



LECTRO Busduct System

[Series LSB PRO / 1000A - 6400A]

Providing Efficient Distribution of Electrical
Power with Minimum Power Loss



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.

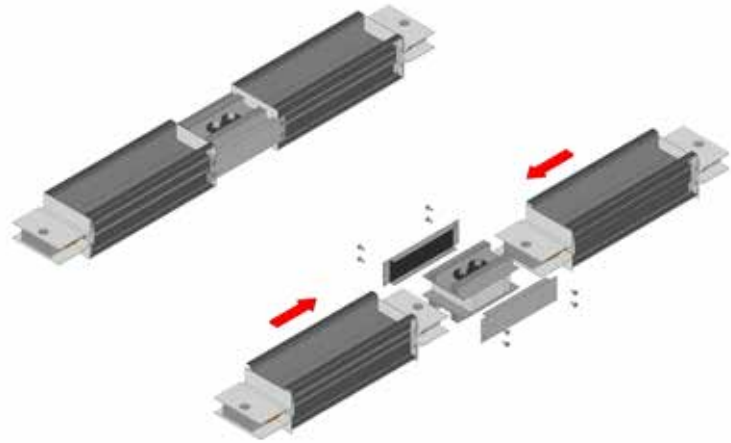
Lectro busduct systems contain high quality components and are trusted for their high safety factor and long life.

Lectro newest range, The «series LSB PRO» busduct provide currents from 1000A 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.



Busducts



Advantages of Busduct Over Cables

» Flexibility:

Reusable, Expandable

» Efficiency:

Cost Savings

» Less space

- 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

- 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

- 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

» Vertical Riser

» Service Entrance and Single Load

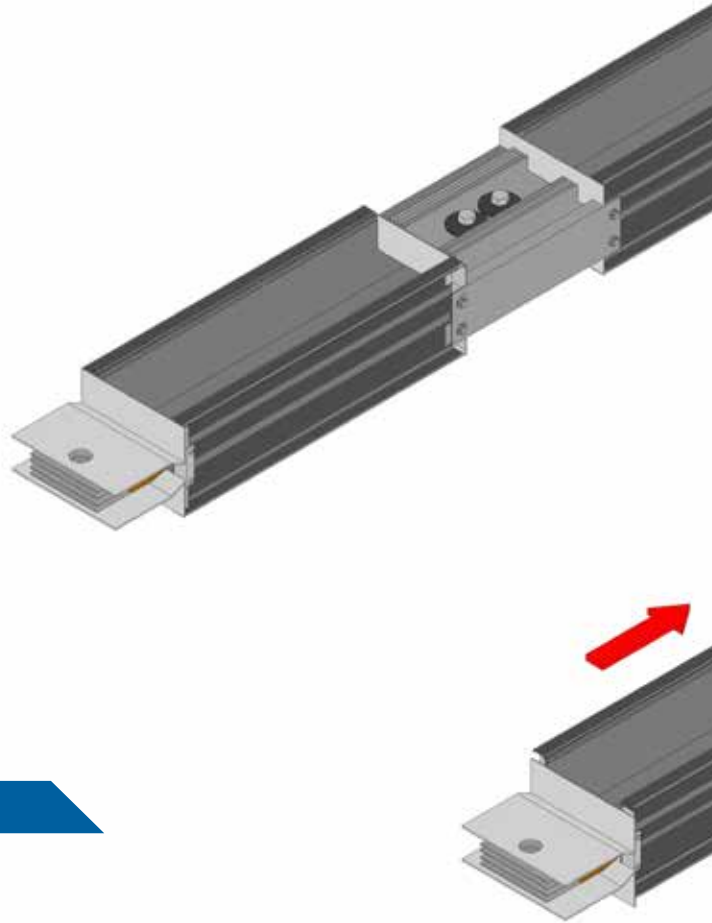
- Feeding multi-loads distributed throughout a building / manufacturing facility is easy and time saving with busducts
- Conveniently placed tap-offs ensure that plugs can be installed and removed safely in no time
- For higher ampere ratings, 'bolted on' tap-offs provide up to 1600A protection at every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

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

- 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

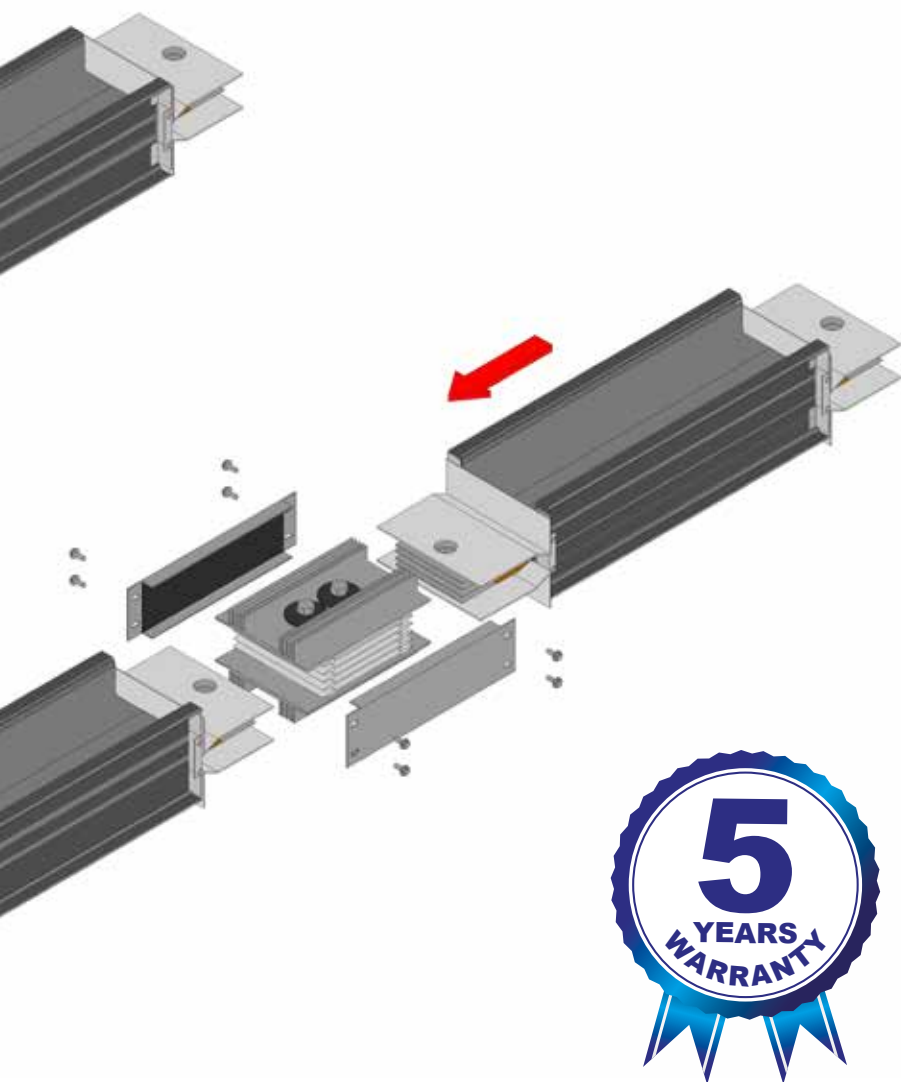
Since 1975, Lectrobar has manufactured thousands of meters of installed busducts. State of the art ISO certified manufacturing facility has their products type tested by DEKRA of Netherlands. Lectrobar busducts are trusted for their high safety factor & long life span.



