



MOLDED IP68 BUSBAR

METAENERGY produces
a wide range of electrical products.
All the information you are interested
in can be found on our website

metaenergy.ru

Video review of our company



You
Tube

You can always download
the current version of the
electronic catalog on the
website.



CONTENTS

4	Foreword
6	Usage
8	Structural features
9	System overview
10	Electrotechnical characteristics
12	Nickel coating of conductors
14	The composition of the naming
15	Straight lengths
16	Horizontal elbow
17	Vertical elbow
18	Z-joint
19	Types of z-joints
20	T-joint
21	Cross element
22	Connection interface
23	Transition length (IP68 to IP55)
24	Connection interface + horizontal elbow
25	Connection interface + vertical elbow
26	Connection interface installation templates
27	Busbar connection patterns
28	Transformer connection joint
29	Accessories
30	Connecting block
32	Flexible busbar
33	Fire-resistant barrier
34	IP55 busbars
36	Flexible and power busbars
37	Insulators
38	Geography of deliveries



Convenience



Eco-friendly



Cost-effectiveness



Reliability



Quality



Versatility



Compactness



Safety

Busbar and cable channel comparison

Quick and easy length mounting. Busbars can save up to 30% of the total cost of a similar scheme using a cable. Also busbar installation is twice as fast as the cable channel circuit.

High overload capacity. All thermal insulation materials we use can withstand up to 150°C, while this indicator for the cable is usually in the range from 95°C to 105°C. Therefore, the overload capacity of the busbar is much higher than that of the cables.

Great heat dissipation characteristics. The insulating layers of the cables (main and outer) insulate both electrically and thermally, while the busbar dissipates heat through convection and radiates heat through the body. Thus, the busbar has an improved heat sink compared to cable channels.

No complicated connections. Unlike cable systems, the busbar does not require a separate connection to each terminal capacity. This saves installation space and makes the whole system more secure.

MOLDED POLYMER MODIFIED BODY

- Resistant to UV and external pollution.
- High corrosion and chemical resistance.
- Resistant to rodents, birds and insects.
- Explosion-proof.
- Applicable in all climatic zones.
- High fire safety.
- Resistant to the spread of fire, does not create traction.
- Maintain working capacity in fire conditions.
- Seismic resistance, high mechanical strength of the system.
- Docking with busbars of the MBA and MBC series.

Cast-insulated busbar Protection class IP68 and IP69K

IP68 means full protection against dust. Reliable protection against contact with humans, tools, and conductors. It also gives full moisture protection – the busbar can be placed underwater to a depth of 1m for up to 30 minutes.

IP69K – The German standard DIN 40050-9 extends the degree of protection to IP69K, used for high-temperature high-pressure washing. The body has not only full dust protection, but is also able to withstand direct high water pressure during washing.

The IP69K was originally developed for vehicles that need a regular intensive cleaning (dump trucks, concrete mixers), but is now finding applications in other fields (food processing and chemical industry).

SIC Metallurg LLC manufactures electrical products under the **METAENERGY** brand. Combining the experience of Russian and foreign researchers in the field of energy and electrical engineering, we create a convenient, affordable and high-quality product.

Every single one of our products is aimed at introducing new efficient technologies in the energy sector and maintaining an economically viable development concept for our partners. From the very beginning of product design our specialists have been pursuing the idea of manufacturing high-quality products.

We seek the close contact with consumers of our products and that allows us to improve the products we have already created and fulfill the our partners' expectations in future products. In such behaviour we see the realization of one of the most important aspirations of our company — sustainable development.

Continuous development, innovation, and economic growth are possible only when building long-term and trusting relationships. This is a guarantee of upholding mutual interests. This is the key to focusing on categories such as **quality, timeliness, consistency, and thrift**. We are open to dialogue, ready to grow

with you and develop new, high-end products for your company.

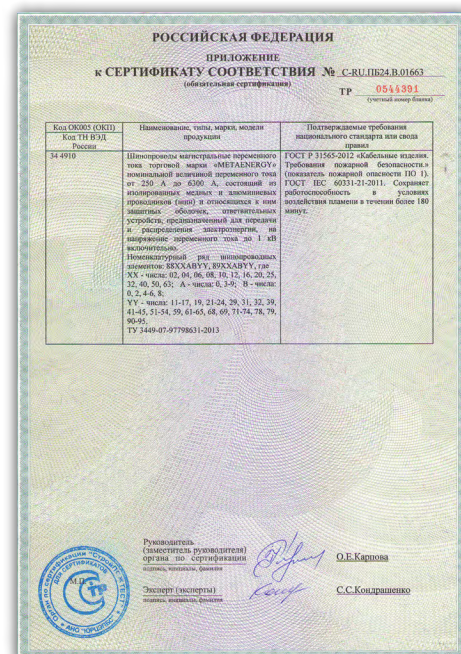
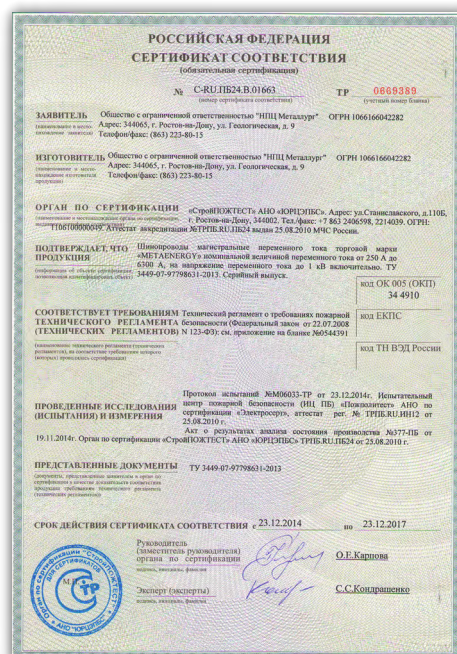
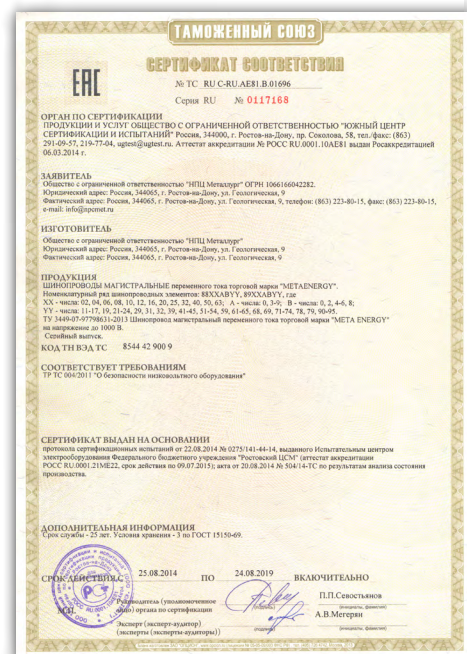
METAENERGY products are modern Russian production with global level of quality. This is what we focus on and pursue to contribute to build confidence in Russian manufacturers, both in Russia and abroad. We are able to work great on both delivery timethe and products quality, packaging, competence and also on responsiveness of our specialists. We will be glad if you decide to try this yourself. Now and always, we will maintain and improve this level.



