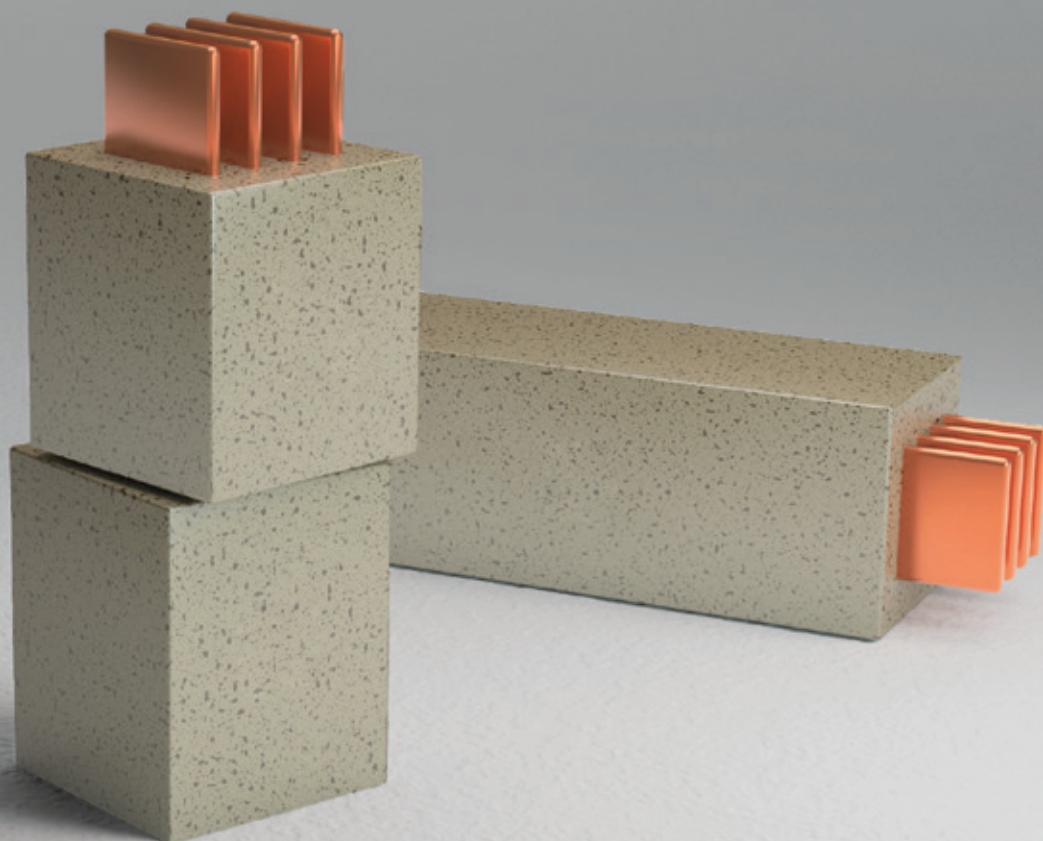




# E-LINECR

Busbar Systems 630A...6300A



**E-LINECR**





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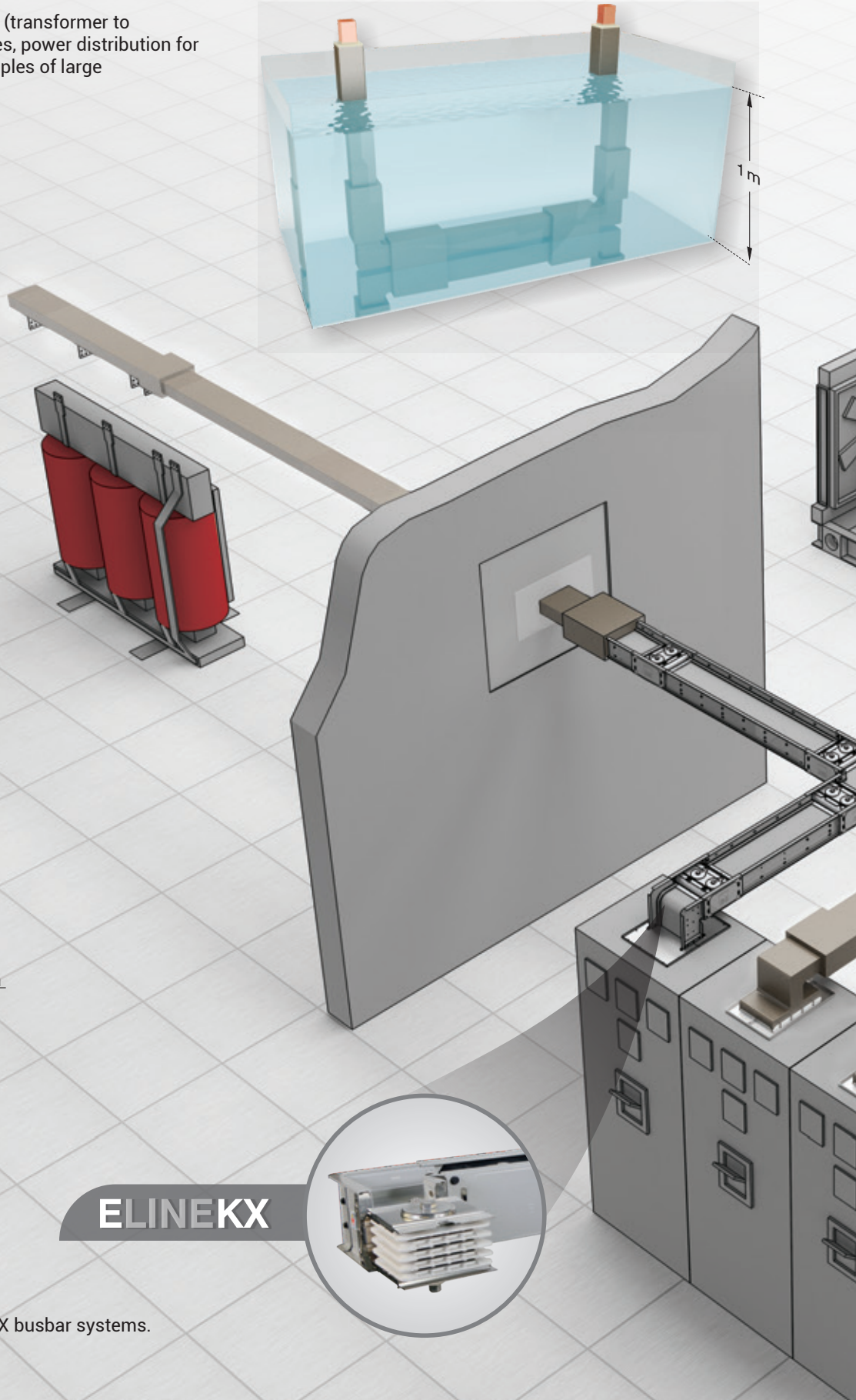
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# E-LINECR

## ►► Introduction

Traditionally, carrying high currents (transformer to switchboards, main distribution lines, power distribution for factories) was achieved using multiples of large cross-section cables in parallel.



### Advantages of a Cast Resin System

- IEC 61439-6 standard approved
- Protection degree IP68
- Protects against corrosion
- Protects against chemicals
- Resist insects and rodents
- Suitable for tropical climates
- High mechanical strength
- Protects against chimney effects
- High short circuit withstand
- Resistant to fire propagation
- Electrical continuity during fire.
- Suitable to connect with E-Line KX busbar systems.

**ELINEKX**

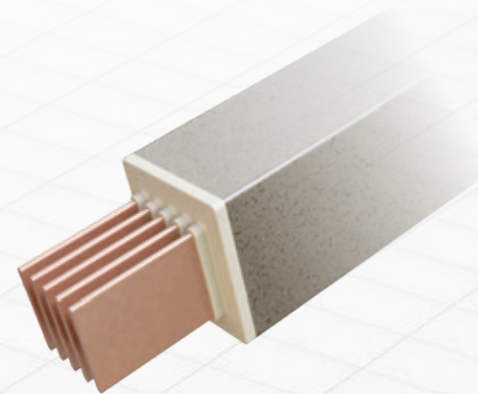
\*Special components can be manufactured quickly.

### High IP Rating

The body of the E-Line CR busbar is formed using DURACOMP a composite material of epoxy resin and pure silica, which gives protection against external elements as listed above.

### Effective Heat Dissipation

The cast resin body gives a very effective heat dissipation characteristic (Diagram 1).



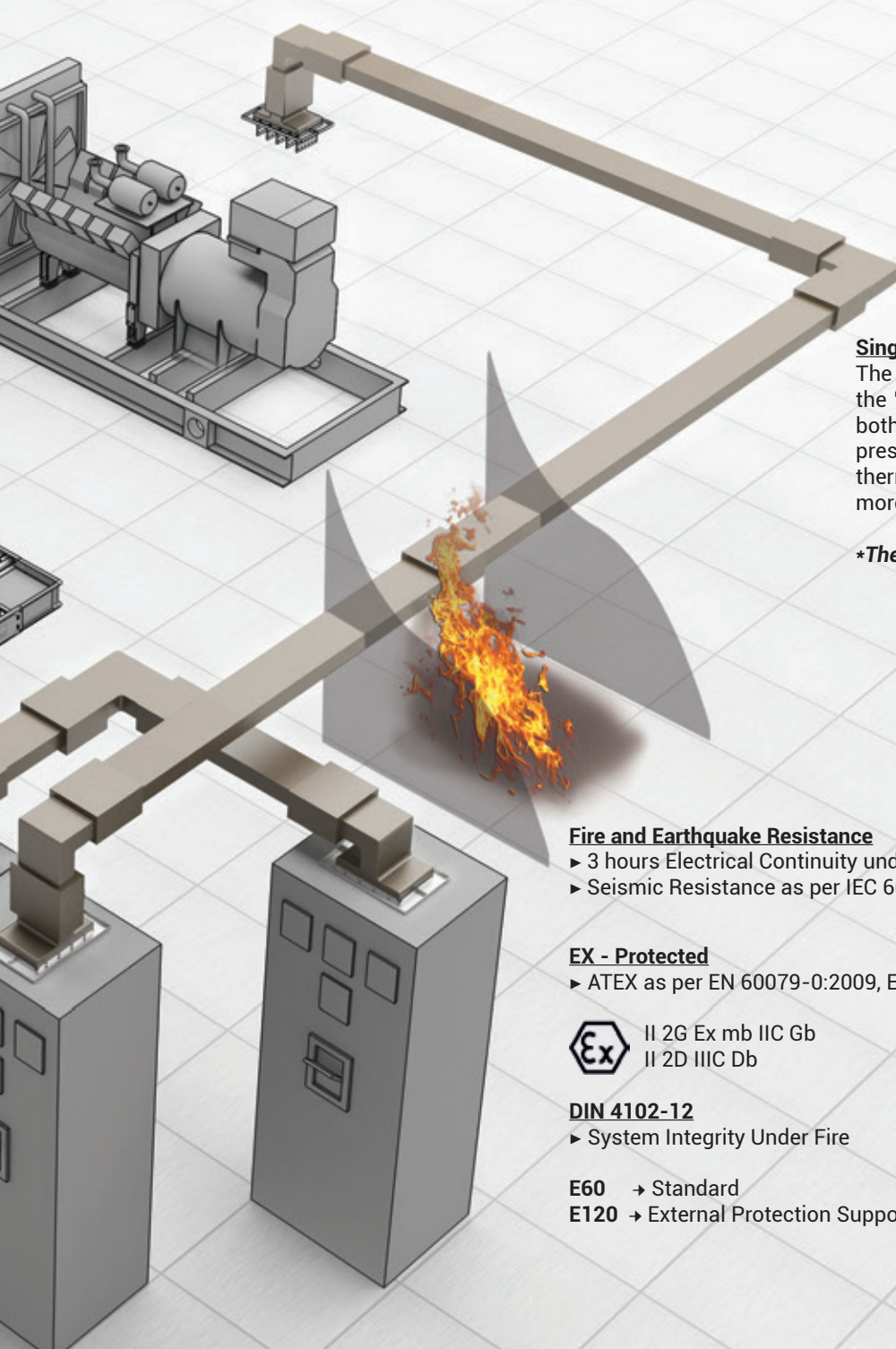
### Short Circuit Withstand

The structure of the E-Line CR has a high mechanical strength, a very high short circuit withstand characteristic, and extreme external thermal resistance.

### Single Bolt Joint

The E-Line CR busbar is installed by tightening the 'single bolt joint. Belleville spring washers on both ends of the bolt maintain the original contact pressure under all kinds of conditions eg the thermal contraction of the bolt, thus ensuring a more secure, reliable and maintenance free joint.

*\*The bolt is tightened to 83Nm (60 lbf)*



### Fire and Earthquake Resistance

- ▶ 3 hours Electrical Continuity under Fire as per IEC 60331-1
- ▶ Seismic Resistance as per IEC 60068-3-3 / 60068-2-57 and IEEE 693.

### EX - Protected

- ▶ ATEX as per EN 60079-0:2009, EN 60079-18:2009, EN60079-31:2009



II 2G Ex mb IIC Gb  
II 2D IIIC Db

### DIN 4102-12

- ▶ System Integrity Under Fire

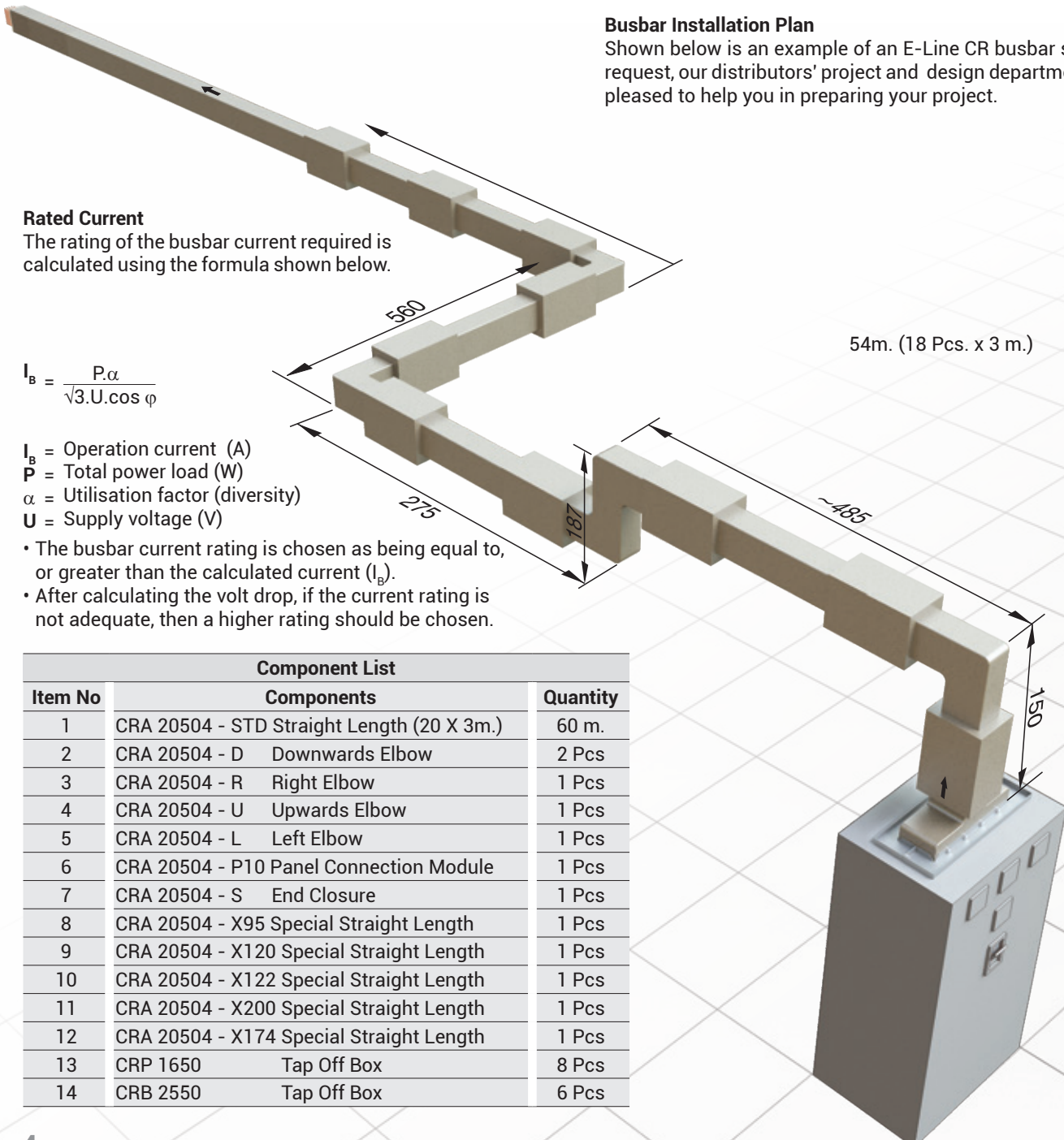
E60 → Standard

E120 → External Protection Support

**When using the E-Line CR to create an electrical distribution system, the following criteria should be taken into consideration.**

- The Power of the load to be connected to the system and their locations.
- Utilisation factor (diversity) assay,
- Power and short circuit currents of transformers, System coordination with other distribution systems (heat, steam, water, etc.),
- Determining a route of the E-Line CR on layout of the designed system,
- Determination of the types of supports according to plan,
- If necessary, the system can be integrated with E-Line KX busbar system.

Sample Project Design (For Horizontal Application)



### Rated Current

The rating of the busbar current required is calculated using the formula shown below.

$$I_B = \frac{P \cdot \alpha}{\sqrt{3} \cdot U \cdot \cos \varphi}$$

- $I_B$  = Operation current (A)
- $P$  = Total power load (W)
- $\alpha$  = Utilisation factor (diversity)
- $U$  = Supply voltage (V)

- The busbar current rating is chosen as being equal to, or greater than the calculated current ( $I_B$ ).
- After calculating the volt drop, if the current rating is not adequate, then a higher rating should be chosen.

Component List		
Item No	Components	Quantity
1	CRA 20504 - STD Straight Length (20 X 3m.)	60 m.
2	CRA 20504 - D Downwards Elbow	2 Pcs
3	CRA 20504 - R Right Elbow	1 Pcs
4	CRA 20504 - U Upwards Elbow	1 Pcs
5	CRA 20504 - L Left Elbow	1 Pcs
6	CRA 20504 - P10 Panel Connection Module	1 Pcs
7	CRA 20504 - S End Closure	1 Pcs
8	CRA 20504 - X95 Special Straight Length	1 Pcs
9	CRA 20504 - X120 Special Straight Length	1 Pcs
10	CRA 20504 - X122 Special Straight Length	1 Pcs
11	CRA 20504 - X200 Special Straight Length	1 Pcs
12	CRA 20504 - X174 Special Straight Length	1 Pcs
13	CRP 1650 Tap Off Box	8 Pcs
14	CRB 2550 Tap Off Box	6 Pcs

### Utilisation Factor (Diversity)

The utilisation factor ( $\alpha$ ) depends on the type and number of loads. Most are 0.7 or less. Intense Lighting and Motor Fed Lines "0,6" is quite difficult to rise above. Even at automobile welding plants it could fall down to "0,30". With only one single and large load can it go up to "1".

### Voltage Drop

All the required values for voltage Drop Calculations, formulas, basic calculations for simple cases the tables are given on pages 6-9. Further support can be obtained from our Design Department.

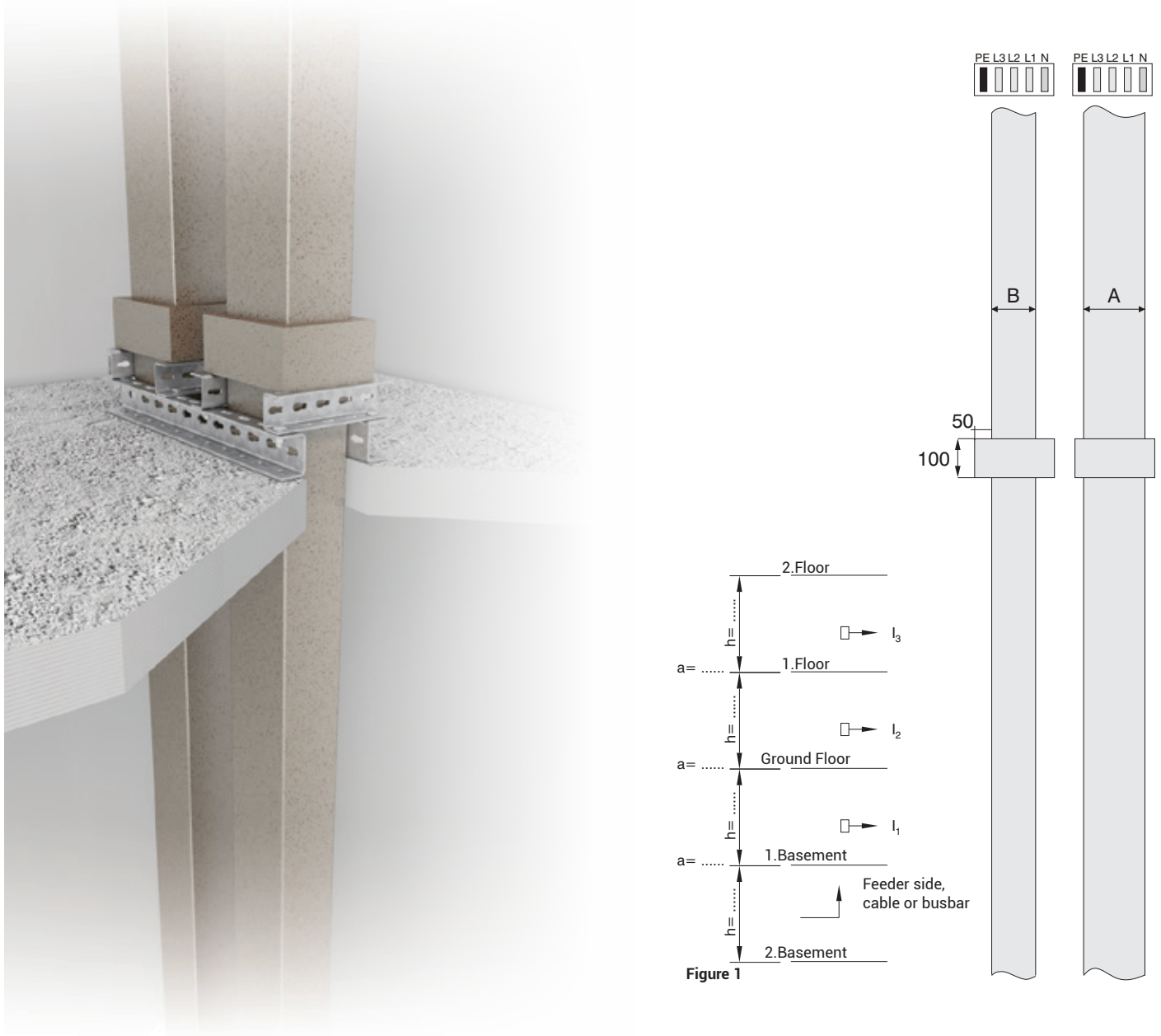
### Short Circuit Values

Short circuit test values are given on the tables on pages 7 and 8. The short circuit values high-light the high short circuit withstand characteristic of the E-Line CR.