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  Mark
- Since 1975 in the market

Tin Coated High Purity Copper Bars	True Sandwich for Both Feeder and Plug-in	High Insulation Tested at 2500V for 1 Minute	Grounding and Neutral Flexibility
<ul style="list-style-type: none"> ■ Oxygen free copper ■ High purity: better or equal to %99.99 ■ High conductivity: better than %99.95 ■ Good contact 	<ul style="list-style-type: none"> ■ 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» 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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

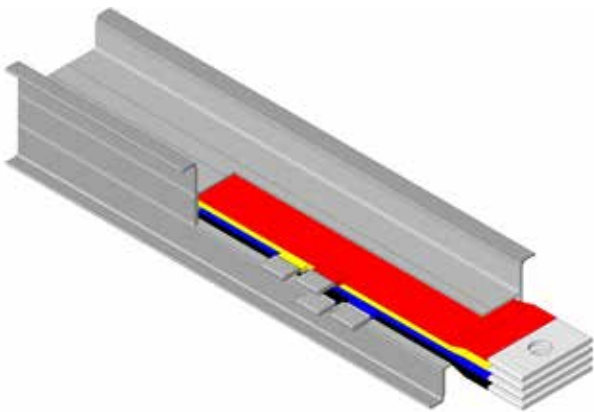
Aluminum Casing	Space Saving Accessories	Transformer Box	Single Window from Design to Delivery
<ul style="list-style-type: none"> ■ Excellent heat dissipation ■ Significant reduction in reactance and magnetic flux leakage ■ Proper ground return path ■ Dust and water protection ■ Special coating for better heat dissipation 	<ul style="list-style-type: none"> ■ Corner elbows, tees, crosses, & reducers etc ■ Maximum Layout flexibility ■ Optimum utilization of space 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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.

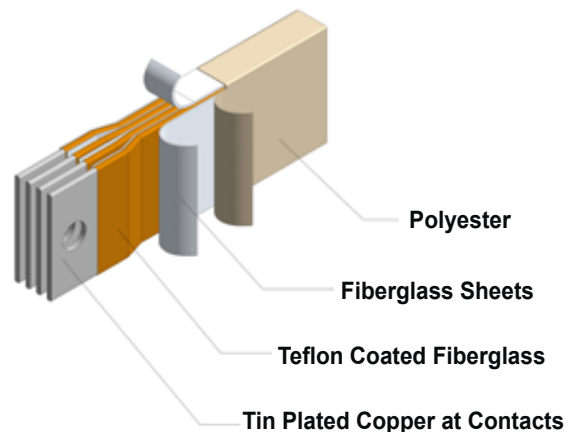
Busbars for plug-in applications, have full size welded conductor tabs. This design extends the contact surfaces outside of the busduct casing and into the plug-in outlet. By this design, true sandwich configuration is maintained throughout the entire busduct length for both feeder and plug-in. This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



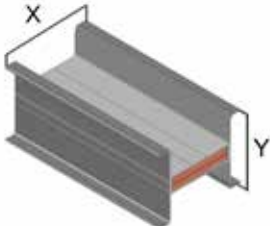
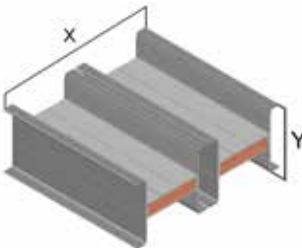
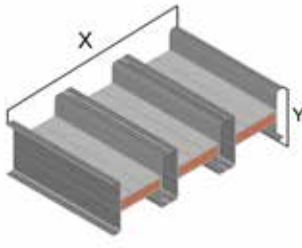
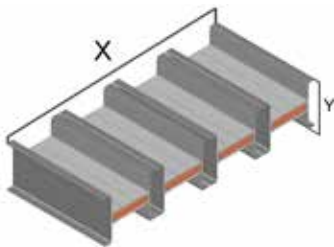
Shown is a section of Lectro busduct insulation consisting of two different insulation materials. Conductors are insulated with Teflon Coated Fiberglass films (10 mil* thickness, 5000 V, 250°C) and layered with Fiberglass sheets. After assembly all the bars are wrapped together with polyester tape. The 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.

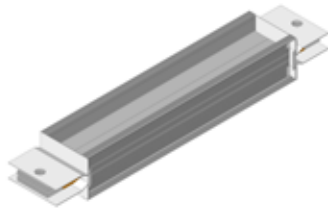
Aluminum casing provides an excellent ground return path. DC resistance /meter of the casing is less than 0.03 milliohm.

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.

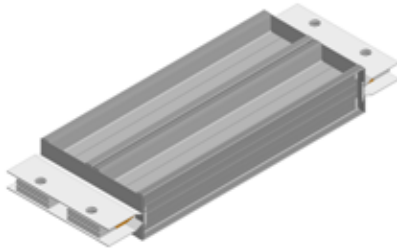
	Ampere Rating (A)	Busducts	X (mm)	Y (mm)	Weight (Kg)
	1000	LSBPROC3FNHFI0100	140	140	13.5
	1300	LSBPROC3FNHFI0130	160	140	15.5
	1600	LSBPROC3FNHFI0160	180	140	25.5
	2000	LSBPROC3FNHFI0200	285	140	27
	2500	LSBPROC3FNHFI0250	325	140	31
	3500	LSBPROC3FNHFI0350	360	140	51
	3100	LSBPROC3FNHFI0310	430	140	40.5
	4000	LSBPROC3FNHFI0400	580	140	54
	5000	LSBPROC3FNHFI0500	655	140	62
	6000	LSBPROC3FNHFI0600	735	140	102

Types of Busducts

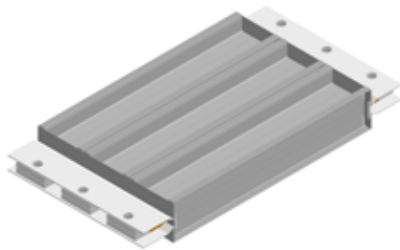
Feeder Busducts



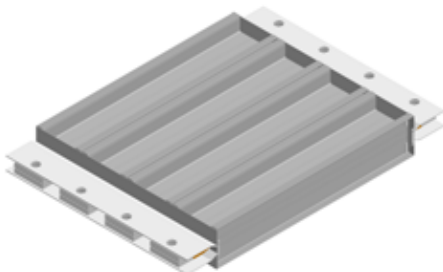
1000 A & 1300 A & 1600 A



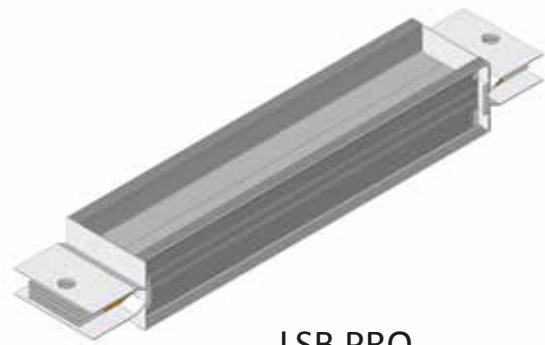
2000 A & 2500 A & 3500 A



3100A



4000 A & 5000 A & 6000 A



LSB PRO

Ampere Rating (A)	Feeder Busducts
1000	LSBPROC3FNHFI0100SL3
1300	LSBPROC3FNHFI0130SL3
1600	LSBPROC3FNHFI0160SL3
2000	LSBPROC3FNHFI0200SL3
2500	LSBPROC3FNHFI0250SL3
3500	LSBPROC3FNHFI0350SL3
3100	LSBPROC3FNHFI0310SL3
4000	LSBPROC3FNHFI0400SL3
5000	LSBPROC3FNHFI0500SL3
6000	LSBPROC3FNHFI0600SL3