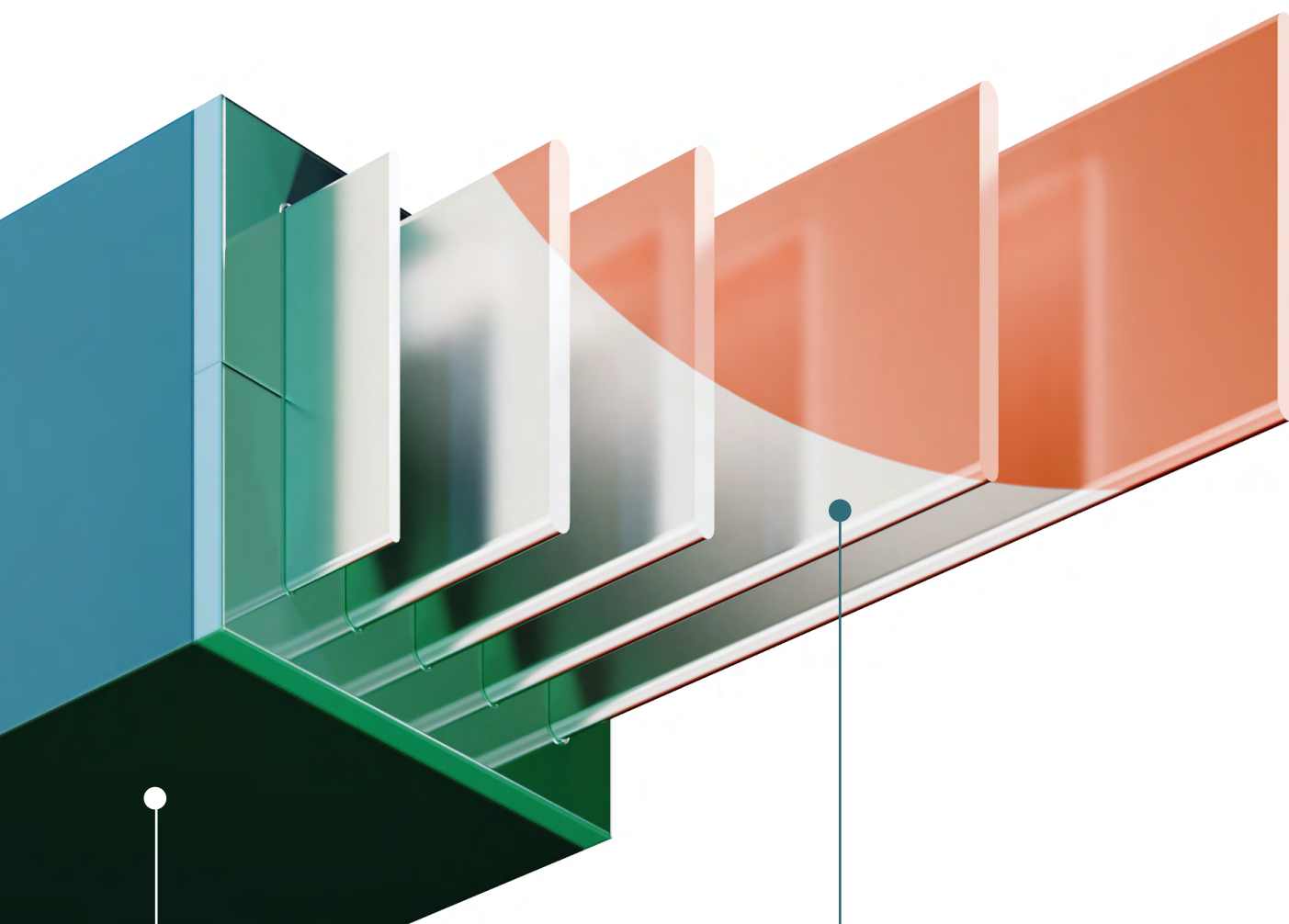
Every year, we confirm that our products comply with the stated requirements at the State Center for Standardization and Metrology. Upon shipment of each batch, a certificate of conformity is issued. This document is stored in an electronic database.

Busbars are designed for the transmission and distribution of electricity in industrial, commercial, administrative buildings, infrastructure facilities, multi-storey and multifunctional buildings, where there is a need for high energy distribution density between and on floors, as well as high requirements for electrical safety and building operation. Thus, highly reliable METAENERGY busbars can be used in a wide range of situations on objects such as:

- Chemical industry enterprises.
- Ports and shipyards.
- Nuclear power plants.
- Hydroelectric power plants.
- Galvanic manufactures.
- Underground and street laying.
- Food industry.
- Mechanical engineering.



METAENERGY molded IP68 busbars use the unique innovative PROTEX material, which is capable of ensuring the equipment's operability in any climatic conditions under the open sky, as well as in emergency situations and when exposed to aggressive environments and fire.



Molded body

- High mechanical strength.
- Operating temperature range from -60°C to +80°C.
- Fire safety.
- Resistance to aggressive effects of chemically active environment.

Conductor

- Copper (Electrical grade, specific resistance Ω 0.0179);
- Aluminum (Electrical grade, specific resistance Ω 0.0355).

Delivery kit

- Busbar (each section is marked)
- Busbar passport
- Busbar installation guidelines
- Mounting guidelines
- Certificates and test reports
- Packaging (plywood or wooden boxes)

Accessories

- Fasteners
- Flexible busbar for connection
- Transition plates (Copper/Aluminum)

Operation at temperatures from -60°C to +80 °C.

The METAENERGY IP68 cast busbar of the CBA and CBC series can be used outdoors in the Arctic winter and under the scorching desert sun. The service life of the busbar is at least 30 years from the moment of its installation.

Fire safety.