### Busbar Installation Plan

Shown below is an example of an E-Line CR busbar system. On request, our distributors' project and design departments will be pleased to help you in preparing your project.

As each building's structure is different, each of the **E-Line CR** projects has to be specially designed. The details on this page briefly explain the information necessary for designing the vertical installation project.



### Pre-Project Design and cost Analysis

Before design and cost analysis can be made, please submit the following information to our Design Department.

Please refer to table on page 11 for "A" size.

- Location and Dimensions of the floor penetration where the busbar line will be installed.
- Floor height and Floor thickness ( $h=...$   $a=...$ )
- Vertical line feeding method (by busbar or by cable)

By supplying the above information of the dimensions on a drawing similar to the example in Figure 1 and by faxing or emailing it to us we will be able to produce a quotation.

**⚠** In multipath busbars in high-rise vertical shaft applications; Due to floor heights, floor thickness and product tolerances, the window or additional point alignments on the upper floors may not be the same. In order for the Tap off boxes to be aligned and the joint point not to coincide with the floor transitions, the assembly should be continued by making measurements on each floor.

■ EAE is not responsible for the potential risks that may occur in cases where the products in our catalogue are used outside of the standard phase sequences as shown in the catalogue.

Number of Conductors	B (mm)
3 Conductors	82
4 Conductors	100
4 ½ Conductors	118
5 Conductors	118
6 Conductors	136

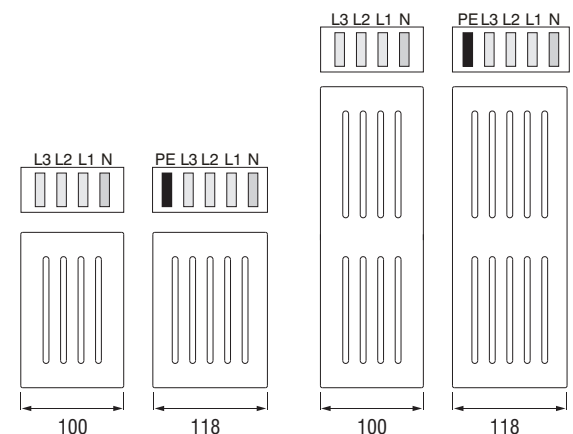
### Aluminium Conductor (Al)

Rated Current	$I_r$	A	630	800	1000	1250	1600	2000	2500
Busbar Code			06	08	10	12	16	20	25
Standards	IEC 61439-6:2012 Ed.1 ; IEC 61439-1 Ed.2:2011, TS EN 61439-1: 2011								
Rated Isolation Voltage	$U_i$	V	1000						
Rated Operational Voltage	$U_e$	V	1000						
Rated Impulse Withstand Voltage	$U_{imp}$	kV	12						
Rated Frequency	f	Hz	50						
Pollution Degree	III								
Protection Degree	IP 68								
External Mechanical Impacts (IK Code)*	50J, greater than IK10								
Protection for Safety	Basic Protection (HD 60364-4-41, Clause A1)								
Rated Short-time Withstand Current (1s)	$I_{cw}$	$kA_{rms}$	20	28	40	55	70	70	70
Rated Peak Withstand Current	$I_{pk}$	kA	40	58,8	84	121	154	154	154
Rated Short-time Withstand Current for Neutral Conductor (1s)	$I_{cw}$	kA	12	16,8	24	33	42	42	42
Rated Peak Withstand Current for Neutral Conductor	$I_{pk}$	kA	24	33,6	50,4	72,6	92,4	88,2	88,2
Rated Short-time Withstand Current for PE Conductor (1s)	$I_{cw}$	kA	12	16,8	24	33	42	42	42
Rated Peak Withstand Current for PE Conductor	$I_{pk}$	kA	24	33,6	50,4	72,6	88,2	92,4	88,2
<b>MEAN PHASE CONDUCTOR CHARACTERISTICS AT RATED CURRENT <math>I_n</math></b>									
Resistance at a conductor temperature of 20 °C	$R_{20}$	mΩ/m	0,125	0,090	0,061	0,045	0,030	0,024	0,020
Resistance at an ambient air temperature of 35 °C	R	mΩ/m	0,161	0,117	0,079	0,057	0,039	0,032	0,026
Reactance (Independent from Temperature)	X	mΩ/m	0,068	0,057	0,044	0,034	0,027	0,022	0,019
Positive and negative sequence impedances at an ambient air temperature of 35 °C	Z	mΩ/m	0,175	0,130	0,091	0,067	0,047	0,039	0,032
Positive and negative sequence impedances at an ambient air temperature of 20 °C	$Z_{20}$	mΩ/m	0,142	0,106	0,075	0,056	0,040	0,033	0,027
Rated Power Loss at 35 °C		Watt	191,9	212,9	237,3	268,6	302,6	382,8	483,8
DC Resistance at a conductor temperature of 20 °C for Phases	$R_{phdc}$	mΩ/m	0,128	0,098	0,060	0,043	0,030	0,024	0,020
DC Resistance at a conductor temperature of 20 °C for Neutral	$R_{Ndc}$	mΩ/m	0,132	0,101	0,062	0,044	0,031	0,025	0,020
DC Resistance at a conductor temperature of 20 °C for PE	$R_{PEdc}$	mΩ/m	0,132	0,101	0,062	0,045	0,031	0,025	0,020
<b>SECTIONS</b>									
L1,L2,L3,N		mm <sup>2</sup>	240	330	480	660	960	1200	1500
PE (5 Conductors)		mm <sup>2</sup>	240	330	480	660	960	1200	1500
Conductor Cross Section		mmxmm	6x40	6x55	6x80	6x110	6x160	6x200	6x250
Busbar Weight (5 Conductors)		kg/m	28	33	40,4	49,9	64,9	77	90
<b>MEAN FAULT-LOOP CHARACTERISTICS</b>									
<b>Zero-sequence Impedance</b>									
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)b20phN}$	mΩ/m	0,670	0,518	0,381	0,281	0,204	0,167	0,165
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)b20phPE}$	mΩ/m	0,670	0,522	0,381	0,294	0,205	0,166	0,166
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)bp35N}$	mΩ/m	0,811	0,622	0,453	0,330	0,237	0,197	0,195
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)bp35PE}$	mΩ/m	0,811	0,626	0,453	0,341	0,239	0,196	0,197
<b>Mean Resistances and Reactances</b>									
Resistance at a conductor temperature of 20 °C	$R_{b20phph}$	mΩ/m	0,257	0,181	0,128	0,091	0,062	0,051	0,052
Resistance at a conductor temperature of 20 °C	$R_{b20phN}$	mΩ/m	0,261	0,185	0,131	0,094	0,064	0,053	0,052
Resistance at a conductor temperature of 20 °C	$R_{b20phPE}$	mΩ/m	0,261	0,186	0,132	0,094	0,064	0,053	0,052
Resistance at an ambient air temperature of 35 °C	$R_{bphph}$	mΩ/m	0,332	0,236	0,166	0,117	0,080	0,067	0,066
Resistance at an ambient air temperature of 35 °C	$R_{bphN}$	mΩ/m	0,337	0,242	0,170	0,121	0,082	0,069	0,068
Resistance at an ambient air temperature of 35 °C	$R_{bphPE}$	mΩ/m	0,337	0,242	0,171	0,121	0,083	0,069	0,069
Reactance (Independent from temperature)	$X_{bphph}$	mΩ/m	0,142	0,089	0,083	0,066	0,050	0,040	0,041
Reactance (Independent from temperature)	$X_{bphN}$	mΩ/m	0,172	0,153	0,112	0,091	0,072	0,059	0,059
Reactance (Independent from temperature)	$X_{bphPE}$	mΩ/m	0,173	0,154	0,117	0,093	0,071	0,058	0,059

**Attention!** The standard mounting of the Cast Resin busbar is with the conductors on edge. This allows for the easy application of the resin at the joint.



2250	3000	3200	3600	4000	5000
23	30	33	36	40	50
100	120	120	120	120	120
220	264	264	264	264	264
60	72	72	72	72	72
132	158,4	158,4	158,4	158,4	158,4
60	72	72	72	72	72
132	158,4	158,4	158,4	158,4	158,4
0,022	0,016	0,015	0,012	0,010	0,008
0,029	0,020	0,019	0,016	0,013	0,010
0,019	0,014	0,015	0,012	0,010	0,008
0,035	0,024	0,024	0,020	0,016	0,013
0,029	0,021	0,021	0,017	0,014	0,012
446,5	545,4	559,1	606,5	604,8	780,0
0,025	0,018	0,016	0,014	0,012	0,012
0,026	0,019	0,017	0,015	0,013	0,013
0,026	0,019	0,017	0,015	0,012	0,012
1320	1920	2040	2400	3000	3600
1320	1920	2040	2400	3000	3600
2(6x110)	2(6x160)	2(6x170)	2(6x200)	2(6x250)	3(6x200)
97,3	129	139,3	151,8	188	224,9
0,155	0,108	0,106	0,087	0,081	0,054
0,142	0,106	0,100	0,087	0,071	0,066
0,184	0,127	0,121	0,101	0,090	0,063
0,169	0,125	0,116	0,102	0,080	0,074
0,050	0,035	0,030	0,025	0,022	0,017
0,052	0,036	0,031	0,026	0,023	0,017
0,052	0,037	0,030	0,026	0,024	0,017
0,065	0,045	0,038	0,032	0,028	0,021
0,068	0,048	0,039	0,034	0,029	0,022
0,068	0,048	0,039	0,033	0,030	0,022
0,041	0,028	0,024	0,022	0,014	0,014
0,057	0,040	0,037	0,033	0,028	0,023
0,056	0,040	0,037	0,032	0,028	0,024

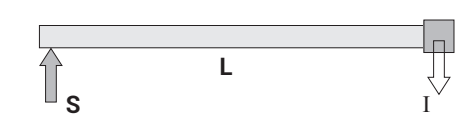


**Voltage Drop Calculation**

Generally Voltage drop of a busbar system can be calculated with the following formula.

$$\Delta U = \sqrt{3} \cdot L \cdot I \cdot (R_1 \cdot \cos\varphi + X_1 \cdot \sin\varphi) \cdot 10^{-3} [V]$$

- $\Delta U$  = Voltage Drop (V)
- L = Line Length (m)
- I = Line Current or Load (A)
- $R_1$  = Resistance (m $\Omega$ /m)
- $X_1$  = Reactance (m $\Omega$ /m)
- $\cos\varphi$  = Power Factor



S = Supply Point

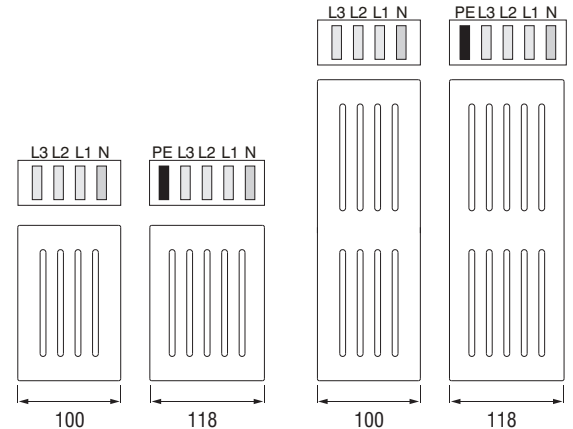
- (1) All phase conductor characteristics have been determined according to Annex BB of IEC 61439-6.
  - (2) Fault-loop zero-sequences impedances have been determined according to Annex CC of IEC 61439-6.
  - (3) Fault-loop resistances and reactances have been determined according to Annex DD of IEC 61439-6.
- \*IK10 corresponds to impact energy of 50J according to IEC 62262.
- \*\*Cast Resin Busbars are produced with a minimum of 3 conductors.

### Copper Conductor (Cu)

Rated Current	$I_r$	A	800	1000	1250	1600	2000	2500	3000
Busbar Code			08	10	12	16	20	25	30
Standards	IEC 61439-6:2012 Ed.1 ; IEC 61439-1 Ed.2:2011, TS EN 61439-1: 2011								
Rated Isolation Voltage	$U_i$	V	1000						
Rated Operational Voltage	$U_e$	V	1000						
Rated Impulse Withstand Voltage	$U_{imp}$	kV	12						
Rated Frequency	f	Hz	50						
Pollution Degree	III								
Protection Degree	IP 68								
External Mechanical Impacts (IK Code)*	50J, greater than IK10								
Protection for Safety	Basic Protection (HD 60364-4-41, Clause A1)								
Rated Short-time Withstand Current (1s)	$I_{cw}$	$kA_{rms}$	23	32	45	60	80	80	120
Rated Peak Withstand Current	$I_{pk}$	kA	48,3	67,2	94,5	132	176	176	264
Rated Short-time Withstand Current for Neutral Conductor (1s)	$I_{cw}$	kA	13,8	19,2	27	36	48	48	72
Rated Peak Withstand Current for Neutral Conductor	$I_{pk}$	kA	27,6	38,4	56,7	75,6	100,8	100,8	158,4
Rated Short-time Withstand Current for PE Conductor (1s)	$I_{cw}$	kA	13,8	19,2	27	36	48	48	72
Rated Peak Withstand Current for PE Conductor	$I_{pk}$	kA	27,6	38,4	56,7	75,6	100,8	100,8	158,4
<b>MEAN PHASE CONDUCTOR CHARACTERISTICS AT RATED CURRENT <math>I_n</math></b>									
Resistance at a conductor temperature of 20 °C	$R_{20}$	$m\Omega/m$	0,078	0,054	0,038	0,028	0,019	0,015	0,014
Resistance at an ambient air temperature of 35 °C	R	$m\Omega/m$	0,100	0,070	0,048	0,035	0,023	0,019	0,018
Reactance (Independent from Temperature)	X	$m\Omega/m$	0,069	0,056	0,045	0,033	0,028	0,022	0,019
Positive and negative sequence impedances at an ambient air temperature of 35 °C	Z	$m\Omega/m$	0,121	0,090	0,066	0,048	0,036	0,029	0,026
Positive and negative sequence impedances at an ambient air temperature of 20 °C	$Z_{20}$	$m\Omega/m$	0,104	0,078	0,059	0,043	0,033	0,026	0,023
Rated Power Loss at 35 °C		Watt	191,8	209,7	224,5	271,1	280,8	361,9	491,4
DC Resistance at a conductor temperature of 20 °C for Phases	$R_{phdc}$	$m\Omega/m$	0,074	0,053	0,036	0,027	0,018	0,014	0,016
DC Resistance at a conductor temperature of 20 °C for Neutral	$R_{Ndc}$	$m\Omega/m$	0,077	0,055	0,038	0,028	0,018	0,015	0,015
DC Resistance at a conductor temperature of 20 °C for PE	$R_{PEdc}$	$m\Omega/m$	0,077	0,055	0,037	0,027	0,019	0,015	0,016
<b>SECTIONS</b>									
L1,L2,L3,N		$mm^2$	240	330	480	660	960	1200	1320
PE (5 Conductors)		$mm^2$	240	330	480	660	960	1200	1320
Conductor Cross Section		$mm \times mm$	6x40	6x55	6x80	6x110	6x160	6x200	2(6x110)
Busbar Weight (5 Conductors)		kg/m	35,6	43,4	55,6	70,3	95,3	114	139,4
<b>MEAN FAULT-LOOP CHARACTERISTICS</b>									
<b>Zero-sequence Impedance</b>									
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)b20phN}$	$m\Omega/m$	0,500	0,391	0,315	0,220	0,167	0,131	0,117
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)b20phPE}$	$m\Omega/m$	0,502	0,402	0,305	0,222	0,165	0,133	0,116
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)bp35N}$	$m\Omega/m$	0,576	0,448	0,353	0,247	0,184	0,146	0,134
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)bp35PE}$	$m\Omega/m$	0,578	0,461	0,341	0,250	0,183	0,148	0,133
<b>Mean Resistances and Reactances</b>									
Resistance at a conductor temperature of 20 °C	$R_{b20phph}$	$m\Omega/m$	0,156	0,115	0,080	0,057	0,039	0,032	0,033
Resistance at a conductor temperature of 20 °C	$R_{b20phN}$	$m\Omega/m$	0,160	0,118	0,086	0,059	0,041	0,034	0,035
Resistance at a conductor temperature of 20 °C	$R_{b20phPE}$	$m\Omega/m$	0,161	0,119	0,083	0,059	0,041	0,034	0,034
Resistance at an ambient air temperature of 35 °C	$R_{bp35ph}$	$m\Omega/m$	0,201	0,148	0,102	0,073	0,049	0,041	0,044
Resistance at an ambient air temperature of 35 °C	$R_{bp35N}$	$m\Omega/m$	0,205	0,153	0,110	0,076	0,051	0,043	0,046
Resistance at an ambient air temperature of 35 °C	$R_{bp35PE}$	$m\Omega/m$	0,206	0,153	0,106	0,076	0,052	0,043	0,045
Reactance (Independent from temperature)	$X_{bp35ph}$	$m\Omega/m$	0,133	0,109	0,082	0,064	0,050	0,040	0,039
Reactance (Independent from temperature)	$X_{bp35N}$	$m\Omega/m$	0,175	0,144	0,119	0,091	0,071	0,062	0,056
Reactance (Independent from temperature)	$X_{bp35PE}$	$m\Omega/m$	0,175	0,147	0,117	0,092	0,071	0,059	0,054

**Attention!** The standard mounting of the Cast Resin busbar is with the conductors on edge. This allows for the easy application of the resin at the joint.

3200	3600	4000	5000	6300
32	36	40	50	63
120	120	120	120	120
264	264	264	264	264
72	72	72	72	72
158,4	158,4	158,4	158,4	158,4
72	72	72	72	72
158,4	158,4	158,4	158,4	158,4
0,012	0,011	0,009	0,007	0,005
0,016	0,014	0,012	0,009	0,006
0,017	0,016	0,014	0,012	0,009
0,023	0,021	0,018	0,015	0,011
0,021	0,019	0,017	0,014	0,010
488,4	544,3	576,0	742,5	726,3
0,013	0,012	0,010	0,008	0,006
0,014	0,012	0,011	0,009	0,006
0,014	0,012	0,010	0,009	0,007
1500	1680	1920	2400	3600
1500	1920	1920	2400	3600
2(6x125)	2(6x140)	2(6x160)	2(6x200)	3(6x200)
156,5	173	200	226	336,1
0,103	0,093	0,077	0,069	0,047
0,103	0,092	0,079	0,070	0,047
0,116	0,104	0,087	0,079	0,051
0,116	0,103	0,089	0,078	0,052
0,025	0,020	0,019	0,015	0,011
0,026	0,021	0,020	0,016	0,013
0,026	0,021	0,020	0,016	0,013
0,032	0,026	0,025	0,020	0,014
0,033	0,028	0,027	0,021	0,016
0,034	0,028	0,026	0,021	0,016
0,031	0,027	0,027	0,021	0,017
0,045	0,039	0,038	0,031	0,025
0,046	0,041	0,037	0,032	0,027

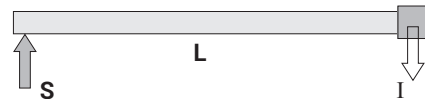


### Voltage Drop Calculation

Generally Voltage drop of a busbar system can be calculated with the following formula.

$$\Delta U = \sqrt{3} \cdot L \cdot I \cdot (R_1 \cdot \cos\phi + X_1 \cdot \sin\phi) \cdot 10^{-3} [V]$$

- $\Delta U$  = Voltage Drop (V)
- L = Line Length (m)
- I = Line Current or Load (A)
- $R_1$  = Resistance (m $\Omega$ /m)
- $X_1$  = Reactance (m $\Omega$ /m)
- $\cos\phi$  = Power Factor



S = Supply Point

- (1) All phase conductor characteristics have been determined according to Annex BB of IEC 61439-6.
- (2) Fault-loop zero-sequences impedances have been determined according to Annex CC of IEC 61439-6.
- (3) Fault-loop resistances and reactances have been determined according to Annex DD of IEC 61439-6.

\*IK10 corresponds to impact energy of 50J according to IEC 62262.

\*\*Cast Resin Busbars are produced with a minimum of 3 conductors.

