EAE
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E-LINE CCR

Busbar Systems 850A...6300A

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E-LINE CCR

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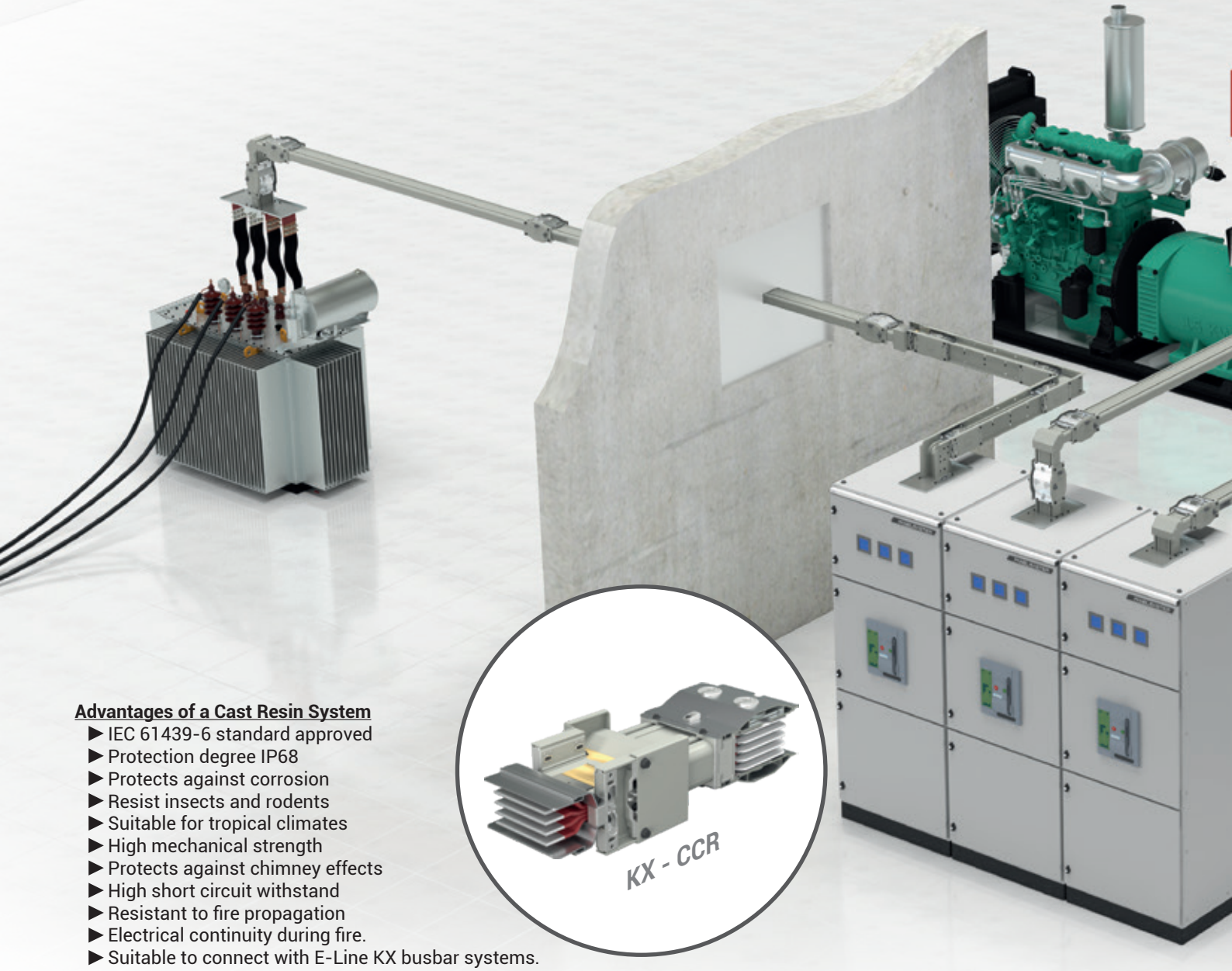
E-LINE CCR

▶▶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.

Safe and Easy Installation

Detachable IP 68 Ext.
Due to alignment piece on the joint point, block joint element and busbar tray are aligned. This makes installation easier and correct on the right axes.



Advantages of a Cast Resin System

- ▶ IEC 61439-6 standard approved
- ▶ Protection degree IP68
- ▶ Protects against corrosion
- ▶ 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.
- ▶ Voltage layout advantage thanks to its compact structure

***Special components can be manufactured quickly.**

E-LINE CCR

High IP Isolation
Aluminium body over the IP 68 “DUROCOMP” composite material that is made by specially selected pure silicium minerals and epoxy resin and has high temperature and mechanical operation features protects E-LINE CCR busbar from external elements.

Effective Heat Dissipation
Heat accumulated in conductors are transferred into the environment through the aluminium body thanks to the additives with high heat transfer rate used in the system. (Figure 1)

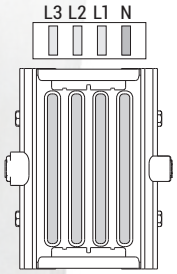
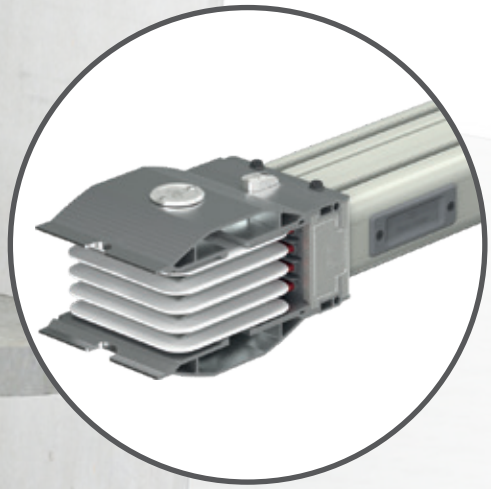


Figure 1



Short Circuit Withstand
High mechanical and thermal resistance within aluminium body thanks to DUROCOMP material.

One Bolt Joint Ensures Safety and Easy Installation

E-Line CRR Busbars are installed by tightening the “one bolt joint”. **Belleville spring washers** on both ends of the bolt retains the original contact pressure, ensuring a more secure, reliable and maintenance - free joint.

***The bolt is tightened to 83Nm (60 lbft)**

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

E-LINE CCR

▶▶Distribution & Horizontal Applications

When using the E-Line CCR 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 CCR 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.

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

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

I_B = Operation current (A)
P = Total power load (W)
α = Utilisation factor (diversity)
U = Supply voltage (V)

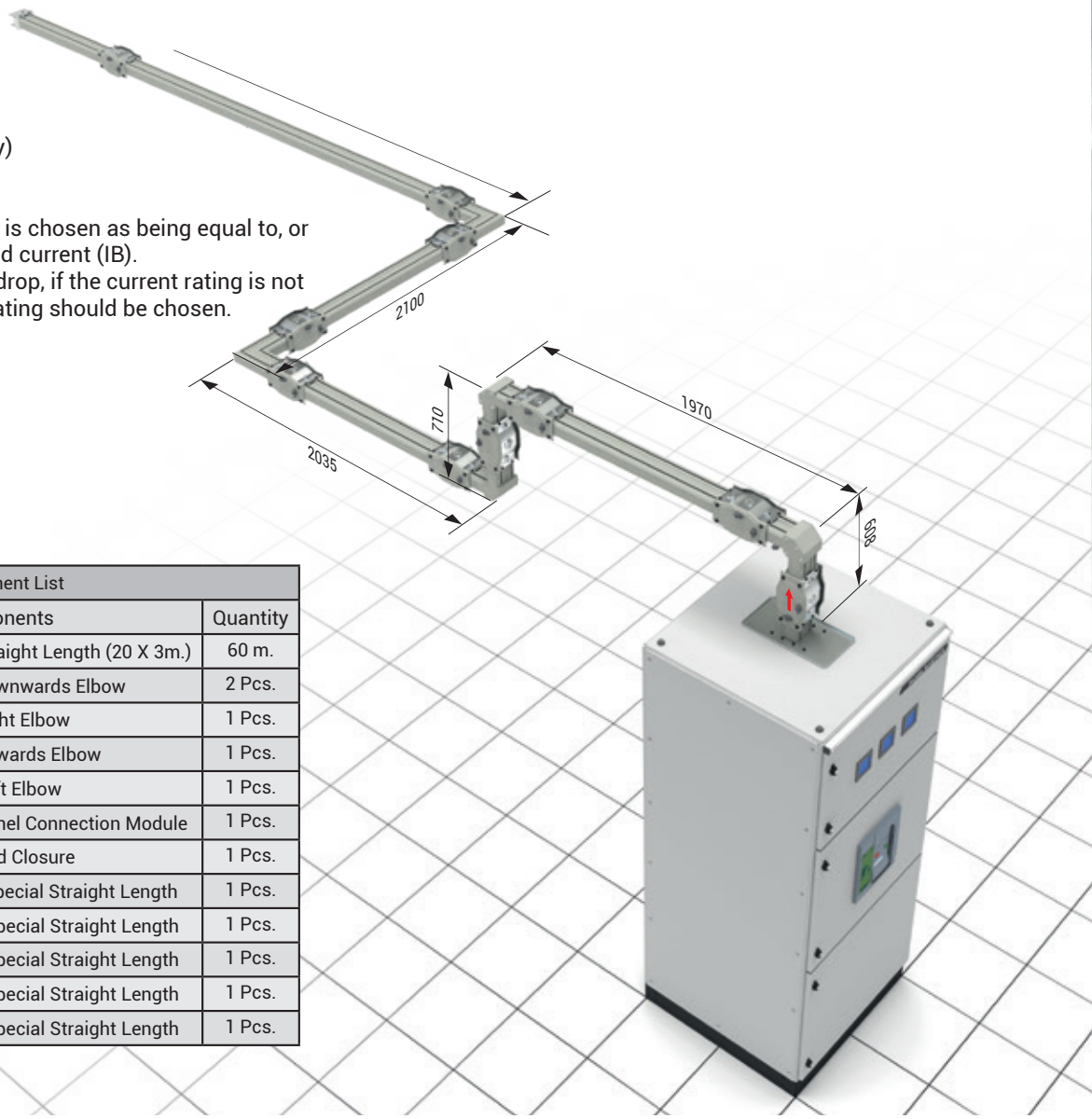
- The busbar current rating is chosen as being equal to, or greater than the calculated current (IB).
- After calculating the volt drop, if the current rating is not adequate, then a higher rating should be chosen.

Utilisation Factor (Diversity)
The utilisation factor (a) 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 CCR.

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



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

E-LINE CCR

▶▶Riser & Vertical Applications

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

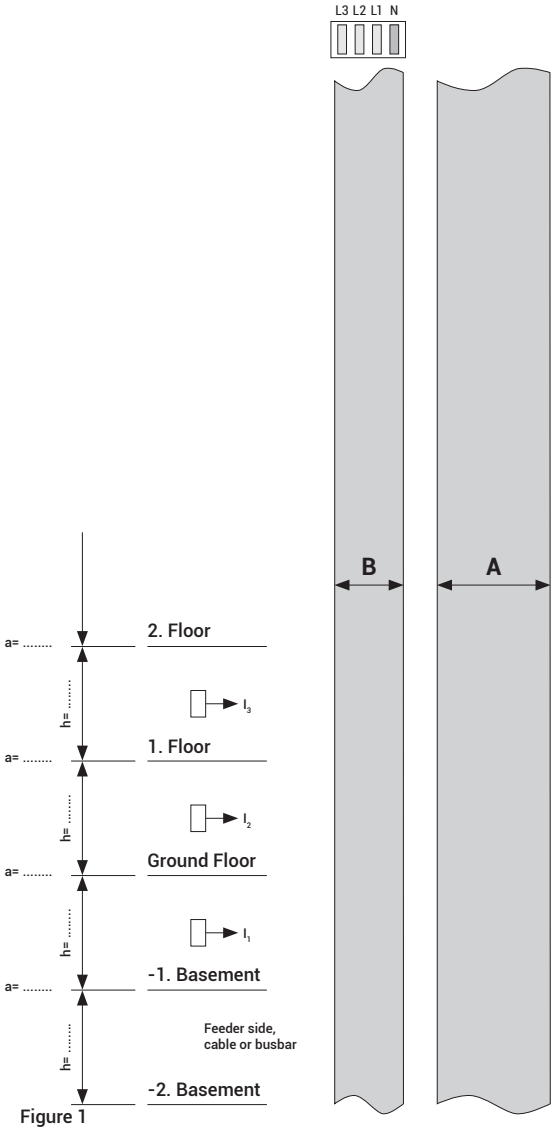


Figure 1

Pre-Project Design and cost Analysis

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

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.

Please refer to table on page 9 for "A" size.

Number of Conductors	B (mm)
3 Conductors	73
4 Conductors	80
4 ½ Conductors	87
5 Conductors	87

E-LINE CCR

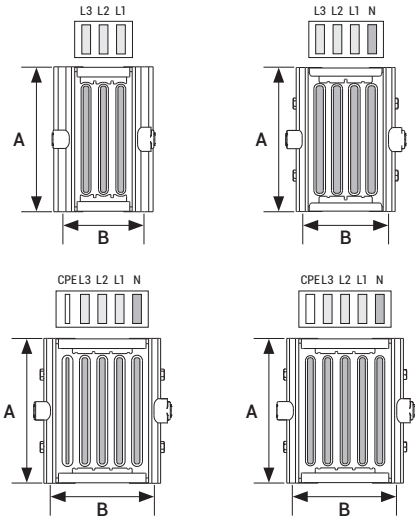
▶▶Technical Characteristics

Copper Conductor (Cu)

Rated Current	I_n	A	850	1000	1250	1600	2000	2500
Busbar Code			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 Operational Voltage	U_e	V	1000	1000	1000	1000	1000	1000
Rated Isolation Voltage	U_i	V_{ac}	1000	1000	1000	1000	1000	1000
Rated Impulse Withstand Voltage	U_{imp}	kV	12	12	12	12	12	12
Rated Frequency	f	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Pollution Degree			III	III	III	III	III	III
Protection Degree	IP 68		IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
External Mechanical Impacts (IK Code)*	50J, >IK10		50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10
Rated Short-time Withstand Current (1s - 3 phase)	I_{cw}	kA	23	50	80	80	80	95
Rated Peak Withstand Current	I_{pk}	kA	48,3	105	176	176	176	210,5
Rated Short-time Withstand Current for Neutral Conductor (1s) (Single phase)	I_{cw}	kA	13,8	31,2	49,5	49,5	49,5	65,2
Rated Peak Withstand Current for Neutral Conductor (Phase-Neutral)	I_{pk}	kA	27,6	65,9	106,4	106,4	106,4	137,4
Rated Short-time Withstand Current for PE (Housing-Phase) Conductor	I_{cw}	kA	13,8	31,2	49,5	49,5	49,5	65,2
Rated Peak Withstand Current for PE (Housing-Phase) Conductor	I_{pk}	kA	27,6	65,9	106,4	106,4	106,4	137,4
PHASE CONDUCTOR CHARACTERISTICS (In)								
Resistance at a conductor temperature of 20 °C	R_{20}	mΩ/m	0,0648	0,0534	0,0358	0,0256	0,0198	0,0181
Resistance at an ambient air temperature of 35 °C	R	mΩ/m	0,0890	0,0727	0,0473	0,0345	0,0263	0,0242
Reactance (Independent from Temperature)	X	mΩ/m	0,0281	0,0246	0,0180	0,0132	0,0097	0,0084
Positive and negative sequence impedances at an ambient air temperature of 35°C	Z	mΩ/m	0,0934	0,0768	0,0506	0,0369	0,0281	0,0256
Positive and negative sequence impedances at an ambient air temperature of 20°C	Z_{20}	mΩ/m	0,0706	0,0588	0,0401	0,0288	0,0221	0,0200
Rated Power Loss at 35°C		W/m	190,8	212,3	219,5	269,7	304,9	447,9
DC Resistance at a conductor temperature of 20°C for Phases	$R_{ph(dc)}$	mΩ/m	0,460	0,362	0,243	0,177	0,129	0,123
DC Resistance at a conductor temperature of 20°C for Neutral	$R_{N(dc)}$	mΩ/m	0,460	0,362	0,243	0,177	0,129	0,123
DC Resistance at a conductor temperature of 20°C for PE	$R_{PE(dc)}$	mΩ/m	0,362	0,362	0,277	0,213	0,225	0,156
SECTIONS								
L1, L2, L3 (Phase Conductor)		mm^2	270	330	480	660	900	960
Neutral		mm^2	270	330	480	660	900	960
PE (Aluminium Housing)		mm^2	1261	1261	1784	1984	2379	3568
Conductor Dimensions		mmxmm	6x45	6x55	6x80	6x110	6x150	2(6x80)
Busbar Weight (4 conductors)		kg/m	23,5	23,5	31	41	54,75	61,25
MEAN FAULT-LOOP CHARACTERISTICS								
Zero-sequence Impedance								
Zero-sequence impedance at a conductor temperature of 20°C (Phase-Neutral)	$Z_{(0)b20phN}$	mΩ/m	0,336	0,280	0,194	0,146	0,108	0,100
Zero-sequence impedance at a conductor temperature of 20°C (Phase-Housing)	$Z_{(0)b20phPE}$	mΩ/m	0,279	0,267	0,196	0,155	0,122	0,102
Zero-sequence impedance at an ambient temperature of 35°C (Phase-Neutral)	$Z_{(0)bphN}$	mΩ/m	0,439	0,360	0,243	0,186	0,136	0,127
Zero-sequence impedance at an ambient temperature of 35°C (Phase-Housing)	$Z_{(0)bphPE}$	mΩ/m	0,337	0,329	0,232	0,187	0,145	0,121
Mean Resistances and Reactances								
Resistance at a conductor temperature of 20°C	$R_{b20phph}$	mΩ/m	0,136	0,110	0,074	0,055	0,041	0,038
Resistance at a conductor temperature of 20°C	R_{b20phN}	mΩ/m	0,141	0,114	0,078	0,059	0,043	0,041
Resistance at a conductor temperature of 20°C	$R_{b20phPE}$	mΩ/m	0,111	0,107	0,072	0,056	0,043	0,037
Resistance at an ambient air temperature of 35°C	R_{bphph}	mΩ/m	0,187	0,150	0,098	0,075	0,055	0,051
Resistance at an ambient air temperature of 35°C	R_{bphN}	mΩ/m	0,194	0,156	0,103	0,079	0,057	0,054
Resistance at an ambient air temperature of 35°C	R_{bphPE}	mΩ/m	0,153	0,145	0,095	0,076	0,057	0,049
Reactance (Independent from temperature)	X_{bphph}	mΩ/m	0,053	0,046	0,033	0,025	0,019	0,016
Reactance (Independent from temperature)	X_{bphN}	mΩ/m	0,075	0,065	0,048	0,036	0,026	0,024
Reactance (Independent from temperature)	X_{bphPE}	mΩ/m	0,083	0,070	0,054	0,043	0,034	0,027