Standard length 3000 mm

Types of Busducts

Plug - in Busducts



LSB PRO
Plug - in Busducts



1000 A & 1300 A & 1600 A



2000 A & 2500 A & 3500 A



3100A



4000 A & 5000 A & 6000 A

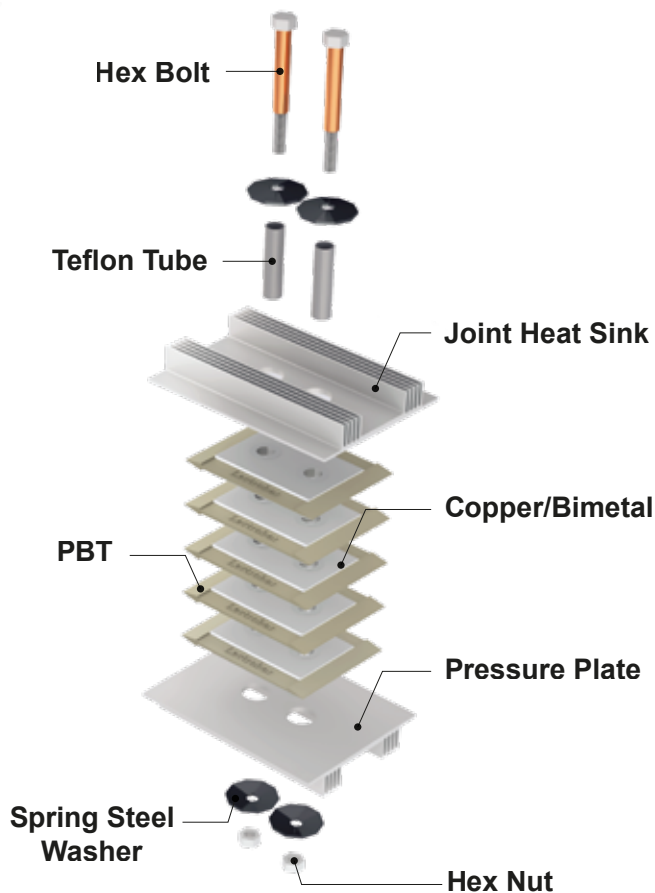
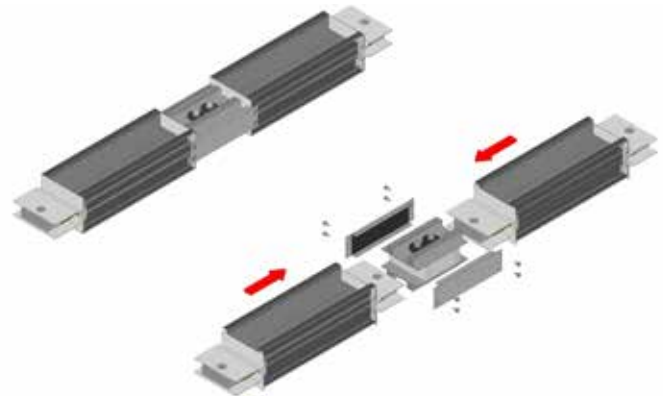
Ampere Rating (A)	Plug-in Busducts
1000	LSBPROC3FNHPI0100SL3
1300	LSBPROC3FNHPI0130SL3
1600	LSBPROC3FNHPI0160SL3
2000	LSBPROC3FNHPI0200SL3
2500	LSBPROC3FNHPI0250SL3
3500	LSBPROC3FNHPI0350SL3
3100	LSBPROC3FNHPI0310SL3
4000	LSBPROC3FNHPI0400SL3
5000	LSBPROC3FNHPI0500SL3
6000	LSBPROC3FNHPI0600SL3

Standard length 3000 mm

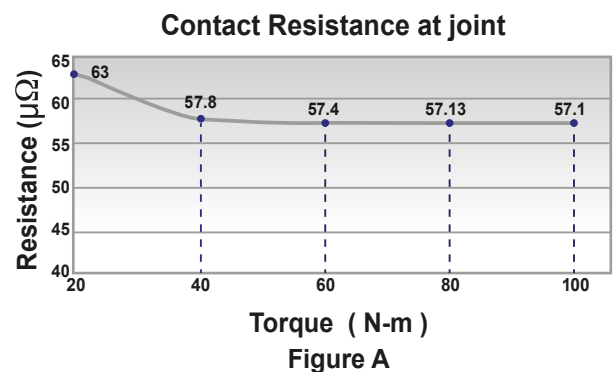
Innovations

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.



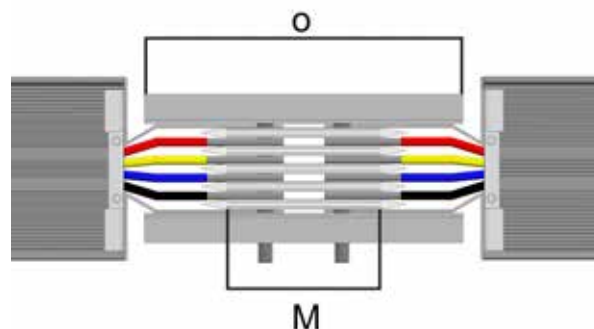
Joint alignment is made by two bolts instead of one bolt in the single bolt design. This design ensures the correct installation of the busduct joint even with non skilled labor. The joint temperature is less than rest of the busduct due to the specially designed heat sinks and contact surface. Figure 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.



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.

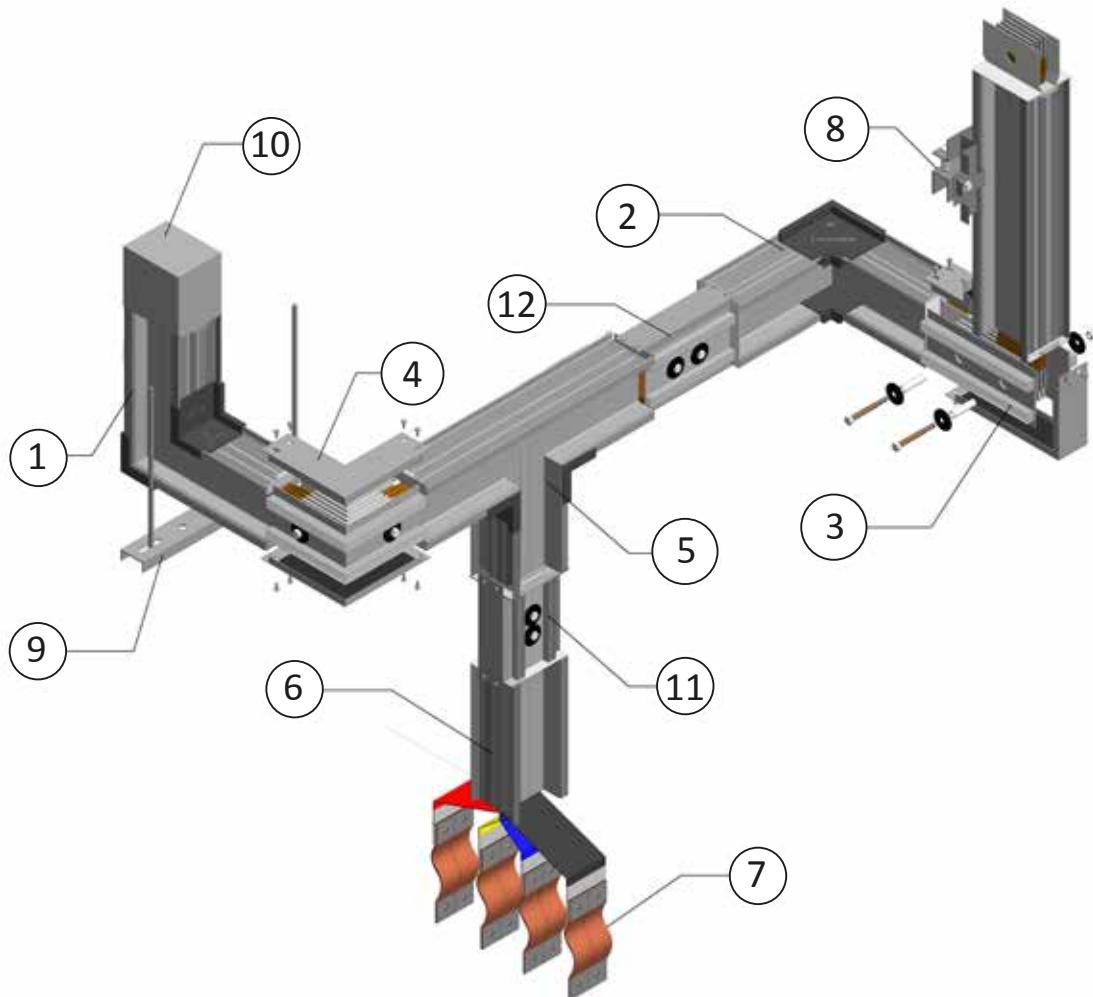


Smart bolts *



* Upon request

Ampere Rating (A)	No	M (in mm)	O (in mm)
1000	1	120	250
1300	1	120	250
1600	1	120	250
2000	2	120	250
2500	2	120	250
3500	2	120	250
3100	3	120	250
4000	4	120	250
5000	4	120	250
6000	4	120	250

