT
6400A	LSBIIC3FNHFI640	TFOT

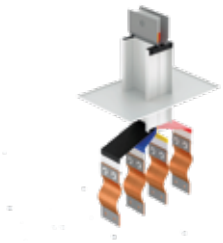
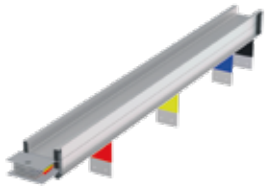
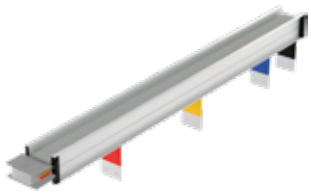
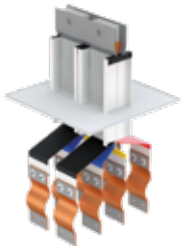
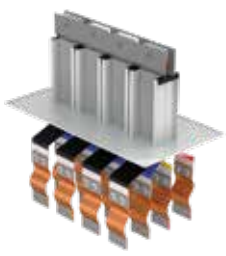
Transformer Flange Dry Type		
Ampere Rating (A)	Dry Type	
300A	LSBIIC3FNHFI030	TFDT
450A	LSBIIC3FNHFI045	TFDT
750A	LSBIIC3FNHFI075	TFDT
800A	LSBIIC3FNHFI080	TFDT
1000A	LSBIIIC3FNHFI100	TFDT
1200A	LSBIIC3FNHFI120	TFDT
1300A	LSBIIC3FNHFI130	TFDT
1600A	LSBIIC3FNHFI160	TFDT
2250A	LSBIIC3FNHFI225	TFDT
2500A	LSBIIC3FNHFI250	TFDT
3200A	LSBIIC3FNHFI320	TFDT
3650A	LSBIIC3FNHFI365	TFDT
4400A	LSBIIC3FNHFI440	TFDT
4800A	LSBIIC3FNHFI480	TFDT
5000A	LSBIIC3FNHFI500	TFDT
6400A	LSBIIC3FNHFI640	TFDT

Swichboard Flange		
Ampere Rating (A)	Swichboard Flange	
300A	LSBIIC3FNHFI030	SF
450A	LSBIIC3FNHFI045	SF
700A	LSBIIC3FNHFI075	SF
800A	LSBIIC3FNHFI080	SF
1000A	LSBIIIC3FNHFI100	SF
1200A	LSBIIC3FNHFI120	SF
1300A	LSBIIC3FNHFI130	SF
1600A	LSBIIC3FNHFI160	SF
2250A	LSBIIC3FNHFI225	SF
2500A	LSBIIC3FNHFI250	SF
3200A	LSBIIC3FNHFI320	SF
3650A	LSBIIC3FNHFI365	SF
4400A	LSBIIC3FNHFI440	SF
4800A	LSBIIC3FNHFI480	SF
5000A	LSBIIC3FNHFI500	SF
6400A	LSBIIC3FNHFI640	SF

Panel Flange

Dimensions in mm						Flange	Panel Collar
Ampere (A)	B	C	D	I	J		
300A	250	270	-	-	18		
450A	250	270	-	-	30		
750A	270	470	-	-	50		
800A	300	470	-	-	80		
1000A	350	470	-	-	100		
1200A	350	470	-	-	100		
1300A	350	470	-	-	120		
1600A	350	470	-	-	120		
2250A	470	470	265	65	100		
2500A	550	470	305	65	120		
3650A	550	470	305	65	120		
3200A	700	470	430	65	100		
4800A	800	470	490	65	120		
4400A	800	470	595	65	100		
5000A	900	470	675	65	120		
6400A	900	470	675	65	120		

Accessories - Transformer Connection

Ampere Rating (A)	Oil Type	Dry Type	Oil Type	Dry Type
300	LSBIIC3FNHFI030TFOT	LSBIIC3FNHFI030TFDT		
450	LSBIIC3FNHFI045TFOT	LSBIIC3FNHFI045TFDT		
750	LSBIIC3FNHFI075TFOT	LSBIIC3FNHFI075TFDT		
800	LSBIIC3FNHFI080TFOT	LSBIIC3FNHFI080TFDT		
1000	LSBIIIC3FNHFI100TFOT	LSBIIC3FNHFI100TFDT		
1200	LSBIIC3FNHFI120TFOT	LSBIIC3FNHFI120TFDT		
1300	LSBIIC3FNHFI130TFOT	LSBIIC3FNHFI130TFDT		
1600	LSBIIC3FNHFI160TFOT	LSBIIC3FNHFI160TFDT		
2250	LSBIIC3FNHFI225TFOT	LSBIIC3FNHFI225TFDT		
2500	LSBIIC3FNHFI250TFOT	LSBIIC3FNHFI250TFDT		
3650	LSBIIC3FNHFI365TFOT	LSBIIC3FNHFI365TFDT		
3200	LSBIIC3FNHFI320TFOT	LSBIIC3FNHFI320TFDT		
4800	LSBIIC3FNHFI480TFOT	LSBIIC3FNHFI480TFDT		
4400	LSBIIC3FNHFI440TFOT	LSBIIC3FNHFI440TFDT		
5000	LSBIIC3FNHFI500TFOT	LSBIIC3FNHFI500TFDT		
6400	LSBIIC3FNHFI640TFOT	LSBIIC3FNHFI640TFDT		