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	3400	4000	5000	5750	6300
32	34	40	50	57	63
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
12	12	12	12	12	12
50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
III	III	III	III	III	III
IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10
95	95	95	95	95	95
210,5	210,5	210,5	210,5	210,5	210,5
65,2	65,2	65,2	65,2	65,2	65,2
137,4	137,4	137,4	137,4	137,4	137,4
65,2	65,2	65,2	65,2	65,2	65,2
137,4	137,4	137,4	137,4	137,4	137,4
0,0133	0,0120	0,0107	0,0080	0,0063	0,0057
0,0180	0,0160	0,0145	0,0106	0,0082	0,0075
0,0066	0,0057	0,0053	0,0038	0,0030	0,0028
0,0192	0,0169	0,0154	0,0112	0,0088	0,0080
0,0148	0,0132	0,0119	0,0088	0,0070	0,0063
538	543,1	674,3	782,6	776,2	843,9
0,090	0,080	0,071	0,053	0,042	0,039
0,090	0,080	0,071	0,053	0,042	0,039
0,126	0,267	0,119	0,112	0,115	0,091
1320	1500	1680	2250	2880	3240
1320	1500	1680	2250	2880	3240
3698	4430	4569	6645	7137	7515
2(6x110)	2(6x125)	2(6x140)	3(6x125)	3(6x160)	3(6x180)
82	92,5	102	138	166,38	211
0,074	0,067	0,059	0,040	0,035	0,031
0,081	0,085	0,064	0,044	0,040	0,038
0,094	0,084	0,075	0,051	0,043	0,040
0,096	0,103	0,076	0,052	0,047	0,044
0,027	0,025	0,021	0,017	0,013	0,012
0,029	0,026	0,023	0,018	0,014	0,012
0,028	0,029	0,022	0,016	0,014	0,013
0,037	0,033	0,029	0,022	0,017	0,015
0,039	0,035	0,031	0,023	0,018	0,016
0,037	0,039	0,030	0,022	0,018	0,017
0,012	0,011	0,010	0,007	0,006	0,005
0,018	0,016	0,015	0,011	0,008	0,008
0,022	0,021	0,017	0,013	0,011	0,010

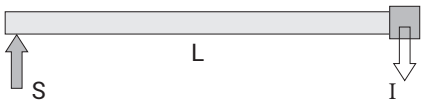


Voltage Drop Calculation

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

$$\Delta U = \sqrt{3}.L.I.(R_1.Cos\varphi + X_1.Sin\varphi)\ 10^{-3}\ [V]$$

ΔU	= Voltage Drop (V)
L	= Line Length (m)
I	= Line Current or Load (A)
R_1	= Resistance (mΩ/m)
X_1	= Reactance (mΩ/m)
Cosφ	= 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.

E-LINE CCR

▶▶Order Code System

BUSBAR
CONDUCTOR MATERIAL
BUSBAR CODE
PROTECTION DEGREE
CONDUCTOR CONFIGURATION
BUSBAR TYPE
COMPONENT

CCR | C | 12 | 8 | 04 - B - STD

BUSBAR TYPE

Busbar Type	

CONDUCTOR MATERIAL

Copper	(Cu)	C

CCR - Cu Conductor		Conductor Cross Section
Rated Current	Busbar Code	
850	08	6x45
1000	10	6x55
1250	12	6x80
1600	16	6x110
2000	20	6x150
2500	25	2(6x80)
3200	32	2(6x110)
3400	34	2(6x125)
4000	40	2(6x140)
5000	50	3(6x125)
5750	57	3(6x160)
6300	63	3(6x180)

BUSBAR CODE

PROTECTION DEGREE

IP68	8

Number of Conductors	Code	Conductor Configuration								
		L1	L2	L3	N	Earth	½ Earth	Clean Earth	½ Clean Earth	Earth (Hosing)
3 Conductor	03	√	√	√						√
4 Conductor	04	√	√	√	√					√
4 ½ Conductor	08	√	√	√	√				√	√
5 Conductor	09	√	√	√	√			√		√

* TYPE	Utilisation Type
(B) Bolt-on	Where there is no need for tap off boxes, power is is supplied from one point to the other end point of the line.

COMPONENT

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 Vertical Offset	UV
Downwards Vertical Offset	DV
Upwards Left Combined Offset	KUL
Upwards Right 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	S10
End Closure	S11
Reduction	RD
Crossing Module	CCRKX
Right Side Feeder "T"	TYR
Left Side Feeder "T"	TYL
Central Feeder "T" Module	TO
Horizontal Expansion	YDT
Vertical Expansion	DDT
Phase Transposition Module	FDM
Panel Connection	P10
Panel/Transformer Connection	TR11
Upwards Panel Connection	PU20
Upwards Panel/Transformer Con.	TU21
Downwards Panel Connection	PD20
Downwards Panel/Transformer Con.	TD21
Right Panel Connection	PR30
Right Panel/Transformer Con.	TR31
Left Panel Connection	PL30
Left Panel/Transformer Con.	TL31
Horizontal Panel Connection	P40
Horizontal Panel/Transformer Con.	TR41
Transformer Connection	TR61
Transformer Connection	TR71

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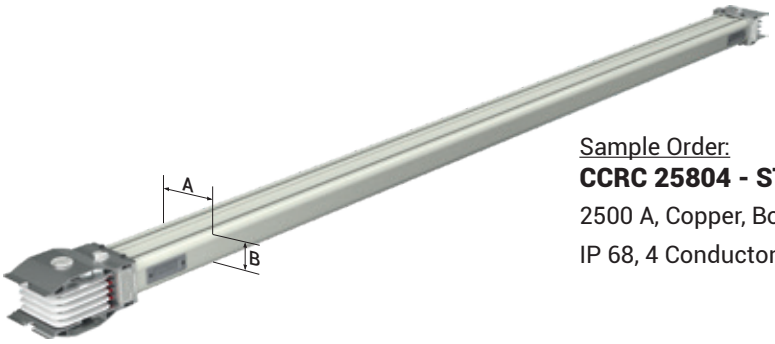
▶▶Standard Straight Length

Standard Feeder Straight Length - STD



Sample Order:

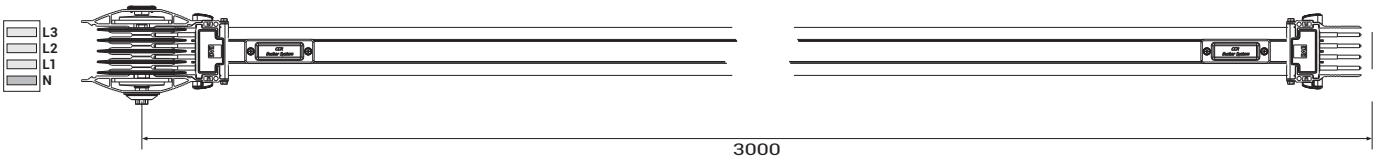
CCRC 25804 - STD

2500 A, Copper, Bolt-on,

IP 68, 4 Conductor

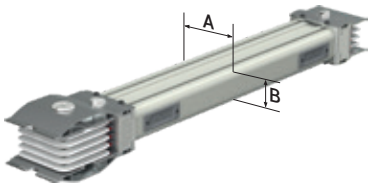
Application Areas:

- Between Transformer - Panel Applications
- Between Panel to Panel Applications
- Generator and Compensation
- Panels Feeding



Special Straight Length - X

Special Straight Length in (mm)



Sample Order:

CCRC 25804 - X - 147

2500 A, Copper, Bolt-on,
IP 68, 4 Conductor, 1470 mm

Special Straight Length

information:

Feeder Minimum Midsize = 450 mm

Application Areas:

- Between Transformer - Panel Applications
- Between Panel to Panel Applications
- Generator and Compensation
- Panels Feeding

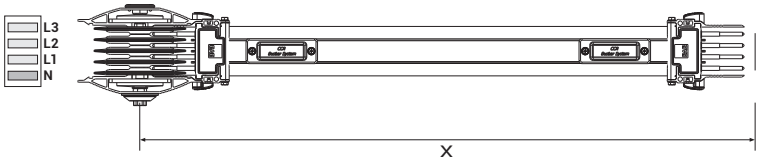


Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	85	85	110	140	180	230	290	320	350	485	590	650

Number of Conductors	3 Conductor	4 Conductor	4 ½ Conductor	5 Conductor
B (mm)	73	80	87	87

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.

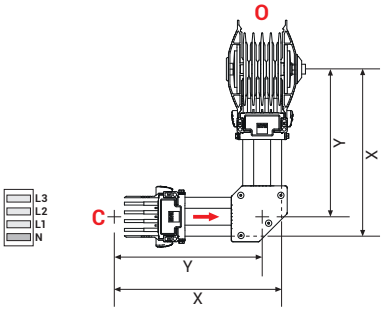
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

E-LINE CCR

▶▶Elbows

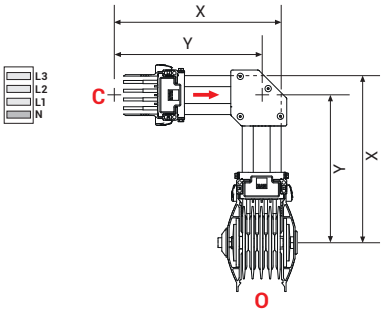
Upwards Elbow - U

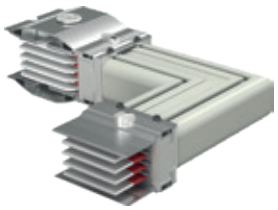
Sample Order:
CCRC 32804 - B - U
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Downwards Elbow - D

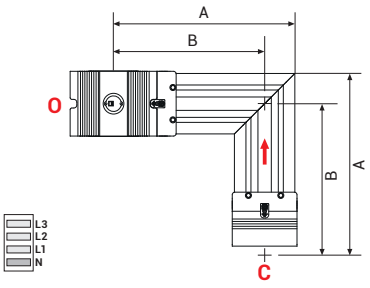
Sample Order:
CCRC 32804 - B - D
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor





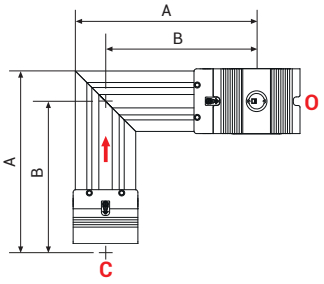
Left Elbow - L

Sample Order:
CCRC 32804 - B - L
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Right Elbow - R

Sample Order:
CCRC 32804 - B - R
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Conductor Dimension Table

CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307

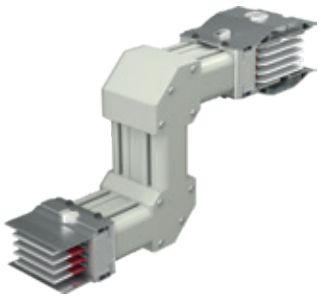
Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

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

E-LINE CCR

▶▶Elbows



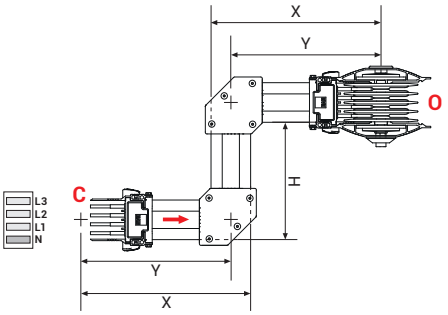
Upwards Vertical Offset - UV

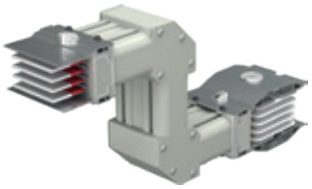
Sample Order:

CCRC 32804 - B - UV

H=60cm, 3200 A, Copper,

Bolt-on, IP 68, 4 Conductor





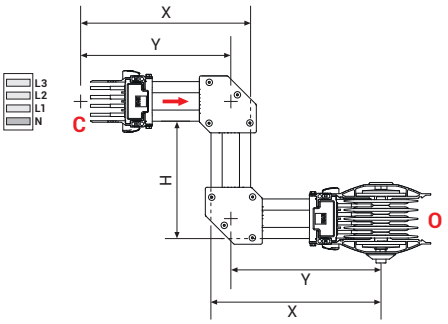
Downwards Vertical Offset - DV

Sample Order:

CCRC 32804 - B - DV

H=60cm, 3200 A, Copper,

Bolt-on, IP 68, 4 Conductor



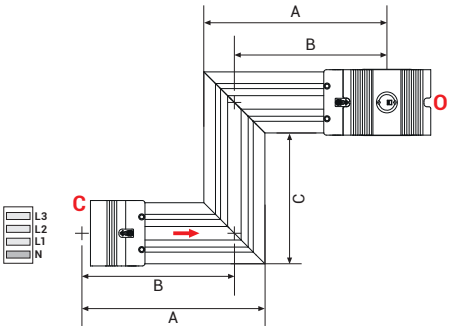
Left Horizontal Offset - LH

Sample Order:

CCRC 32804 - B - LH

C=60cm, 3200 A, Copper,

Bolt-on, IP 68, 4 Conductor



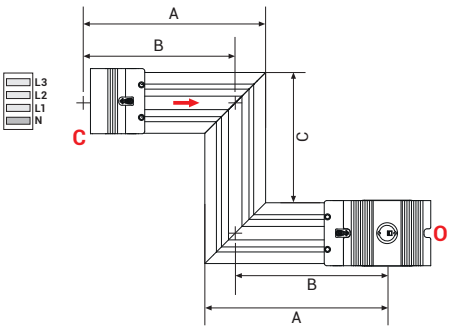
Right Horizontal Offset - RH

Sample Order:

CCRC 32804 - B - RH

C=60cm, 3200 A, Copper,

Bolt-on, IP 68, 4 Conductor



Conductor Dimension Table

CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307
H	(mm)	231	238	245	245

C min= 280mm

H max. 3 Conductors = 601mm
H max. 4 Conductors = 608mm
H max. 4½ Conductors = 615mm
H max. 5 Conductors = 615mm

Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565
C max.	(mm)	565	565	590	620	660	710	770	800	830	965	1070	1130

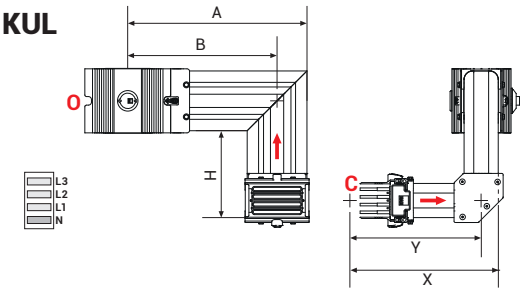
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