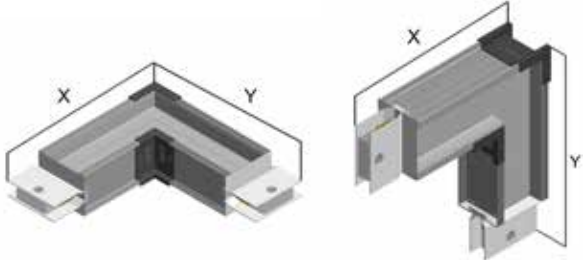
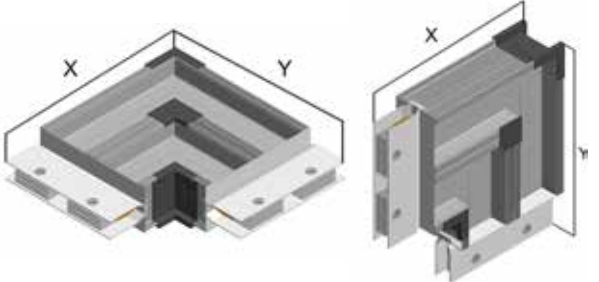
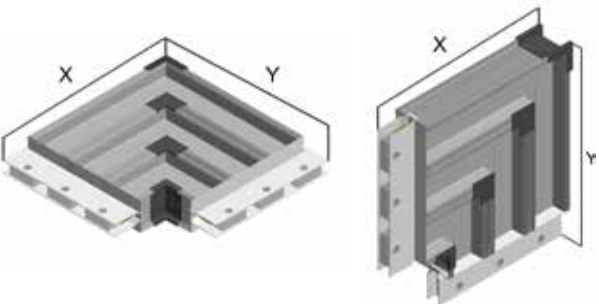
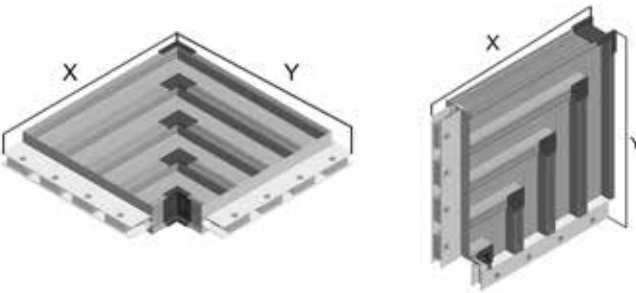


Complete line of 'standard fittings' or 'made to fit' accessories with wide varieties are available to meet every application need.

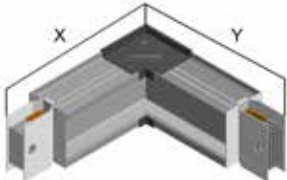
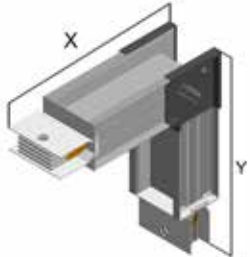
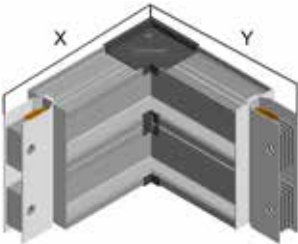
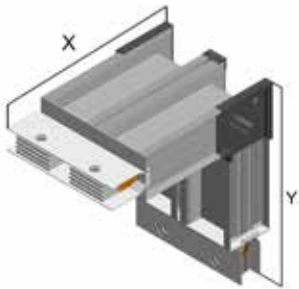
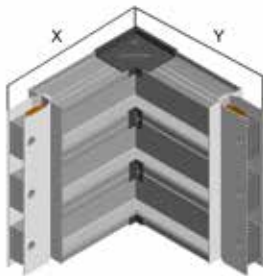
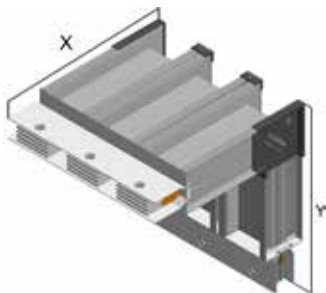
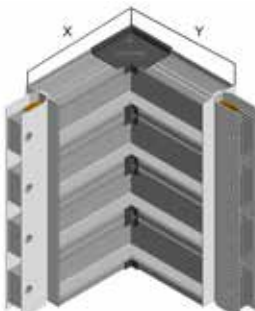
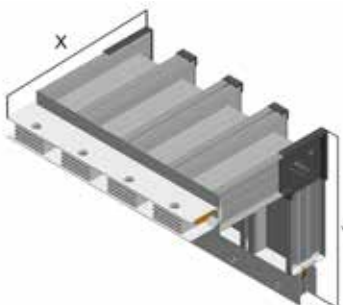
These accessories include :

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

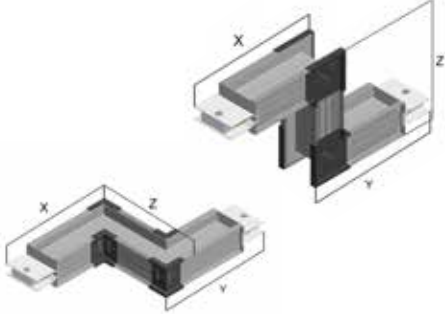
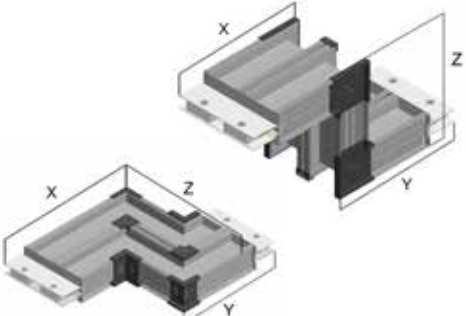
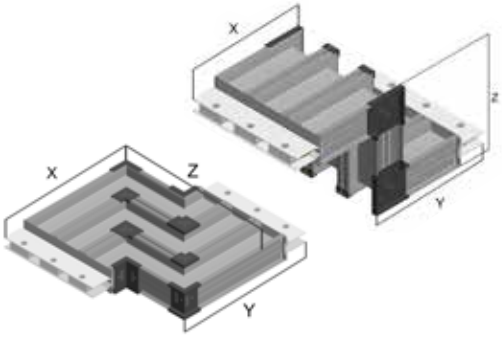
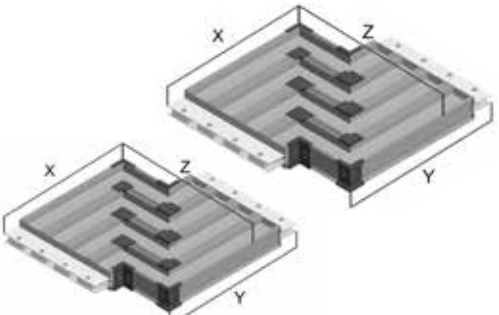
Accessories - Flat Elbow