- BUSBAR
- CONDUCTOR MATERIAL
- BUSBAR CODE
- PROTECTION DEGREE
- CONDUCTOR CONFIGURATION
- UTILISATION TYPE / FEEDER
- COMPONENT

**CR C 16 8 04 - B - TR40**

Busbar Type

Aluminium (Al) **A**  
Copper (Cu) **C**

CONDUCTOR MATERIAL

CRC - Al Conductor		CRC - Cu Conductor		Conductor Cross Section
Rated Current	Busbar Code	Rated Current	Busbar Code	
630	06	800	08	6x40
800	08	1000	10	6x55
1000	10	1250	12	6x80
1250	12	1600	16	6x110
1600	16	2000	20	6x160
2000	20	2500	25	6x200
2500	25	-	-	6x250
2250	23	3000	30	2(6x110)
-	-	3200	32	2(6x125)
-	-	3600	36	2(6x140)
3000	30	4000	40	2(6x160)
3200	33	-	-	2(6x170)
3600	36	5000	50	2(6x200)
4000	40	-	-	2(6x250)
5000	50	6300	63	3(6x200)

BUSBAR CODE

IP 68 **8**

PROTECTION DEGREE

Number of Conductors	Code	Conductor Configuration						
		L1	L2	L3	N	N	Clean Earth	½ Clean Earth
<b>3 Conductor</b>	03	✓	✓	✓	////	////	////	////////
<b>4 Conductor</b>	04	✓	✓	✓	✓	////	////	////
<b>4 ½ Conductor</b>	05	✓	✓	✓	✓	////	////	✓
<b>5 Conductor</b>	06	✓	✓	✓	✓	////	✓	////
<b>6 Conductor</b>	07	✓	✓	✓	✓	✓	✓	////

\* TYPE Utilisation Type

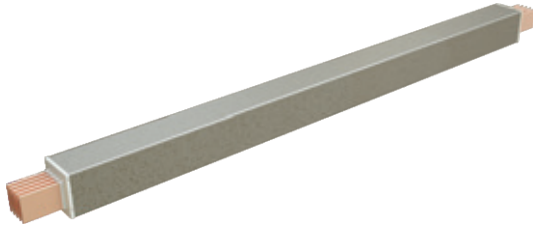
**(B) Feeder** Where there is no need for tap off boxes, power is supplied from one point to the other end point of the line.

Standard Straight Length.....	STD
Special Straight Length.....	X
Upwards Elbow.....	U
Downwards Elbow.....	D
Left Elbow.....	L
Right Elbow.....	R
Left Horizontal Offset.....	LH
Right Horizontal Offset.....	RH
Upwards Horizontal Offset.....	UV
Downwards Horizontal Offset.....	DV
Upwards Left Combined Offset.....	KUL
Upwards Left Combined Offset.....	KUR
Downwards Left Combined Offset.....	KDL
Downwards Right Combined Offset.....	KDR
Left Upwards Combined Offset.....	KLU
Right Upwards Combined Offset.....	KRU
Left Downwards Combined Offset.....	KLD
Right Downwards Combined Offset.....	KRD
End Closure.....	S
Reduction.....	RD
Tee Module.....	T
Horizontal Expansion.....	YDT
Vertical Expansion.....	DDT
Phase Transposition Module.....	FDM
Panel Connection.....	P10
Upwards Panel Connection.....	PU20
Downwards Panel Connection.....	PD20
Right Panel Connection.....	PR30
Left Panel Connection.....	PL30
Panel Connection.....	P40
Transformer Connection.....	TR10
Upwards Transformer Connection.....	TU20
Downwards Transformer Connection.....	TD20
Right Connection.....	TR30
Left Connection.....	TL30
Transformer Connection.....	TR40
Transformer Connection.....	TR60
Flexible.....	F

Component

## Standard Feeder Straight Length

- STD

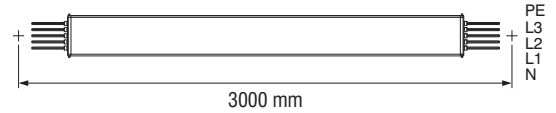


Sample Order:  
**CRA 25806 - STD**

2500 A, Aluminium,  
Feeder, IP 68, 5 Conductor

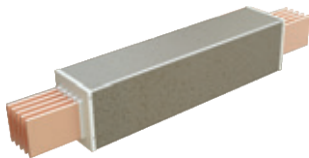
### Application Areas:

- Between Transformer -
- Panel Applications
- Between Panel to Panel Applications
- Generator and Compensation Panels Feeding
- By-pass feeding



## Special Feeder Straight Length

- X



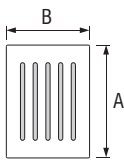
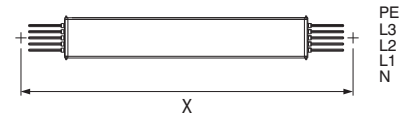
Special Straight Length in (mm)

Sample Order:  
**CRA 20806 - X - 147**

2000 A, Aluminium, Feeder, IP 68,  
5 Conductor, 1470 mm Special Length

### Note:

Minimum Special Length = 450 mm



Number of Conductors	B (mm)
3 Conductor	82
4 Conductor	100
4 ½ Conductor	118
5 Conductor	118
6 Conductor	136

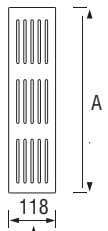
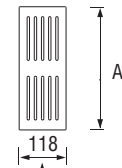
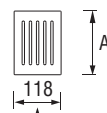


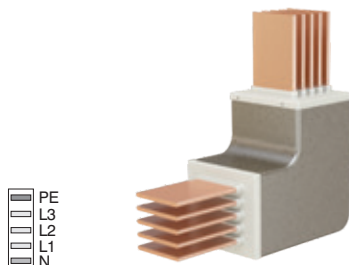
Table For Outer Dimension of Busbars

	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
CRA - Al Conductor	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
CRC - Cu Conductor	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
	A (mm)	90	105	130	160	210	250	300	310	340	370	410	430	490	590	730

**Attention !** The standard mounting of the Cast Resin busbar is with the conductors on edge. This allows for the easy application of the resin at the joint.

## Upwards Downwards Elbow

- U  
- D

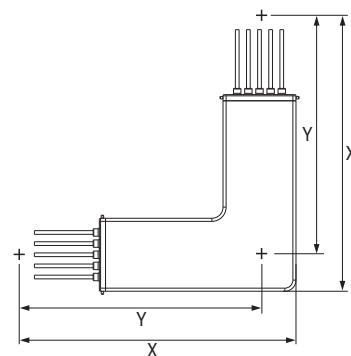


PE  
L3  
L2  
L1  
N

Sample Order:  
**CRC 32806 - U**

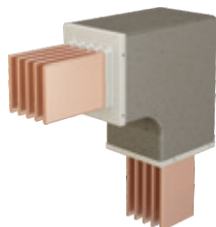
3200 A, Copper, Feeder, IP 68,  
5 Conductors

Number of Conductors	X (mm)	Y (mm)
3 Conductors	407	366
4 Conductors	425	375
4 ½ Conductors	443	384
5 Conductors	443	384
6 Conductors	461	393



## Left Right Elbow

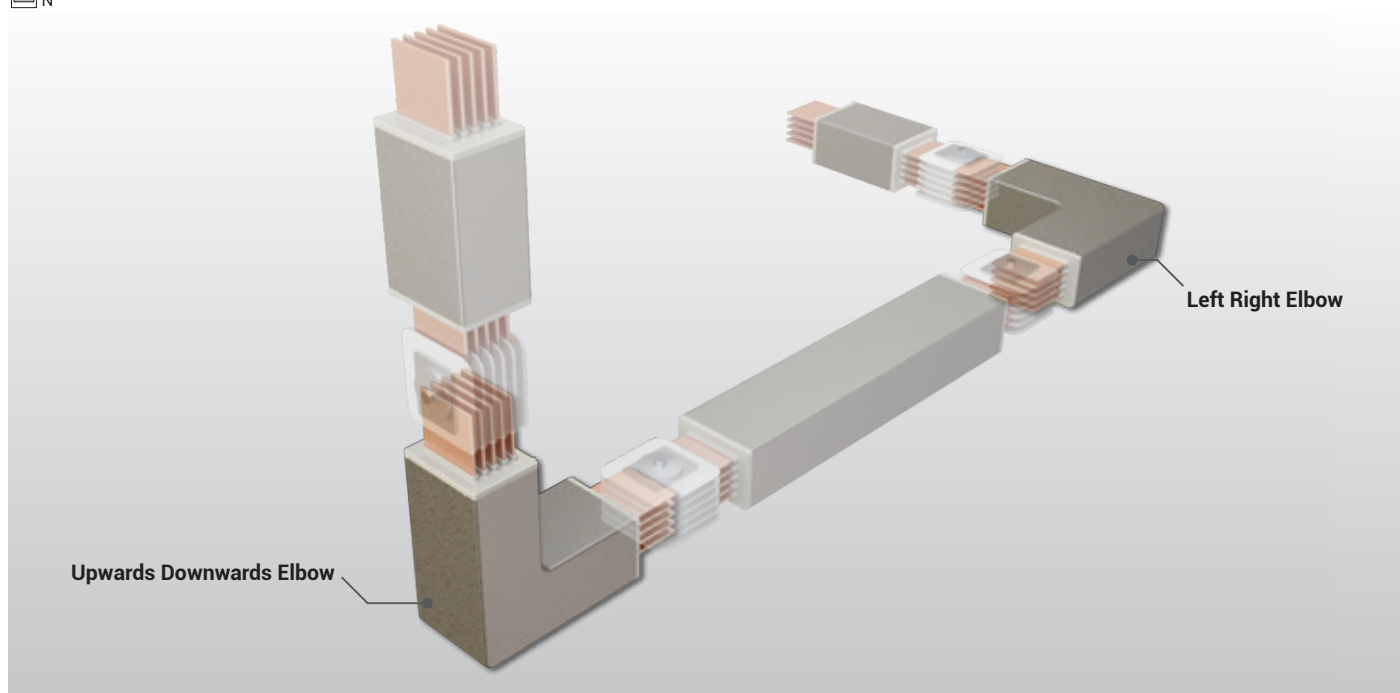
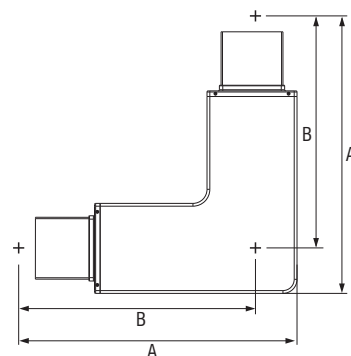
- R  
- L



PE  
L3  
L2  
L1  
N

Sample Order:  
**CRC 20806 - R**

2000 A, Copper, Feeder, IP 68,  
5 Conductors

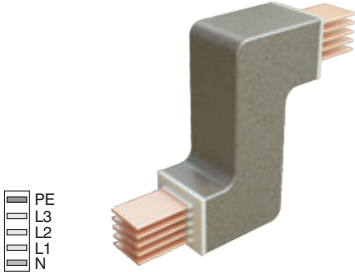


■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

CRA - Al Conductor	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
CRC - Cu Conductor	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
A	(mm)	415	430	455	485	535	575	625	635	665	695	735	755	815	915	1055
B	(mm)	370	377	390	405	430	450	475	480	495	510	530	540	570	620	690

## Upwards Downwards Vertical Offset

**-UV  
-DV**

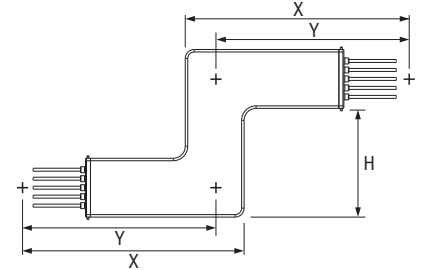


PE  
L3  
L2  
L1  
N

Sample Order:  
**CRC 20806 - UV25**

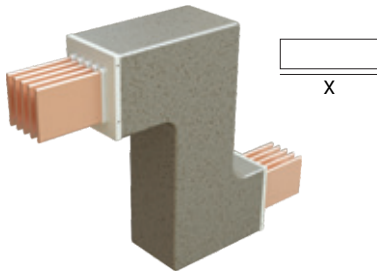
Note:  
H= min. 218 mm  
In special cases consult your company for the "H" dimension.

Number of Conductors	X (mm)	Y (mm)	H (max.)
3 Conductors	407	366	732
4 Conductors	425	375	750
4 ½ Conductors	443	384	768
5 Conductors	443	384	768
6 Conductors	461	393	786



## Right Left Horizontal Offset

**-RH  
-LH**

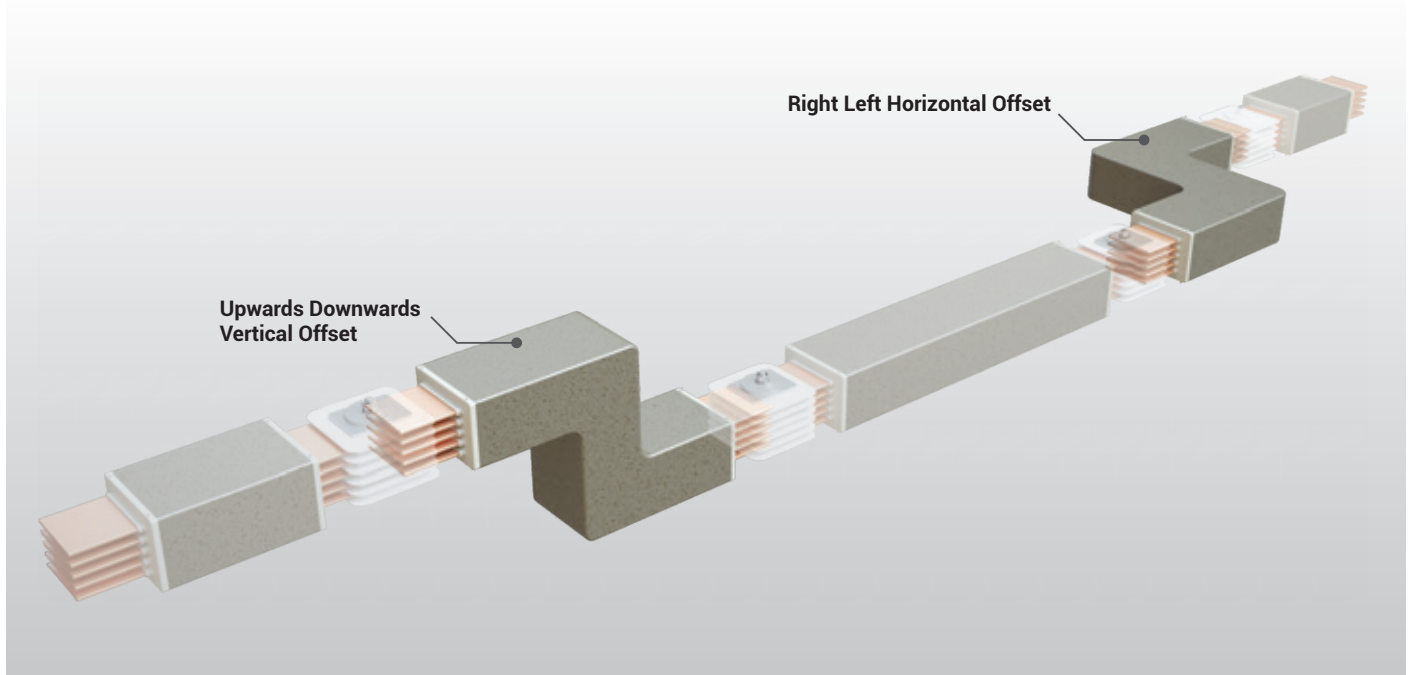
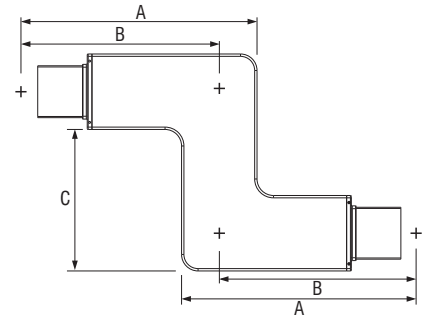


PE  
L3  
L2  
L1  
N

Sample Order:  
**CRC 32806 - RH60**

X=600 mm, 3200 A, Copper Feeder, IP 68, 5 Conductor

Note:  
C=min: 150 mm, Please see the table for max dimensions.  
\*If there is no availability using two elbows, then this offsets will be able to used.



Right Left Horizontal Offset

Upwards Downwards Vertical Offset

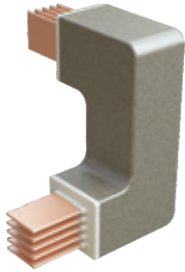
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

CRA - Al Conductor	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
CRC - Cu Conductor	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
A (min.)	(mm)	415	430	455	485	535	575	625	635	665	695	735	755	815	915	1055
B (min.)	(mm)	370	377	390	405	430	450	475	480	495	510	530	540	570	620	690
C (max.)	(mm)	740	755	780	810	860	900	950	960	990	1020	1060	1080	1140	1240	1380

**Upwards Left Upwards  
Right Combined Offset**

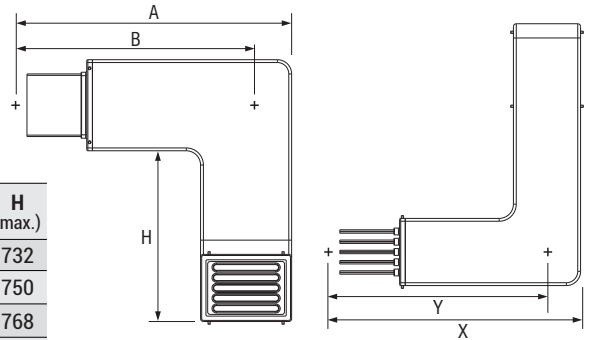
- KUL
- KDR
- KRU
- KLD

- PE
- L3
- L2
- L1
- N



Sample Order:  
**CRC 32806 - B - KUL**  
3200 A, Copper  
Feeder, IP 68, 5 Conductor

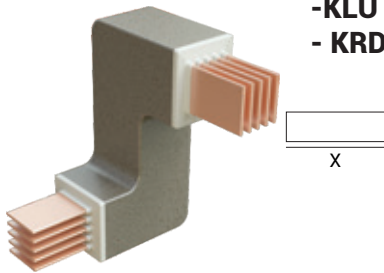
Number of Conductors	X (mm)	Y (mm)	H (max.)
3 Conductors	407	366	732
4 Conductors	425	375	750
4 ½ Conductors	443	384	768
5 Conductors	443	384	768
6 Conductors	461	393	786



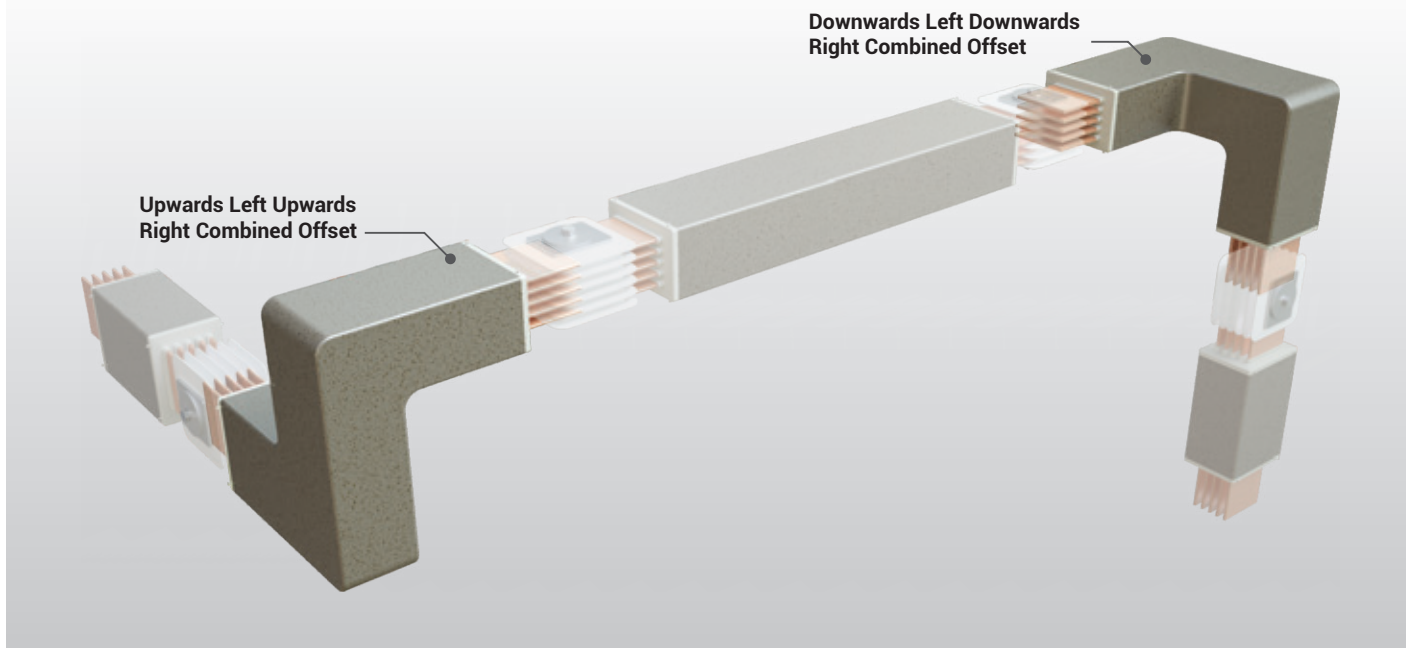
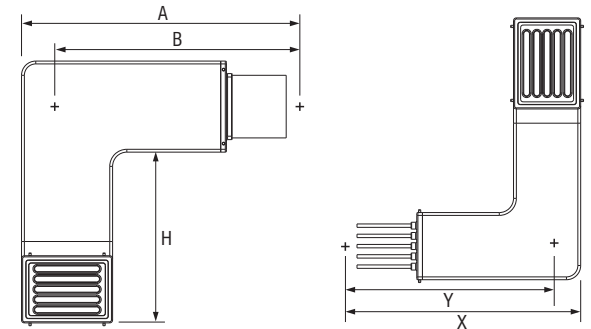
**Downwards Left Downwards  
Right Combined Offset**

- KUR
- KDL
- KLU
- KRD

- PE
- L3
- L2
- L1
- N



Sample Order:  
**CRC 32806 - B - KDL**  
3200 A, Copper  
Feeder, IP 68, 5 Conductor