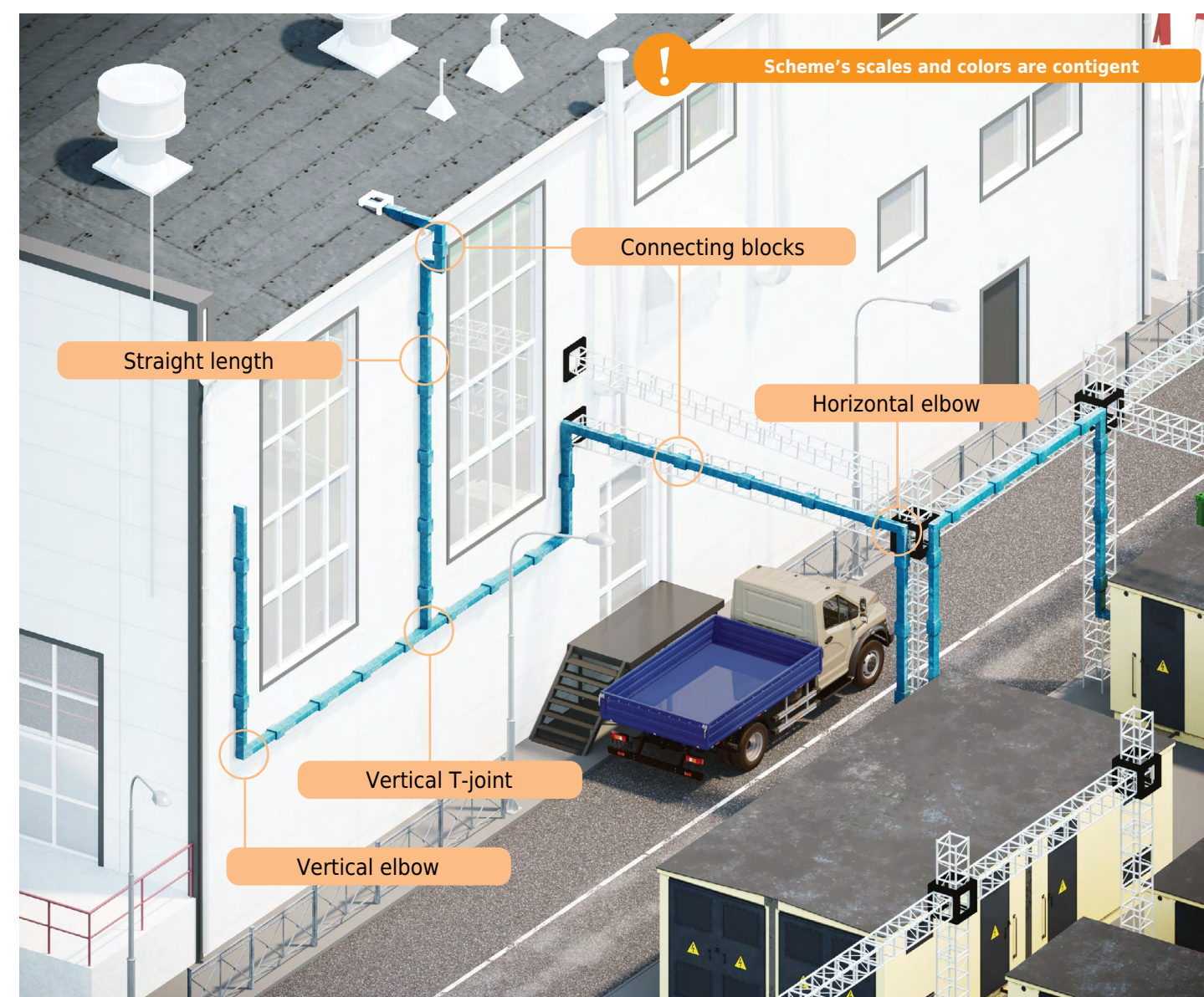
The PROTEX material does not burn. And even in fire METAENERGY IP68 busbar ensures operability for at least 240 minutes.

High mechanical strength.

The busbar body is completely protected from moisture and ingress of foreign bodies. It can be laid in cable trenches and underground utilities.

Resistance to aggressive effects of chemically active environment.

The PROTEX material is chemically resistant to acidic, alkaline, industrial and salt environments. This allows the METAENERGY IP68 busbar to be used on offshore drilling platforms, in manufacturing plants, in the chemical and extractive industries.



Aluminum conductor (Al)

Al			Single busbar					
	Rated current	A	800	1000	1250	1600	2000	2500
	Insulation voltage	V	1000					
	Operating voltage	V	1000					
	Frequency	Hz	50					
	IP code	IP	68					
	Permissible short-term fault current (t=1c), I _{cw}	kA	27	40	53	65	70	80
	Permissible peak current (t=0.1s), I _{pk}	kA	56	84	117	143	154	176
	Active resistance at rated current, R	mOm/m	0,096	0,074	0,059	0,036	0,029	0,026
	Reactance, X	mOm/m	0,026	0,055	0,05	0,046	0,031	0,029
	Dimensions of the conductor	mm/mm	6x60	6x80	6x100	6x160	6x200	6x240
	Voltage drop at rated current and load evenly distributed along the line, expressed in Volts (V) per 100 meters and per 1 Ampere (A)	cos φ =1	0,0166	0,0128	0,0102	0,0062	0,0050	0,0045
		cos φ =0,9	0,0169	0,0157	0,0130	0,0091	0,0069	0,0062
		cos φ =0,8	0,0160	0,0160	0,0134	0,0098	0,0072	0,0066
		cos φ =0,7	0,0149	0,0158	0,0133	0,0101	0,0074	0,0067

			Double busbar		
	Rated current	A	3200	4000	5000
	Insulation voltage	V	1000		
	Operating voltage	V	1000		
	Frequency	Hz	50		
	IP code	IP	68		
	Permissible short-term fault current (t=1c), I _{cw}	kA	100	100	100
	Permissible peak current (t=0.1s), I _{pk}	kA	220	220	220
	Active resistance at rated current, R	mOm/m	0,019	0,015	0,013
	Reactance, X	mOm/m	0,026	0,024	0,023
	Dimensions of the conductor	mm/mm	2(6x160)	2(6x200)	2(6x240)
	Voltage drop at rated current and load evenly distributed along the line, expressed in Volts (V) per 100 meters and per 1 Ampere (A)	cos φ =1	0,0033	0,0026	0,0023
		cos φ =0,9	0,0048	0,0043	0,0038
		cos φ =0,8	0,0051	0,0048	0,0042
		cos φ =0,7	0,0053	0,0050	0,0044

Copper conductor (Cu)

Cu			Single busbar					
	Rated current	A	1000	1250	1600	2000	2500	3200
	Insulation voltage	V	1000					
	Operating voltage	V	1000					
	Frequency	Hz	50					
	IP code	IP	68					
	Permissible short-term fault current (t=1c), I _{cw}	kA	38	45	65	80	80	100
	Permissible peak current (t=0.1s), I _{pk}	kA	80	94,5	143	176	176	220
	Active resistance at rated current, R	mOm/m	0,062	0,05	0,04	0,025	0,02	0,018
	Reactance, X	mOm/m	0,069	0,051	0,046	0,034	0,031	0,029
	Dimensions of the conductor	mm/mm	6x60	6x80	6x100	6x160	6x200	6x240
	Voltage drop at rated current and load evenly distributed along the line, expressed in Volts (V) per 100 meters and per 1 Ampere (A)	cos φ =1	0,011	0,009	0,007	0,004	0,003	0,003
		cos φ =0,9	0,015	0,012	0,010	0,006	0,005	0,005
		cos φ =0,8	0,016	0,012	0,010	0,007	0,006	0,006
		cos φ =0,7	0,016	0,012	0,011	0,007	0,006	0,006

			Double busbar		
	Rated current	A	4000	5000	6300
	Insulation voltage	V	1000		
	Operating voltage	V	1000		
	Frequency	Hz	50		
	IP code	IP	68		
	Permissible short-term fault current (t=1c), I _{cw}	kA	120	125	125
	Permissible peak current (t=0.1s), I _{pk}	kA	264	275	275
	Active resistance at rated current, R	mOm/m	0,013	0,01	0,008
	Reactance, X	mOm/m	0,014	0,013	0,011
	Dimensions of the conductor	mm/mm	2(6x160)	2(6x200)	2(6x240)
	Voltage drop at rated current and load evenly distributed along the line, expressed in Volts (V) per 100 meters and per 1 Ampere (A)	cos φ =1	0,002	0,002	0,001
		cos φ =0,9	0,003	0,003	0,002
		cos φ =0,8	0,003	0,003	0,002
		cos φ =0,7	0,003	0,003	0,002

Ambient temperature °C	Reduction ratio of the rated current
40	1,00
45	0,95
50	0,90
55	0,85
60	0,80

