E-LINE CCR

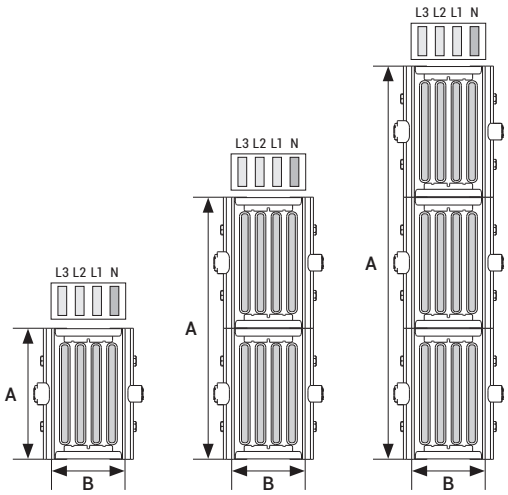
▶▶Technical Characteristics

Copper Conductor (Cu)

Rated Current	I_n	A	850	1000	1250	1600	2000
Busbar Code			08	10	12	16	20
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
Rated Isolation Voltage	U_i	V_{ac}	1000	1000	1000	1000	1000
Rated Impulse Withstand Voltage	U_{imp}	kV	12	12	12	12	12
Rated Frequency	f	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Pollution Degree			III	III	III	III	III
Protection Degree	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
Rated Short-time Withstand Current (1s) (Three phase)	I_{cw}	kA	23	50	80	80	80
Rated Peak Withstand Current	I_{pk}	kA	48,3	105	176	176	176
Rated Short-time Withstand Current for Neutral Conductor (1s) (Single phase)	I_{cw}	kA	13,8	31,2	49,5	49,5	49,5
Rated Peak Withstand Current for Neutral Conductor (Single phase)	I_{pk}	kA	27,6	65,9	106,4	106,4	106,4
Rated Short-time Withstand Current for PE (Housing-Phase) Conductor (1s)	I_{cw}	kA	13,8	31,2	49,5	49,5	49,5
Rated Peak Withstand Current for PE (Housing-Phase) Conductor	I_{pk}	kA	27,6	65,9	106,4	106,4	106,4
PHASE CONDUCTOR CHARACTERISTICS (In)							
Average Ohmic Resistance in In Current in 20°C Ambient Temperature	R_{20}	mΩ/m	0,0648	0,0534	0,0358	0,0256	0,0198
Average Ohmic Resistance in In Current in 35°C Ambient Temperature	R	mΩ/m	0,0890	0,0727	0,0473	0,0345	0,0263
Reactance (Independent from Temperature)	X	mΩ/m	0,0281	0,0246	0,0180	0,0132	0,0097
Average Impedance in In Current in 35°C Ambient Temperature	Z	mΩ/m	0,0934	0,0768	0,0506	0,0369	0,0281
Average Impedance in In Current in 20°C Ambient Temperature	Z_{20}	mΩ/m	0,0706	0,0588	0,0401	0,0288	0,0221
Rated Power Loss at 35 °C		W/m	190,8	212,3	219,5	269,7	304,9
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
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
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
SECTIONS							
L1, L2, L3 (Phase Conductors)		mm^2	270	330	480	660	900
Neutral		mm^2	270	330	480	660	900
PE (Aluminium Housing)		mm^2	1261	1261	1784	1984	2379
Conductor Dimensions		mmxmm	6x45	6x55	6x80	6x110	6x150
Busbar Weight (4 conductors)		kg/m	23,5	23,5	31	41	54,75
MEAN FAULT-LOOP CHARACTERISTICS							
Zero-sequence Impedance							
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)b20phN}$	mΩ/m	0,336	0,280	0,194	0,146	0,108
Zero Impedance of Conductor in 20°C (Phase-Housing)	$Z_{(0)b20phPE}$	mΩ/m	0,279	0,267	0,196	0,155	0,122
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
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
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
Resistance at a conductor temperature of 20 °C	R_{b20phN}	mΩ/m	0,141	0,114	0,078	0,059	0,043
Resistance at a conductor temperature of 20 °C	$R_{b20phPE}$	mΩ/m	0,111	0,107	0,072	0,056	0,043
Average Ohmic Resistance in 35°C Ambient Temperature	R_{bphph}	mΩ/m	0,187	0,150	0,098	0,075	0,055
Average Ohmic Resistance in 35°C Ambient Temperature	R_{bphN}	mΩ/m	0,194	0,156	0,103	0,079	0,057
Average Ohmic Resistance in 35°C Ambient Temperature	R_{bphPE}	mΩ/m	0,153	0,145	0,095	0,076	0,057
Mean Resistance at an ambient air temperature of 35 °C	X_{bphph}	mΩ/m	0,053	0,046	0,033	0,025	0,019
Mean Resistance at an ambient air temperature of 35 °C	X_{bphN}	mΩ/m	0,075	0,065	0,048	0,036	0,026
Reactance (Independent from temperature)	X_{bphPE}	mΩ/m	0,083	0,070	0,054	0,043	0,034