Ampere Rating (A)	Flat Elbow	Min X,Y (mm)		
1000	LSBPROC3FNHFI100EF	290		
1300	LSBPROC3FNHFI130EF	310		
1600	LSBPROC3FNHFI160EF	330		
2000	LSBPROC3FNHFI200EF	435		
2500	LSBPROC3FNHFI250EF	475		
3500	LSBPROC3FNHFI350EF	510		
3100	LSBPROC3FNHFI310EF	580		
4000	LSBPROC3FNHFI400EF	730		
5000	LSBPROC3FNHFI500EF	805		
6000	LSBPROC3FNHF600EF	885		

Accessories - Edgewise Elbow

Ampere Rating (A)	Edgewise Elbow	Min X,Y (mm)		
1000	LSBPROC3FNHFI100EE	290	 	
1300	LSBPROC3FNHFI130EE	290		
1600	LSBPROC3FNHFI160EE	290		
2000	LSBPROC3FNHFI200EE	290	 	
2500	LSBPROC3FNHFI250EE	290		
3500	LSBPROC3FNHFI350EE	290		
3100	LSBPROC3FNHFI310EE	290	 	
4000	LSBPROC3FNHFI400EE	290		
5000	LSBPROC3FNHFI500EE	290		
6000	LSBPROC3FNHF600EE	290	 	

Accessories - Offset Elbow

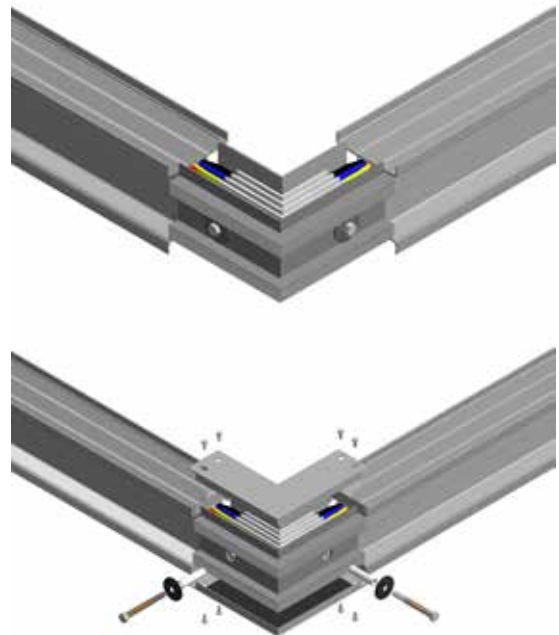
Ampere Rating (A)	Offset Elbow Flat	Min X,Y (mm)	Min Z (mm)	Offset Elbow Edgewise	Min X,Y (mm)	Min Z (mm)
1000	LSBPROC3FNHFI100OF	290	190	LSBPROC3FNHFI100OE	290	330
1250	LSBPROC3FNHFI125OF	330	210	LSBPROC3FNHFI100OE	290	330
1600	LSBPROC3FNHFI160OF	330	210	LSBPROC3FNHFI100OE	290	330
						
2000	LSBPROC3FNHFI200OF	435	365	LSBPROC3FNHFI200OE	290	330
2500	LSBPROC3FNHFI250OF	475	375	LSBPROC3FNHFI250OE	290	330
3500	LSBPROC3FNHFI350OF	415	515	LSBPROC3FNHFI350OE	290	330
						
3100	LSBPROC3FNHFI310OF	580	510	LSBPROC3FNHFI310OE	290	330
						
4000	LSBPROC3FNHFI400OF	730	660	LSBPROC3FNHFI400OE	290	330
5000	LSBPROC3FNHFI500OF	805	755	LSBPROC3FNHFI500OE	290	330
6400	LSBPROC3FNHFI600OF	885	855	LSBPROC3FNHFI600OE	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.

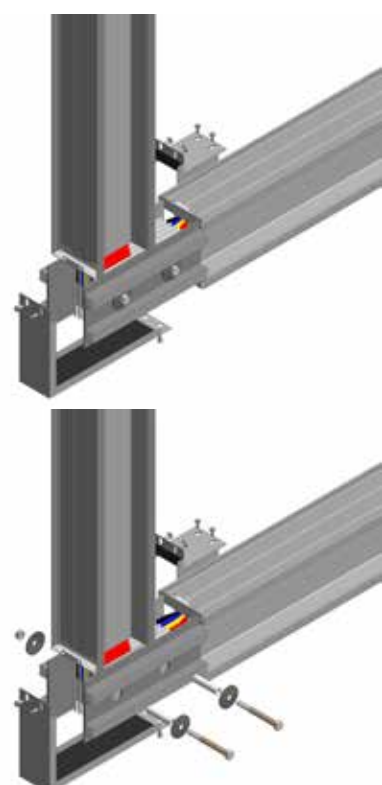
With a minimum leg length of 13 cm for an edgewise elbow, the corner joint elbow can solve any serious path problems and helps to achieve optimum layout with minimal space requirements.

Ampere Rating (A)	Corner Elbow (Edgewise)
1000	LSBPROC3FNHFI0100CEE
1250	LSBPROC3FNHFI0125CEE
1600	LSBPROC3FNHFI0160CEE
2000	LSBPROC3FNHFI0200CEE
2500	LSBPROC3FNHFI0250CEE
3500	LSBPROC3FNHFI0350CEE
3100	LSBPROC3FNHFI0310CEE
4000	LSBPROC3FNHFI0400CEE
5000	LSBPROC3FNHFI0500CEE
6400	LSBPROC3FNHFI0640CEE



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)
1000	LSBPROC3FNHFI0100CEF
1250	LSBPROC3FNHFI0125CEF
1600	LSBPROC3FNHFI0160CEF
2000	LSBPROC3FNHFI0200CEF
2500	LSBPROC3FNHFI0250CEF
3500	LSBPROC3FNHFI0350CEF
3100	LSBPROC3FNHFI0310CEF
4000	LSBPROC3FNHFI0400CEF
5000	LSBPROC3FNHFI0500CEF
6400	LSBPROC3FNHFI0640CEF



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

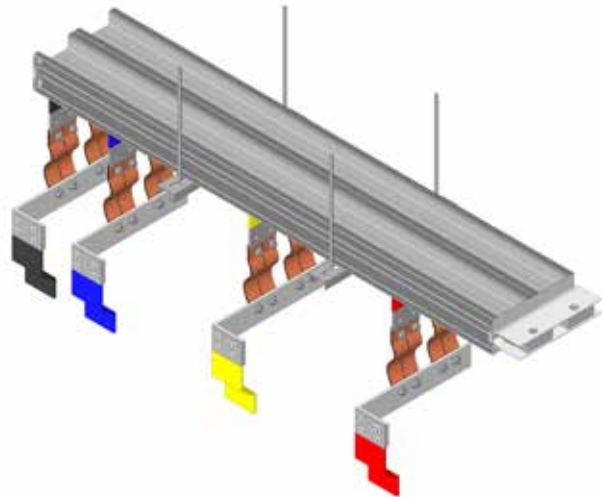
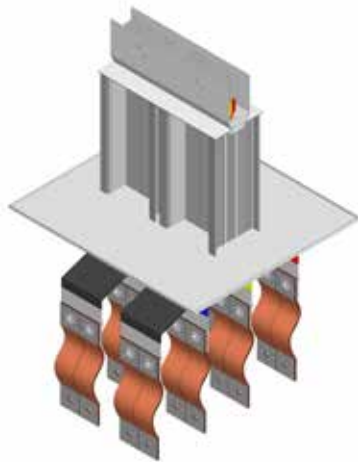