Table 3



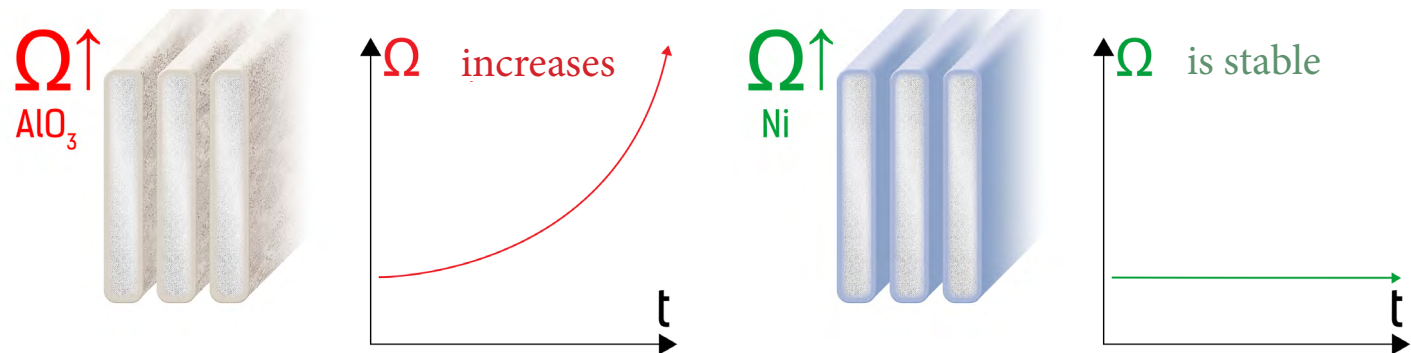
METAENERGY busbars can operate without restrictions at rated currents at ambient temperatures up to 40 ° C. During continuous operation at a higher ambient temperature the rated currents must be reduced.

Шинопровод Метаэнергия IP68 может стабильно эксплуатироваться при температурах окружающей среды от -60 до +60 °C без влияния на механические характеристики системы.

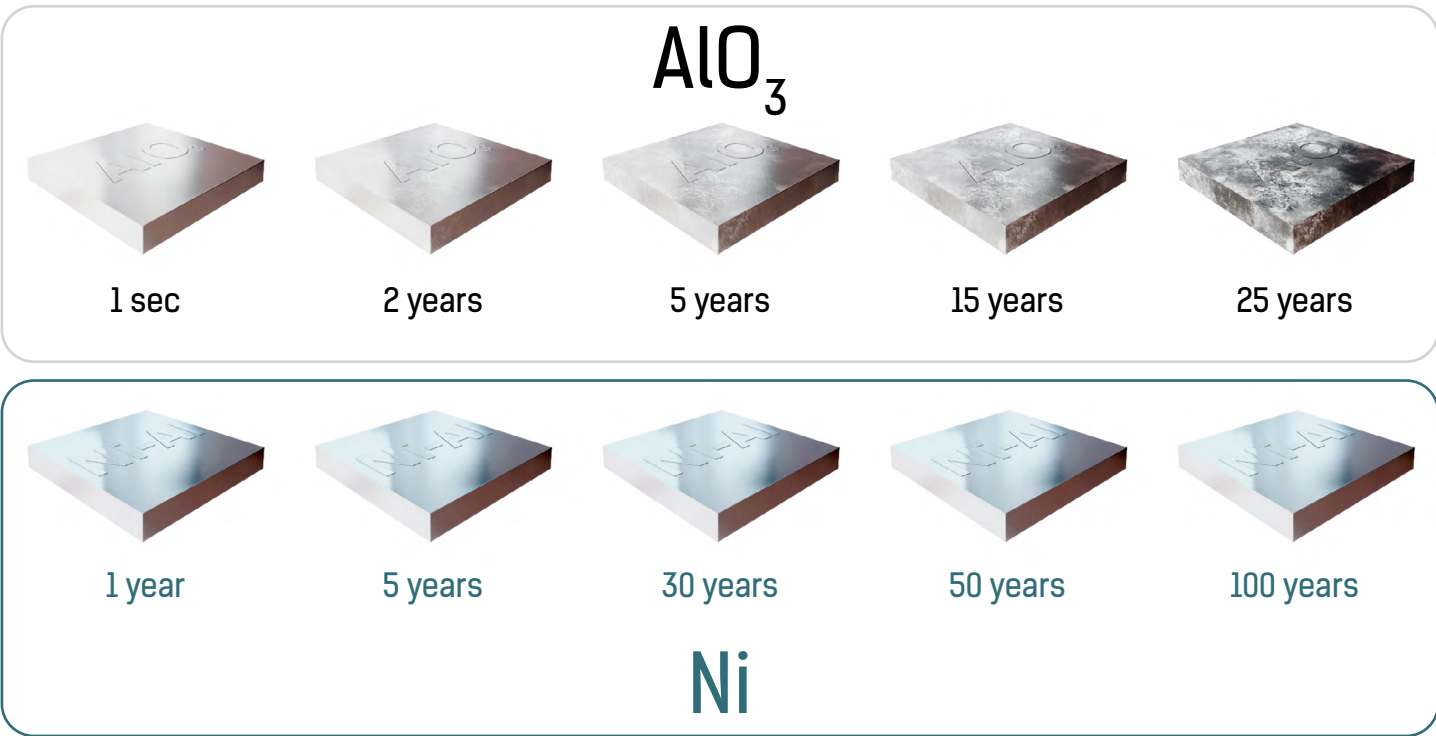


Over time, aluminum oxide forms and grows on the surface of an unprotected conductor. Simply put, an aluminum conductor «rusts», which therefore affects the operational properties of the conductor: electrical resistance increases, overheating occurs, and all other problems that follow from this!

To increase the service life and stability of operational properties, a special nickel coating is applied to the conductor. It protects the surface from corrosion, which preserves stable electrical and mechanical properties of the conductor for decades.



Aluminum oxide forms and grows on the surface of the conductor from the moment of production



The nickel coating steadily covers the surface of the conductor for many years.