Attention! Standard installation of cast resin busbar is designed according to the positioning of conductors in 90° (on sides) with the floor level. This positioning is necessary for the easy application of adjunct resin.

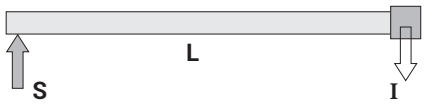
2500	3200	3400	4000	5000	5750	6300
25	32	34	40	50	57	63
1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000
12	12	12	12	12	12	12
50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
III	III	III	III	III	III	III
IP 68	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10	50J, >IK10
95	95	95	95	95	95	95
210,5	210,5	210,5	210,5	210,5	210,5	210,5
65,2	65,2	65,2	65,2	65,2	65,2	65,2
137,4	137,4	137,4	137,4	137,4	137,4	137,4
65,2	65,2	65,2	65,2	65,2	65,2	65,2
137,4	137,4	137,4	137,4	137,4	137,4	137,4
0,0181	0,0133	0,0120	0,0107	0,0080	0,0063	0,0057
0,0242	0,0180	0,0160	0,0145	0,0106	0,0082	0,0075
0,0084	0,0066	0,0057	0,0053	0,0038	0,0030	0,0028
0,0256	0,0192	0,0169	0,0154	0,0112	0,0088	0,0080
0,0200	0,0148	0,0132	0,0119	0,0088	0,0070	0,0063
447,9	538	543,1	674,3	782,6	776,2	843,9
0,123	0,090	0,080	0,071	0,053	0,042	0,039
0,123	0,090	0,080	0,071	0,053	0,042	0,039
0,156	0,126	0,267	0,119	0,112	0,115	0,091
960	1320	1500	1680	2250	2880	3240
960	1320	1500	1680	2250	2880	3240
3568	3698	4430	4569	6645	7137	7515
2x6x80	2x6x110	2x6x125	2x6x140	3x6x125	3x6x160	3x6x180
61,25	82	92,5	102	138	166,38	211
0,100	0,074	0,067	0,059	0,040	0,035	0,031
0,102	0,081	0,085	0,064	0,044	0,040	0,038
0,127	0,094	0,084	0,075	0,051	0,043	0,040
0,121	0,096	0,103	0,076	0,052	0,047	0,044
0,038	0,027	0,025	0,021	0,017	0,013	0,012
0,041	0,029	0,026	0,023	0,018	0,014	0,012
0,037	0,028	0,029	0,022	0,016	0,014	0,013
0,051	0,037	0,033	0,029	0,022	0,017	0,015
0,054	0,039	0,035	0,031	0,023	0,018	0,016
0,049	0,037	0,039	0,030	0,022	0,018	0,017
0,016	0,012	0,011	0,010	0,007	0,006	0,005
0,024	0,018	0,016	0,015	0,011	0,008	0,008
0,027	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 or Load Current (A)
R_1	= Resistance (mΩ/m)
X_1	= Resistance (mΩ/m)
Cosφ	= Power Factor



S = Supply Point

(1) All phase conductor characteristics had been determined according to Annex BB of IEC/EN 61439-6.

(2) Fault-loop zero-sequences impedances had been determined according to Annex CC of IEC/EN 61439-6.

(3)Fault-loop resistances and impedances had been determined according to Annex DD of IEC/EN 61439-6.

*IK10 corresponds to impact energy of 20J according to IEC 62262.

**CR series busbars are produced as minimum 3 conductors.(3P)