E-LINE CCR

▶▶Elbows

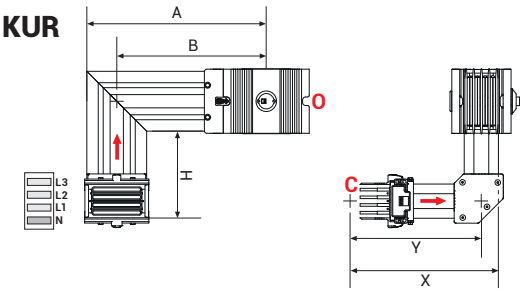
Upwards Left Combined Offset - KUL

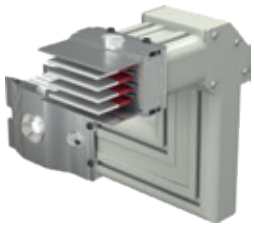
Sample Order:
CCRC 32804 - B - KUL
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Upwards Right Combined Offset - KUR

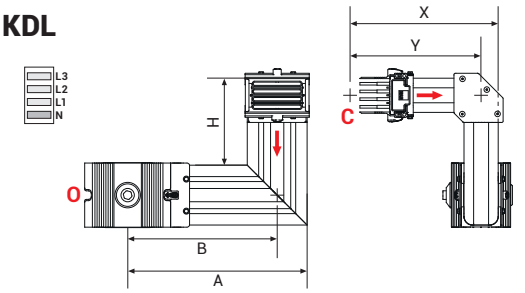
Sample Order:
CCRC 32804 - B - KUR
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor

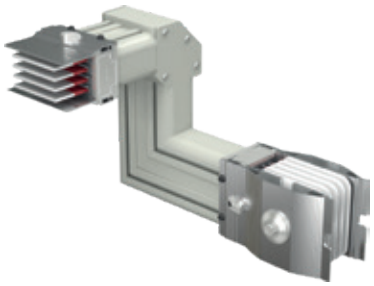




Downwards Left Combined Offset - KDL

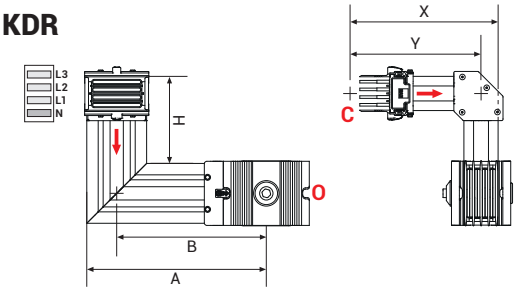
Sample Order:
CCRC 32804 - B - KDL
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor





Downwards Right Combined Offset - KDR

Sample Order:
CCRC 32804 - B - KDR
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Conductor Dimension Table

CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307
H	(mm)	231	238	245	245

H max. 3 Conductors = 577mm
H max. 4 Conductors = 584mm
H max. 4½ Conductors = 591mm
H max. 5 Conductors = 591mm

Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

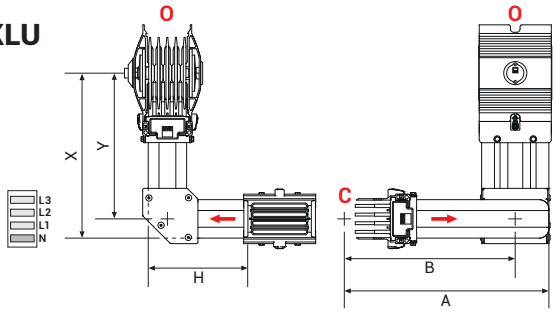
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.

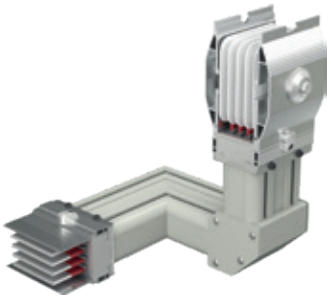
E-LINE CCR

▶▶Elbows

Left Upwards Combined Offset - KLU

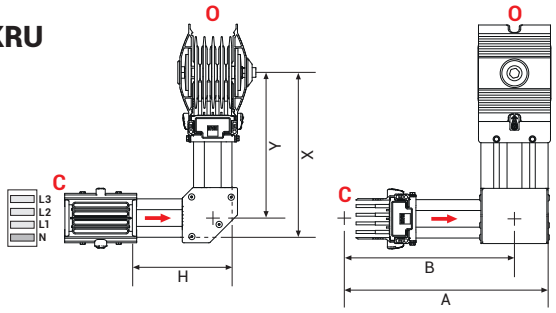
Sample Order:
CCRC 32804 - B - KLU
3200 A, Copper, Bolt-on, IP 68, 4 Conductor





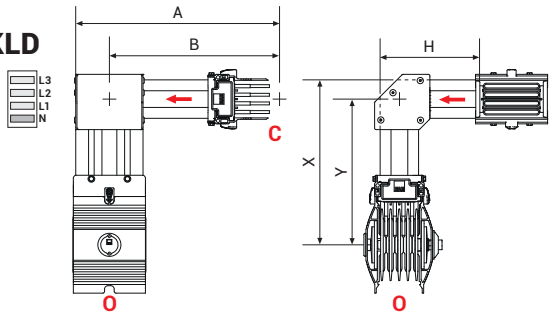
Right Upwards Combined Offset - KRU

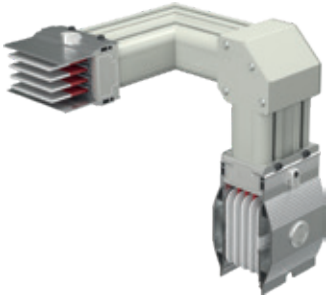
Sample Order:
CCRC 32804 - B - KRU
3200 A, Copper, Bolt-on, IP 68, 4 Conductor



Left Downwards Combined Offset - KLD

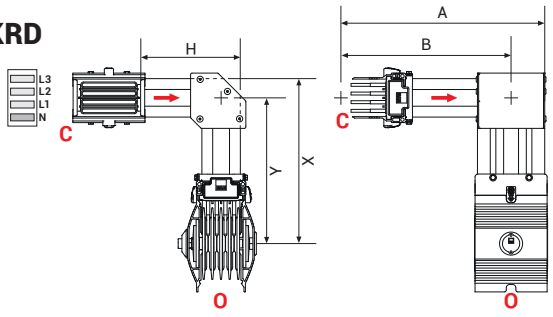
Sample Order:
CCRC 32804 - B - KLD
3200 A, Copper, Bolt-on, IP 68, 4 Conductor





Right Downwards Combined Offset - KRD

Sample Order:
CCRC 32804 - B - KRD
3200 A, Copper, Bolt-on, IP 68, 4 Conductor



Conductor Dimension Table

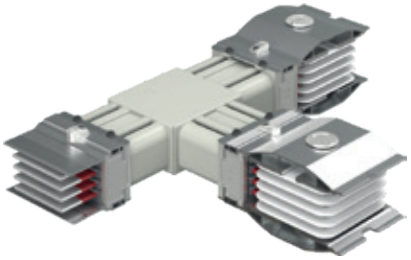
CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307
H	(mm)	231	238	245	245

H max. 3 Conductors = 577mm
H max. 4 Conductors = 584mm
H max. 4½ Conductors = 591mm
H max. 5 Conductors = 591mm

Table For Outer Dimension of Busbars

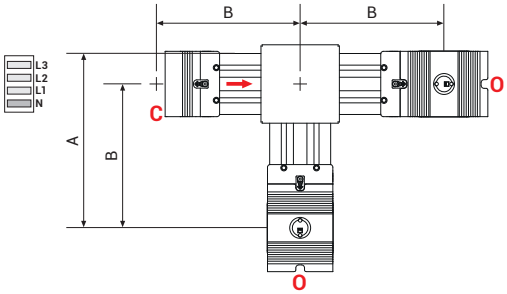
CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

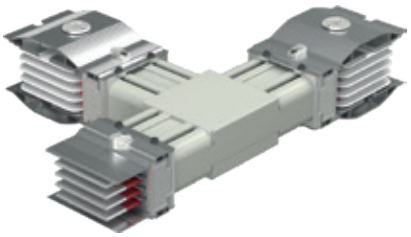
■ The dimensions given above are minimum values. ■ Please call us for non-standard components.



Right "T" Module - TYR

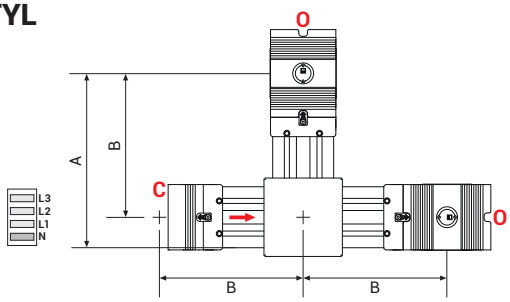
Sample Order:
CCRC 32804 - B - TYR
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor

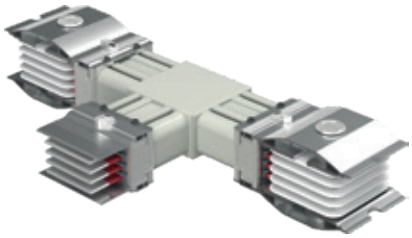




Left "T" Module - TYL

Sample Order:
CCRC 32804 - B - TYL
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor





Central Feeder "T" Module - TO

Sample Order:
CCRC 32804 - B - TO
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor

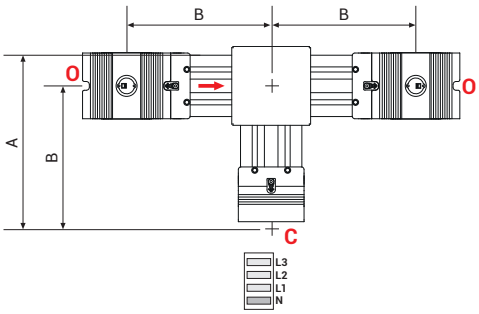


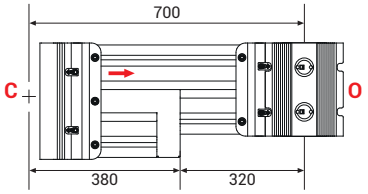
Table For Outer Dimension of Busbars

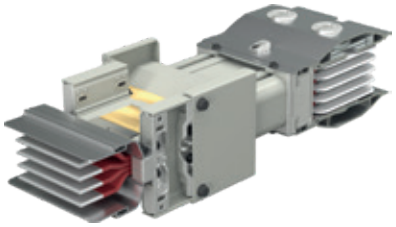
CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

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

Reduction Modules - RD

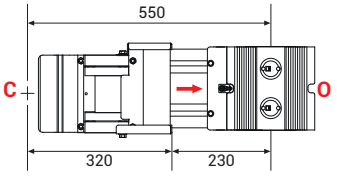
Sample Order:
CCRC 32804 - B - RD
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor





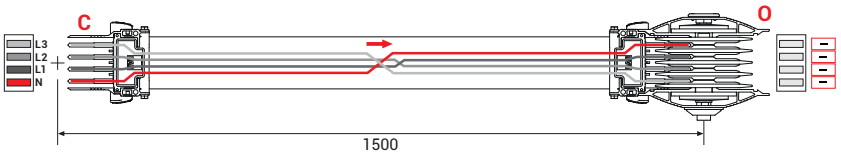
KX - CCR Crossing Module - CCRKX

Sample Order:
CCRC 32804- B - CCRKX
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



Phase Transposition Module - FDM

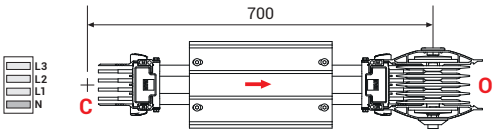
Sample Order:
CCRC 32804- B - FDM
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



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

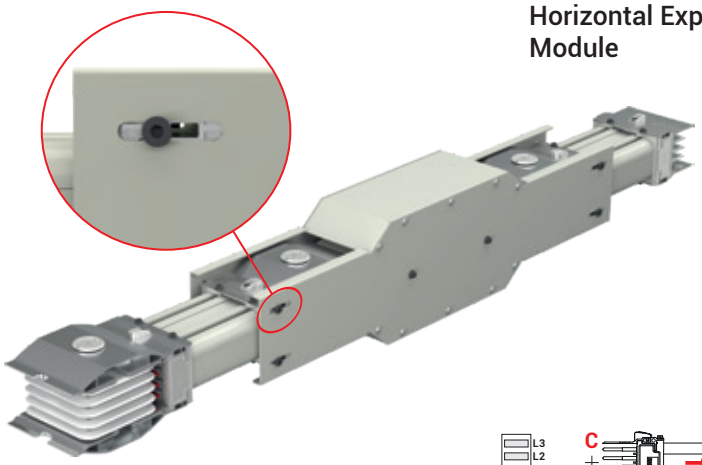
Vertical Expansion Module - DDT

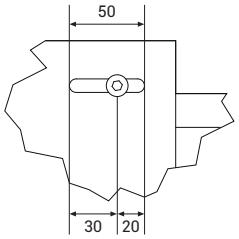
Sample Order:
CCRC 32804 - B - DDT
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor

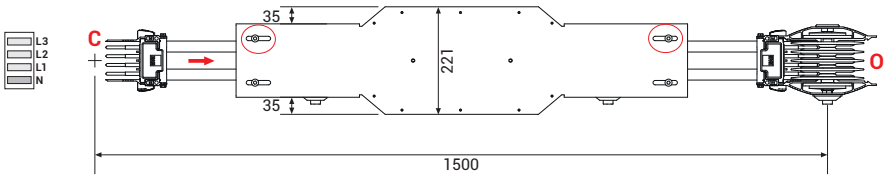


DDT Expansion
● Used for vertical applications in multi storey buildings. One vertical expansion unit is advised to be used at every floor between fixed support points.

Horizontal Expansion Module - YDT







YDT Horizontal Expansion Module
● It is used as a horizontal expansion element every 40m on a long straight run.

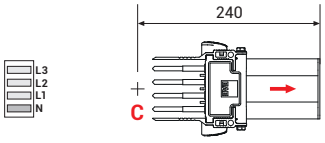
Note:
● If the busbar run passes through a horizontal expansion of building, a Dilation Module has to be used.
● Dilation Modules must be used for very long free lines (>75m) that are closed with an end closer and not fixed on the hanger.
● The movement span of Dilation Module is 50mm

We recommend consulting our company during the project phase.