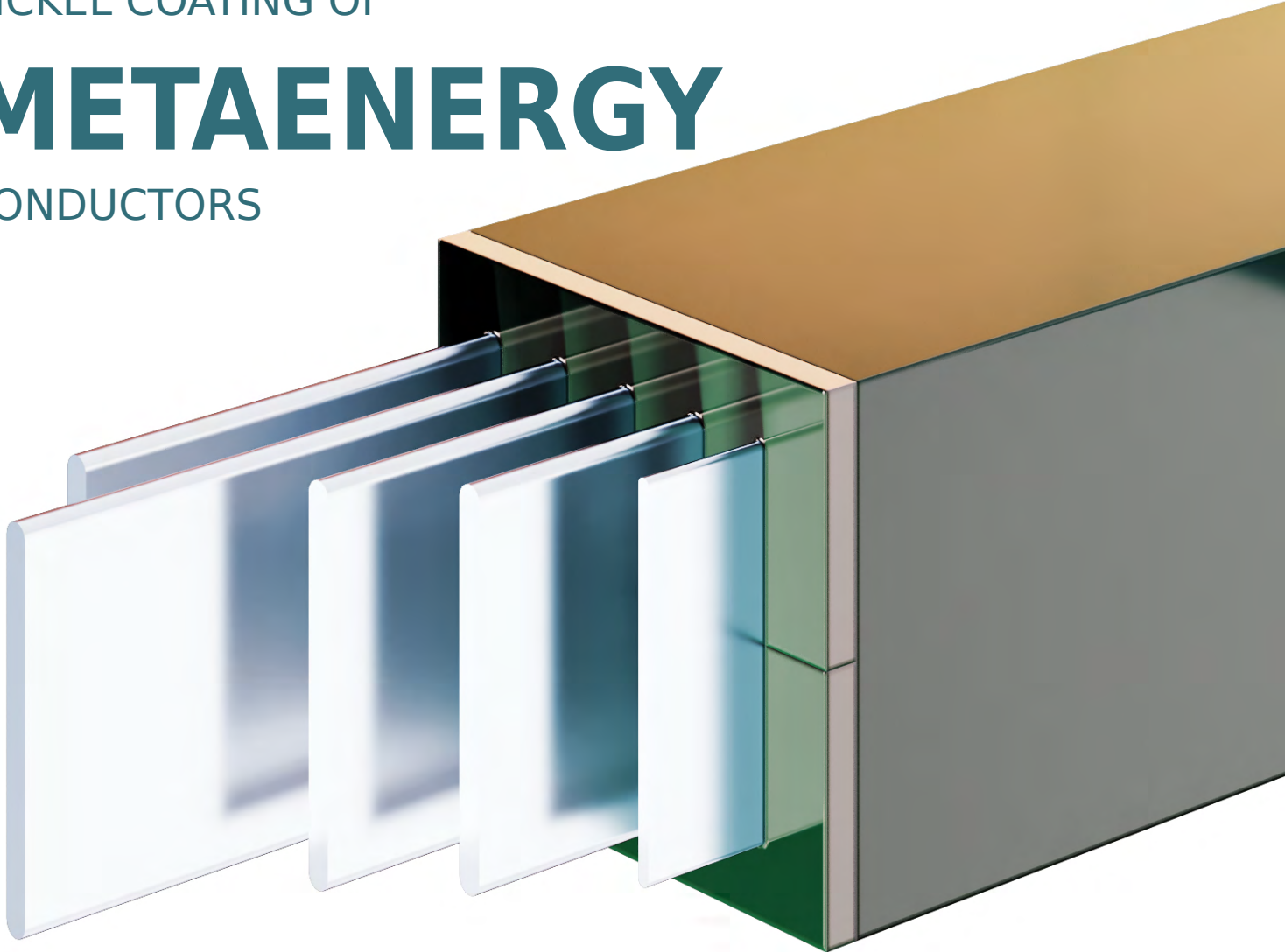


Aluminum oxide membrane has good insulating and anti-corrosion properties when formed on the surface of the conductor. However, its appearance on the surface of the contact pads leads to undesirable electrical losses, overheating and rapid wear of the conductor.

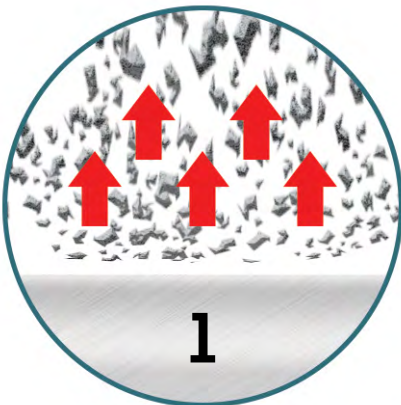
NICKEL COATING OF

METAENERGY

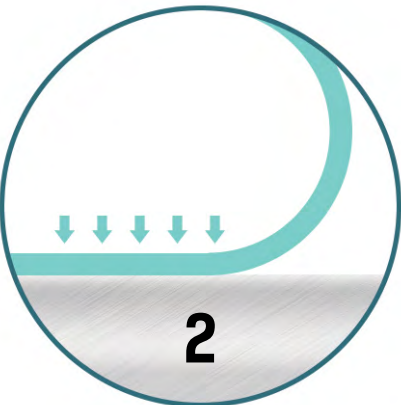
CONDUCTORS



Ni-Al system in METAENERGY busbars



1
Removing AlO_3 from the surface



2
Applying a layer of nickel to the cleaned surface



Removing the aluminum oxide layer before creating the coating

THE COMPOSITION OF THE NAMING AND ARTICLE NUMBER DESIGNATION

STRAIGHT LENGTH

Example of recording the designation of a 1m straight length, aluminum busbar for 3200 A, 3 phases + insulated neutral + PE (grounding) of IP 68:

88325811 [CBA 3200A 11] 1000 mm Straight length

Table 4

Article number: 88 32 5 8 11

Naming: [CBA 3200A 5 8] 1000 mm Straight length

Code	Electric current (A)
08	800 A
10	1000 A
12	1250 A
16	1600 A
20	2000 A
25	2500 A
32	3200 A
40	4000 A
50	5000 A
63	6300 A

Layout type	Conductors' layout type
5	3L+N+PE100%

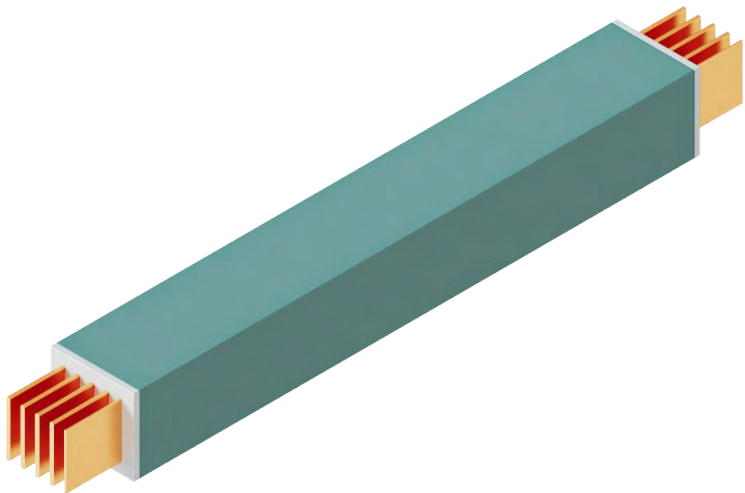
IP code in the naming	IP code
8	IP 68

11	1000 mm Straight length without outlets
12	2000 mm Straight length without outlets
13	3000 mm Straight length without outlets
19	Special straight length without outlets
31	N1 Horizontal elbow
32	N2 Horizontal elbow
33	Special horizontal elbow
34	Vertical elbow
35	Special vertical elbow
39	Special double elbow
41	Special horizontal T-joint
42	Special vertical T-joint
43	Special horizontal cross element
44	Special vertical cross element
60	Connection interface
61	N1 Connection interface + horizontal elbow
62	N2 Connection interface + horizontal elbow
63	N3 Connection interface + horizontal elbow
64	N4 Connection interface + horizontal elbow
71	T1 Side transformer connection joint
72	T2 Front transformer connection joint
73	T3 Transformer connection joint
74	T4 Transformer connection joint
90	1500 mm Straight expansion unit
91	1500 mm Lowering length
92	1000 mm Neutral permutation length
93	1000 mm Phase permutation length
95	Connecting block
96	Transition length (IP68 to IP55)
99	Side cap

The type of busbar is indicated in parentheses, the type of length – after parentheses. If the section is non-standard (special), an additional feature is added to the name (size, number of outlets, drawing number, etc.)