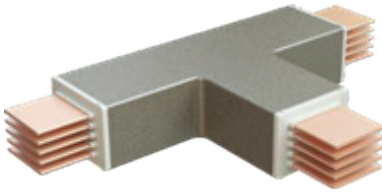
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

CRA - Al Conductor	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
CRC - Cu Conductor	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
A (min.)	(mm)	415	430	455	485	535	575	625	635	665	695	735	755	815	915	1055
B (min.)	(mm)	370	377	390	405	430	450	475	480	495	510	530	540	570	620	690

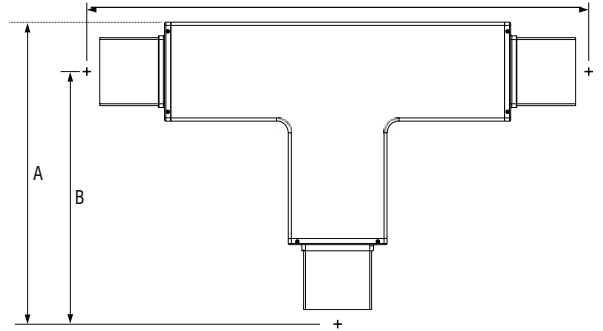


## Tee Connection

-T



Sample Order:  
**CRC 25806 - T**  
 2500 A, Copper,  
 Feeder, IP 68, 5 Conductor

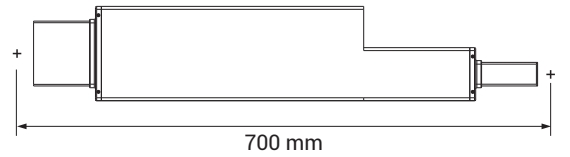


## Reduction

-RD **Reduction**



Is used to change busbar cross section.  
 Sample Order:  
**CRC 20806 - RD17**  
 2000A / 1600A, Copper  
 Feeder, IP 68, 5 Conductor



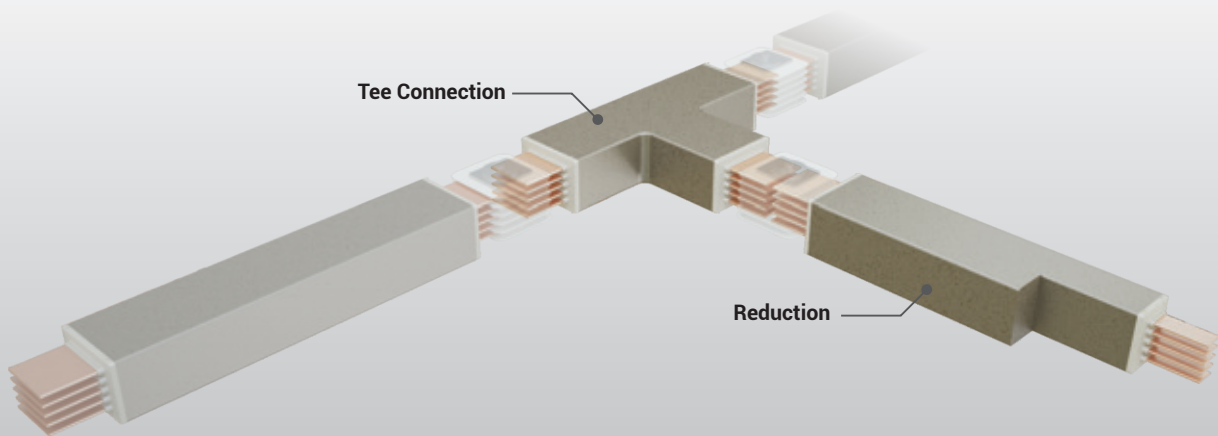
**Note:**  
 Decision and selection of reduction module and protection on lower side is under the customer's responsibility.

### CRA - Al Conductor

Rated Current	Reduced Busbar Code											
	06	08	10	12	16	20	25	30	33	36	40	
800	✓	-	-	-	-	-	-	-	-	-	-	-
1000	✓	✓	-	-	-	-	-	-	-	-	-	-
1250	-	✓	✓	-	-	-	-	-	-	-	-	-
1600	-	-	✓	✓	-	-	-	-	-	-	-	-
2000	-	-	-	✓	✓	-	-	-	-	-	-	-
2500	-	-	-	-	✓	✓	-	-	-	-	-	-
2250	-	-	-	-	✓	✓	-	-	-	-	-	-
3000	-	-	-	-	-	-	✓	-	-	-	-	-
3200	-	-	-	-	-	-	-	✓	-	-	-	-
3600	-	-	-	-	-	-	-	-	✓	-	-	-
4000	-	-	-	-	-	-	-	-	-	✓	✓	-
5000	-	-	-	-	-	-	-	-	-	-	✓	✓

### CRC - Cu Conductor

Rated Current	Reduced Busbar Code											
	08	10	12	16	20	25	30	32	36	40	50	
1000	✓	-	-	-	-	-	-	-	-	-	-	-
1250	✓	✓	-	-	-	-	-	-	-	-	-	-
1600	-	✓	✓	-	-	-	-	-	-	-	-	-
2000	-	-	✓	✓	-	-	-	-	-	-	-	-
2500	-	-	-	✓	✓	-	-	-	-	-	-	-
3000	-	-	-	-	✓	✓	-	-	-	-	-	-
3200	-	-	-	-	-	✓	✓	-	-	-	-	-
3600	-	-	-	-	-	-	✓	✓	-	-	-	-
4000	-	-	-	-	-	-	-	✓	✓	-	-	-
5000	-	-	-	-	-	-	-	-	✓	✓	-	-
6300	-	-	-	-	-	-	-	-	-	✓	✓	-

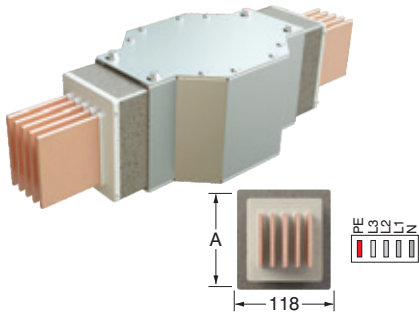


■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

CRA - Al Conductor	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
CRC - Cu Conductor	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
A	(mm)	415	430	455	485	535	575	625	635	665	695	735	755	815	915	1055
B	(mm)	370	377	390	405	430	450	475	480	495	510	530	540	570	620	690
C	(mm)	740	755	780	810	860	900	950	960	990	1020	1060	1080	1140	1240	1380

### Vertical Expansion

### - DDT

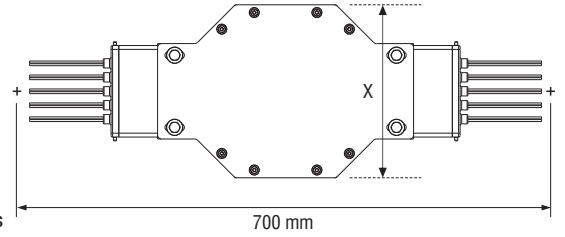


Sample Order:  
**CRC 25806 - DDT**

2500 A, Copper Feeder, IP 68, 5 Conductor

One vertical expansion unit is advised to be used at every floor between fixed support points. Used for Vertical applications in multi storey buildings.

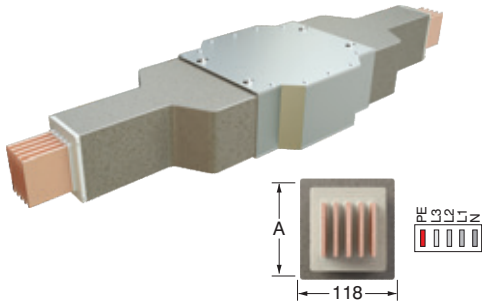
Please contact us during the design stage for our recommendations.



Number of Conductors	3 Conductors	4 Conductors	4 ½ Conductors	5 Conductors	6 Conductors
X (mm)	187	205	223	223	241

### Horizontal Expansion

### - YDT

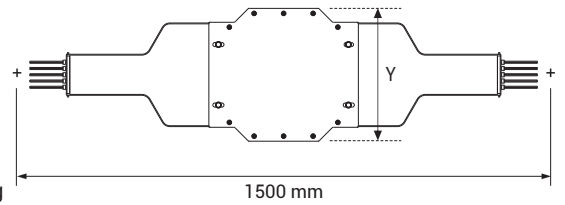


Sample Order:  
**CRC 25806 - YDT**

2500 A, Copper Feeder, IP 68, 5 Conductor

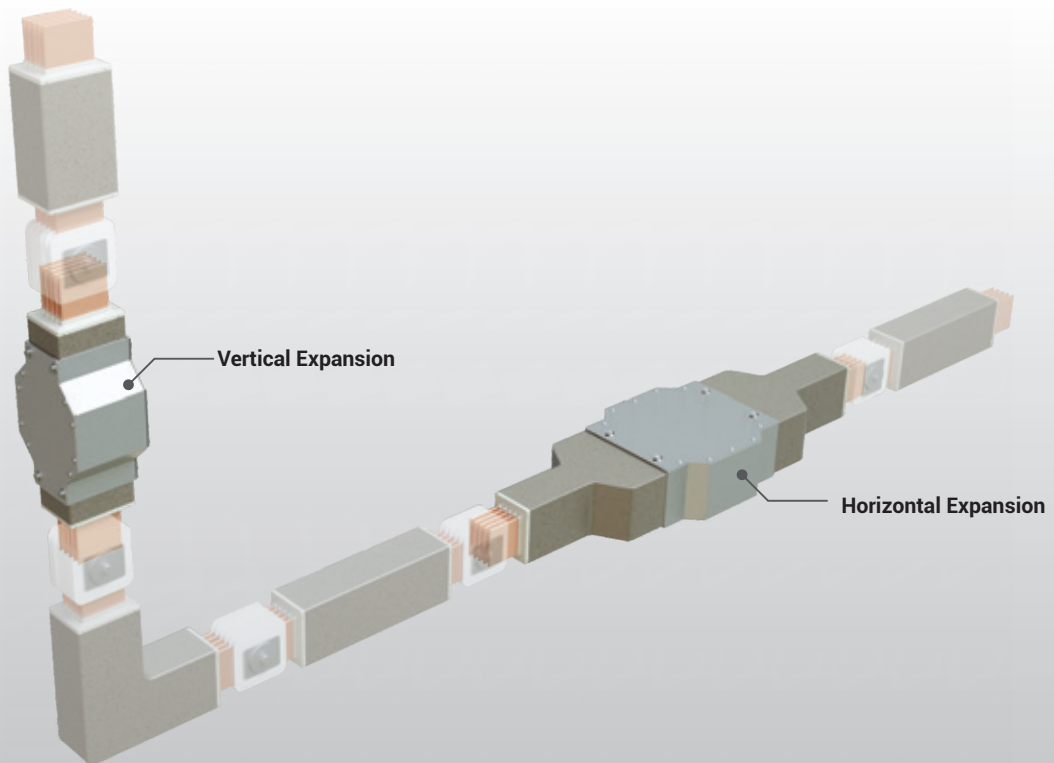
Used at every 40m in long horizontal straight lines and building expansion points.

Please contact us during the design stage for our recommendations.



Number of Conductors	3 Conductors	4 Conductors	4 ½ Conductors	5 Conductors	6 Conductors
Y (mm)	266	324	382	382	440

**Attention!** the total length of the module should be adjusted to 1500mm after installation.

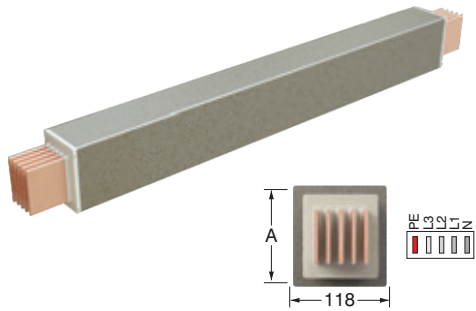


■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

**Note:**

- 1) Horizontal Expansion unit should be used when the busbar run crosses to an adjacent building or crosses a building expansion joint.
- 2) This module is used on the long busbar line (75m) where line is ended by end closure and is not fixed on the support rigidly.
- 3) Horizontal Expansion Joint has sufficient movement span of 25mm max.

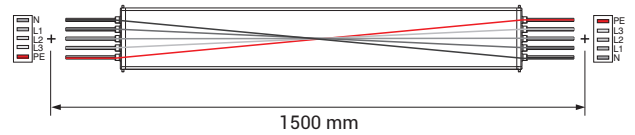
**Phase Transposition Module - FDM**



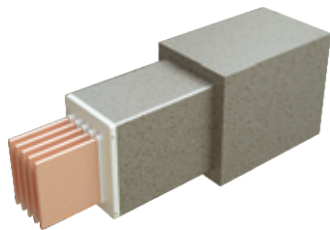
Sample Order:  
**CRC 25806 - FDM**

2500 A, Copper  
 Feeder, IP 68, 5 Conductor

These units are used for the  
 transposition of phases along  
 the busbar run.



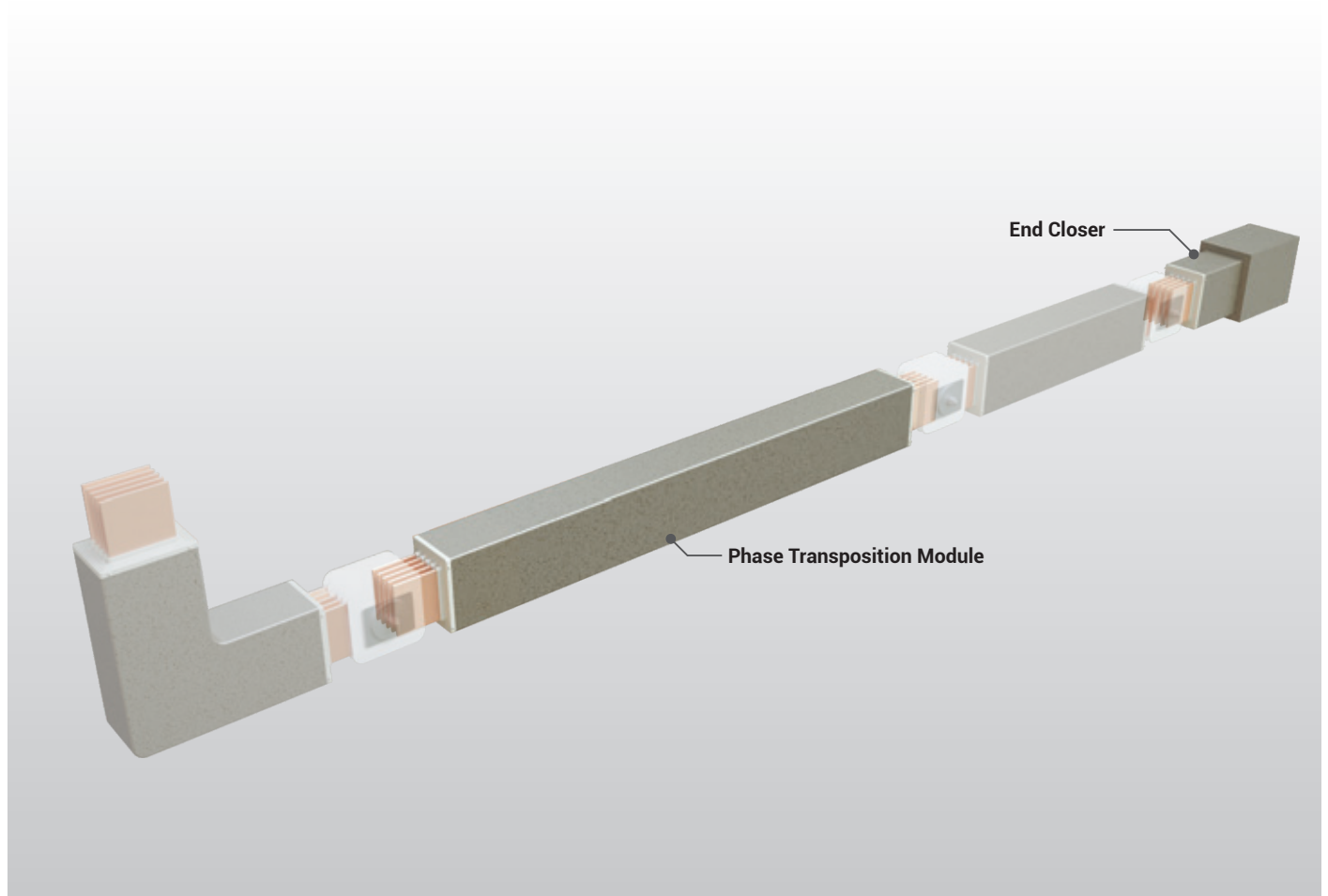
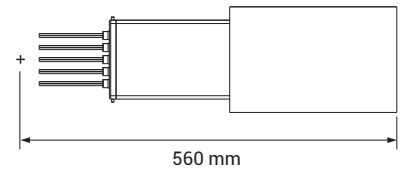
**End Closer - S**



Sample Order:  
**CRC 25806 - S**

2500 A, Copper  
 Feeder, IP 68, 5 Conductor

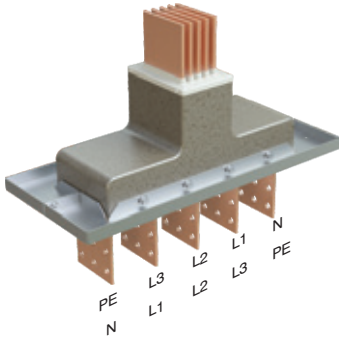
Is used to close the end of  
 busbar run.



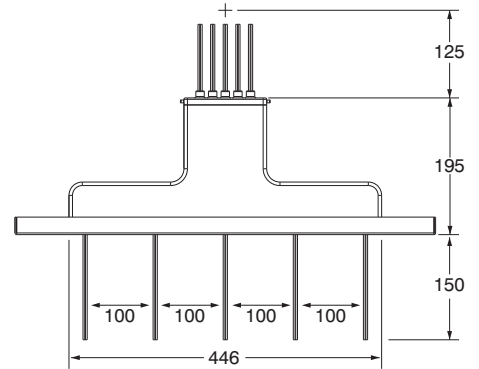
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

## Panel Connection

**- P10**  
**- TR10**



Sample Order:  
**CRC 25806 - P10**  
2500 A, Copper,  
Feeder, IP 68, 5 Conductors  
For Panel Feeder  
Please use the tables on  
page 21, 22 for connection  
measurements.

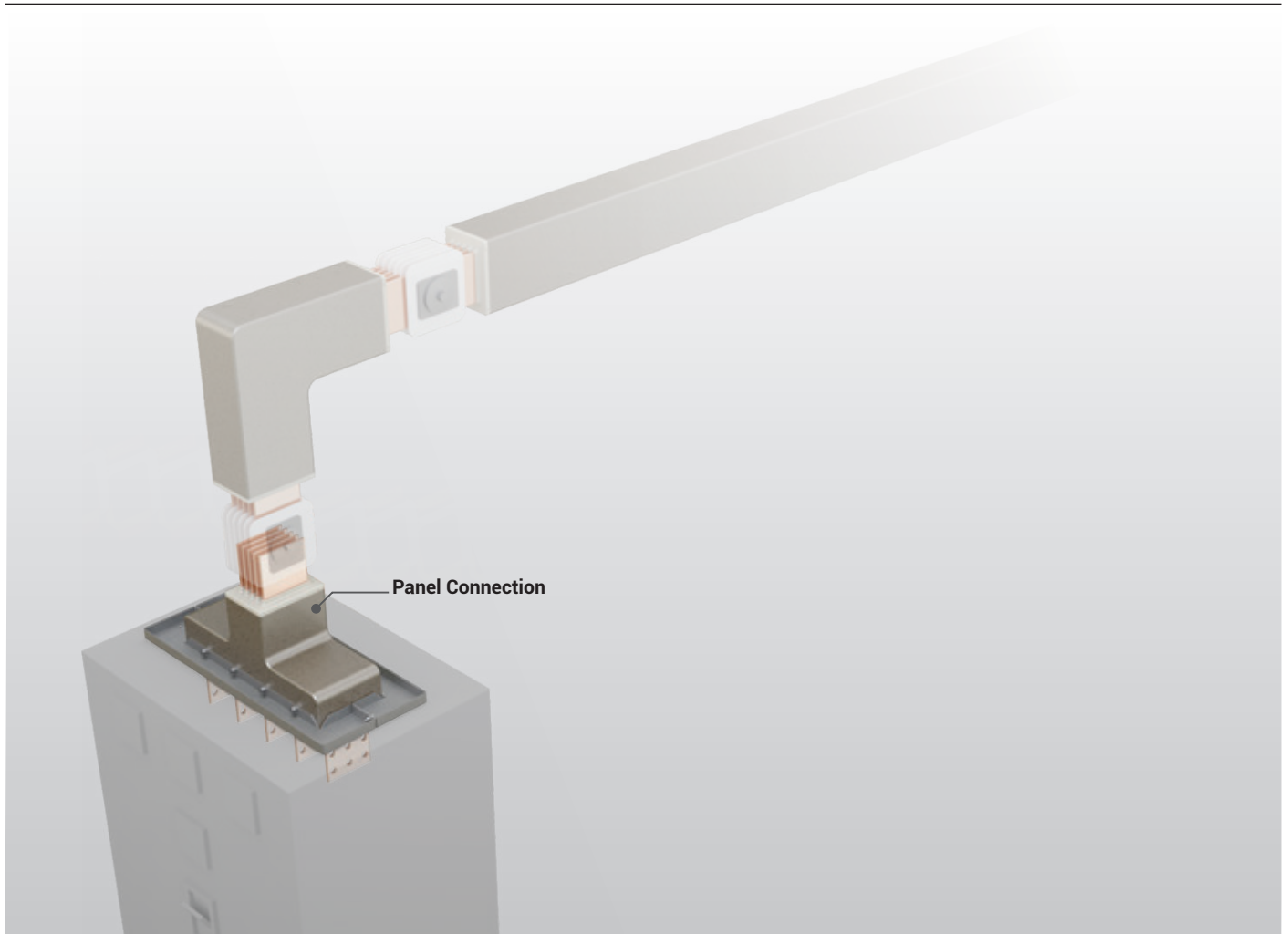
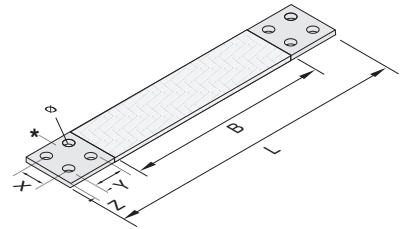