Edgewise



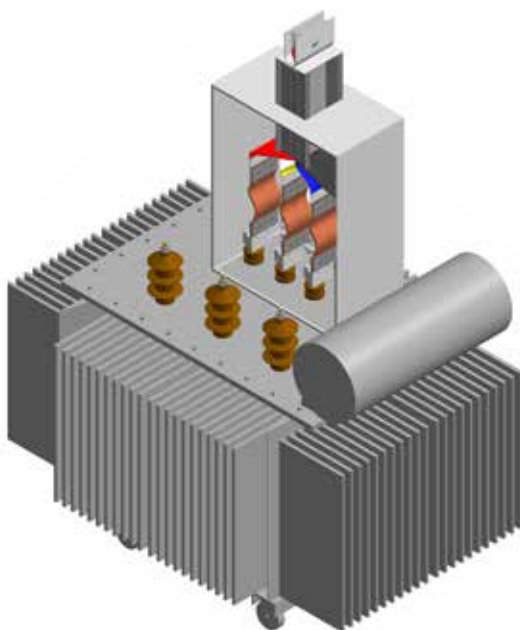
Ampere Rating (A)	T-Elbow Edgewise	T-Elbow Flat	Cross Edgewise	Cross Flat
1000	LSBPROC3FNHFI0100TE	LSBPROC3FNHFI0100TF	LSBPROC3FNHFI0100CE	LSBPROC3FNHFI0100CF
1250	LSBPROC3FNHFI0125TE	LSBPROC3FNHFI0125TF	LSBPROC3FNHFI0125CE	LSBPROC3FNHFI0125CF
1600	LSBPROC3FNHFI0160TE	LSBPROC3FNHFI0160TF	LSBPROC3FNHFI0160CE	LSBPROC3FNHFI0160CF
2000	LSBPROC3FNHFI0200TE	LSBPROC3FNHFI0200TF	LSBPROC3FNHFI0200CE	LSBPROC3FNHFI0200CF
2500	LSBPROC3FNHFI0250TE	LSBPROC3FNHFI0250TF	LSBPROC3FNHFI0250CE	LSBPROC3FNHFI0250CF
3500	LSBPROC3FNHFI0350TE	LSBPROC3FNHFI0350TF	LSBPROC3FNHFI0350CE	LSBPROC3FNHFI0350CF
3100	LSBPROC3FNHFI0310TE	LSBPROC3FNHFI0310TF	LSBPROC3FNHFI0310CE	LSBPROC3FNHFI0310CF
4000	LSBPROC3FNHFI0400TE	LSBPROC3FNHFI0400TF	LSBPROC3FNHFI0400CE	LSBPROC3FNHFI0400CF
5000	LSBPROC3FNHFI0500TE	LSBPROC3FNHFI0500TF	LSBPROC3FNHFI0500CE	LSBPROC3FNHFI0500CF
6400	LSBPROC3FNHFI0640TE	LSBPROC3FNHFI0640TF	LSBPROC3FNHFI0640CE	LSBPROC3FNHFI0640CF

Accessories - Transformer Connection

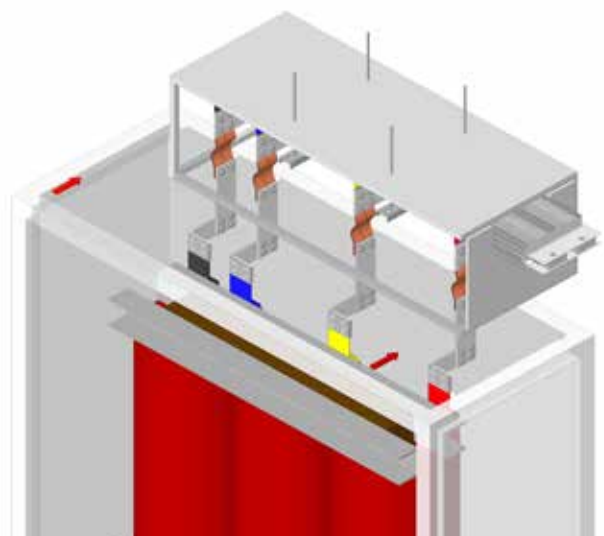


Transformer Box

The transformer connection is equipped with the necessary flexible joints and is totally enclosed in an IP54/55 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

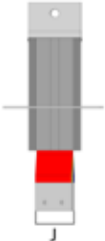
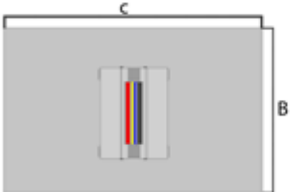
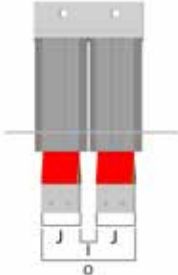
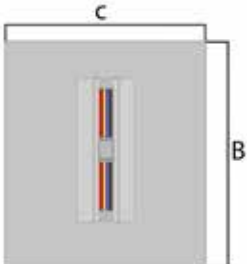
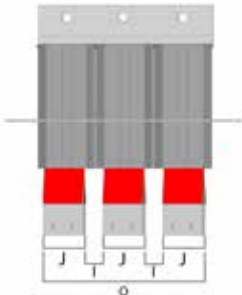
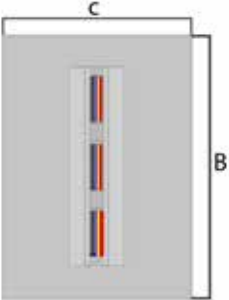
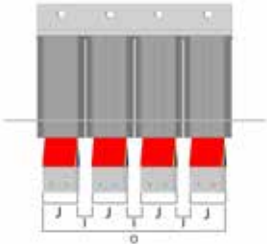
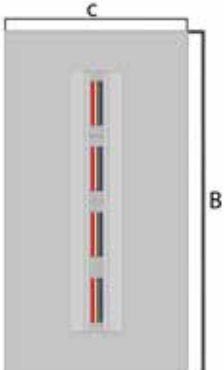
Transformer & Switchboard Flanges

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.

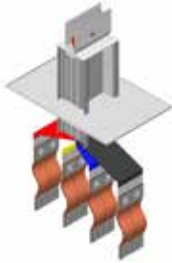
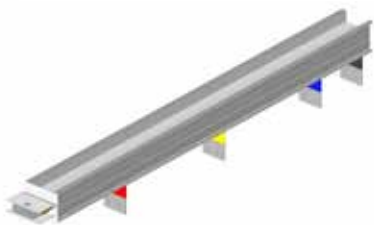
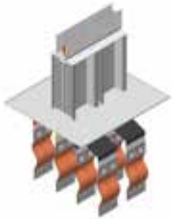

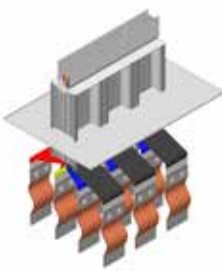

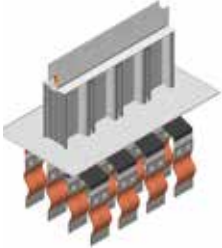



Transformer Flange Oil Type		Transformer Flange Dry Type		Flange End	
Ampere Rating (A)	Oil Type	Ampere Rating (A)	Dry Type	Ampere Rating (A)	Flange End
1000	LSBPROC3FNHFI0100 TFOT	1000	LSBPROC3FNHFI0100 TFDT	1000	LSBPROC3FNHFI0100 FE
1250	LSBPROC3FNHFI0125 TFOT	1250	LSBPROC3FNHFI0125 TFDT	1250	LSBPROC3FNHFI0125 FE
1600	LSBPROC3FNHFI0160 TFOT	1600	LSBPROC3FNHFI0160 TFDT	1600	LSBPROC3FNHFI0160 FE
2000	LSBPROC3FNHFI0200 TFOT	2000	LSBPROC3FNHFI0200 TFDT	2000	LSBPROC3FNHFI0200 FE
2500	LSBPROC3FNHFI0250 TFOT	2500	LSBPROC3FNHFI0250 TFDT	2500	LSBPROC3FNHFI0250 FE
3500	LSBPROC3FNHFI0350 TFOT	3500	LSBPROC3FNHFI0350 TFDT	3500	LSBPROC3FNHFI0350 FE
3100	LSBPROC3FNHFI0310 TFOT	3100	LSBPROC3FNHFI0310 TFDT	3100	LSBPROC3FNHFI0310 FE
4000	LSBPROC3FNHFI0400 TFOT	4000	LSBPROC3FNHFI0400 TFDT	4000	LSBPROC3FNHFI0400 FE
5000	LSBPROC3FNHFI0500 TFOT	5000	LSBPROC3FNHFI0500 TFDT	5000	LSBPROC3FNHFI0500 FE
6400	LSBPROC3FNHFI0640 TFOT	6400	LSBPROC3FNHFI0640 TFDT	6400	LSBPROC3FNHFI0640 FE