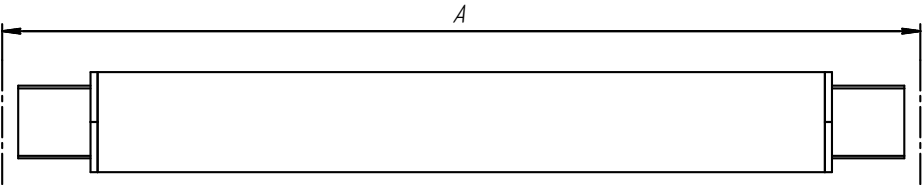
Example:

88325819 [CBA 3200A 19] 1250 mm Special straight length without outlets

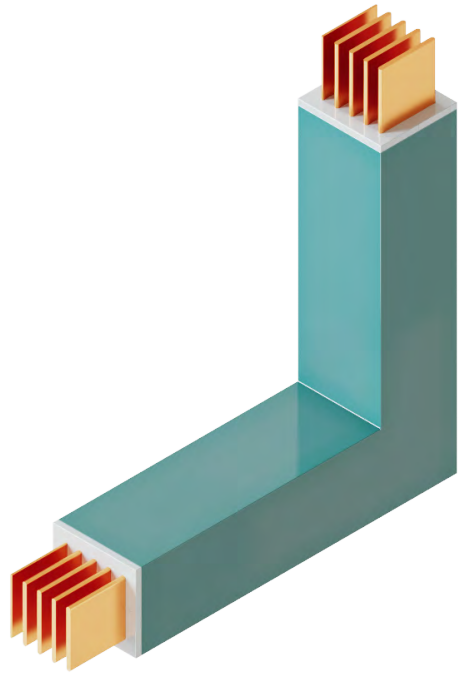
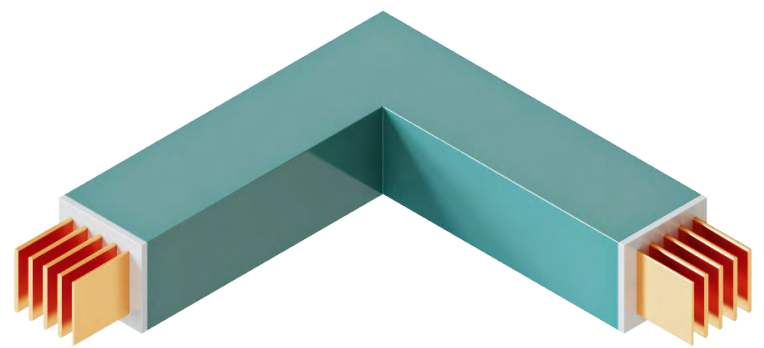
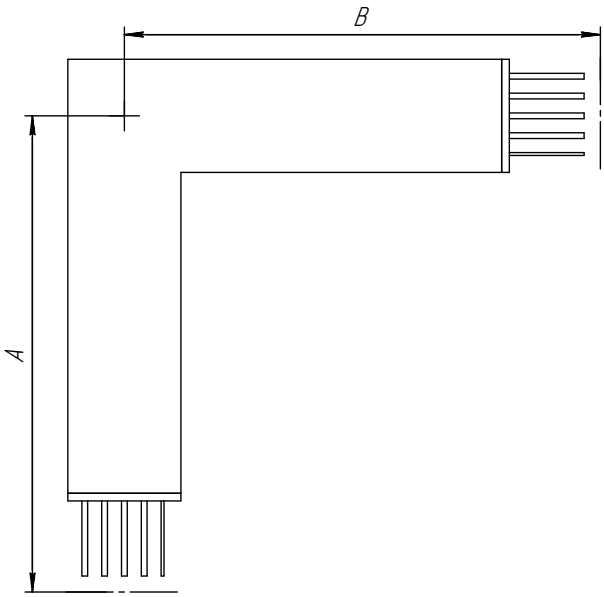


A	L 3000 mm	L 2000 mm	L 1000 mm	Special	Min. A mm	Max. A mm	Al
800	8808 58 13	8808 58 12	8808 58 11	8808 58 19	500	3000	
1000	8810 58 13	8810 58 12	8810 58 11	8810 58 19			
1250	8812 58 13	8812 58 12	8812 58 11	8812 58 19			
1600	8816 58 13	8816 58 12	8816 58 11	8816 58 19			
2000	8820 58 13	8820 58 12	8820 58 11	8820 58 19			
2500	8825 58 13	8825 58 12	8825 58 11	8825 58 19			
3200	8832 58 13	8832 58 12	8832 58 11	8832 58 19			
4000	8840 58 13	8840 58 12	8840 58 11	8840 58 19			
5000	8850 58 13	8850 58 12	8850 58 11	8850 58 19			

A	L 3000 mm	L 2000 mm	L 1000 mm	Special	Min. A mm	Max. A mm	Cu
1000	8910 58 13	8910 58 12	8910 58 11	8910 58 19	500	3000	
1250	8912 58 13	8912 58 12	8912 58 11	8912 58 19			
1600	8916 58 13	8916 58 12	8916 58 11	8916 58 19			
2000	8920 58 13	8920 58 12	8920 58 11	8920 58 19			
2500	8925 58 13	8925 58 12	8925 58 11	8925 58 19			
3200	8932 58 13	8932 58 12	8932 58 11	8932 58 19			
4000	8940 58 13	8940 58 12	8940 58 11	8940 58 19			
5000	8950 58 13	8950 58 12	8950 58 11	8950 58 19			
6300	8963 58 13	8963 58 12	8963 58 11	8963 58 19			



HORIZONTAL ELBOW

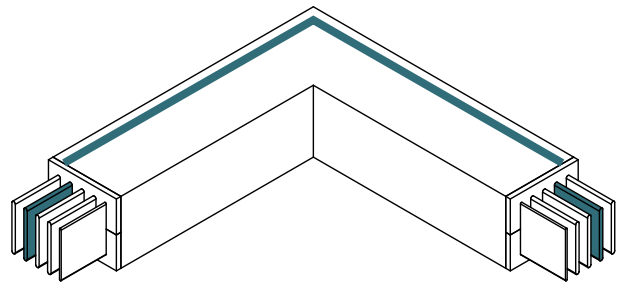
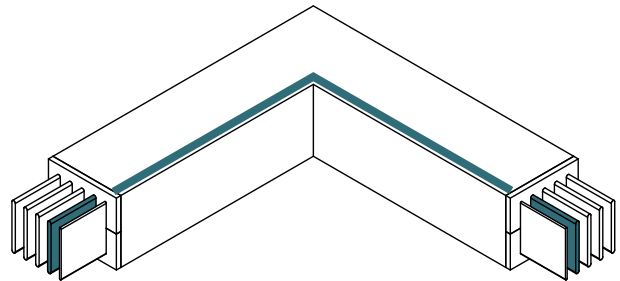


VERTICAL ELBOW

A1	A	N 1	N 2	Special	Standard dimensions	Min. dimensions
	800	8808 58 31	8808 58 32	8808 58 33	500×500 mm	300×300 mm
	1000	8810 58 31	8810 58 32	8810 58 33		
	1250	8812 58 31	8812 58 32	8812 58 33		
	1600	8816 58 31	8816 58 32	8816 58 33		
	2000	8820 58 31	8820 58 32	8820 58 33		
	2500	8825 58 31	8825 58 32	8825 58 33		
	3200	8832 58 31	8832 58 32	8832 58 33		
	4000	8840 58 31	8840 58 32	8840 58 33		
	5000	8850 58 31	8850 58 32	8850 58 33		