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

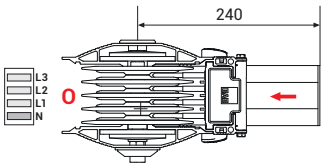
End Closure - S 10

Sample Order:
CCRC 32804 - B - S10
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



End Closure - S 11

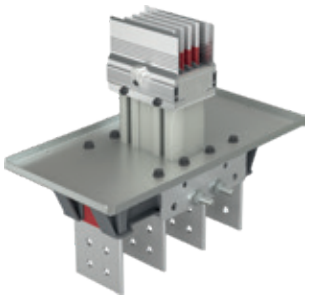
Sample Order:
CCRC 32804 - B - S11
3200 A, Copper, Bolt-on,
IP 68, 4 Conductor



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

E-LINE CCR

▶▶Panel / Transformer Connections



Panel Connection - P 10

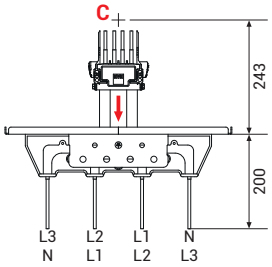
Panel Feeder

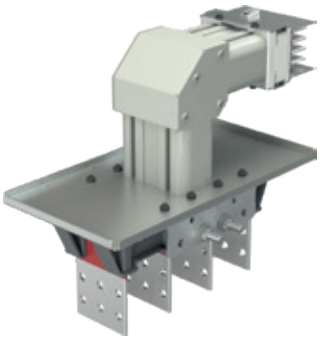
Sample Order:

CCRC 32804 - B - P10

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Upwards Panel Connection - PU 20

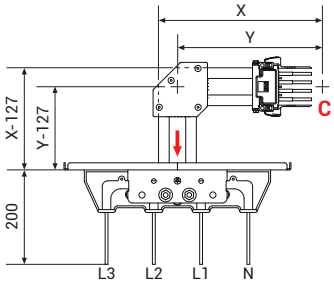
Panel Feeder

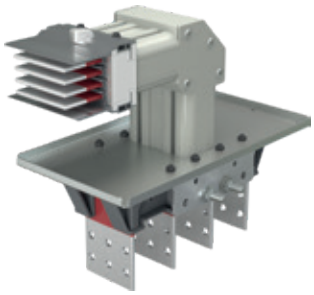
Sample Order:

CCRC 32804 - B - PU20

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Downwards Panel Connection - PD 20

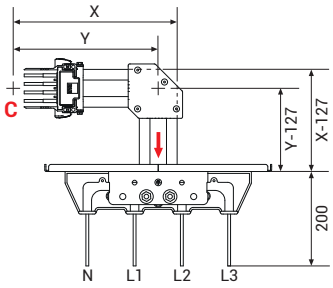
Panel Feeder

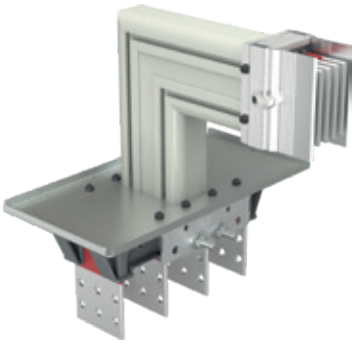
Sample Order:

CCRC 32804 - B - PD20

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Right Panel Connection - PR 30

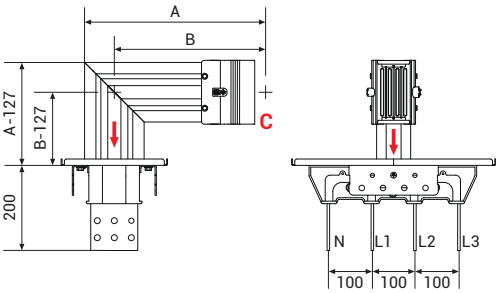
Panel Feeder

Sample Order:

CCRC 32804 - B - PR30

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



Conductor Dimension Table

CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307

Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

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

E-LINE CCR

▶▶Panel / Transformer Connections

Transformer Connection - T R11

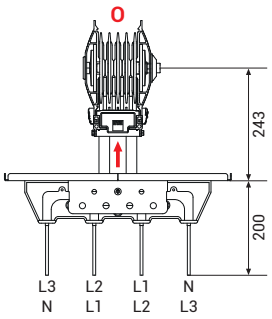
Panel/Transformer Output

Sample Order:

CCRC 32804 - B - TR11

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



Upwards Transformer Connection - TU 21

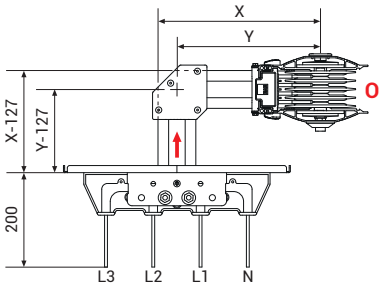
Panel/Transformer Output

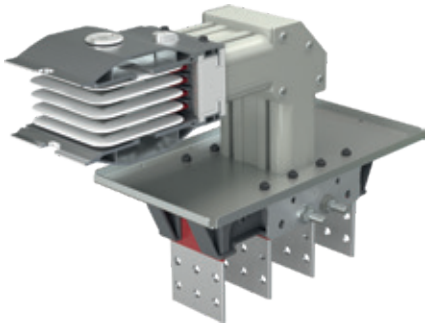
Sample Order:

CCRC 32804 - B - TU21

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Downwards Transformer Connection - TD 21

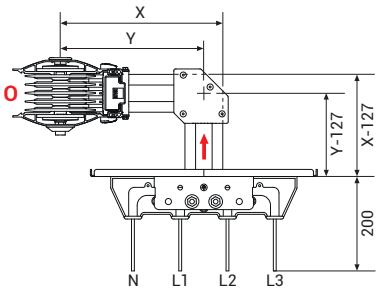
Panel/Transformer Output

Sample Order:

CCRC 32804 - B - TD21

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



Right Transformer Connection - TR 31

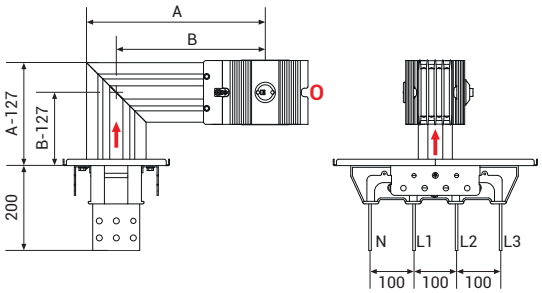
Panel/Transformer Output

Sample Order:

CCRC 32804 - B - TR31

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



Conductor Dimension Table

CCRC - Cu Conductor	Number of Conductors	3	4	4½	5
X	(mm)	337	344	351	351
Y	(mm)	300	304	307	307

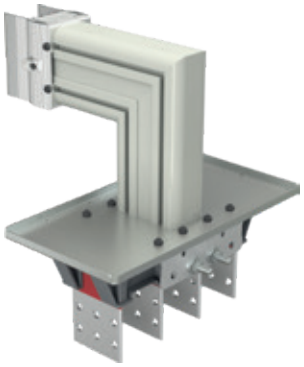
Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

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

E-LINE CCR

▶▶Panel / Transformer Connections



Left Panel Connection - PL 30

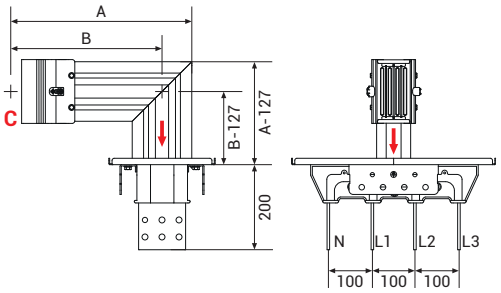
Panel Feeder

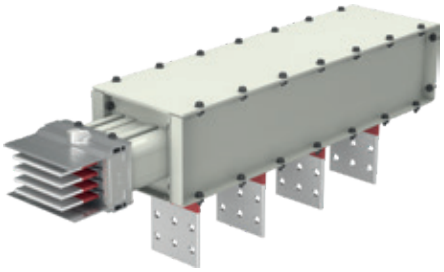
Sample Order:

CCRC 32804 - B - PL30

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Horizontal Panel Connection - P 40

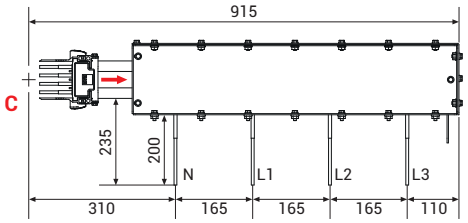
Panel Fedeer

Sample Order:

CCRC 32804 - B - P40

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



Transformer Connection - TR 71

Transformer Output

Sample Order:

CCRC 32804 - B - TR71

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor

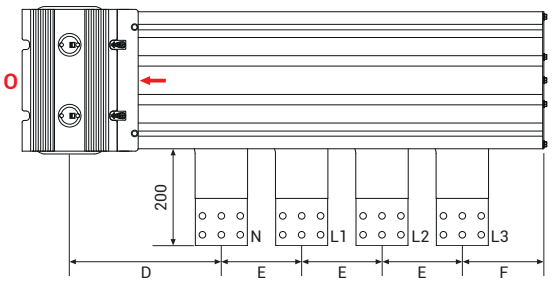
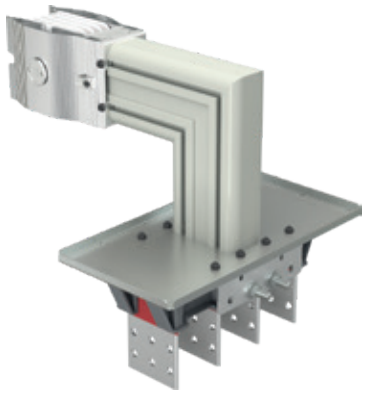


Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565
D	(mm)	289	294	306	321	341	306	321	329	336	329	346	356
E	(mm)	105	115	140	170	210	140	170	185	200	185	220	240
F	(mm)	133	138	150	165	185	150	165	173	180	173	190	200

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



Left Transformer Connection - TL 31

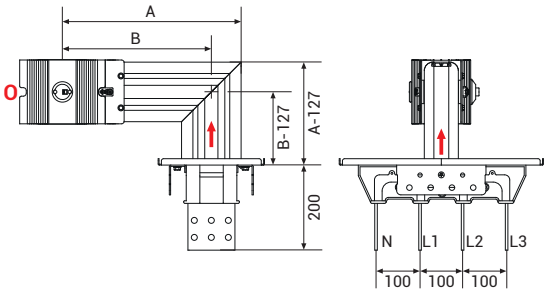
Pano/Transformer Output

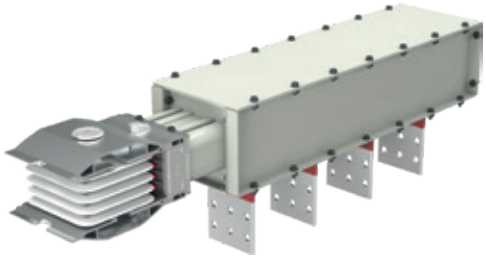
Sample Order:

CCRC 32804 - B - TL31

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Horizontal Transformer Connection - TR 41

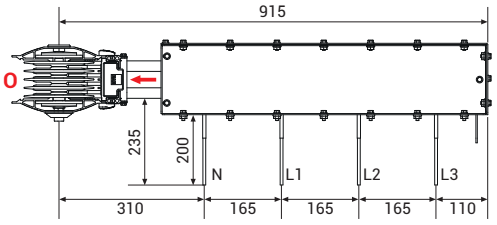
Pano/Transformer Output

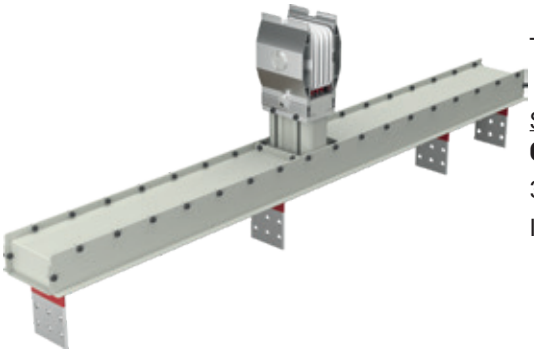
Sample Order:

CCRC 32804 - B - TR41

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor





Transformer Connection - TR 61

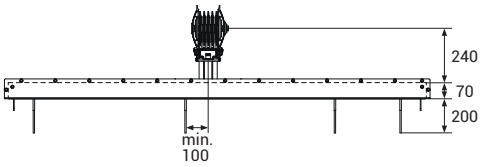
Transformer Output

Sample Order:

CCRC 32804 - B - TR61

3200 A, Copper, Bolt-on,

IP 68, 4 Conductor



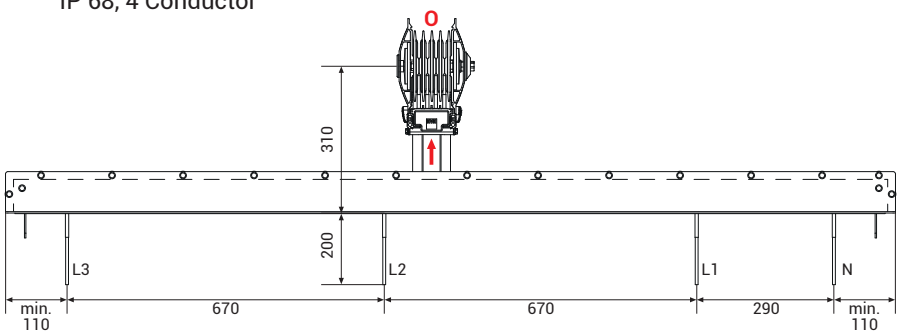


Table For Outer Dimension of Busbars

CCRC - Cu Conductor	Rated Current	850	1000	1250	1600	2000	2500	3200	3400	4000	5000	5750	6300
	Busbar Code	08	10	12	16	20	25	32	34	40	50	57	63
A	(mm)	325	325	350	380	420	470	530	560	590	725	830	890
B	(mm)	283	283	295	310	330	355	385	400	415	483	535	565

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

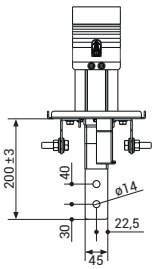
E-LINE CCR

▶▶Panel / Transformer Connections

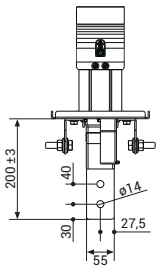
Panel Connection Units

Panel Connection Units (P10, TR11, PU20, TU21, PD20, TD21, PR30, TR31, PL30, TL31, P40, TR41, TR61)

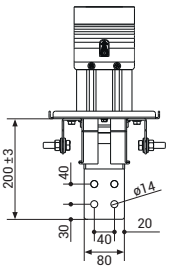
CCRC 08



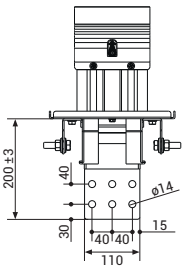
CCRC 10



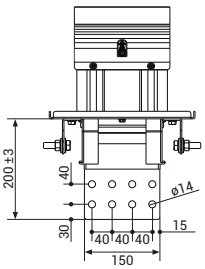
CCRC 12



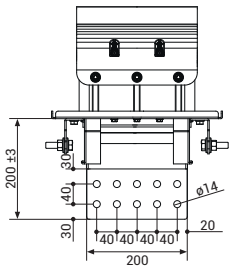
CCRC 16



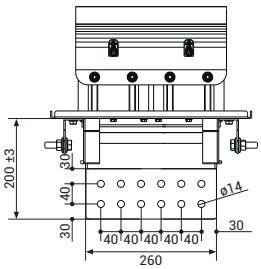
CCRC 20



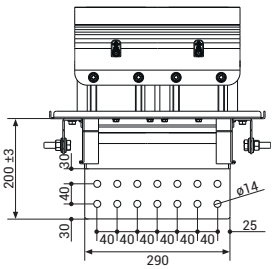
CCRC 25



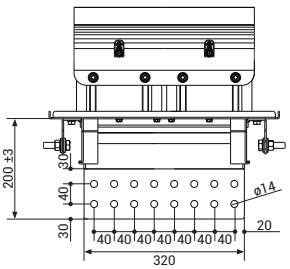
CCRC 32



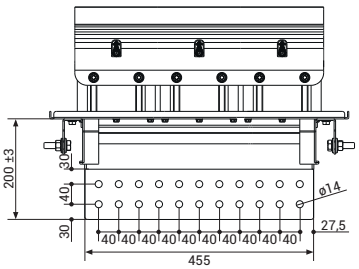
CCRC 34



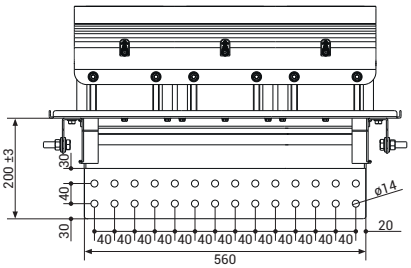
CCRC 40



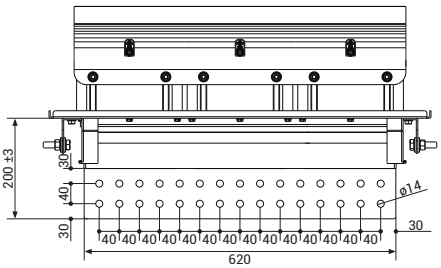
CCRC 50



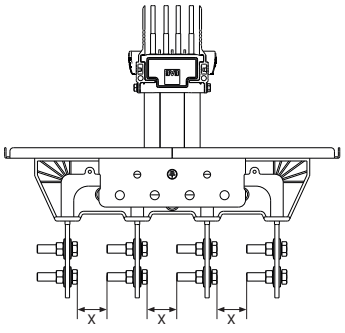
CCRC 57



CCRC 63



Sample Connection



(Minimum X= 25 mm)

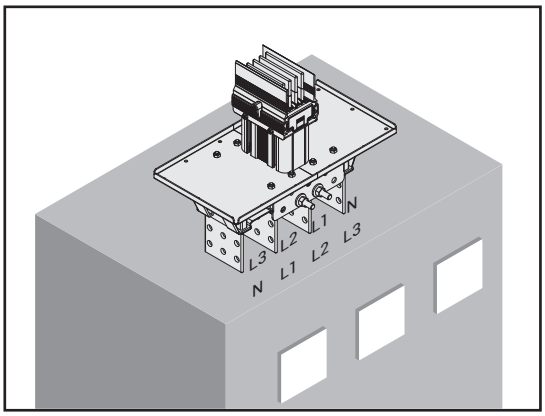
■The dimensions given above are minimum values. ■ Please call us for non-standard components. ■Distance between conductors can vary in ±5 mm.