Flange End

Dimensions in mm						Flange	Panel Collar
Ampere (A)	B	C	D	I	J		
1000A	300	470	-	-	80		
1250A	350	470	-	-	100		
1600A	350	470	-	-	120		
2000A	470	470	225	65	80		
2500A	470	470	265	65	100		
3500A	550	470	305	65	120		
3100A	550	470	370	65	80		
4000A	800	470	515	65	80		
5000A	800	470	595	65	100		
6400A	900	470	675	65	120		

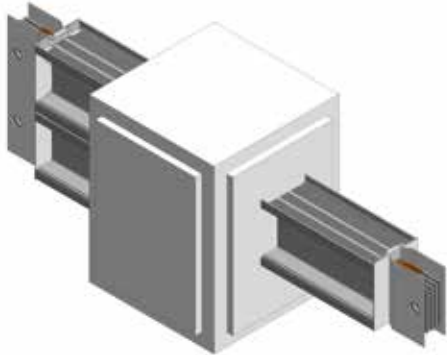
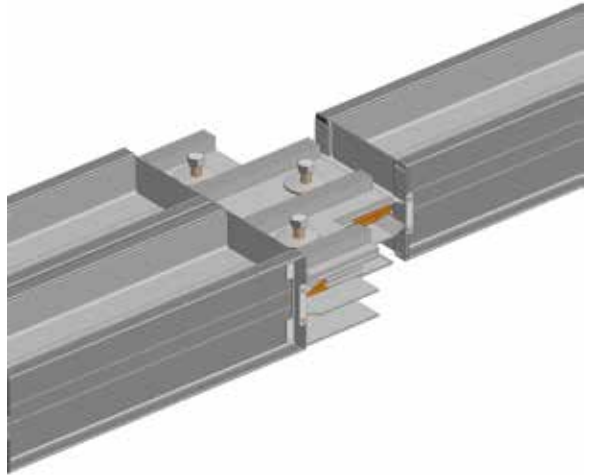
Accessories - Transformer Connection

Ampere Rating (A)	Oil Type	Dry Type	Oil Type	Dry Type
1000	LSBPROC3FNHFI100TFOT	LSBPROC3FNHFI100TFDT		
1250	LSBPROC3FNHFI125TFOT	LSBPROC3FNHFI125TFDT		
1600	LSBPROC3FNHFI160TFOT	LSBPROC3FNHFI160TFDT		
2000	LSBPROC3FNHFI200TFOT	LSBPROC3FNHFI200TFDT		
2500	LSBPROC3FNHFI250TFOT	LSBPROC3FNHFI250TFDT		
3500	LSBPROC3FNHFI350TFOT	LSBPROC3FNHFI350TFDT		
3100	LSBPROC3FNHFI310TFOT	LSBPROC3FNHFI310TFDT		
4000	LSBPROC3FNHFI400TFOT	LSBPROC3FNHFI400TFDT		
5000	LSBPROC3FNHFI500TFOT	LSBPROC3FNHFI500TFDT		
6400	LSBPROC3FNHFI640TFOT	LSBPROC3FNHFI640TFDT		

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.



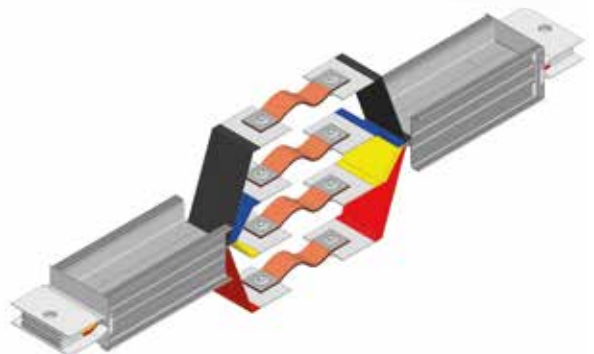
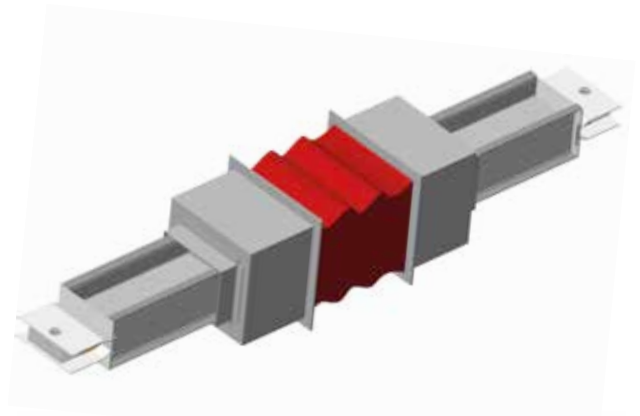
■ Protected Reducers

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

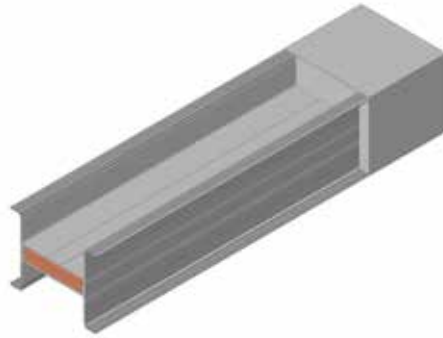
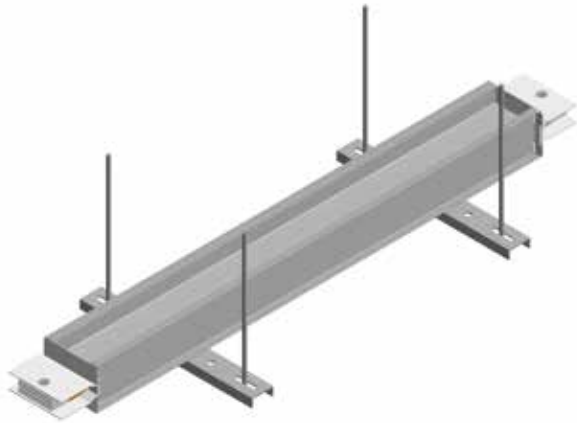
Lectro busduct is designed to expand as a load is applied and the temperature of the busbar increases. If the installation can accept this movement, then no expansion coupling is required. Generally, horizontal runs do not require expansion lengths. However, if both ends of the busduct are fixed, normal 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 truncing body and identified by means of a label attached to the side of the expansion length box.



Accessories

■ End Closure

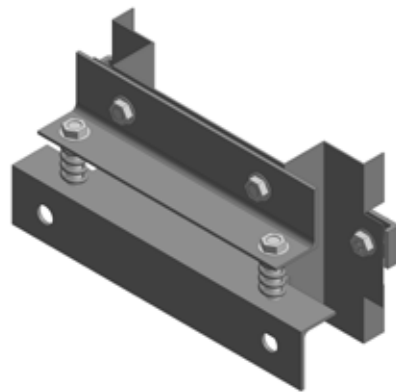
End closures terminate a busduct run and can be used to close right or left ends. It is constructed from thick Fiberglass sheets laid between the busduct bars.



■ Fixation and Hangers

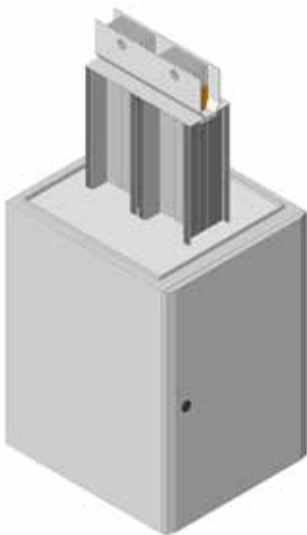
Horizontal Hangers

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



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.