Cu	A	N 1	N 2	Special	Standard dimensions	Min. dimensions
	1000	8910 58 31	8810 58 32	8810 58 33	500×500 mm	300×300 mm
	1250	8912 58 31	8812 58 32	8812 58 33		
	1600	8916 58 31	8816 58 32	8816 58 33		
	2000	8920 58 31	8820 58 32	8820 58 33		
	2500	8925 58 31	8825 58 32	8825 58 33		
	3200	8932 58 31	8832 58 32	8832 58 33		
	4000	8940 58 31	8840 58 32	8840 58 33		
	5000	8950 58 31	8850 58 32	8850 58 33		
	6300	8963 58 31	8863 58 32	8863 58 33		

neutral designation
N1 (position of the neutral inside the elbow)

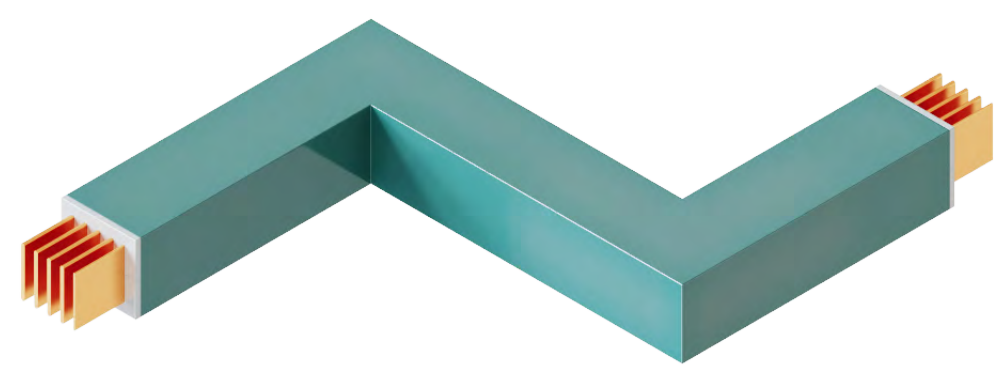
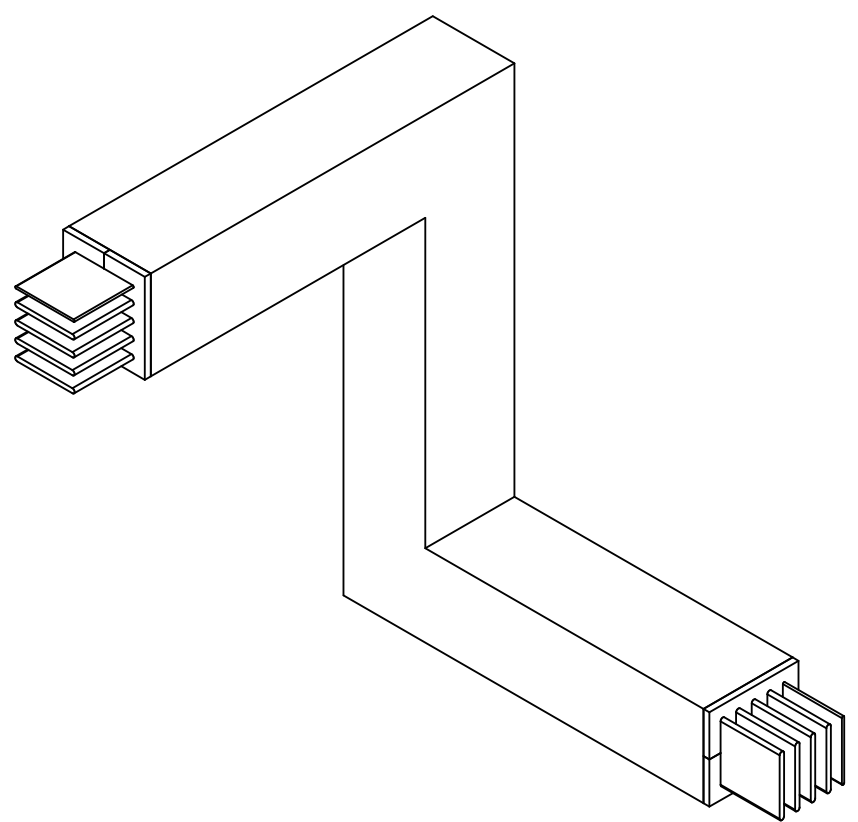


N 2 (position of the neutral outside the elbow)

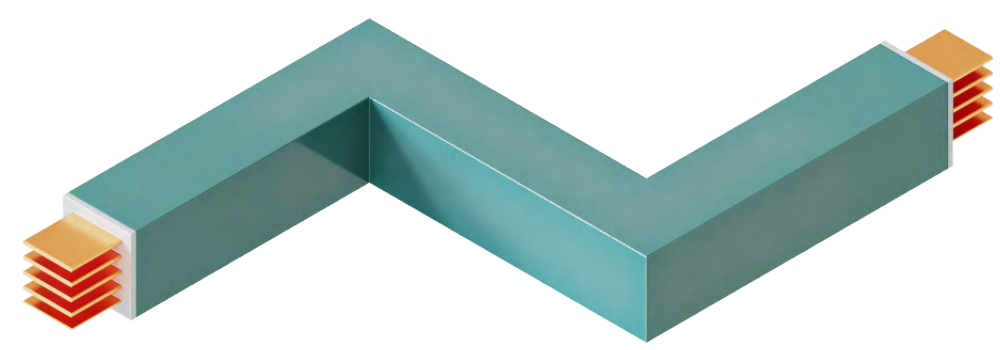
A	Vertical	Special	Standard dimensions	Min. dimensions	A1
800	8808 58 34	8808 58 35	500×500 mm	350x350 mm	
1000	8810 58 34	8810 58 35			
1250	8812 58 34	8812 58 35			
1600	8816 58 34	8816 58 35			
2000	8820 58 34	8820 58 35			
2500	8825 58 34	8825 58 35			
3200	8832 58 34	8832 58 35	500x500 mm		
4000	8840 58 34	8840 58 35			
5000	8850 58 34	8850 58 35			

A	Vertical	Special	Standard dimensions	Min. dimensions	Cu
1000	8810 58 34	8810 58 35	500×500 mm	350x350 mm	
1250	8812 58 34	8812 58 35			
1600	8816 58 34	8816 58 35			
2000	8820 58 34	8820 58 35			
2500	8825 58 34	8825 58 35			
3200	8832 58 34	8832 58 35			
4000	8840 58 34	8840 58 35	500x500 mm		
5000	8850 58 34	8850 58 35			
6300	8863 58 34	8863 58 35			

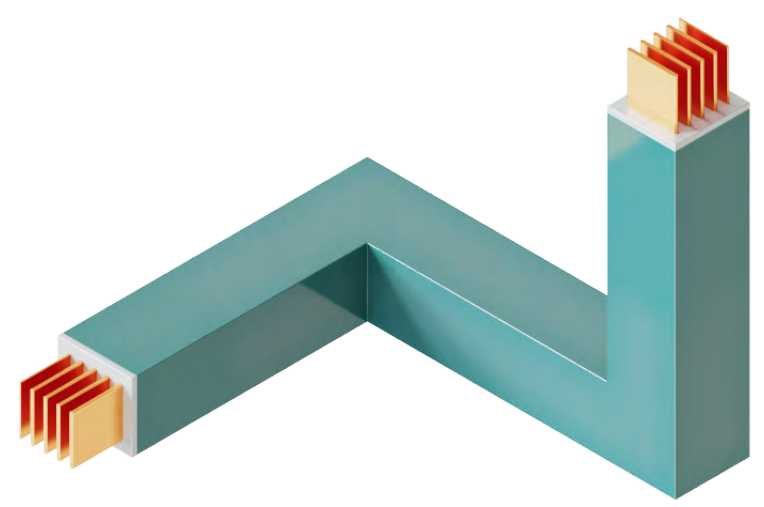
If you order a non-equilateral vertical elbow please specify the position of the neutral.