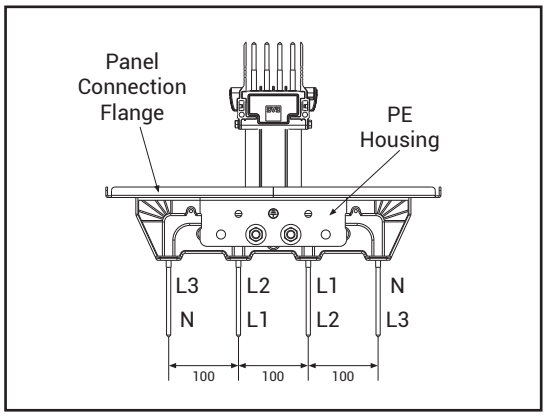
E-LINE CCR

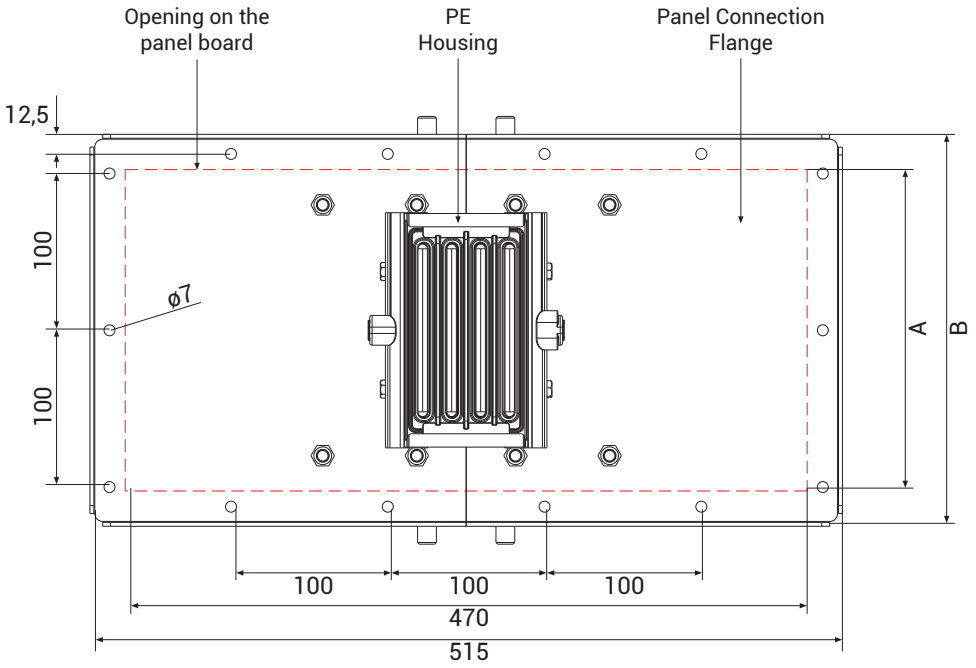
▶▶Panel / Transformer Connections

Panel Modules Flange Dimensions

Panel Connection Units are supplied with suitable flange as standard.







Panel Modules Flange Dimensions

Copper (Cu)						
						* Bolt and nut sets are supplied together with related product as per the quantities below.
Rated Current	Busbar Code	Conductor	A (mm)	B (mm)	Number of the holes along B length	* M6 Bolt/ Nut Set(pcs)
850	08	6x45	150	195	2	12
1000	10	6x55	150	195	2	12
1250	12	6x80	175	220	2	12
1600	16	6x110	205	250	3	14
2000	20	6x150	245	290	3	14
2500	25	2(6x80)	295	340	4	16
3200	32	2(6x110)	355	400	4	16
3400	34	2(6x125)	385	430	5	18
4000	40	2(6x140)	415	460	5	18
5000	50	3(6x125)	550	595	6	20
5750	57	3(6x160)	655	700	7	22
6300	63	3(6x180)	715	760	8	24

E-LINE CCR

▶▶Edgewise and Flatwise CCR Applications

Figure 1 - Edgewise Application

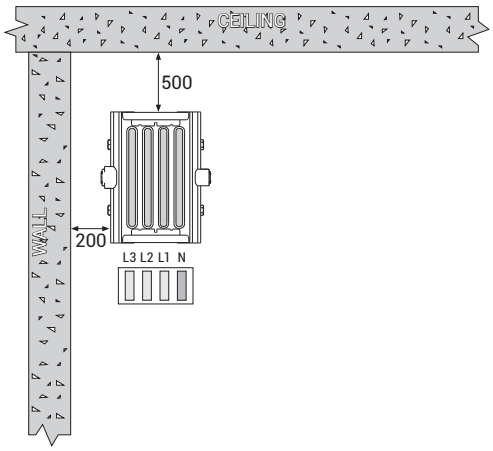
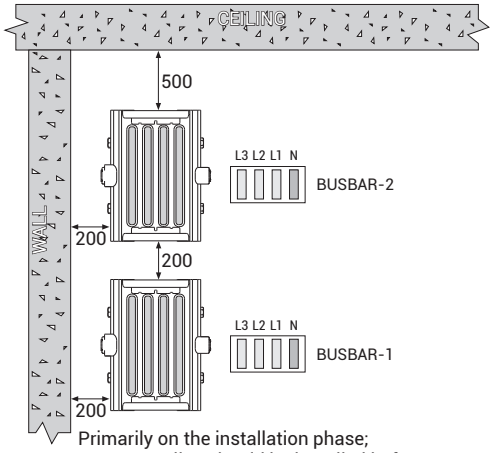
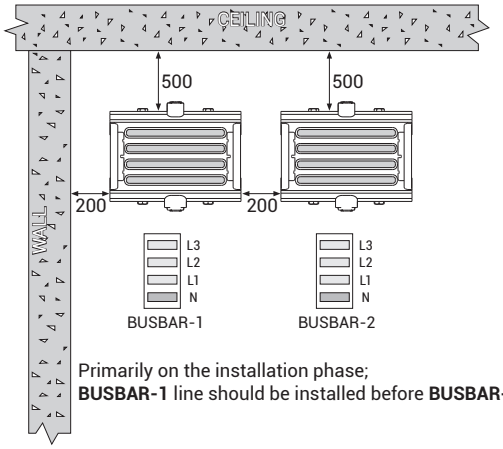


Figure 2 - Edgewise Application



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

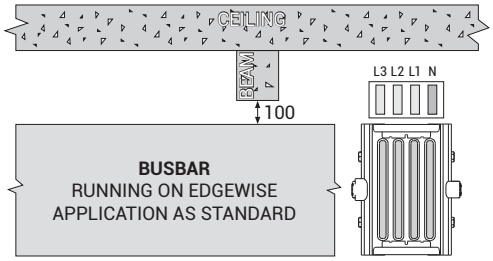


Figure 5 - Crossing Under A Beam On Flatwise Application

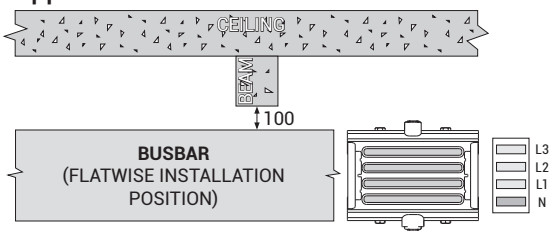


Figure 6 - Sample Wall Crossing With Fire Barrier

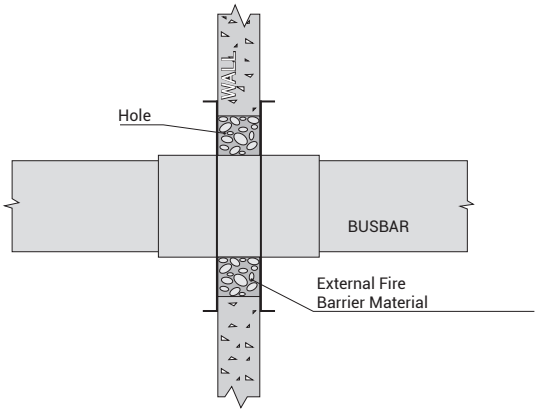
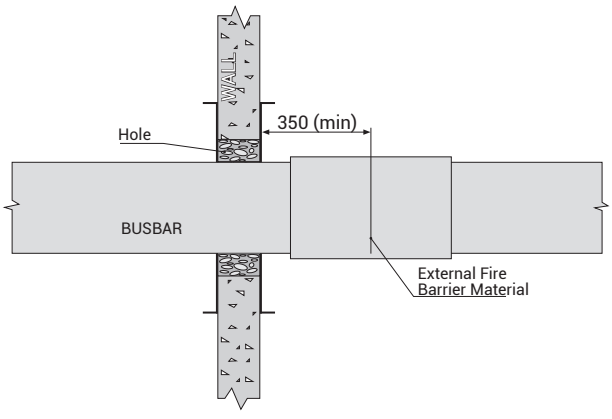


Figure 7 - Standard Wall Crossing



Attention!

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

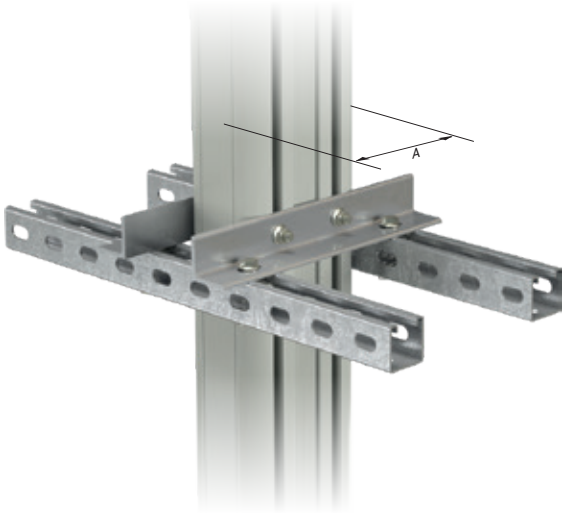
E-LINE CCR

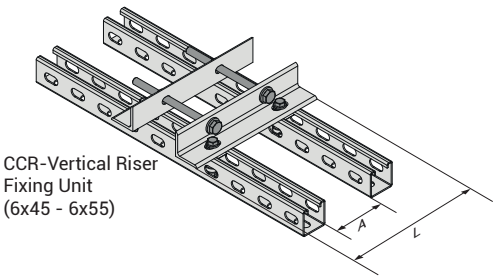
▶▶Fixing Elements

Vertical Shaft Type Carriers

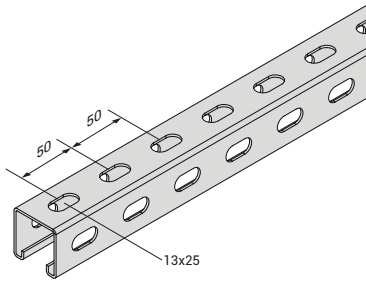
CCR Vertical Riser Fixing Unit

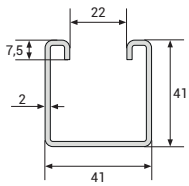
CCRC-Cu Conductor		Conductor	A (mm)	L (mm)	Order Code
Rated Current	Busbar Code				
850	08	6x45	85	225	3266297
1000	10	6x55	85	225	3266297
1250	12	6x80	110	250	3257224
1600	16	6x110	140	280	3257225
2000	20	6x150	180	320	3257226
2500	25	2(6x80)	230	370	3257228
3200	32	2(6x110)	290	430	3257229
3400	34	2(6x125)	320	460	3257230
4000	40	2(6x140)	350	490	3257231
5000	50	3(6x125)	485	625	3257232
5750	57	3(6x160)	590	730	3257233
6300	63	3(6x180)	650	790	3257234

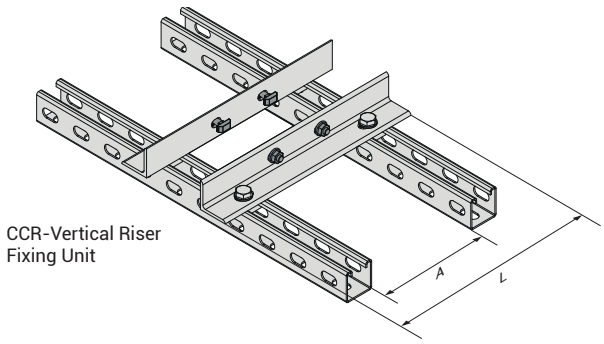




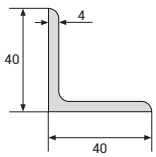
CCR-Vertical Riser Fixing Unit (6x45 - 6x55)

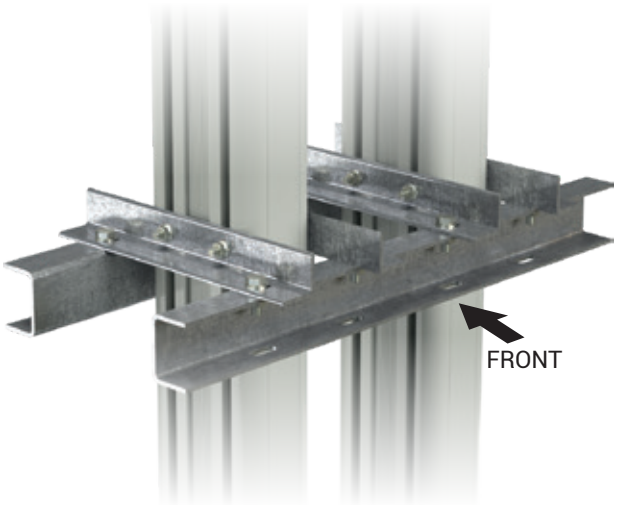






CCR-Vertical Riser Fixing Unit





Vertical Riser Application Sample Order Hanging (Special to project)

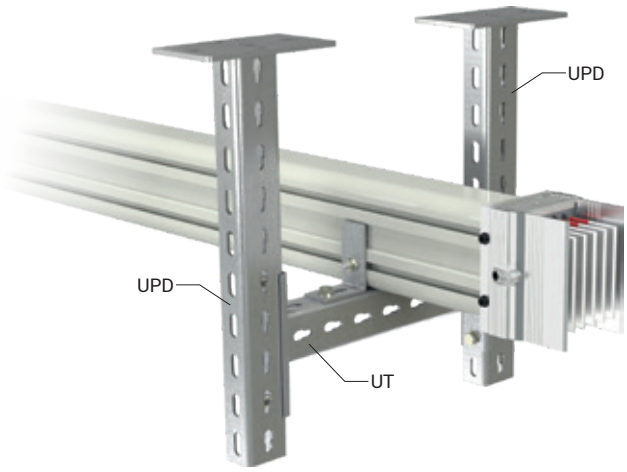
■ The dimensions given above are minimum values. ■ Please call us for non-standard components. ■ All measures are given in mm.

E-LINE CCR

▶▶Fixing Elements

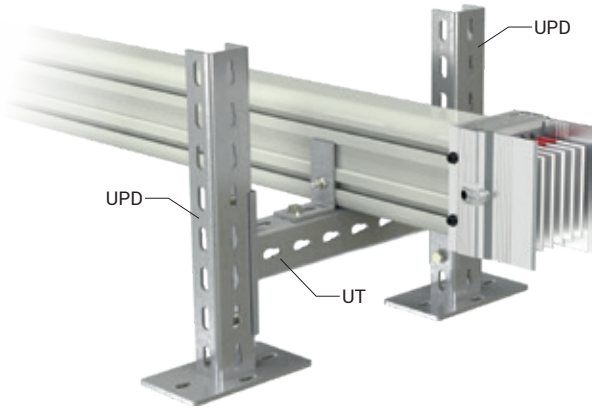
Ceiling Type Supports

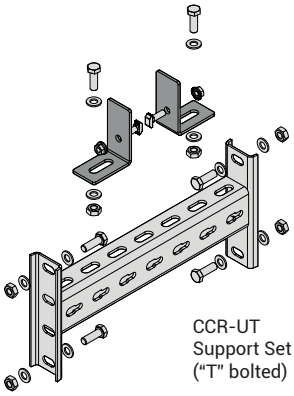
CCR-UT Two-Way For Edgewise Application To NPI Channel



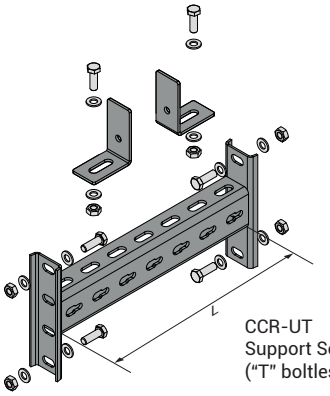
Floor Type Supports

CCR-UT Two-Way For Edgewise Application To NPI Channel

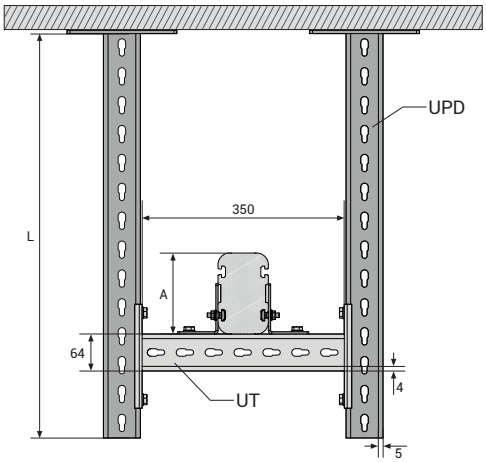




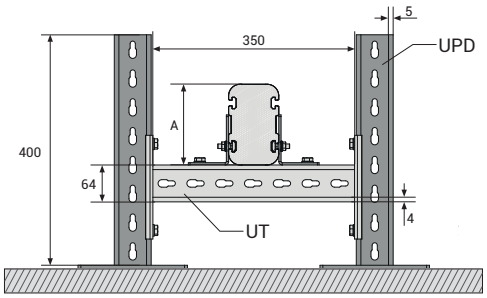
CCR-UT
Support Set
("T" bolted)

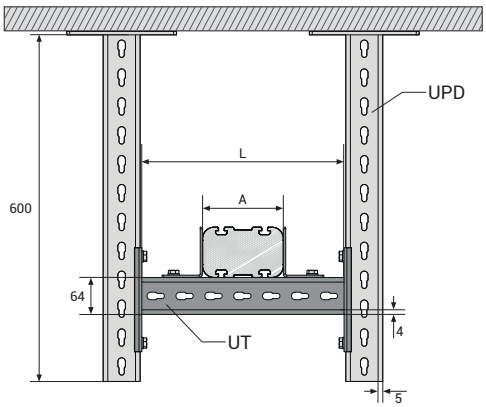


CCR-UT
Support Set
("T" boltless)

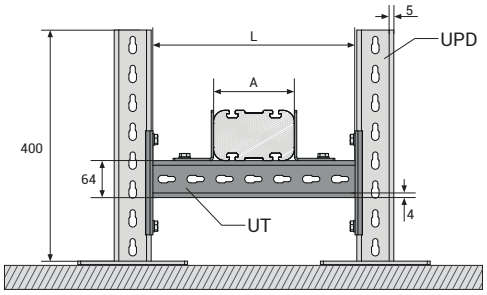


When selecting an UPD product, please keep in mind to select the UPD product suitable to the Busbar A dimension.