## Flexibles

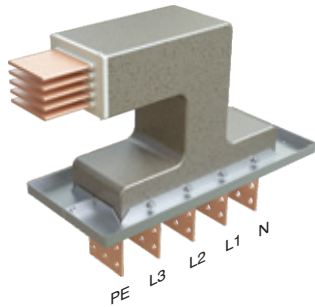
**- F**



Sample Order:  
**CRC 0800 - F**  
\*It will be produced according to details Is  
used for between Transformer Bushings and  
Busbar connections Is used for between panel  
and busbar connections.  
B=.....mm  
X=.....mm  
Y=.....mm  
Z=.....mm  
ø=.....mm

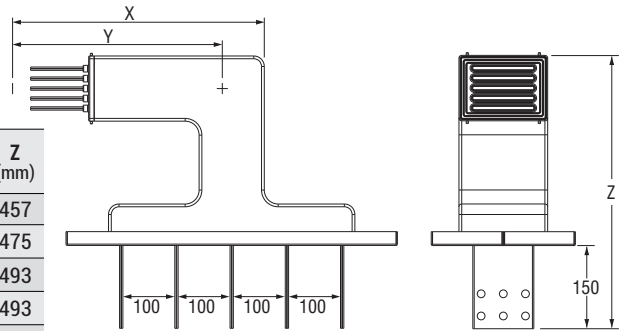


### Upwards Downwards Panel Connections

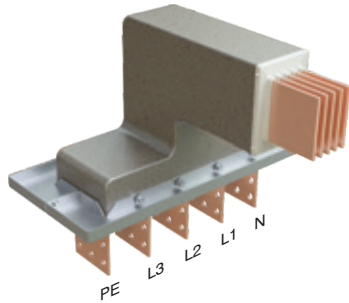


- PU20
  - PD20
  - TU20
  - TD20
- Sample Order:  
**CRC 36806 - PU20**
- 3600 A, Copper,  
Feeder, IP 68, 5 Conductor  
For Panel Feeder

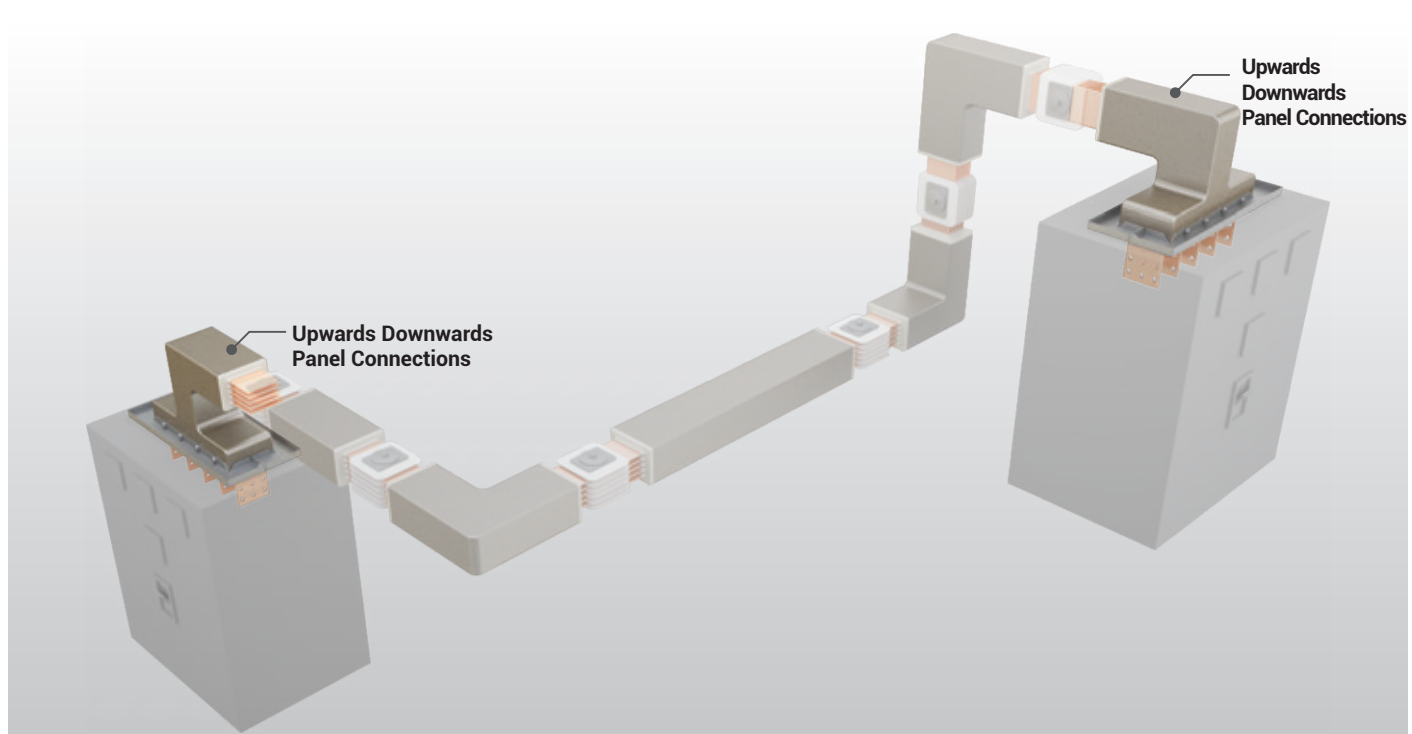
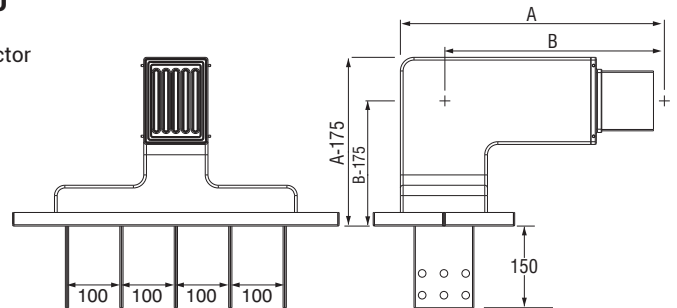
Number of Conductors	X (mm)	Y (mm)	Z (mm)
3 Conductors	407	366	457
4 Conductors	425	375	475
4 ½ Conductors	443	384	493
5 Conductors	443	384	493
6 Conductors	461	393	511



### Upwards Downwards Panel Connections



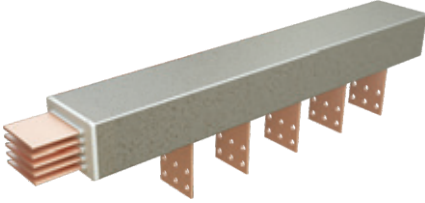
- PR30
  - PL30
  - TL30
  - TR30
- Sample Order:  
**CRC 36806 - PR30**
- 3600 A, Copper,  
Feeder, IP 68, 5 Conductor  
For Panel Feeder



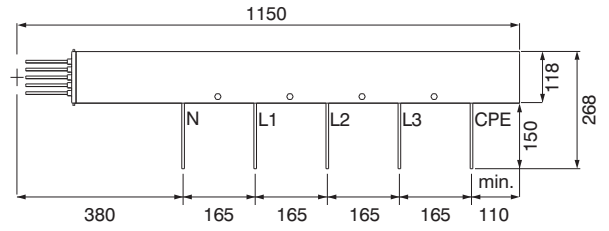
CRA - Al Conductor	Rated Current (A)	630	800	1000	1250	1600	2000	2500	2250	2500	-	3000	3200	3600	4000	5000
	Busbar Code	06	08	10	12	16	20	25	23	-	-	30	33	36	40	50
CRC - Cu Conductor	Rated Current (A)	800	1000	1250	1600	2000	2500	-	3000	3200	3600	4000	-	5000	-	6300
	Busbar Code	08	10	12	16	20	25	-	30	32	36	40	-	50	-	63
A	(mm)	415	430	455	485	535	575	625	635	665	695	735	755	815	915	1055
B	(mm)	370	377	390	405	430	450	475	480	495	510	530	540	570	620	690

### Panel Connection

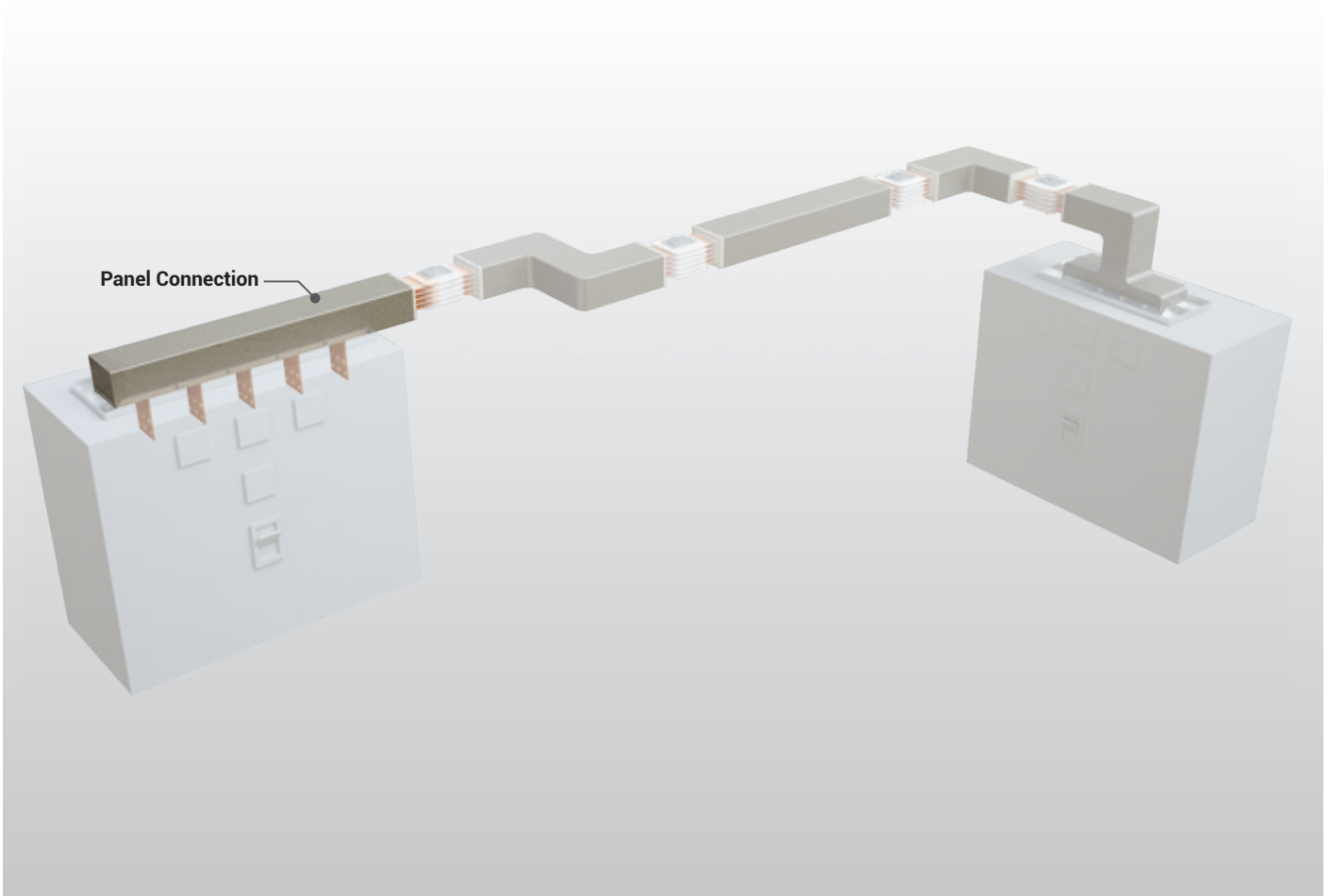
### - P40



Sample Order:  
**CRC 36806 - P40**  
3600 A, Copper,  
Feeder, IP 68, 5 Conductor  
for Panel Feeder  
Please use the tables on  
page 21, 22 for connection  
measurements.

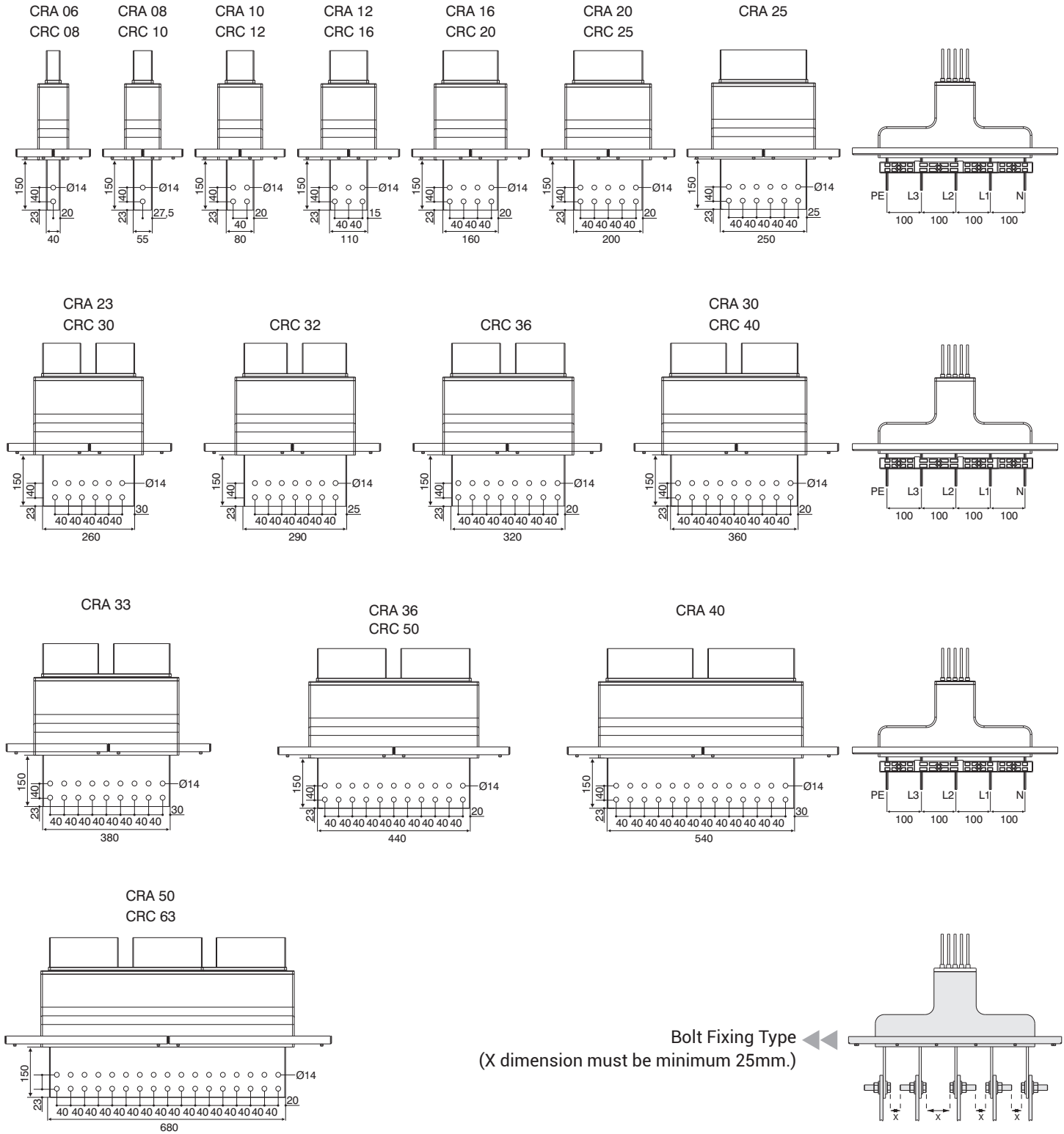


Distance between conductors  
can vary in  $\pm 5$ mm.



### Panel and Transformer Connection Units

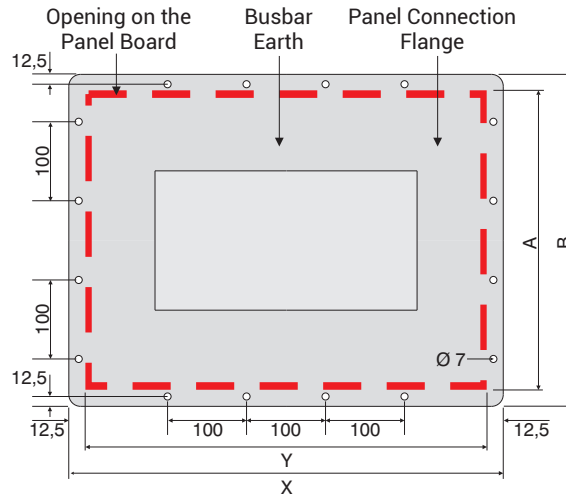
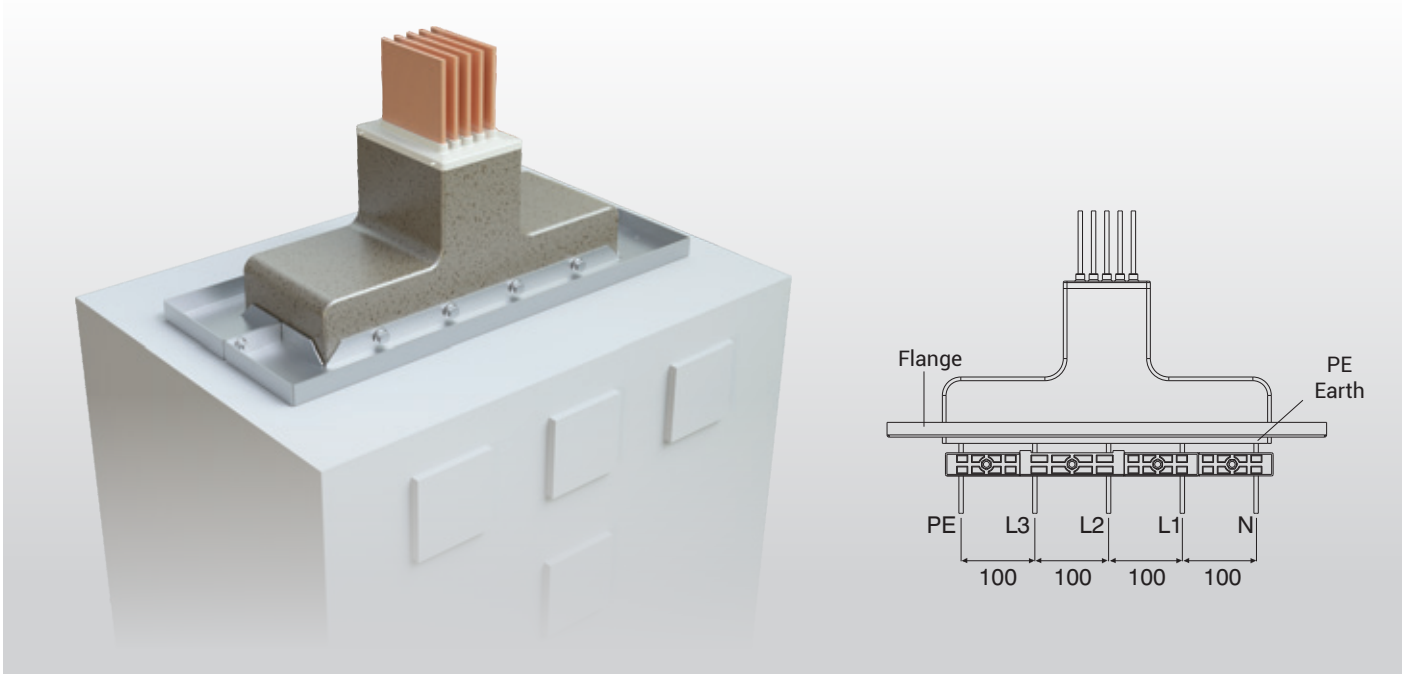
#### Panel and Transformer Connection Units (P10, TR10, PU20, TU20, PD20, TD20, PL30, PR30, P40)



■ Please call us for non-standard components. ■ Distance between conductors can vary +5mm. ■ The dimensions given above are minimum values.

### Panel Modules Flange Dimensions

Panel Connection Modules are supplied with suitable flange as standard.