Accessories - Reducers

Non Protected Reducer

Non-protected reducers are used to reduce the capacity of busduct without protection device. No protection is required where busduct is reduced in size provided that the length of the smaller busduct is less than 15m and has a current rating of at least 1/3 of the larger busduct. The reduction is made by a patent joint design to make the reduction in minimum space.

Protected Reducers

Reducer boxes with circuit breakers or fuses are used for protection and as a disconnecting means.

Reduction in bus capacity is made within the box .Minimum length of the protected reducer is 80cm.

Expansion Coupling

Lectro busduct is designed to expand as a load is applied and the temperature of the busbar increases. If the installation can accept this movement, then no expansion coupling is required. Generally, horizontal runs do not require expansion lengths. However, if both ends of the busduct are fixed, normal expansion is restricted. In this case, expansion coupling will be necessary. Expansion couplings are manufactured using a layered laminated flexible section bolted to the adjacent copper conductors. Expansions are individually insulated within the truncking body and identified by means of a label attached to the side of the expansion length box.

Accessories

End Closure

End closures terminate a busduct run and can be used to close right or left ends. It is constructed from thick Fiberglass sheets laid between the busduct bars.

Vertical Hangers

A spring suspension type is used for vertical runs. This hanger equalizes the weight of vertically mounted busduct along all supports. These hangers compensate for expansion and contraction of the busduct . At least, one vertical hanger must be used for each floor.

Fixation and Hangers

Horizontal Hangers

Angle Hangers are provided for every 3 meters of horizontally mounted busduct . The type of hanger supplied is determined by the specific mounting.

Feed Box

Feed units are used to supply power to the busduct. The box is made from sheet steel containing either connection strip, circuit breaker or fuses. However, it is recommended to feed busducts over 1600A directly from the distribution panel. The minimum length of the feed unit depends on the size of cables entering the box, but normally it is greater than 80cm.

Busduct Final Fit Piece

A final fit section of busduct is typically an elbow or a short length; left intentionally for later shipment. Its purpose is to effectively manage the dimensional uncertainties that may involve in busduct layout.

Tap-offs

- An ON-OFF handle mounted on tap-off to operate the breaker without opening the cover.

The tap-off boxes are made from sheet steel painted with electrostatic paint or galvanized. Tap-off with breakers have the following precautions to ensure safe operation:

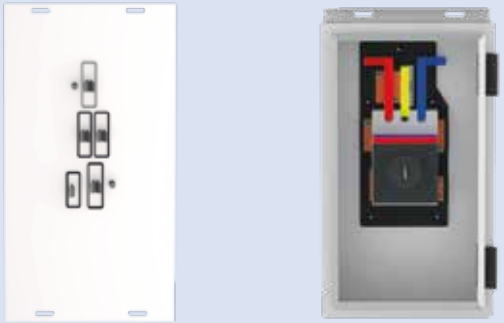
- A cover interlock to prevent opening while the tap-offs in the ON position
- An ON-OFF handle mounted on tap-off to operate the breaker without opening the cover
- A switch interlock to prevent putting the device into operation when the cover is open
- A safety interlock to prevent insertion or removal of the plug while in the ON position

To ensure that the tap-off plugs are seated onto the busduct, the box is equipped with a clamping mechanism.
This mechanism will draw the unit tight on to the busduct housing as the installer tightens the clamps. The contact resistance between plug pins and the tinned busbars is constant even after years of operation due to the high contact pressure.

Bolted On

Bolt-on tap-offs are used as power take-off up to 1600 A. When the required current is higher than the capacity of the plug-in, tap-off unit bolts directly to the contact surfaces of the busbar joint. This unit can carry either a circuit breaker or fuses.