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



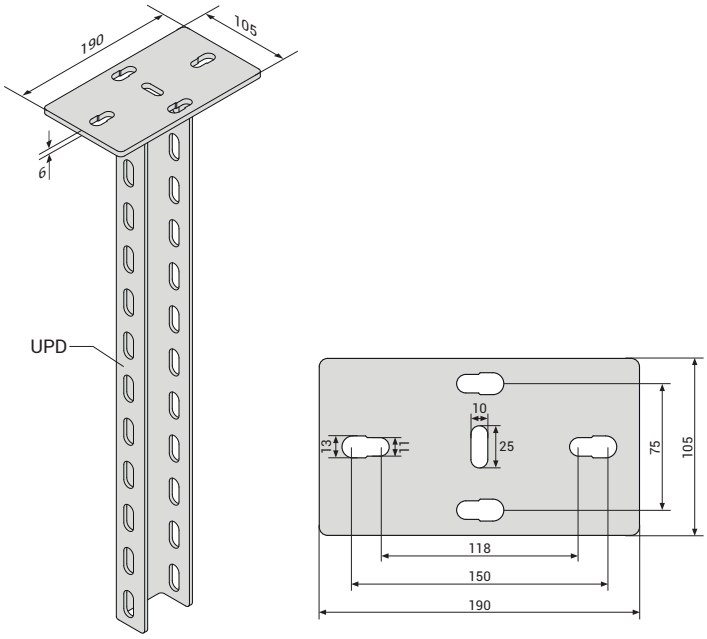
■The dimensions given above are minimum values. ■Please call us for non-standard components. ■All measures are given in mm.

E-LINE CCR

▶▶Fixing Elements

Heavy Duty Supports (U)

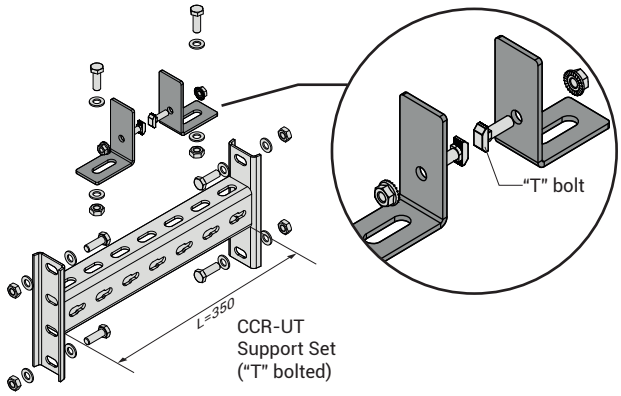
Hot Dip Galvanized After Fabrication (TS EN ISO 1461)

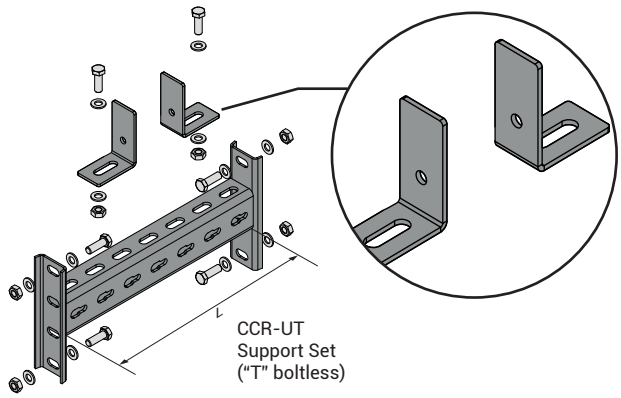


CCRC-Cu Conductors		Conductor	A (mm)	UPD L (mm)	Order Code
Rated Current	Busbar Code				
Floor Type Supports CCR-UPD Suspension Assembly				400	3004512
850	08	6x45	85	700	3004518
1000	10	6x55	85	700	3004518
1250	12	6x80	110	700	3004518
1600	16	6x110	140	800	3004519
2000	20	6x150	180	800	3004519
2500	25	2(6x80)	230	800	3004519
3200	32	2(6x110)	290	800	3004519
3400	34	2(6x125)	320	900	3004520
4000	40	2(6x140)	350	1000	3004521
5000	50	3(6x125)	485	1100	3004522
5750	57	3(6x160)	590	1200	3004523
6300	63	3(6x180)	650	1200	3004523

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

CCR-UT Suspension Assembly





CCRC-Cu Conductors		Conductor	A (mm)	UT L (mm)	Order Code
Rated Current	Busbar Code				
CCR-UT Suspension Assembly ("T" bolted)				350	3257217
850	08	6x45	85	350	3108705
1000	10	6x55	85	350	3108705
1250	12	6x80	110	350	3108705
1600	16	6x110	140	350	3108705
2000	20	6x150	180	450	3108707
2500	25	2(6x80)	230	450	3108707
3200	32	2(6x110)	290	550	3108708
3400	34	2(6x125)	320	550	3108708
4000	40	2(6x140)	350	650	3108709
5000	50	3(6x125)	485	750	3108710
5750	57	3(6x160)	590	850	3108711
6300	63	3(6x180)	650	950	3108712

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

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

■ The dimensions given above are minimum values.

■ Please call us for non-standard components.

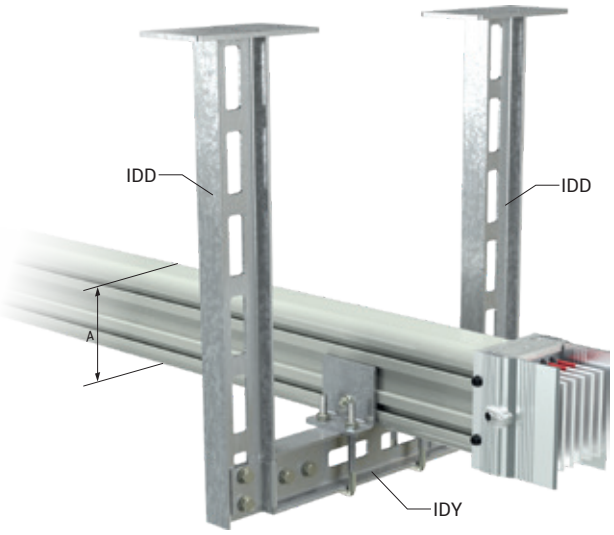
■ All measures are given in mm.

E-LINE CCR

▶▶Fixing Elements

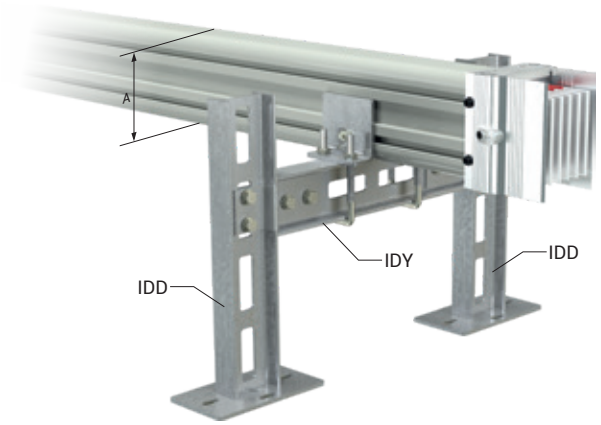
Ceiling Type Supports

CCR-UT Two-Way For Edgewise Application
To NPI Channel

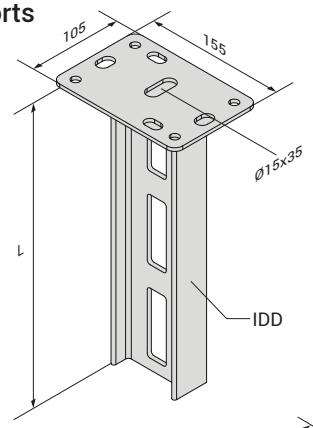


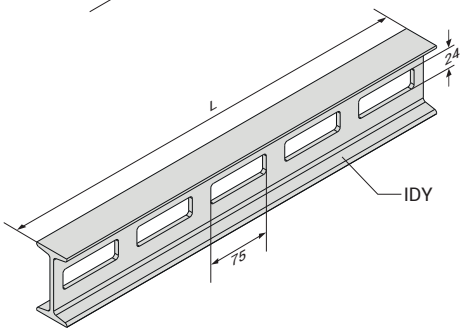
Floor Type Supports

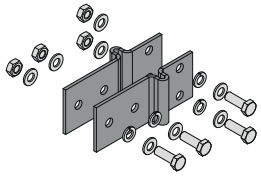
CCR-UT Two-Way For Edgewise Application
To NPI Channel



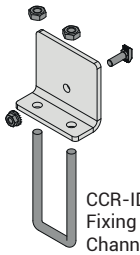
Supports



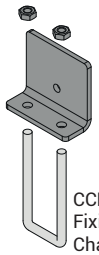




CCR-IDT
Suspension Element
Set



CCR-IDY
Fixing Clamp for
Channel (bolted)



CCR-IDY
Fixing Clamp for
Channel (boltless)

CCRC-Cu Conductors		Conductor	A (mm)	Description	L (mm)	Order Code
Rated Current	Busbar Code					
850	08	6x45	85	IDD 500	500	3008312
1000	10	6x55	85	IDD 500	500	3008312
1250	12	6x80	110	IDD 500	500	3008312
1600	16	6x110	140	IDD 600	600	3008311
2000	20	6x150	180	IDD 700	700	3008310
2500	25	2(6x80)	230	IDD 700	700	3008310
3200	32	2(6x110)	290	IDD 800	800	3008309
3400	34	2(6x125)	320	IDD 800	800	3008309
4000	40	2(6x140)	350	IDD 800	800	3008309
5000	50	3(6x125)	485	IDD 1000	1000	3008307
5750	57	3(6x160)	590	IDD 1100	1100	3008306
6300	63	3(6x180)	650	IDD 1100	1100	3008306
850	08	6x45	85	IDY 400	400	3008290
1000	10	6x55	85	IDY 400	400	3008290
1250	12	6x80	110	IDY 400	400	3008290
1600	16	6x110	140	IDY 400	400	3008290
2000	20	6x150	180	IDY 400	400	3008290
2500	25	2(6x80)	230	IDY 500	500	3008289
3200	32	2(6x110)	290	IDY 500	500	3008289
3400	34	2(6x125)	320	IDY 600	600	3008288
4000	40	2(6x140)	350	IDY 600	600	3008288
5000	50	3(6x125)	485	IDY 700	700	3008287
5750	57	3(6x160)	590	IDY 800	800	3008286
6300	63	3(6x180)	650	IDY 900	900	3008285

CCR-IDT Suspension Element Set	3008279
CCR-IDY Fixing Clamp for Channel (bolted)	3265712
CCR-IDY Fixing Clamp for Channel (boltless)	3265713

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

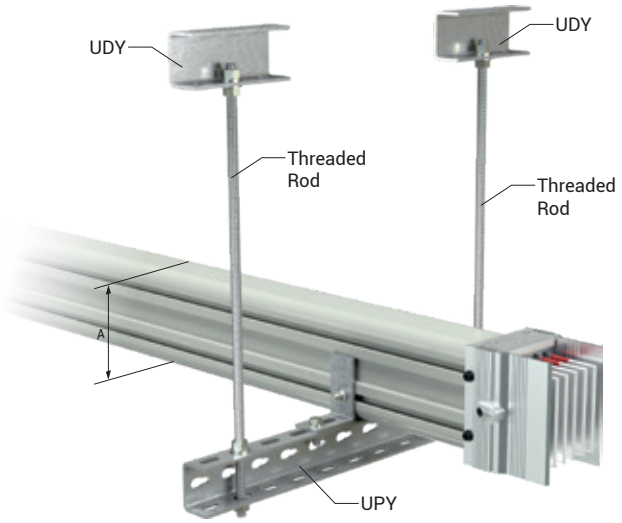
■ The dimensions given above are minimum values. ■ Please call us for non-standard components. ■ All measures are given in mm.

E-LINE CCR

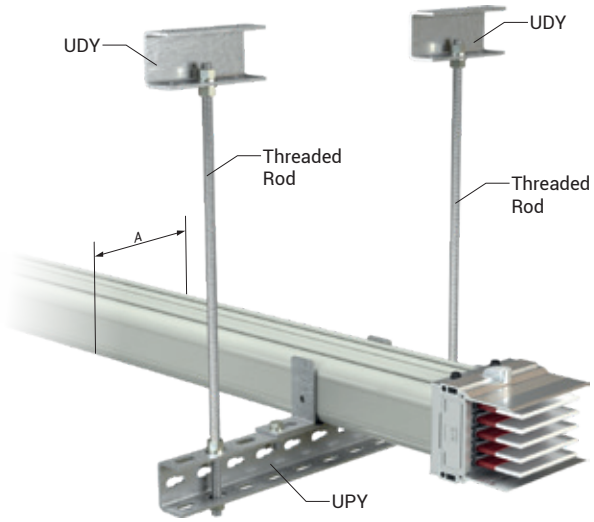
▶▶Fixing Elements

Ceiling Type Supports

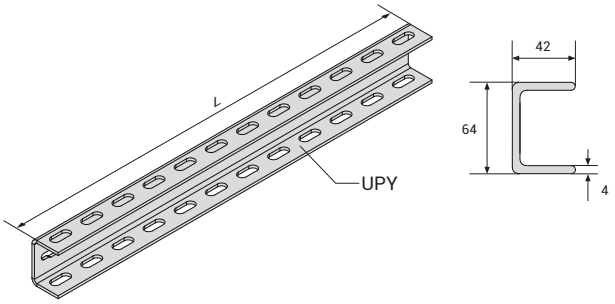
CCR-Threaded Rod Two-Way For Edgewise Application To NPI Channel



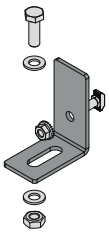
CCR-Threaded Rod Two-Way For Flatwise Application To NPI Channel



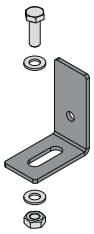
Supports



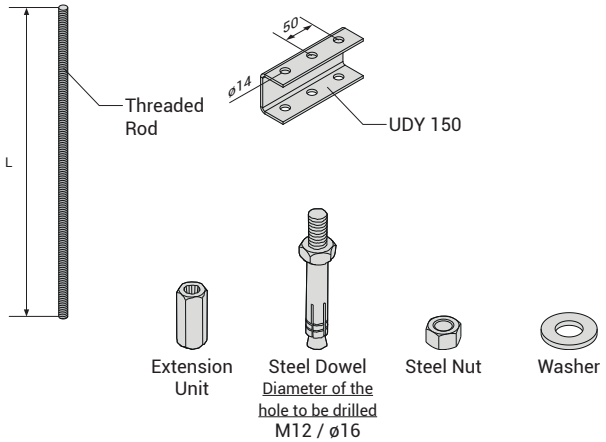
CCR-L Suspension Set



CR-L Suspension Connection Set



Fixing Elements



CCRC-Cu Conductors		Conductor	A (mm)	Description	L (mm)	Order Code
Rated Current	Busbar Code					
850	08	6x45	85	UPY 600	600	3004493
1000	10	6x55	85	UPY 600	600	3004493
1250	12	6x80	110	UPY 600	600	3004493
1600	16	6x110	140	UPY 600	600	3004493
2000	20	6x150	180	UPY 700	700	3004495
2500	25	2(6x80)	230	UPY 700	700	3004495
3200	32	2(6x110)	290	UPY 800	800	3004496
3400	34	2(6x125)	320	UPY 800	800	3004496
4000	40	2(6x140)	350	UPY 900	900	3004497
5000	50	3(6x125)	485	UPY 1000	1000	3004498
5750	57	3(6x160)	590	UPY 1100	1100	3004499
6300	63	3(6x180)	650	UPY 1100	1100	3004499