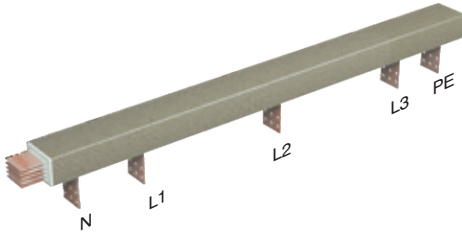


Number of Conductors	X (mm)	Y (mm)
3 Conductors	400	355
4 Conductors	500	455
4 ½ Conductors	600	555
5 Conductors	600	555
6 Conductors	700	655

Aluminium (Al)		Copper (Cu)		Conductor Size	A (mm)	B (mm)	Number of Holes along length B
Rated Current	Busbar Code	Rated Current	Busbar Code				
630	06	800	08	6x40	145	190	2
800	08	1000	10	6x55	160	205	2
1000	10	1250	12	6x80	185	230	2
1250	12	1600	16	6x110	215	260	2
1600	16	2000	20	6x160	265	310	2
2000	20	2500	25	6x200	305	350	4
2500	25	-	-	6x250	355	400	4
2250	23	3000	30	2(6x110)	365	410	4
-	-	3200	32	2(6x125)	395	440	4
-	-	3600	36	2(6x140)	425	470	4
3000	30	4000	40	2(6x160)	465	510	4
3200	33	-	-	2(6x170)	485	530	4
3600	36	5000	50	2(6x200)	545	590	4
4000	40	-	-	2(6x250)	645	690	6
5000	50	6300	63	3(6x200)	785	830	8

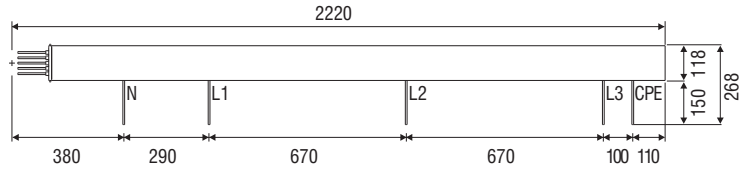


### Transformer Connection - TR40

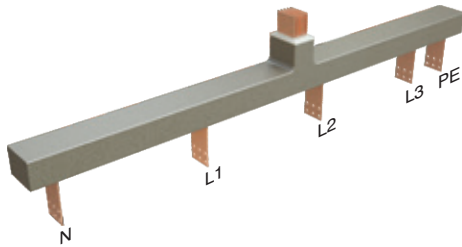


Sample Order:  
**CRC 25806 - TR40**

2500 A, Copper  
Feeder, IP 68, 5 Conductor

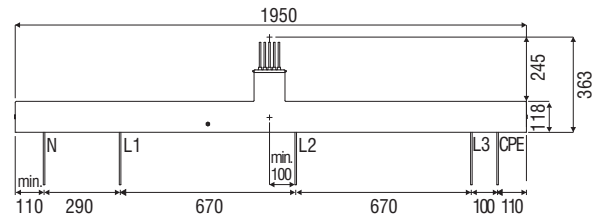


### Transformer Connection - TR60



Sample Order:  
**CRC 25806 - TR60**

2500 A, Copper  
Feeder, IP 68, 5 Conductor

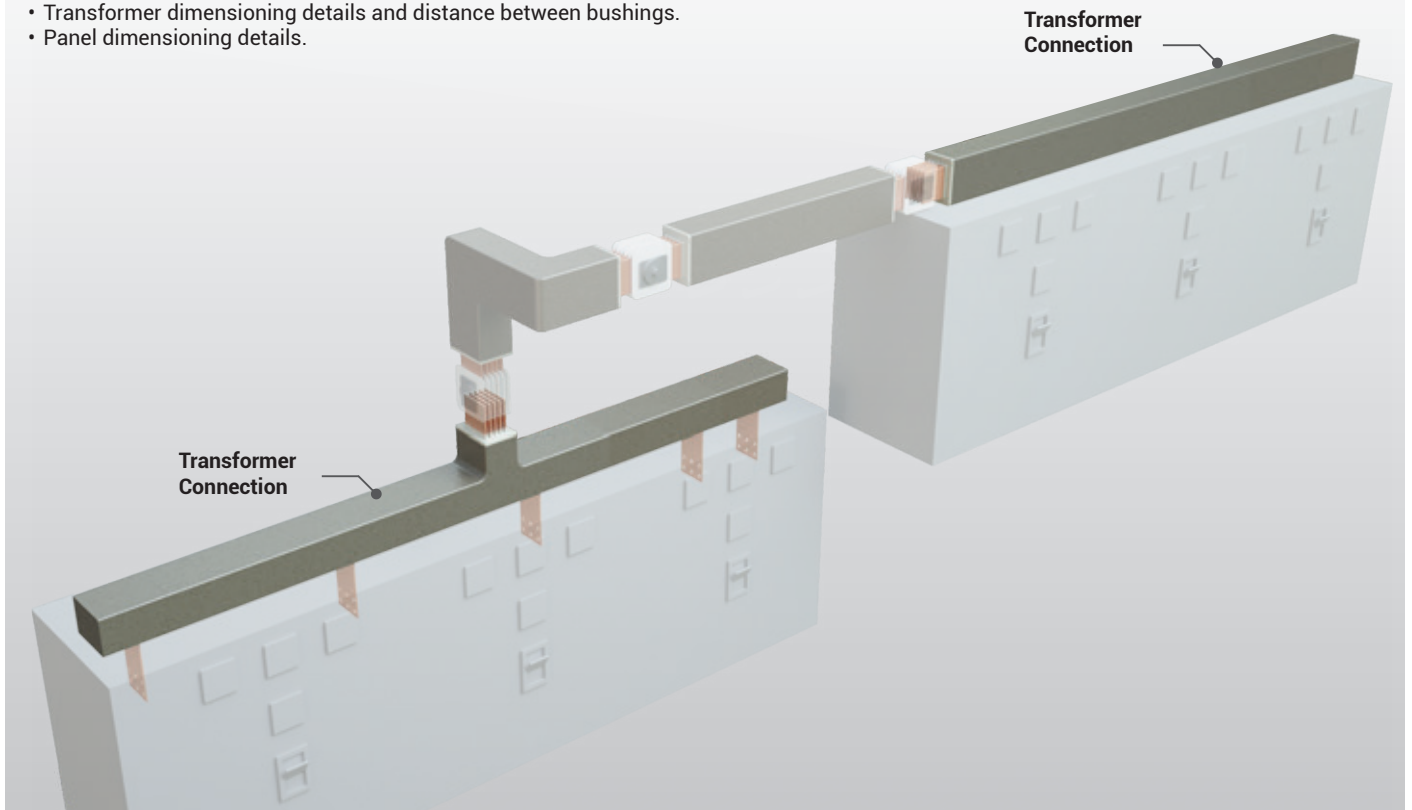


Please use the tables on page 21 for connection measurements.

For between Transformer and Panel connection applications EAE Designing department can prepare your projects on request.

The following information is required when designing the installation;

- Plan of Transformer and Panel rooms and height of the rooms.
- Transformer dimensioning details and distance between bushings.
- Panel dimensioning details.

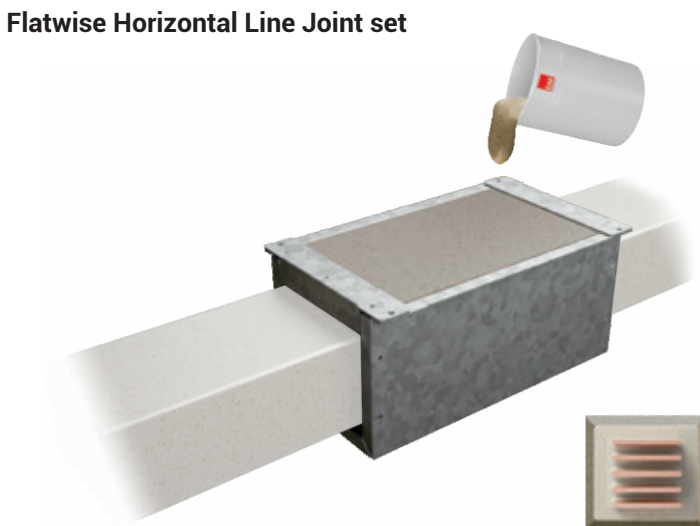


## Edgewise Horizontal Line Joint set



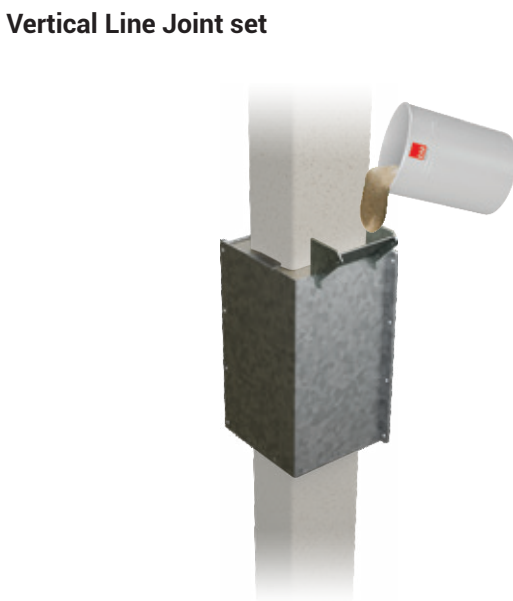
Rated Current	Aluminium		Rated Current	Copper		Conductor Cross Section
	4 Conductor	5 Conductor		4 Conductor	5 Conductor	
630	3134311	3134317	800	3134428	3134434	6*40
800	3134320	3134326	1000	3134437	3134443	6*55
1000	3134329	3134335	1250	3134446	3134452	6*80
1250	3134338	3134344	1600	3134455	3134461	6*110
1600	3134347	3134353	2000	3134464	3134470	6*160
2000	3134356	3134362	2500	3134473	3134479	6*200
2500	3134374	3134380	-	-	-	6*250
2250	3134365	3134371	3000	3134482	3134488	2*6*110
-	-	-	3200	3134491	3134497	2*6*125
-	-	-	3600	3134500	3134506	2*6*140
3000	3134383	3134389	4000	3134509	3134515	2*6*160
3200	3134392	3134398	-	-	-	2*6*170
3600	3134401	3134407	5000	3134518	3134524	2*6*200
4000	3134410	3134416	-	-	-	2*6*250
5000	3134419	3134425	6300	3134527	3134533	3*6*200

## Flatwise Horizontal Line Joint set



Rated Current	Aluminium		Rated Current	Copper		Conductor Cross Section
	4 Conductor	5 Conductor		4 Conductor	5 Conductor	
630	3134312	3134318	800	3134429	3134435	6*40
800	3134321	3134327	1000	3134438	3134444	6*55
1000	3134330	3134336	1250	3134447	3134453	6*80
1250	3134339	3134345	1600	3134456	3134462	6*110
1600	3134348	3134354	2000	3134465	3134471	6*160
2000	3134357	3134363	2500	3134474	3134480	6*200
2500	3134375	3134381	-	-	-	6*250
2250	3134366	3134372	3000	3134483	3134489	2*6*110
-	-	-	3200	3134492	3134498	2*6*125
-	-	-	3600	3134501	3134507	2*6*140
3000	3134384	3134390	4000	3134510	3134516	2*6*160
3200	3134393	3134399	-	-	-	2*6*170
3600	3134402	3134408	5000	3134519	3134525	2*6*200
4000	3134411	3134417	-	-	-	2*6*250
5000	3134420	3134426	6300	3134528	3134534	3*6*200

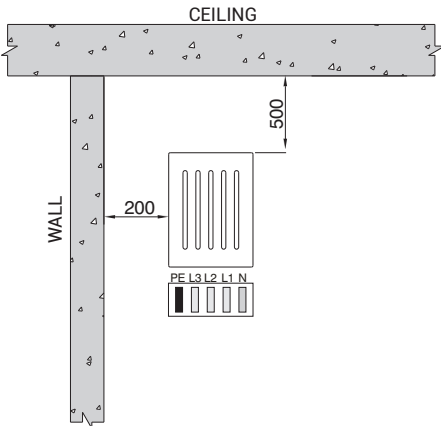
## Vertical Line Joint set



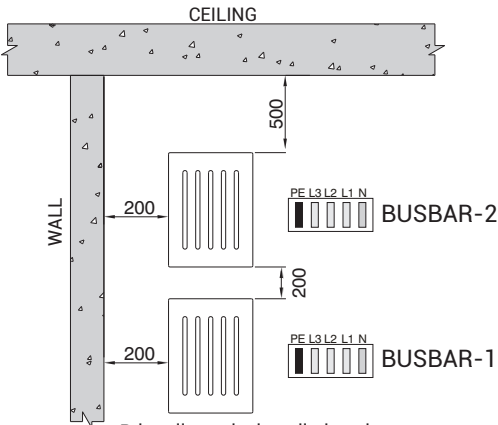
Rated Current	Aluminium		Rated Current	Copper		Conductor Cross Section
	4 Conductor	5 Conductor		4 Conductor	5 Conductor	
630	3134310	3134316	800	3134427	3134433	6*40
800	3134319	3134325	1000	3134436	3134442	6*55
1000	3134328	3134334	1250	3134445	3134451	6*80
1250	3134337	3134343	1600	3134454	3134460	6*110
1600	3134346	3134352	2000	3134463	3134469	6*160
2000	3134355	3134361	2500	3134472	3134478	6*200
2500	3134373	3134379	-	-	-	6*250
2250	3134364	3134370	3000	3134481	3134487	2*6*110
-	-	-	3200	3134490	3134496	2*6*125
-	-	-	3600	3134499	3134505	2*6*140
3000	3134382	3134388	4000	3134508	3134514	2*6*160
3200	3134391	3134397	-	-	-	2*6*170
3600	3134400	3134406	5000	3134517	3134523	2*6*200
4000	3134409	3134415	-	-	-	2*6*250
5000	3134418	3134424	6300	3134526	3134532	3*6*200

Description	Code
Silis Sand Mixture	1021601
CR Hardener (B)	1006294
CR Resin (A)	1006292
Torque Wrench	5000048
CR Spoon Brush	5000311
CR Plastic Hammer	5000310
CR Mixer	5000132

**FIGURE 1 - EDGEWISE APPLICATION**

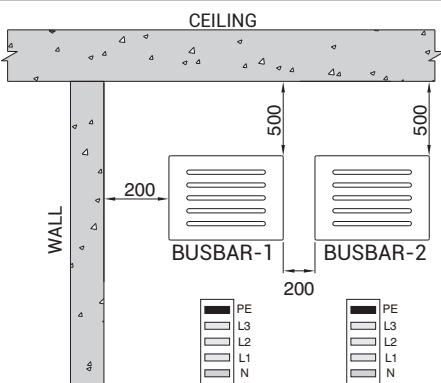


**FIGURE 2 - EDGEWISE APPLICATION**



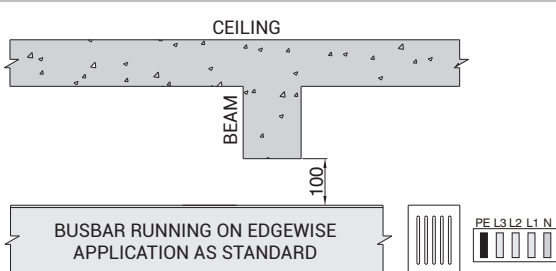
Primarily on the installation phase; BUSBAR-1 line should be installed before BUSBAR-2 line.

**FIGURE 3 - FLATWISE APPLICATION**

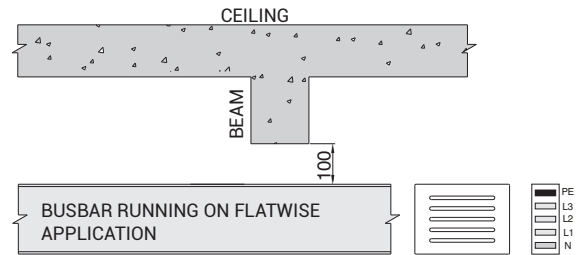


Primarily on the installation phase; BUSBAR-1 line should be installed before BUSBAR-2 line.

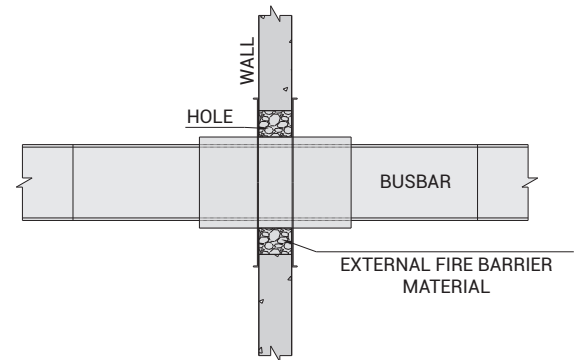
**FIGURE 4 - CROSSING UNDER A BEAM ON EDGEWISE APPLICATION**



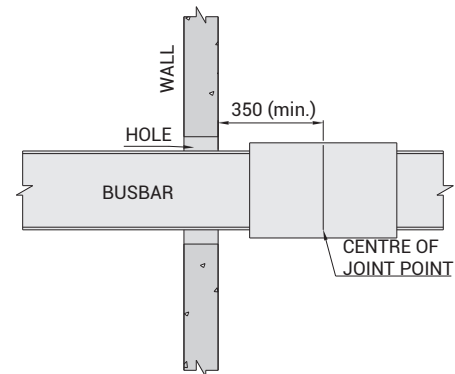
**FIGURE 5 - CROSSING UNDER A BEAM ON FLATWISE APPLICATION**



**FIGURE 6 - SAMPLE WALL CROSSING WITH FIRE BARRIER**



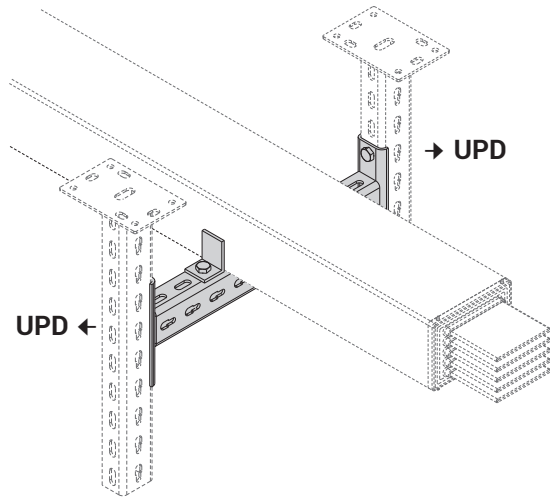
**FIGURE 7 - STANDARD WALL CROSSING**



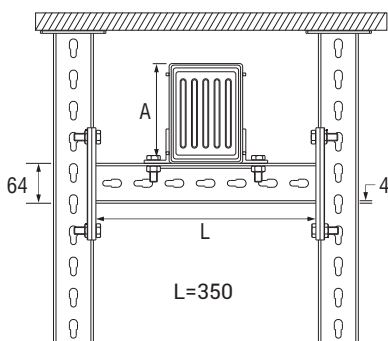
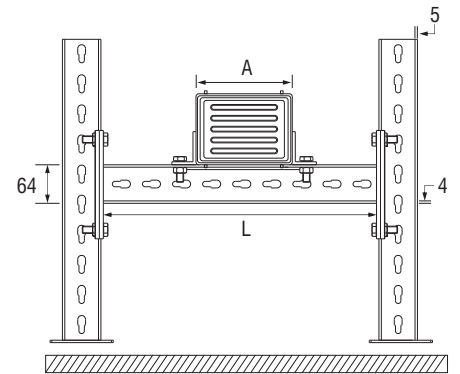
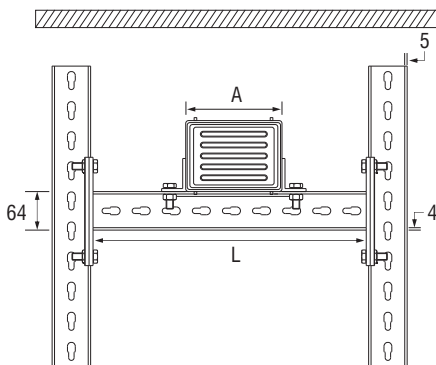
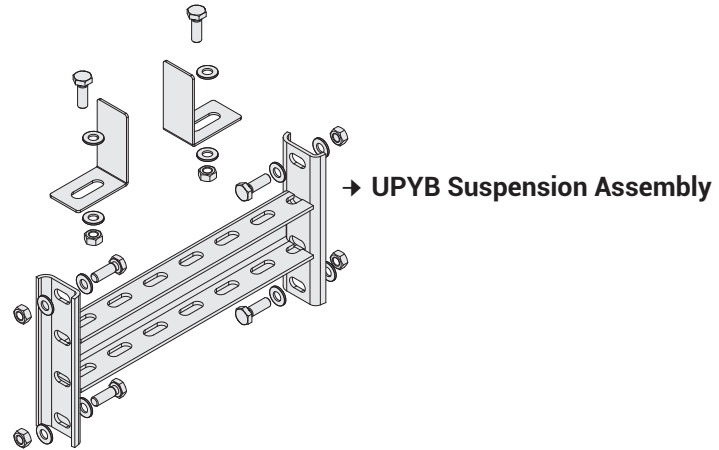
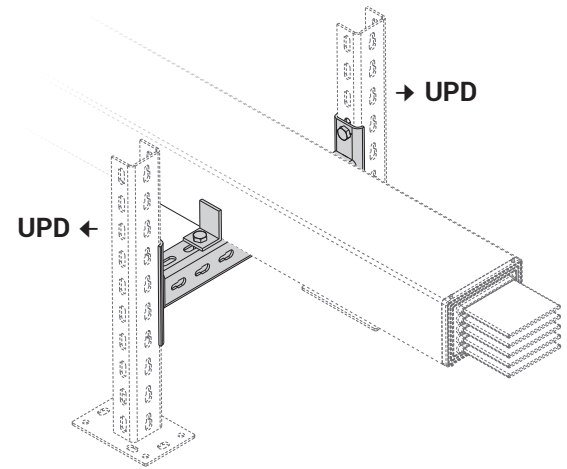
### ⚠ Attention!

- For correct installation, the dimension from the busbar to the ceiling should not be less than 500mm
- The joint should not come across to Beams.
- The dimensions given above are minimum values.
- All dimensions are given in mm.