Rated Current	X (cm)	Y (cm)	Z (cm)
32A	35	20	15
Up to 160A	40	30	25
160A to 250A	50	30	25
250A to 400A	60	30	26
400A to 700A	70	30	26
700A to 800A	80	40	33
800A to 1000A	90	40	33



Electrical Data Sheet

Description

Casing	: Extruded Aluminium
Protection Degree (IP)	: Standard - IP54, Optional - IP55, IP65, IP67
Rated Insulation Volltage (V)	: 1000V
Rated Operation Volltage (V)	: up to 1000V
Rated Impulse Volltage (kV)	: 8kV
Frequency (Hz)	: 50Hz or 60Hz

Ampere Rating (A)															
	300	450	750	800	1000	1200	1300	1600	2250	2500	3200	3650	4400	5000	6400
Short Circuit Current															
Short circuit current for 1sec (kA)**	15	20	25	40	50	50	60	75	120	120	120	120	120	120	120
Peak Short Circuit (kA)	30	40	52.5	84	105	105	132	154	264	264	264	264	264	264	264
Characteristics under normal operation															
Phase resistance (μΩ/m)	333	200	124	73.64	68.6	56.8	52	41.7	27	25	19	18.39	15.48	12.1	9.77
Phase reactance (μΩ/m)	61	42	47	22.98	16.6	13.8	26	30.2	6	12	7	8.29	6.77	3.49	7.5
Phase impedance (μΩ/m)	338.5	204	132.6	77.58	70.57	58.45	58.13	51.48	27.65	27.73	20.25	20.17	16.89	12.59	12.31
Casing resistance (μΩ/m)	72	68	49	31	28	19	19	15.5	14	9.5	9.5	6.3	7	4.75	4.7
Voltage drop for distributed load*(μV/m)/A (for Loading 75% or less) (A)															
CosΦ = 0.8	262.4	160.38	110.32	62.95	56.15	46.52	49.53	44.58	21.82	23.55	16.8	17.05	14.24	10.19	10.66
CosΦ = 0.9	282.25	171.52	114.15	65.95	59.65	49.4	50.21	43.74	23.27	23.95	17.41	17.42	14.58	10.73	10.4
CosΦ = 1.0	288.37	173.2	107.38	63.77	59.4	49.18	45.03	36.11	23.39	21.65	16.45	15.92	13.4	10.47	8.46

*The value of the voltage drop is for distributed load.

For voltage drop in μ V/m multiply the table values by the actual current.

Shown values are line to line voltage drop.