UDY 150	150	3008376
BRA 14-05 Threaded Rod (M12)	500	5000026

CCR-L Support Set (“T” bolted)	2118521
CR-L Suspension Connection Kit(“T” boltless)	2054886
BRA 13 Extension Unit (M12)	1004282
BRA 9 Steel Dowel (M12)	5000022
M12 Steel Nut	1000964
M12 Washer	1000505

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

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

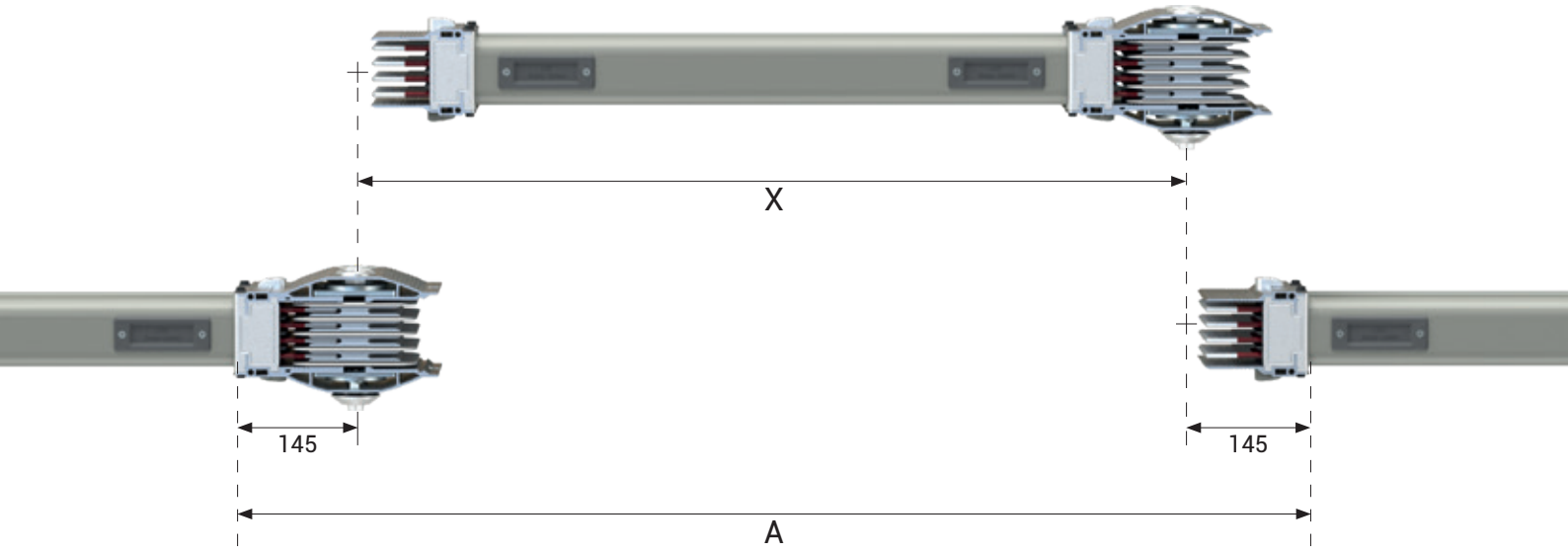
E-LINE CCR

▶▶Measuring a Special Length

After installation of standard busbar 3m lengths, you will be in need of special lengths which are smaller than 3m.The minimum length for these special elements can be 450mm. Please measure the lengths of these modules as shown below.

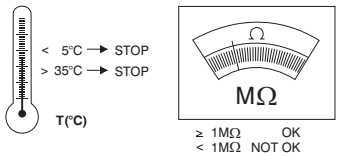
Length A is measured between housing of 2 busbars in mm. A. The special length is calculated by deducting 290mm from this measured length.

X = A - 290mm X = Length of Special Busbar



▶▶Preparation of Joint Resin 4

The meger test must be carried out before casting. If Resin 4 (A) and Resin 4 (B) are stored in a cold environment, they should be kept in a warm environment one day before casting (> 20 °C). Ambient temperature during casting should be 5 °C < T casting < 40 °C.



Preparation of Resin 4

Based on the joint, find the total mixture from the table values on the side.

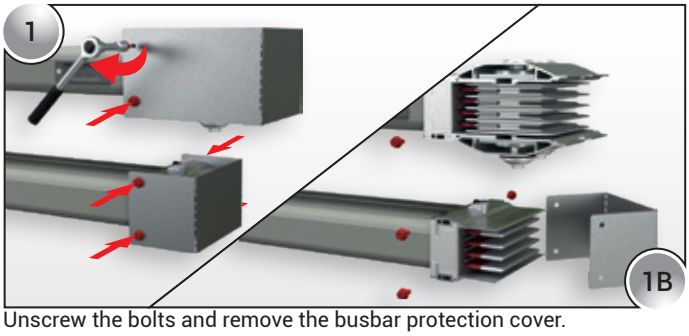
Mix the mixture with a beater at low speed for at least 5 minutes until it is homogeneous.

Amount of Resin to be Used

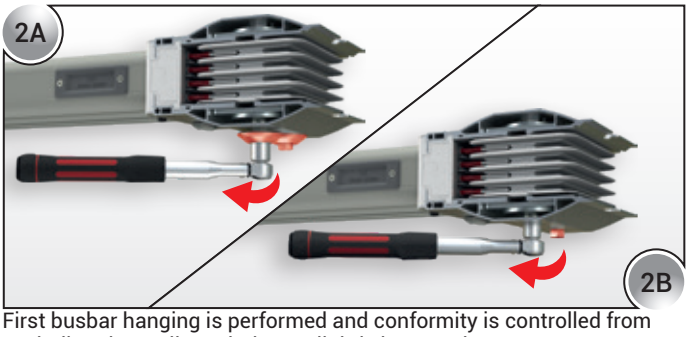
Copper (Cu)				
Rated Current	Busbar Code	Conductor	4 Conductor (kg)	4½ - 5 Conductor (kg)
850	08	6x45	1,4	1,7
1000	10	6x55	1,4	1,5
1250	12	6x80	1,6	1,8
1600	16	6x110	1,8	2,1
2000	20	6x150	2,0	2,6
2500	25	2(6x80)	2,7	3,0
3200	32	2(6x110)	3,2	3,5
3400	34	2(6x125)	3,5	4,0
4000	40	2(6x140)	3,7	4,2
5000	50	3(6x125)	4,8	5,7
5750	57	3(6x160)	5,5	6,9
6300	63	3(6x180)	6,8	7,6

E-LINE CCR

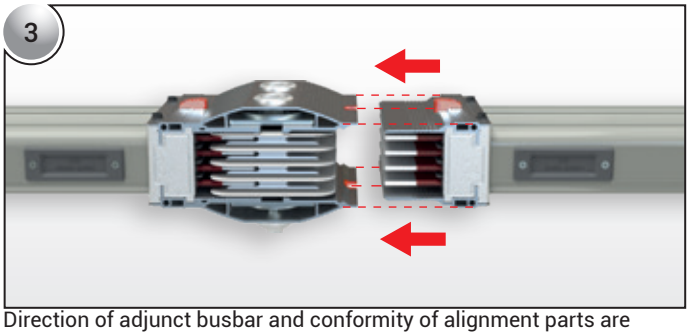
▶▶Installation / Flatwise



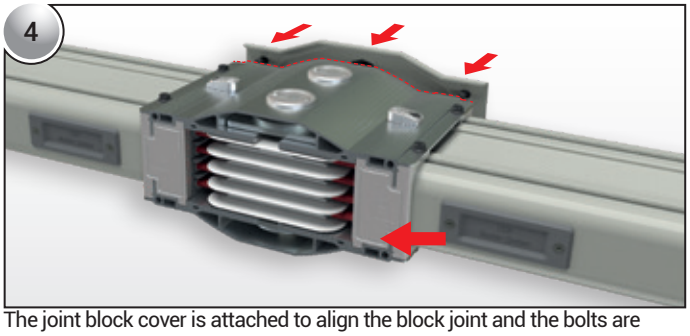
Unscrew the bolts and remove the busbar protection cover.



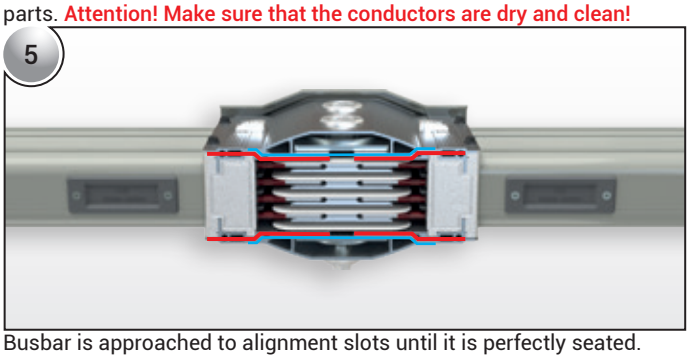
First busbar hanging is performed and conformity is controlled from each direction. Adjunct bolts are lightly loosened.



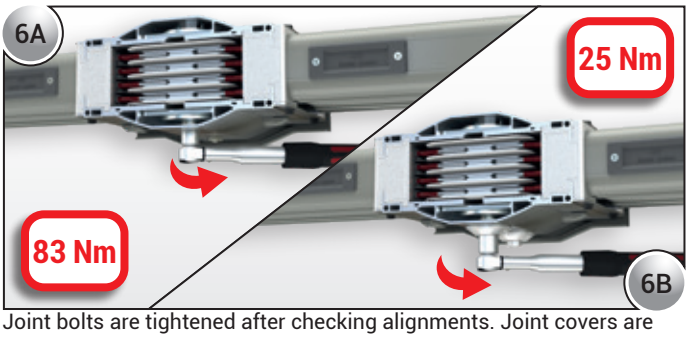
Direction of adjunct busbar and conformity of alignment parts are controlled. Busbar is assembled in a way to overlap small alignment parts. **Attention! Make sure that the conductors are dry and clean!**



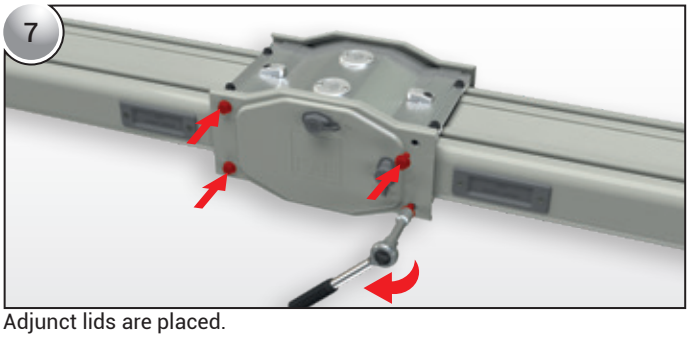
The joint block cover is attached to align the block joint and the bolts are tightened not too strong.



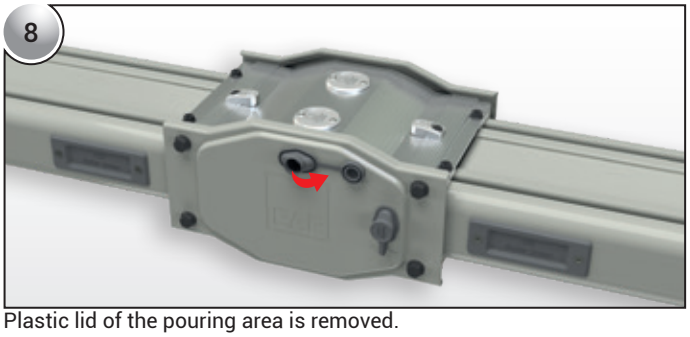
Busbar is approached to alignment slots until it is perfectly seated. Adjunct bolts are tightened after checking alignments.



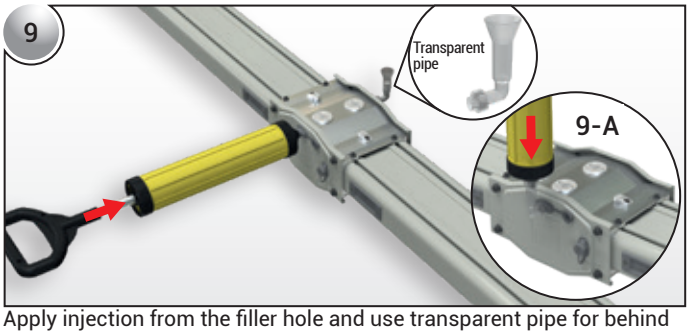
Joint bolts are tightened after checking alignments. Joint covers are placed.



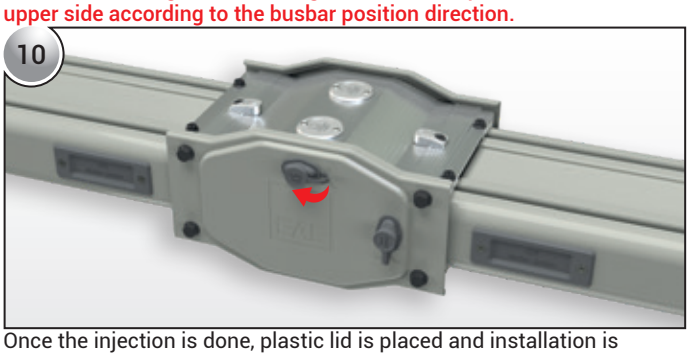
Adjunct lids are placed.



Plastic lid of the pouring area is removed.
Attention! Pouring is done through the lid that is positioned on the upper side according to the busbar position direction.



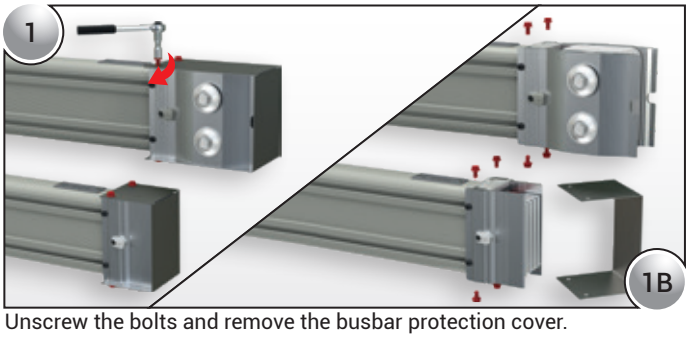
Apply injection from the filler hole and use transparent pipe for behind hole. Continue the filling process until you see silicon inside the transparent pipe. (If you don't have enough space for injection, use transparent pipe for both sides)



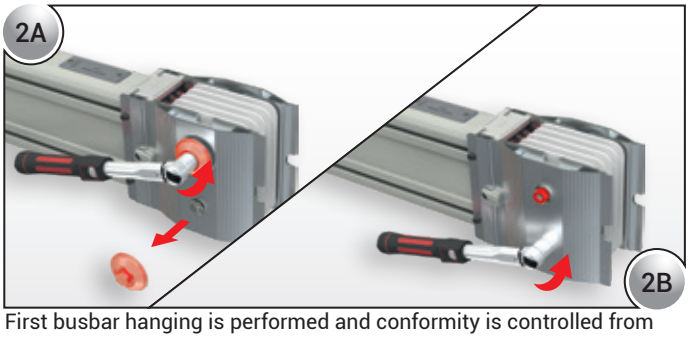
Once the injection is done, plastic lid is placed and installation is completed.

E-LINE CCR

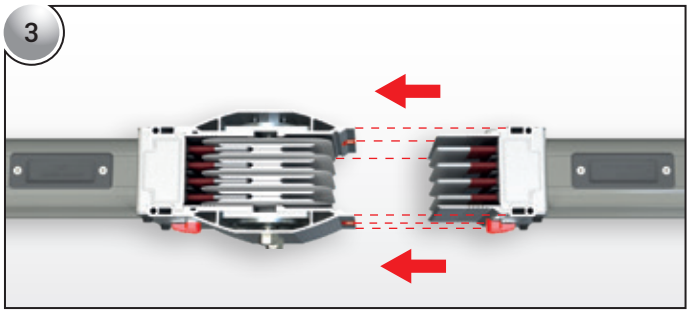
▶▶Installation / Edgewise



Unscrew the bolts and remove the busbar protection cover.