■ 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

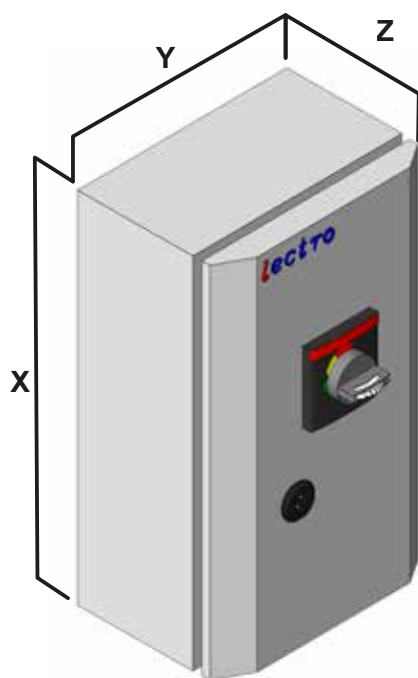
To ensure that the tap-off plugs are seated onto the busduct, the box is equipped with a clamping mechanism.

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 Voltage (V)	: 1000V
Rated Operation Voltage (V)	: up to 1000V
Rated Impulse Voltage (kV)	: 8kV
Frequency (Hz)	: 50Hz or 60Hz

Ampere Rating (A)										
	1000	1300	1600	2000	2500	3100	3500	4000	5000	6000
Short Circuit Current										
Short circuit current for 1sec (kA)**	50	50	70	85	100	100	100	100	100	100
Peak Short Circuit (kA)	105	105	154	187.00	220	220	220	220	220	220
Characteristics under normal operation										
Phase resistance ($\mu\Omega/m$)	73.64	60.13	41.7	37.52	25	26.12	19.14	19.7	12.5	9.77
Phase reactance ($\mu\Omega/m$)	22.98	28.6	30.2	4.82	6	7.85	8.98	6.17	5	7.5
Phase impedance ($\mu\Omega/m$)	77.14	66.58	51.48	37.82	25.70	27.27	21.14	20.64	13.46	12.31
Casing resistance ($\mu\Omega/m$)	31.00	19.00	15.50	15.50	14.00	10.33	7.75	7.00	7.00	4.70
Voltage drop for distributed load*($\mu V/m$)/A										
Cos Φ = 0.8	62.95	56.51	44.58	28.49	20.43	22.17	17.92	16.85	11.25	10.66
Cos Φ = 0.9	65.95	57.51	43.74	31.03	21.71	23.28	18.26	17.65	11.60	10.40
Cos Φ = 1.0	63.77	52.07	36.11	32.49	21.65	22.61	16.57	17.06	10.82	8.46
Voltage drop for distributed load*($\mu V/m$)/A (full load current) (B)										
Cos Φ = 0.8	62.95									
Cos Φ = 0.9	65.95									
Cos Φ = 1.0	63.77									

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

For voltage drop in $\mu V/m$ multiply the table values by the actual current.

Shown values are line to line voltage drop.

* From 2500 A to 6000 A tested at 85 kA**

Note: for current loading between 75% & full load take voltage drop average of both values (A+B)/2

DSLB Busduct Catalogue Numbering System

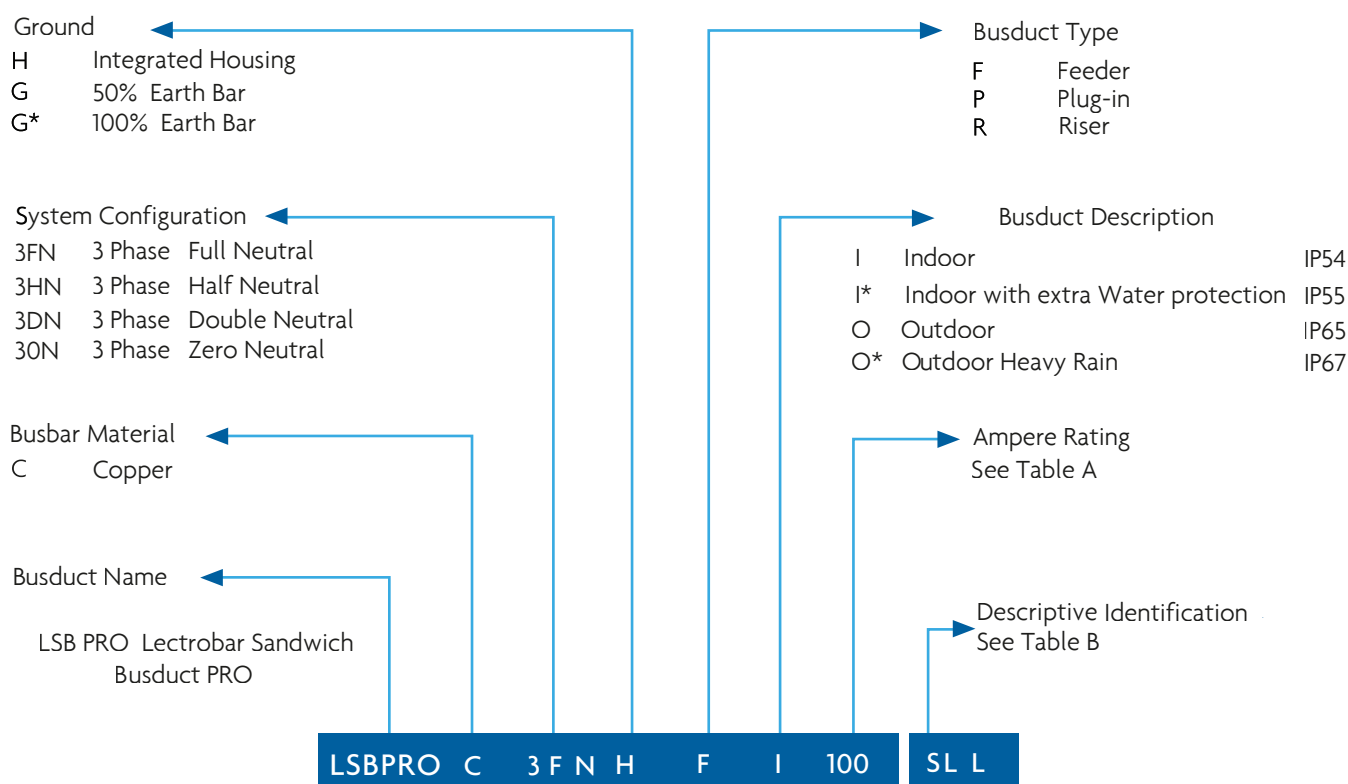


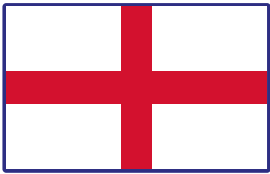
Table A

100	1000
130	1250
160	1600
200	2000
250	2500
310	3100
350	3500
310	3100
400	4000
500	5000
600	6000

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
FE L	Flange End of L meters
PR L	Protected Reducer of L meters
EX L	Expansion of L meters
FB L	Feed Box of L meters

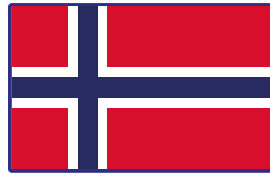
International Projects



ENGLAND



KOREA



NORWAY



U.A.E



KSA



NIGERIA



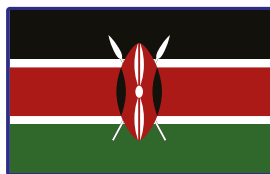
ALGERIA



IRAQ



OMAN



KENYA



TANZANIA



ZAMBIA



CHAD



JORDAN



QATAR



SUDAN



BAHRAIN