* Value is for 750 A
** Value is for 4400 A

DSLB Busduct Catalogue Numbering System

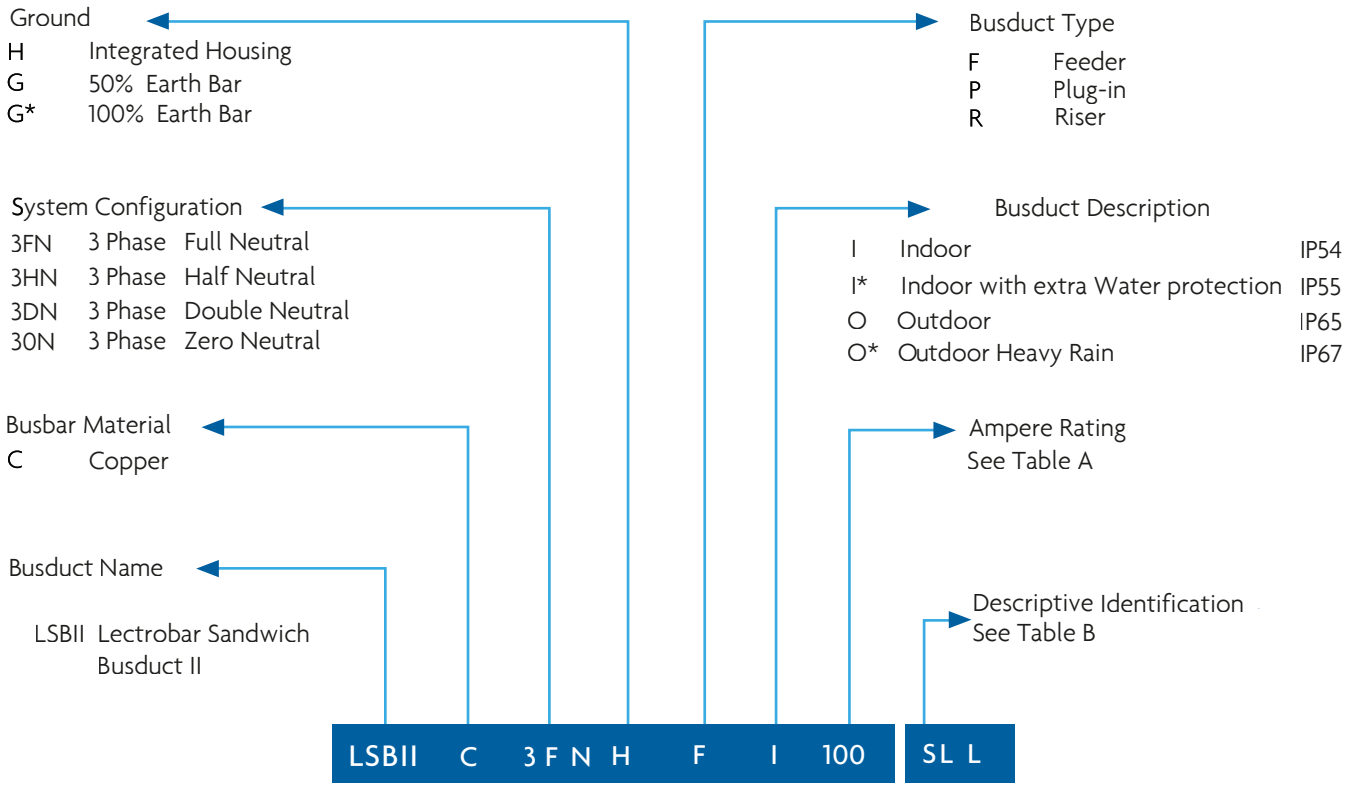


Table A

30	300
45	450
75	750
80	800
100	1000
120	1200
130	1300
160	1600
225	2250
250	2500
320	3200
365	3650
440	4400
500	5000
600	6400

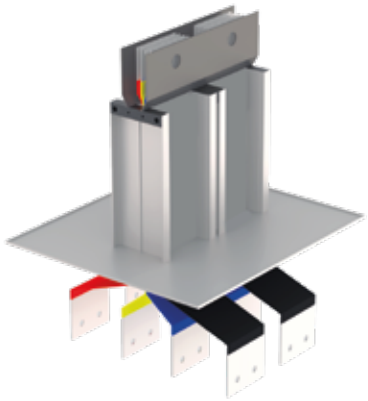
Table B

SL L	Straight Length of L meters
OSL L	Plug-in of L meters
EF XY	Flat Elbow with X,Y Dimentions
EE XY	Edgewise Elbow with X,Y Dimentions
OF XY	Offset Elbow-flat with X,Y Dimentions
OE XZY	Offset Elbow-Edgewise with X,Y,Z Dimentions
COE XZY	Combination Elbow with X,Y,Z Dimentions
CEE XY	Corner Elbow Edgewise with X,Y Dimentions
CEF XY	Corner Elbow Flat with X,Y Dimentions
TE XZY	T-Elbow Edgewise with X,Y,Z Dimentions
TF XZY	T-Elbow Flat with X,Y,Z Dimentions
CE XY	Cross Edgewise with X,Y Dimentions
CF XY	Cross Flat with X,Y Dimentions
TFOT L	Transformer Flange - Oil Type of L meters
TFDT L	Transformer Flange - Dry Type of L meters
SF L	Switchboard Flange of L meters
PR L	Protected Reducer of L meters
EX L	Expansion of L meters
FB L	Feed Box of L meters

LSB Series

Lectro Sandwich Busduct

Copper



300A

450A

700A

800A

1000A

1200A

Lectrobar

OPTIMUM DESIGN

1300A

1600A

Certified DEKRA

KEMA KEUR

2250A

2500A

3200A

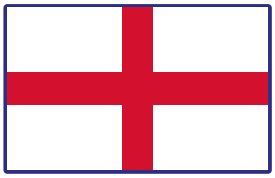
4400A

5000A

6400A

Lectrobar
OPTIMUM DESIGN

International Projects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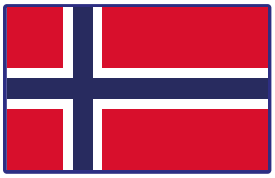
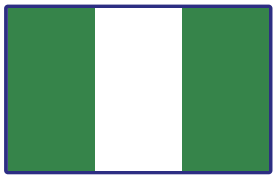
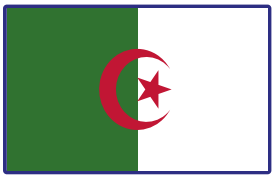
KOREA


NORWAY


U.A.E


KSA


NIGERIA


ALGERIA


IRAQ


OMAN

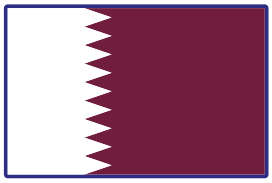

KENYA


TANZANIA


ZAMBIA


CHAD


JORDAN


QATAR


SUDAN


BAHRAIN