## Ceiling Type Supports CR-UT Two Way Horizontal Application Kit

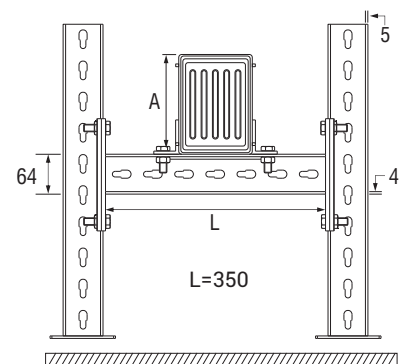


## Floor Type Supports CR-UT Two Way Horizontal Application Kit



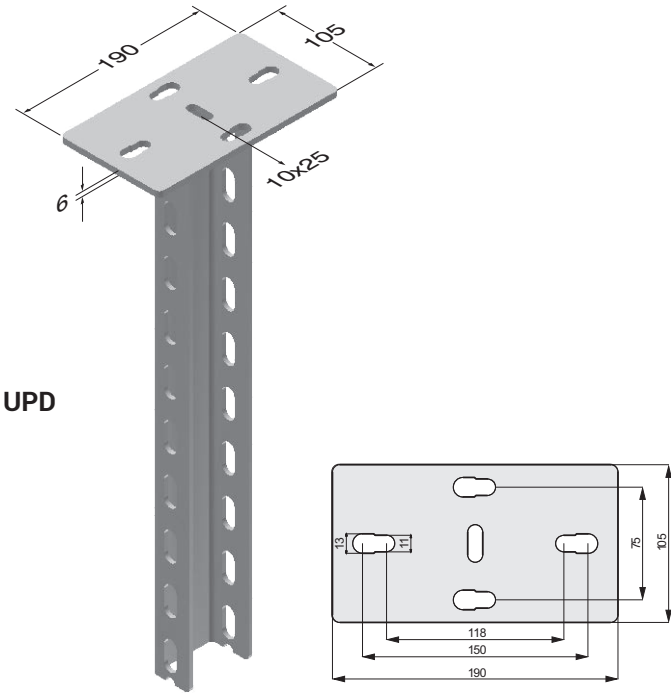
**⚠ When selecting an UPD product, please keep in mind to select the UPD product suitable to the Busbar A dimension.**

**⚠ When choosing CR-UT Suspension Set, appropriate CR-UT Suspension Set should be selected according to Busbar size.**



■ Horizontal mounting can be used only in special cases. ■ Please call us for non-standard dimensions.  
■ Please check our Suspension Systems (A-A) Catalogue to see our alternative solutions for suspension types.

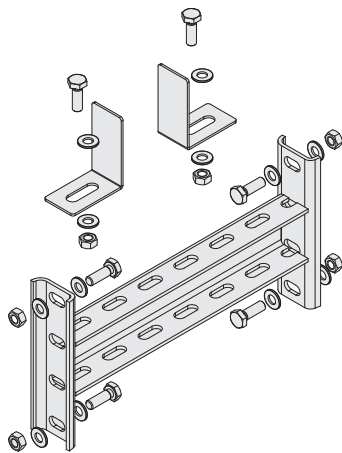
## Heavy Duty Supports (U) Hot Dip Galvanized After Fabrication (TS EN ISO 1461)



Description	L (mm)	Tensile Load (kg)	Weight (kg./pcs.)	Order Code
UPD 300	300	900	2,101	3004510
UPD 400	400	900	2,497	3004512
UPD 500	500	900	2,882	3004514
UPD 600	600	900	3,267	3004516
UPD 700	700	900	3,674	3004518
UPD 800	800	900	4,056	3004519
UPD 900	900	900	4,451	3004520
UPD 1000	1000	900	4,837	3004521
UPD 1100	1100	900	5,226	3004522
UPD 1200	1200	900	5,610	3004523
UPD 1300	1300	900	6,006	3004524
UPD 1400	1400	900	6,391	3004525
UPD 1500	1500	900	6,787	3004526
UPD 1600	1600	900	7,172	3004527
UPD 1700	1700	900	7,570	3004528
UPD 1800	1800	900	7,960	3004529
UPD 1300	1900	900	8,349	3004530
UPD 1400	2000	900	8,741	3004531
UPD 1500	3000	900	12,645	3030393

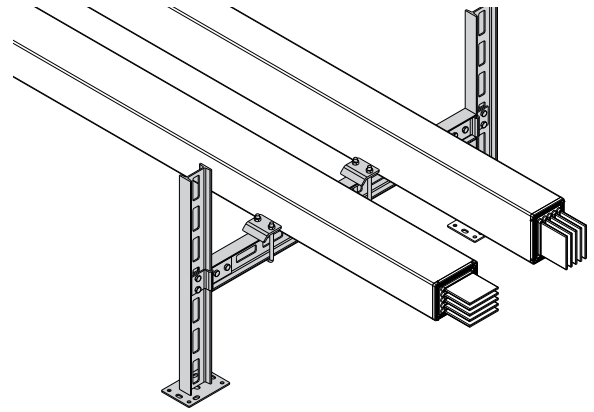
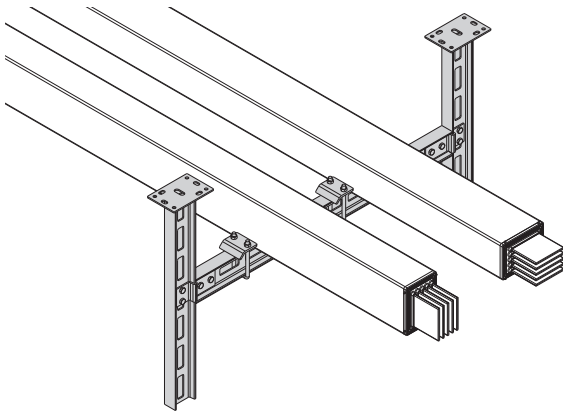
**⚠ When selecting an UPD product, please keep in mind to select the UPD product suitable to the Busbar A dimension.**

## CR-UT Suspension Assembly

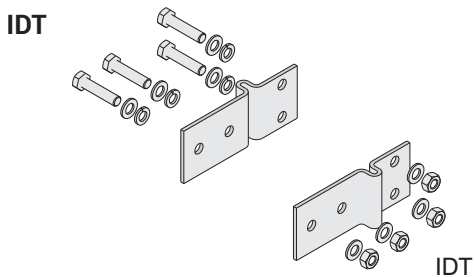
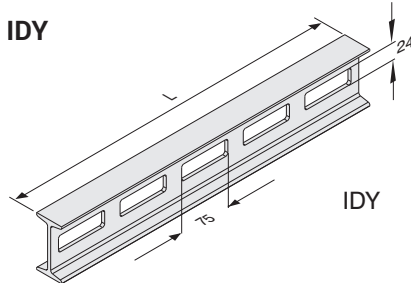
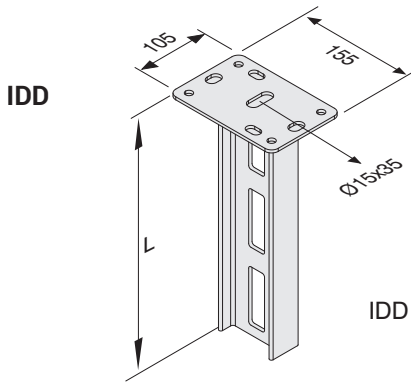


Description	CRA - Al Conductors		CRC - Cu Conductors		Conductor Cross Section	L (mm)	A (mm)	Order Code
	Rated Current	Busbar Code	Rated Current	Busbar Code				
CR-UT Suspension Assembly	630	06	800	08	6x40	350	90	3108705
	800	08	1000	10	6x55	350	105	
	1000	10	1250	12	6x80	350	130	
	1250	12	1600	16	6x110	350	160	
CR-UT Suspension Assembly	1600	16	2000	20	6x160	450	210	3108707
	2000	20	2500	25	6x200	450	250	
	2500	25	-	-	6x250	450	300	
CR-UT Suspension Assembly	2250	23	3000	30	2(6x110)	550	310	3108708
	-	-	3200	32	2(6x125)	550	340	
CR-UT Suspension Assembly	-	-	3600	36	2(6x140)	650	370	3108709
	3000	30	4000	40	2(6x160)	650	410	
	3200	33	-	-	2(6x170)	650	430	
CR-UT Suspension Assembly	3600	36	5000	50	2(6x200)	750	490	3108710
CR-UT Suspension Assembly	4000	40	-	-	2(6x250)	850	590	3108711
CR-UT Suspension Assembly	5000	50	6300	63	3(6x200)	950	730	3108712

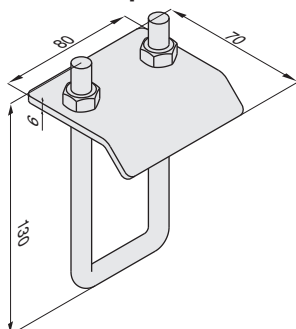
**⚠ When choosing CR-UT Suspension Set, appropriate CR-UT Suspension Set should be selected according to Busbar size.**



### Supports



### BR 1-34 Beam Clamp



Description	L (mm)	Code
IDD 300	300	3008314
IDD 400	400	3008313
IDD 500	500	3008312
IDD 600	600	3008311
IDD 700	700	3008310
IDD 800	800	3008309
IDD 900	900	3008308
IDD 1000	1000	3008307
IDD 1100	1100	3008306
IDD 1200	1200	3008305
IDD 1300	1300	3008304
IDD 1400	1400	3008303
IDD 1500	1500	3008302
IDD 1600	1600	3008301
IDD 1700	1700	3008300
IDD 1800	1800	3008299
IDD 1900	1900	3008298
IDD 2000	2000	3008297

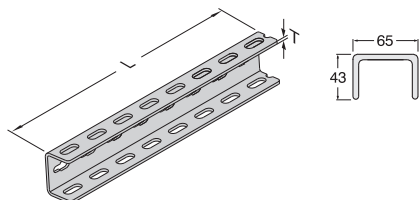
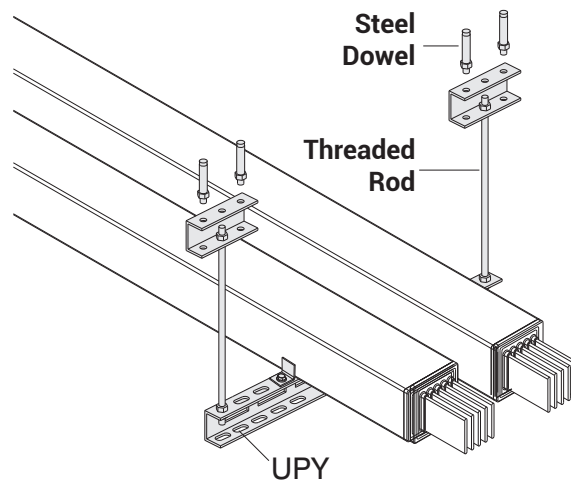
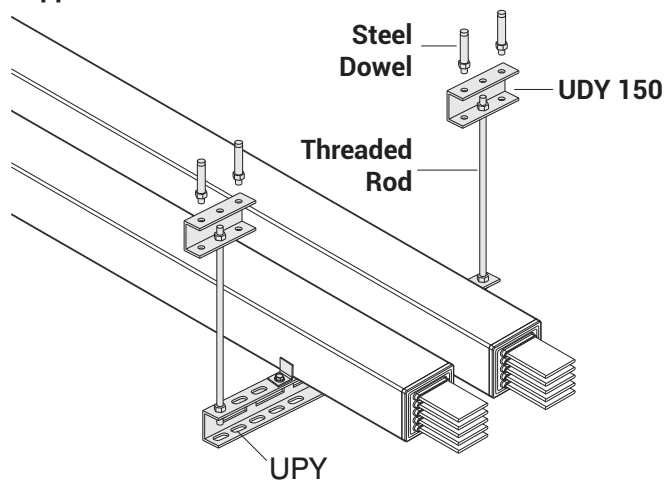
Description	L (mm)	Code
IDY 300	300	3008242
IDY 400	400	3008290
IDY 500	500	3008289
IDY 600	600	3008288
IDY 700	700	3008287
IDY 800	800	3008286
IDY 900	900	3008285
IDY 1000	1000	3008284
IDY 1100	1100	3008283
IDY 1200	1200	3008282
IDY 1300	1300	3008236
IDY 1400	1400	3008281
IDY 1500	1500	3008280
IDY 1600	1600	3008241
IDY 1700	1700	3008240
IDY 1800	1800	3008239
IDY 1900	1900	3008238
IDY 2000	2000	3008237

IDT Support Fitting	-	3008279
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Description	T (mm)	Weight (kg./pc.)	Order Code
BR 1-34 Beam Clamp (41x82mm)	6	0,563	3000213

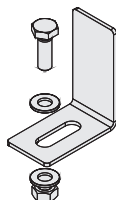
■ Please check our Suspension Systems (A-A) Catalogue to see our alternative solutions for suspension types.

### Supports



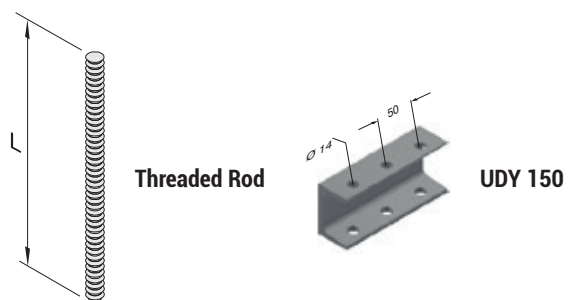
Description	T (mm)	L (mm)	Code
UPY 300	4	300	3004487
UPY 400	4	400	3004489
UPY 500	4	500	3004491
UPY 600	4	600	3004493
UPY 700	4	700	3004495
UPY 800	4	800	3004496
UPY 900	4	900	3004497
UPY 1000	4	1000	3004498
UPY 1100	4	1100	3004499
UPY 1200	4	1200	3004500
UPY 1500	4	1500	3004503

### CR-L Suspension Connection Kit

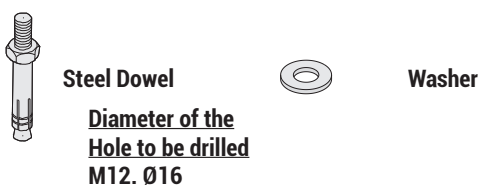


Description	Code
CR-L Suspension Connection Kit	2054886

### Connection Units



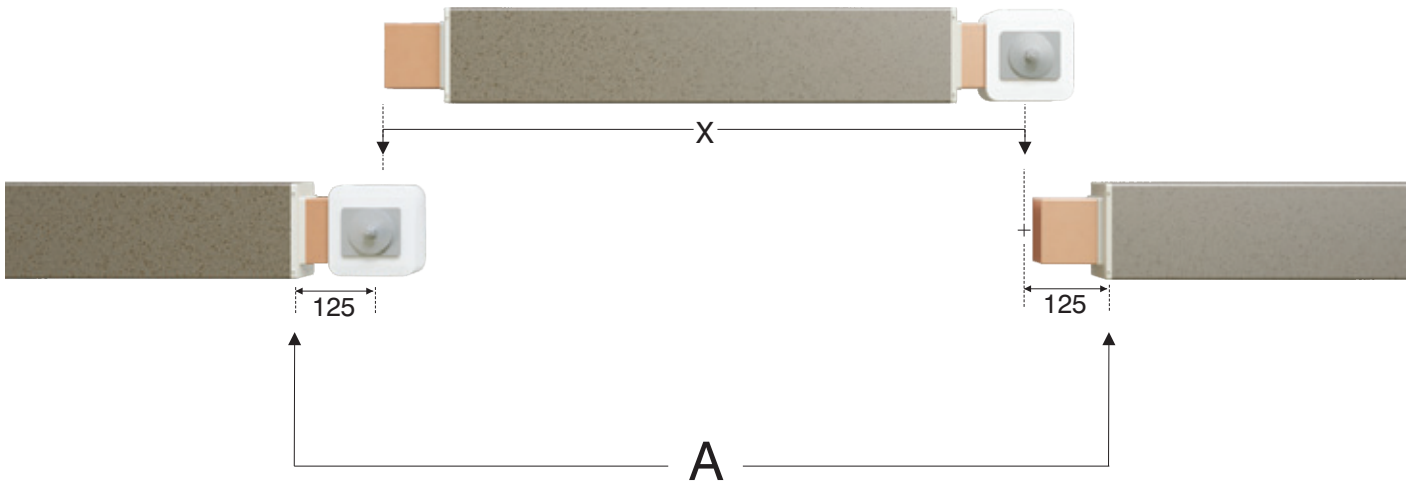
Description	L (mm)	Code
UDY 150	150	3008376
BRA 14-05 Threaded Rod (M12)	500	5000026
BRA 14-10 Threaded Rod (M12)	1000	5000034
BRA 13 Extension Unit (M12)	-	1004282
BRA 9 Steel Dowel (M12)	-	5000022
M12 Steel Nut	-	1000964
M12 Washer	-	1000505



**Diameter of the Hole to be drilled M12. Ø16**

After installation of standard 3m busbar lengths, special lengths ( make up pieces ) shorter than 3m may be required. The minimum length for these special pieces is 45cm

The busbar elements are positioned so that there is a distance of approximately 25 mm between the busbar ends.  
 $X = A - 25$  (cm)  
 $X = \text{Length of Special Busbar}$  (The busbar module will be manufactured as per X value.)



CRA - Al Conductor		CRC - Cu Conductor		Conductor Cross Section	4 Conductor	5 Conductor
Rated Current	Busbar Code	Rated Current	Busbar Code			
630	06	800	08	6x40	15	16
800	08	1000	10	6x55	16	17
1000	10	1250	12	6x80	18	19
1250	12	1600	16	6x110	20	21
1600	16	2000	20	6x160	23	25
2000	20	2500	25	6x200	26	28
2500	25	-	-	6x250	29	31
2250	23	3000	30	2(6x110)	32	34
-	-	3200	32	2(6x125)	34	37
-	-	3600	36	2(6x140)	36	39
3000	30	4000	40	2(6x160)	38	41
3200	33	-	-	2(6x170)	40	43
3600	36	5000	50	2(6x200)	43	47
4000	40	-	-	2(6x250)	53	57
5000	50	6300	63	3(6x200)	60	65

Total mixture weight of 1 Bucket is 15 kg



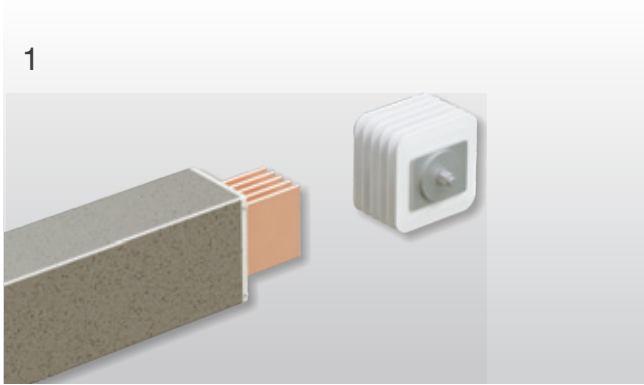
● The quantity must be determined according to number of joint in the project and ordered separately.

### ► Cast Resin Installation Tools

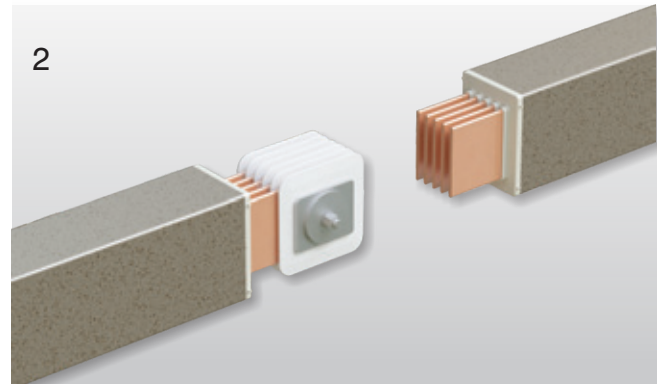
Description	Order Code
CR Joint Area Mixer	5000132
CR Plastic Hammer	5000310
CR Spoon Brush	5000311
Torque Wrench	5000048



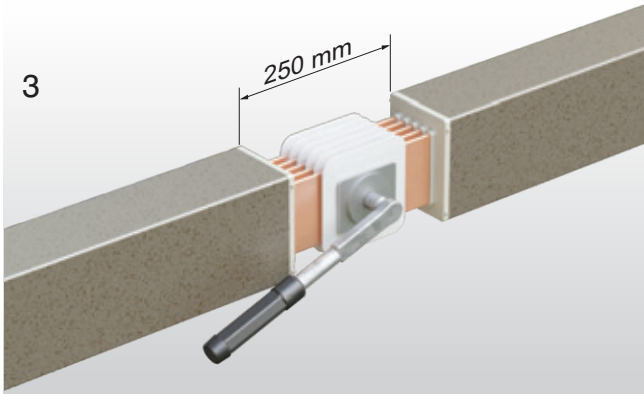




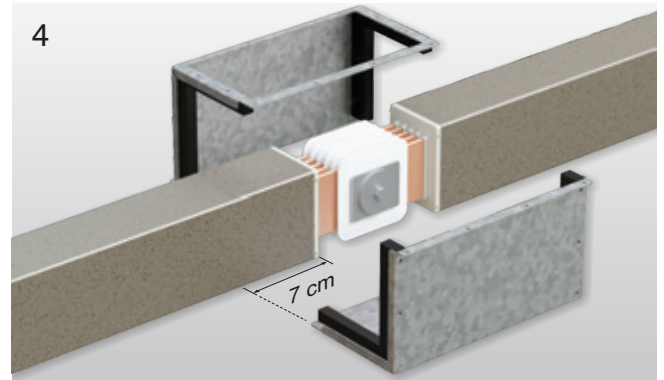
The exposed end parts of the busbar are to be cleaned with a clean piece of cloth. After the completion of the cleaning process install and fix the joint block. Tighten the joint bolt enough to hold the joint block in place.



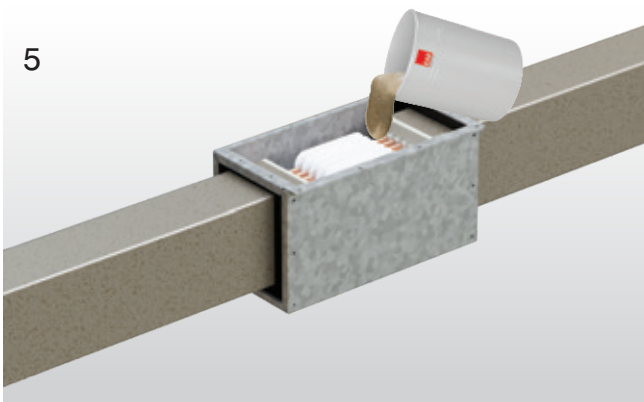
The second busbar length is introduced, slacken the joint block to allow the conductors to slide into the block. Then tighten the joint bolt.