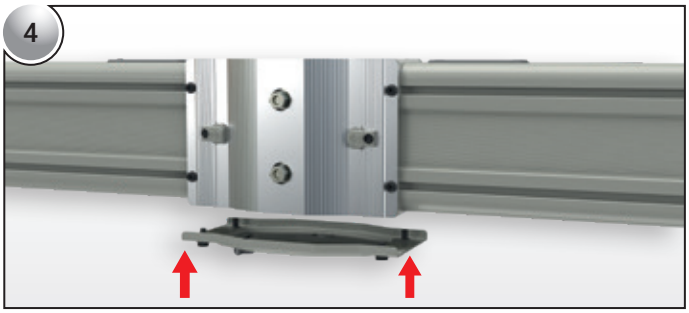


First busbar hanging is performed and conformity is controlled from each direction. Adjunct bolts are lightly loosened after removing the bolt protection lids.

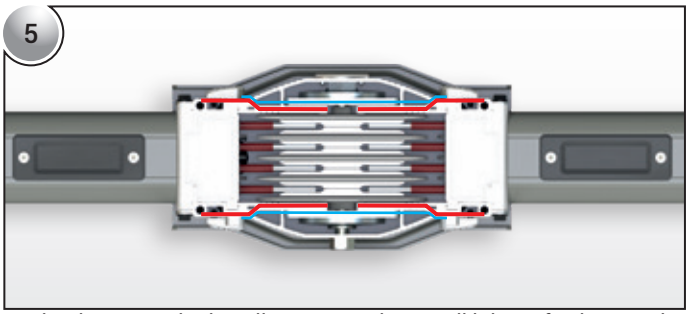


Direction of adjunct busbar and conformity of alignment parts are controlled. Busbar is assembled, aligning big alignment part to big, small part to small.

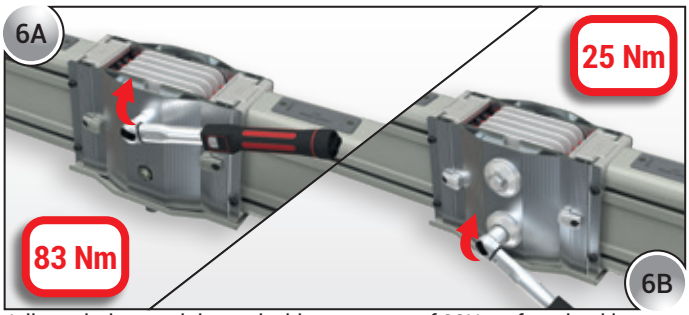
Attention! Make sure that the conductors are dry and clean!



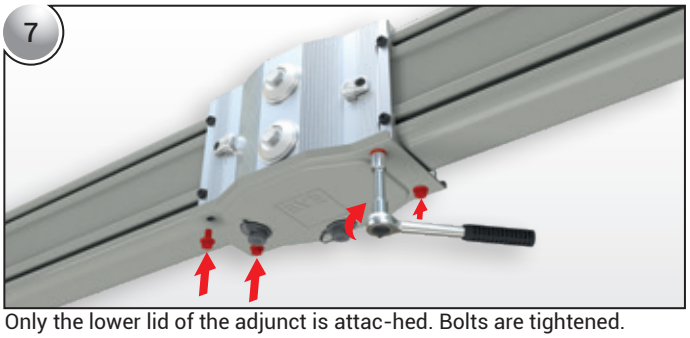
The joint block cover is attached to align the block joint and the bolts are tightened not too strong.



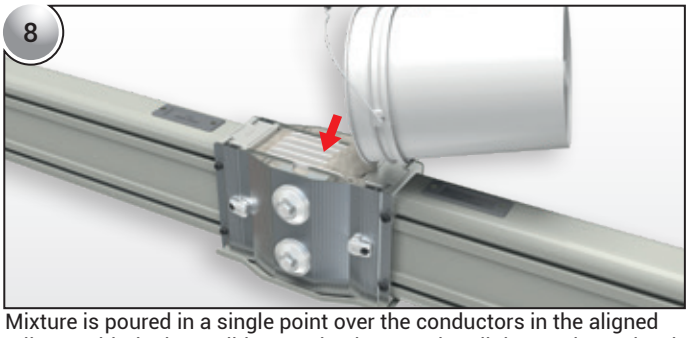
Busbar is approached to alignment sockets until it is perfectly seated.



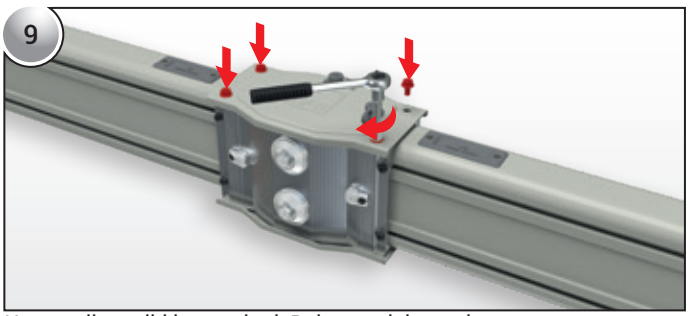
Adjunct bolts are tightened with a moment of 83Nm after checking alignments. Bolt protection lids are attached.



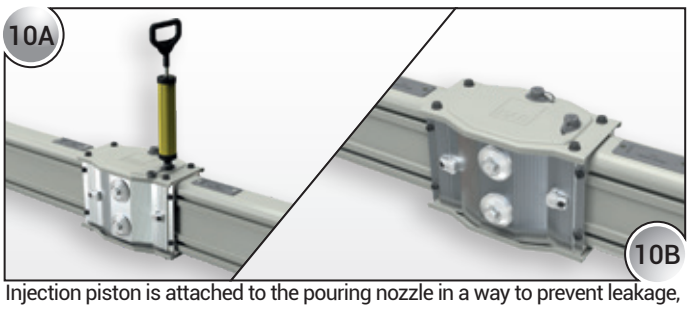
Only the lower lid of the adjunct is attac-hed. Bolts are tightened.



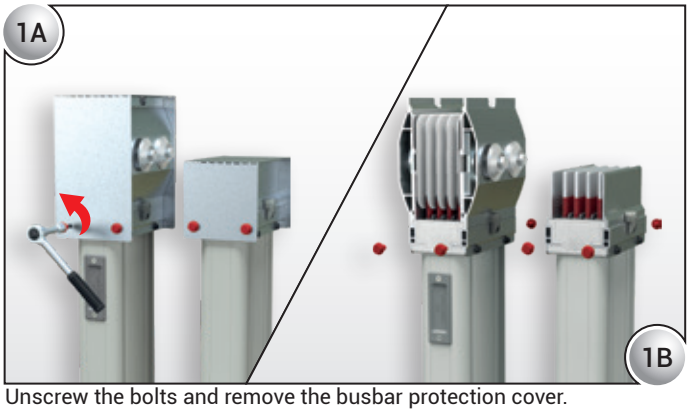
Mixture is poured in a single point over the conductors in the aligned adjunct with the lower-lid capped. It is poured until the maximum level.



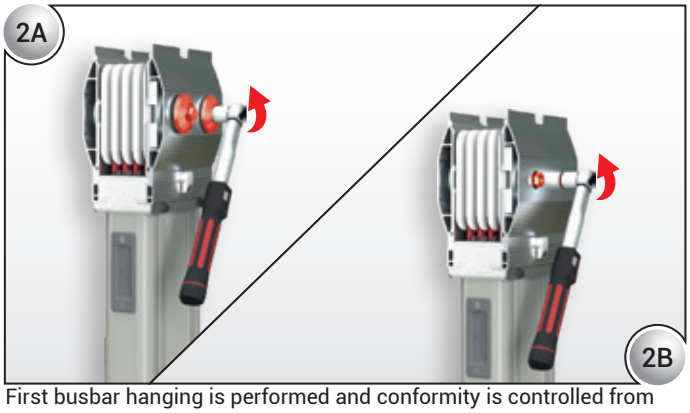
Upper adjunct lid is attached. Bolts are tightened.



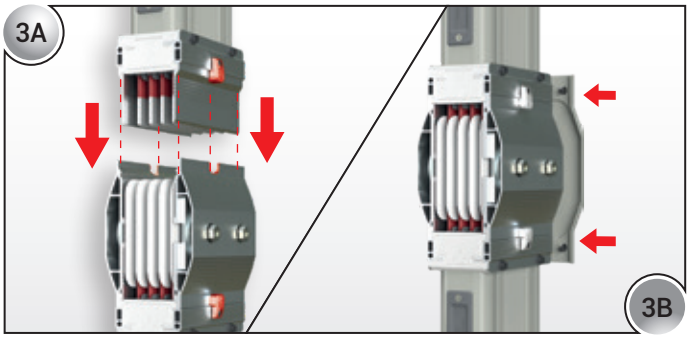
Injection piston is attached to the pouring nozzle in a way to prevent leakage, and "Resin 4" material injected inside the adjunct with the help of the handle. Once the injection is done, plastic lid is placed and installation is completed.



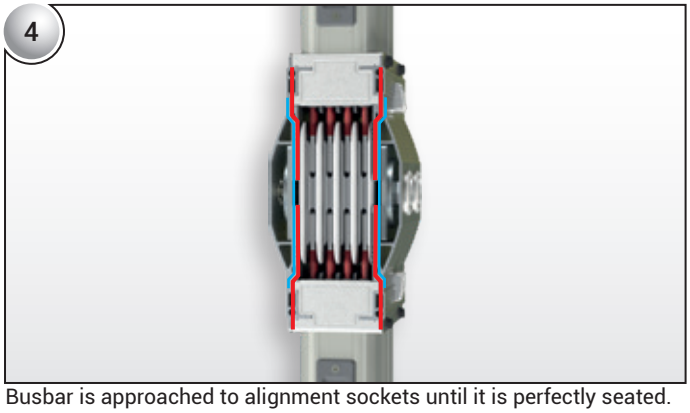
Unscrew the bolts and remove the busbar protection cover.



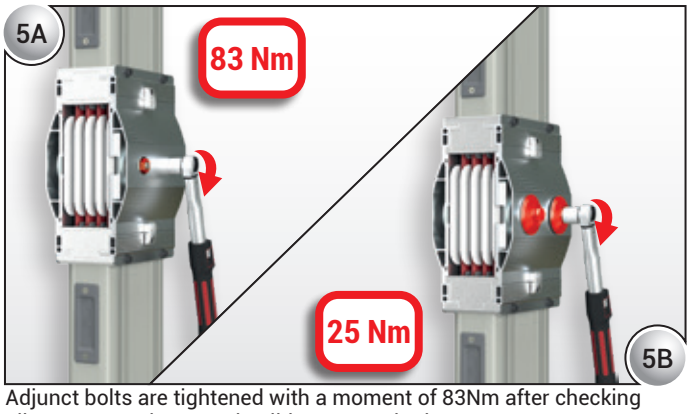
First busbar hanging is performed and conformity is controlled from each direction. Adjunct bolts are lightly loosened after removing the bolt protection lids.



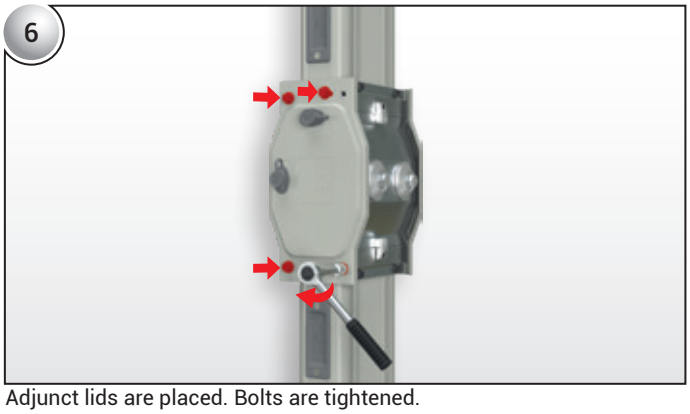
Direction of adjunct busbar and conformity of alignment parts are controlled. Busbar is assembled, aligning big alignment part to big, small part to small.The joint block cover is attached to align the block joint and the bolts are tightened not too strong.
Attention! Make sure that the conductors are dry and clean!



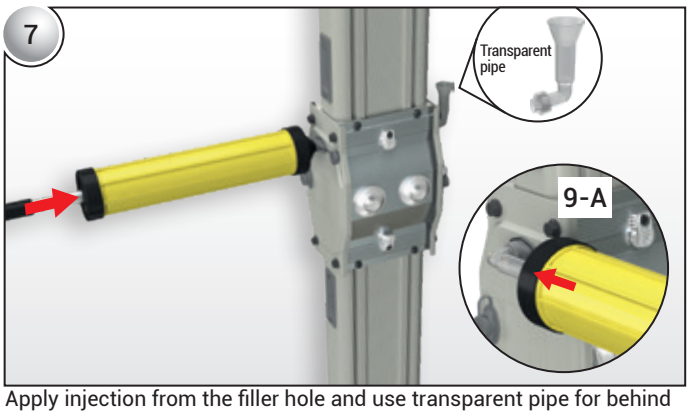
Busbar is approached to alignment sockets until it is perfectly seated.



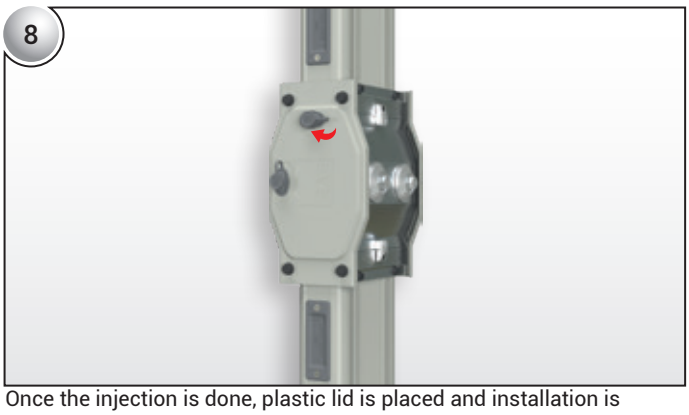
Adjunct bolts are tightened with a moment of 83Nm after checking alignments. Bolt protection lids are attached.



Adjunct lids are placed. Bolts are tightened.



Apply injection from the filler hole and use transparent pipe for behind hole. Continue the filling process until you see silicon inside the transparent pipe. (If you don't have enough space for injection, use transparent pipe for both sides)



Once the injection is done, plastic lid is placed and installation is completed.

CE DECLARATION OF CONFORMITY

Product Group E-Line CCR Busbar Energy Distribution System

Manufacturer EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
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

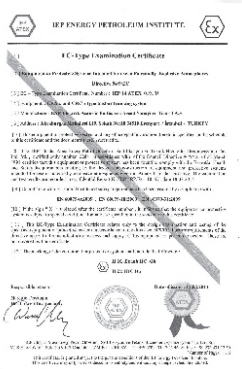
Elif Gamze KAYA OK
Deputy General Manager

E-LINE CCR

▶▶Certificates


TEST CERTIFICATE


TEST CERTIFICATE


IEP ENERGY PETROLEUM INSTITUTE

IEC-Type Examination Certificate


TEST CERTIFICATE

For the product: Low-voltage busbar trunking system


TEST CERTIFICATE


TEST CERTIFICATE


TEST CERTIFICATE


TEST CERTIFICATE

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


TEST CERTIFICATE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DEKRA Certification B.V.

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850A...6300A COMPACT BUSBAR PRODUCT OVERVIEW (E-LINE CCR)

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- Electirical Characteristics

-Busbar systems nominal insulation voltage shall be 1000V

-As per ampere rates, minimum short circuit values shall be as given below;

For Copper Conductors;

850A	: 1 sec/rms	23kA, Peak	48,3kA
1000A	: 1 sec/rms	50kA, Peak	105kA
1250-1600-2000A	: 1 sec/rms	80kA, Peak	176kA
2500A and above	: 1 sec/rms	90kA, Peak	210,5kA

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

-Busbar system shall have copper conductors between 850-6300A

-Busbar system shall have the following number of conductors and wire configuration.

a) 3 Conductors
b) 4 Conductor
c) 4 ½ Conductors
d) 5 Conductors

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

-Copper conductors shall be minimum 99,95% electrolytic copper. Minimum conductivity shall be 56m/mm 2.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 Commisioning

-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 systemthe 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.

PRODUCT TYPES

BUSBAR ENERGY DISTRIBUTION SYSTEMS

CABLE TRAYS

TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS

INDOOR SOLUTIONS

SUPPORT SYSTEMS

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