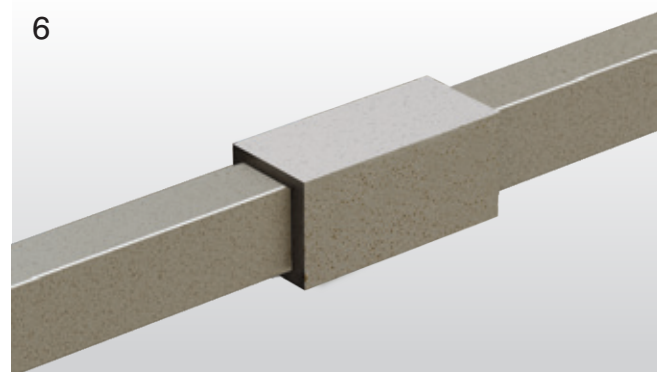
After checking the three parts for correct alignment and the distance between the two busbar lengths is 25cm, tighten the joint bolt to 82nm using a calibrated torque wrench.



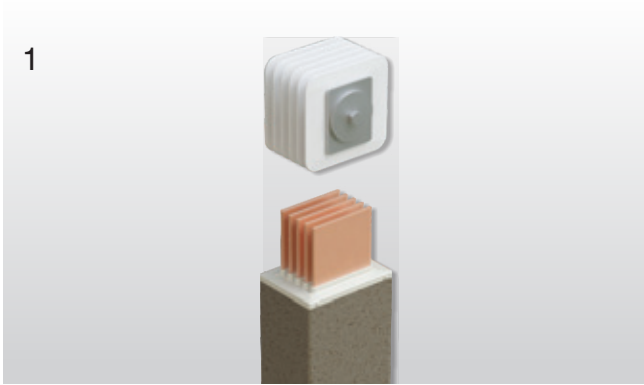
Fix the casting mould plates to the joint area of the two joined lengths. The casting mould plates should be fitted approximately 7cm from the end of the busbar.



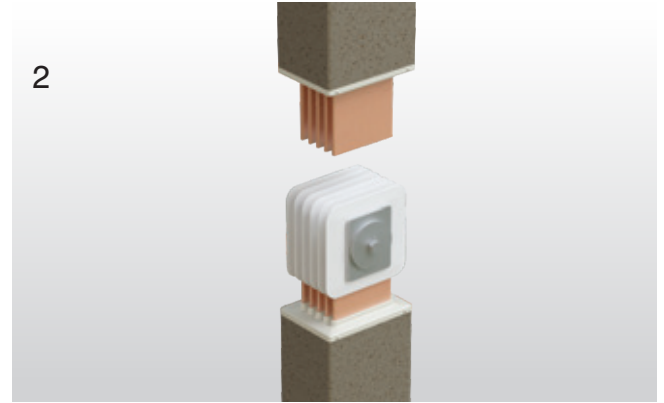
The casting material should be poured from the same position as shown.



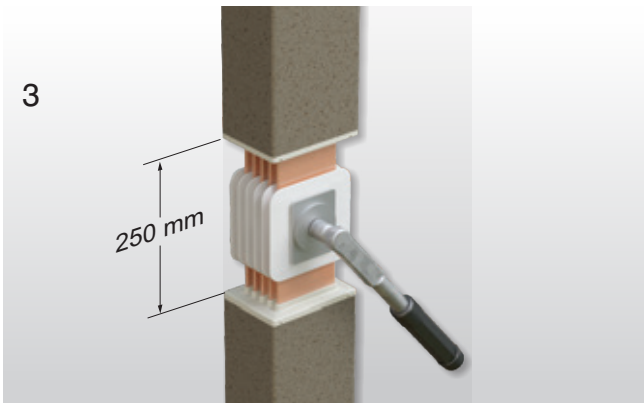
Please refer to the assembly manual for further instructions.



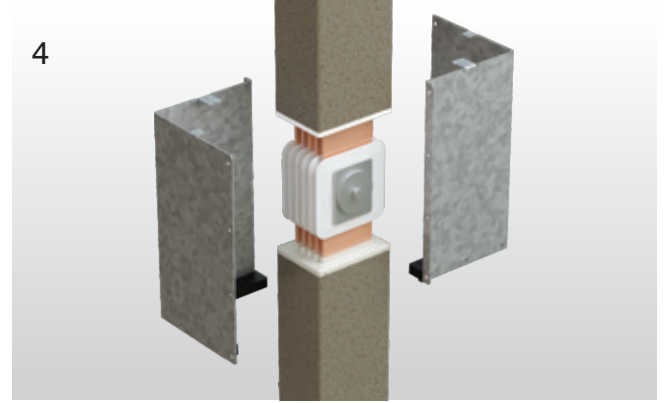
1  
The exposed end parts of the busbar are to be cleaned with a clean piece of cloth. After the completion of the cleaning process install and fix the joint block. Tighten the joint bolt enough to hold the joint block in place.



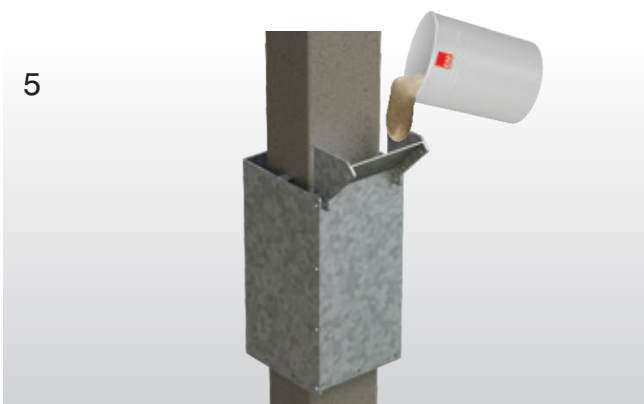
2  
The second busbar length is introduced, slacken the joint block to allow the conductors to slide into the block. Then tighten the joint bolt.



3  
After checking the three parts for correct alignment and the distance between the two busbar lengths is 25cm, tighten the joint bolt to 82nm using a calibrated torque wrench.



4  
Fix the casting mould plates to the joint area of the two joined lengths. The casting mould plates should be fitted approximately 7cm from the end of the busbar.



5  
Only fit the gaskets at the bottom of the mould plates so that the resin can be poured through the gap at the top of the plates.

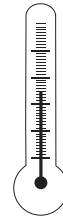


6  
Please refer to the assembly manual for further instructions.

Megger test must be done at joint and the result must be higher than  $1\text{m}^{\Omega}\text{hm}$

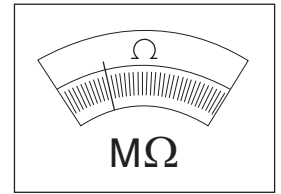
Resin (A), Hardener (B) and fillers; must be stored at least one day over ( $> 20\text{ }^{\circ}\text{C}$ ).

Ambient temperature of job side must be  $5^{\circ}\text{C} < T_{\text{amb}} < 40^{\circ}\text{C}$



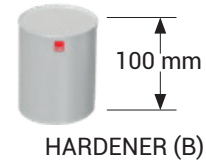
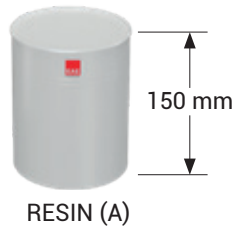
$< 5^{\circ}\text{C} \rightarrow \text{STOP}$   
 $> 35^{\circ}\text{C} \rightarrow \text{STOP}$

$T(^{\circ}\text{C})$



$\geq 1\text{M}\Omega$  OK  
 $< 1\text{M}\Omega$  NOT OK

### Preparation of Cast Resin Mixture



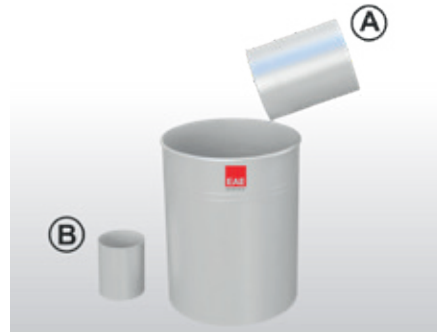
1

2

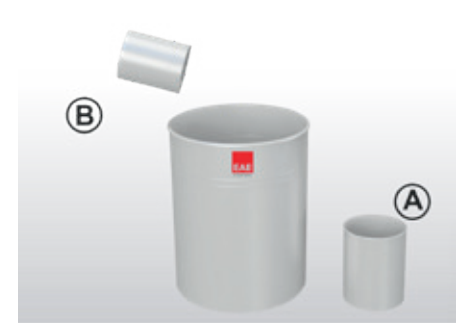
3



Filler removed from the plastic bucket and fillers have to be absolutely dry



Resin and hardener are mixed in plastic bucket.



4

5



Mix resin and hardener thoroughly with stirrer at least 1 minute.



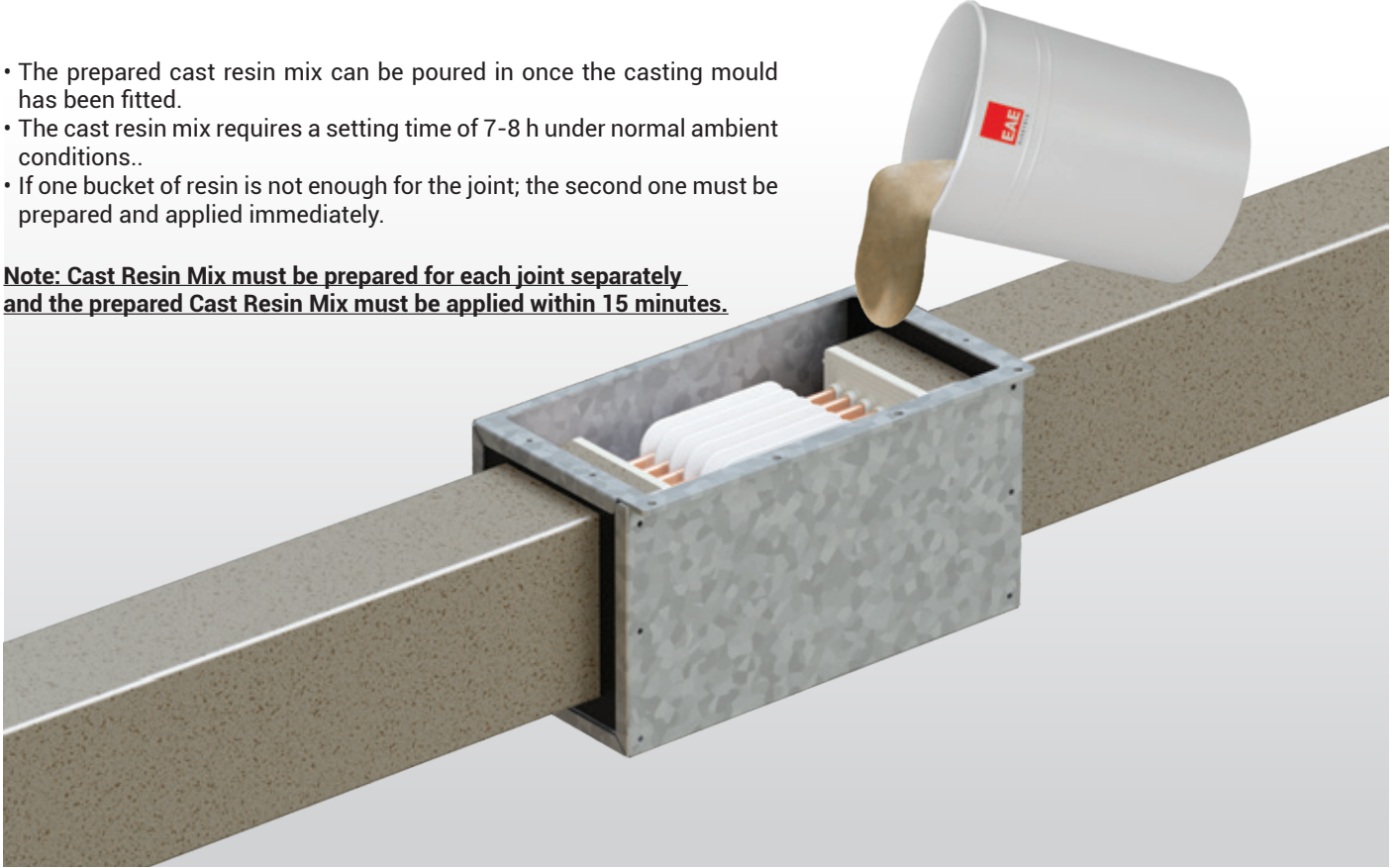
Add fillers and mix until homogeneous; at least 5 minutes. Then application must be done within 15 minutes.

### Horizontal Application

After all adjustments are made, the megger test and the slide electrical test are performed on the combined busbar system to ensure that there is no leakage and the material prepared in the bucket is poured into the additional zone. It is necessary to ensure that the poured material completely fills the joint block area. After finished vibrate the joint with a small hammer to ensure that the joint is completely filled with the resin material.

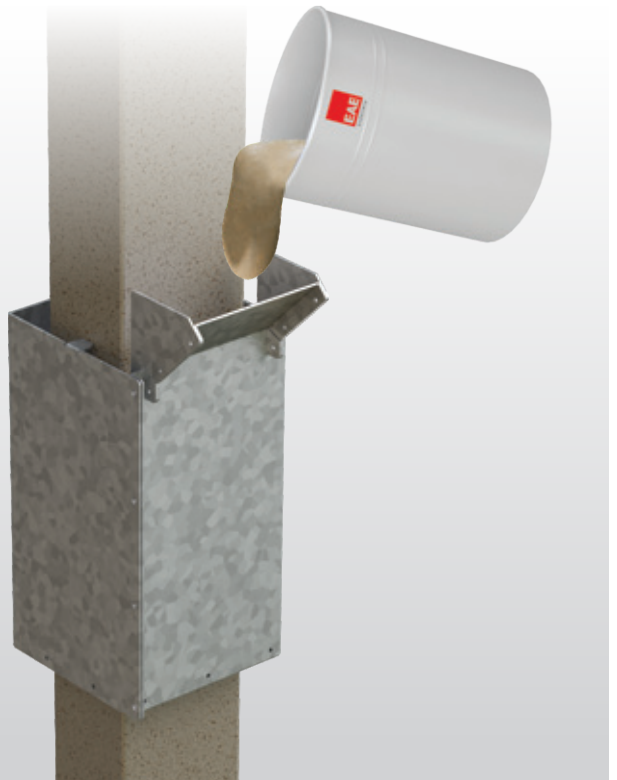
- The prepared cast resin mix can be poured in once the casting mould has been fitted.
- The cast resin mix requires a setting time of 7-8 h under normal ambient conditions..
- If one bucket of resin is not enough for the joint; the second one must be prepared and applied immediately.

**Note: Cast Resin Mix must be prepared for each joint separately and the prepared Cast Resin Mix must be applied within 15 minutes.**



### Vertical Application

**Note: In the vertical application the moulding plates should be supported from the bottom to ensure that the plates are secure.**



# CE DECLARATION OF CONFORMITY

**Product Group** E-Line CR Busbar Energy Distribution System

**Manufacturer** Akcaburgaz Mahallesi, 3114. Sokak,  
No:10 34522 Esenyurt-Istanbul

The objects of the declaration described below is in conformity with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

**Standard :**

**TS EN 61439-6**

Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems (busways)

**CE - Directive:**

2014/35/EU "The Low Voltage Directive"

2014/30/EU "Electromagnetic Compatibility (EMC) Directive"

2011/65/EU "Restriction of the use of certain hazardous substances (RoHS)"

**Technical Document Preparation Official ;**

EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.  
Akcaburgaz Mahallesi, 3114. Sokak, No:10 34522 Esenyurt-Istanbul

Emre GÜRLEYEN

**Date**

20.04.2016

**Document Authorized Signatory**

Elif Gamze KAYA OK  
Deputy General Manager



<p>For the product: Low-voltage busbar trunking system</p>			
<p>Requirements: IEC 61439-6: 2012; Clauses: 10.2.3, 10.2.6, 10.2.7, 10.2.101, 10.3, 10.4, 10.5, 10.9, 10.10, 10.11 and Annex BB, CC, and DD</p>			
	<p>DEKRA Certification B.V.</p> <p>F.S. Strikwerda Certification Manager</p> <p>is certificate and adjoining reports is allowed</p>		

DEKRA Certification B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem, The Netherlands  
 T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Company registration 09085396

## 630A...6300A COMPACT BUSBAR PRODUCT OVERVIEW (E-LINE CR)

### 1- Standards & Certification:

- Busbar trunking system shall be designed, type tested and, manufactured in accordance with the International standard IEC 61439-6. Type test shall be documented by independent and internationally accredited testing and certification bodies. Short circuit type tests shall be conducted by independent and accredited testing and certification bodies. Short circuit type tests and the following 3 main type tests shall be conducted for each current rating of the busbar system and conformity to the standards certificates obtained.

### 2- General Structure Of The System

The busbar system should be low impedance in accordance with the following characteristics. The tin coated conductors are arranged as a sandwich construction inside the resin body without any air gaps.

#### 2.1- Electrical Characteristics

- Busbar systems nominal insulation voltage shall be 1000V
- As per ampere rates, minimum short circuit values shall be as given below;

##### For Aluminium Conductors

630A	: 1sec/rms 20kA Peak 40kA
800A	: 1sec/rms 28kA Peak 58,8kA
1000A	: 1sec/rms 40kA Peak 84kA
1250A	: 1sec/rms 55kA Peak 121kA
1600-2000-2500A	: 1sec/rms 70kA Peak 154kA
2250-2500A	: 1sec/rms 100kA Peak 220kA
3000A and above	: 1sec/rms 120kA Peak 264kA

##### For Copper Conductors

800A	: 1sec/rms 23kA Peak 48,3kA
1000A	: 1sec/rms 32kA Peak 67,2kA
1250A	: 1sec/rms 45kA Peak 94,5kA
1600A	: 1sec/rms 60kA Peak 132kA
2000-2500A	: 1sec/rms 80kA Peak 176kA
3000A and above	: 1sec/rms 120kA Peak 264kA

#### 2.2- Housing

- The housing of the busbar system shall be manufactured with specially developed cast material.
- The structure of the busbar lengths shall have conductors tin plated along their complete length within the housing.
- Multi-path busbars should be combined in a single body so that they are not separated from each other.
- Up and down, right-left turn elements, "T" and offset elements, panel, transformer and cable connectors, termination, horizontal and vertical expansion elements should be standard in the Busbar trunking system. Special modules and different lengths busbar ducts that may be required during the application of the project must be manufactured in a short time in accordance with standard specifications and technology.
- If busbar runs pass through the building expansion joint a horizontal expansion element shall be used in the run. In addition horizontal expansion elements should be used every 40 m along a horizontal run.

#### 2.3- Conductors and Phase Configuration

Aluminium or Copper conductors shall be tin plated at the joints upon the wire configuration and required numbers, which are described below.

- Busbar system shall have aluminium conductors between 630A-5000A
- Busbar system shall have copper conductors between 800A-6300A
- Busbar system shall have the following number of conductors and wire configuration.
  - a) 3 Conductors
  - b) 4 Conductors
  - c) 4 1/2 Conductors
  - d) 5 Conductors
  - e) 6 Conductors

-Neutral conductor shall have the same cross section as the phase conductor cross section.

-Aluminium conductors shall be of EC grade aluminium. Minimum conductivity shall be 34m/mm<sup>2</sup>.Ω. All surfaces of aluminium conductors shall be tin plated

-Copper conductors shall be minimum 99,95% electrolytic copper. Minimum conductivity shall be 56m/mm<sup>2</sup>.Ω. all surfaces of electrolytic copper conductors shall be tin plated

#### 2.4- Insulation

-Busbars shall be insulated using a mixture of specially selected silica and calcite mixed with an electrical grade epoxy resin to make a superior composite material.

This insulation material must have a high impact resistance against external impacts.

#### 2.5- Modular Joint Construction

- The busbar lengths must be joined together with the joint's point drawer type modular block joint system by placing the conductors in the conductive socket in the block insert. Joint block insulators should be high strength CTP insulators. The joint block's centre bolt should be tightened with a torque wrench set to 83 Nm (60 lb ft) after installation

#### 2.6- Protection

- Protection degree of the housing and joints shall be IP68.

### 3- Installation and Commissioning

The installation of the busbar system should be done in accordance with the type and current values shown in these plans in accordance with the electrical project, electrical single line schemes, layout plans and detailed busbar application projects, the manufacturer's installation instructions must be observed carefully during the assembly process. The central joint's bolts must be tightened with the appropriate torque wrench and the nut side of the bolt must be secured with the nut locking cap.

After installation of the busbar system the installation should be checked for compliance with the manufacturer's instructions and the requirements of the project, an insulation test should be done. Insulation resistance between all conductors and body has to be bigger than 1 megaohm.


Component List		Quantity
Item	Component	
Company :		Prepared by
Project :		
Project No :		
Name :		
Date :		
Signature :		

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Component List		
Item	Component	Quantity


Company :	Project :	Project No :
Prepared by		
Name :	Date :	Signature :



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Component List		
Item	Component	Quantity

Company :	
Project :	
Project No :	
Name :	
Date :	
Signature :	
Prepared by	



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# PRODUCT TYPES



**BUSBAR ENERGY DISTRIBUTION SYSTEMS**

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**CABLE TRAYS**

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**TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS**

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**INDOOR SOLUTIONS**

---



**SUPPORT SYSTEMS**

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EAE Elektrik A.S.  
Head Office  
Akcaburgaz Mahallesi,  
3114. Sokak, No:10 34522  
Esenyurt - Istanbul - TURKEY  
Tel: +90 (212) 866 20 00  
Fax: +90 (212) 886 24 20

EAE DL 3 Factory  
Busbar  
Gebze IV Istanbul Makine ve Sanayicileri  
Organize Bolgesi, 6. Cadde,  
No: 6 41455 Demirciler Koyu,  
Dilovası - Kocaeli - TURKEY  
Tel: +90 (262) 999 05 55  
Fax: +90 (262) 502 05 69

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