Horizontal z-joint



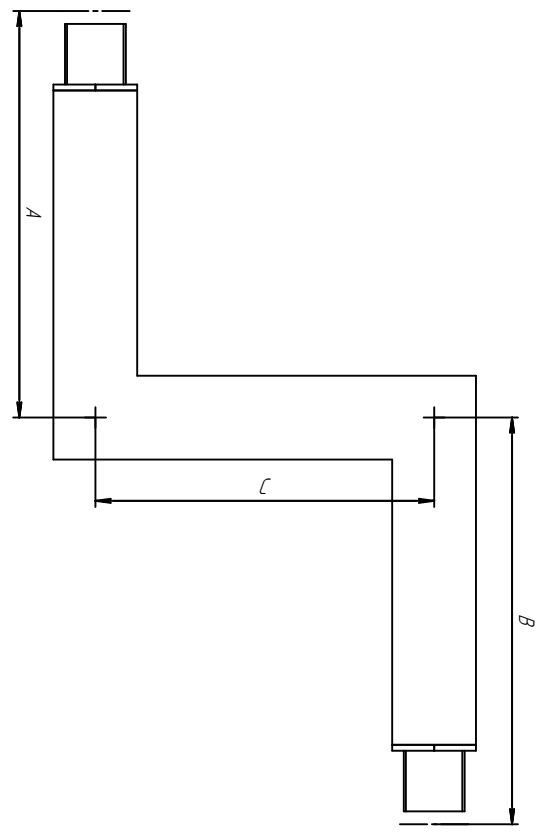
Vertical z-joint



Universal z-joint

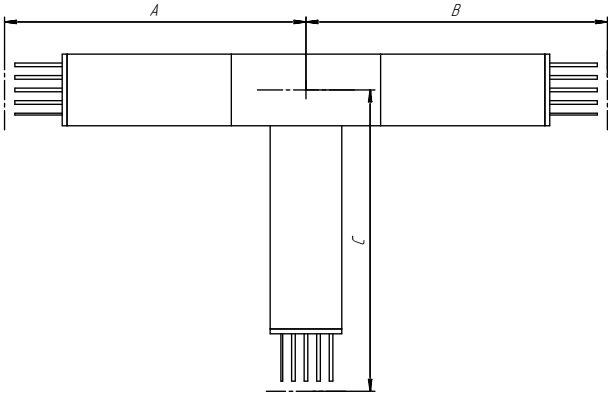
Al	A	Z-type	C Uni. Min.	A,B Hor. Min.	A,B Vert. Min.	C Hor. Min.	C Vert. Min.
	800	8808 58 39	100 mm	300 mm	350 mm	50 mm	50 mm
	1000	8810 58 39	120 mm				
	1250	8812 58 39	125 mm				
	1600	8816 58 39	155 mm				
	2000	8820 58 39	175 mm				
	2500	8825 58 39	195 mm				
	3200	8832 58 39	250 mm		500 mm		
	4000	8840 58 39	290 mm				
	5000	8850 58 39	330 mm				

Cu	A	Z-type	C Uni. Min.	A,B Hor. Min.	A,B Vert. Min.	C Hor. Min.	C Vert. Min.
	1000	8910 58 39	100 mm	300 mm	350 mm	50 mm	50 mm
	1250	8912 58 39	120 mm				
	1600	8916 58 39	125 mm				
	2000	8920 58 39	155 mm				
	2500	8925 58 39	175 mm				
	3200	8932 58 39	195 mm		500 mm		
	4000	8940 58 39	250 mm				
	5000	8950 58 39	290 mm				
	6300	8963 58 39	330 mm				

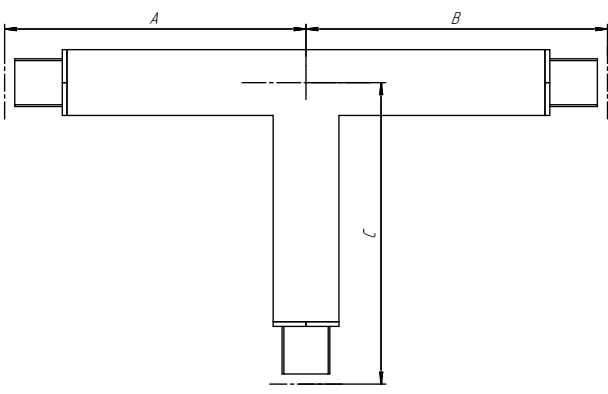


Standard A, B, C dimensions are 500x500x500 mm.

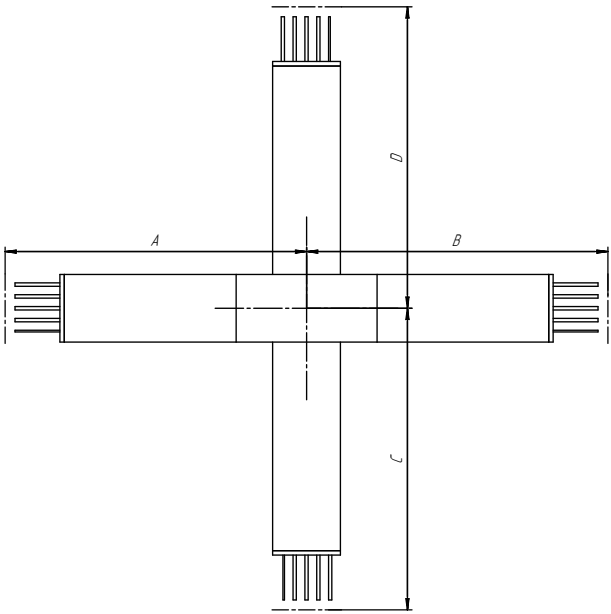
Horizontal t-joint



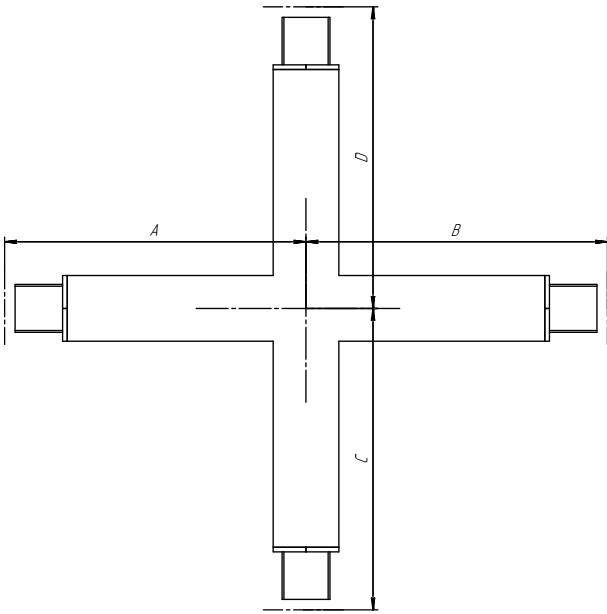
Vertical t-joint



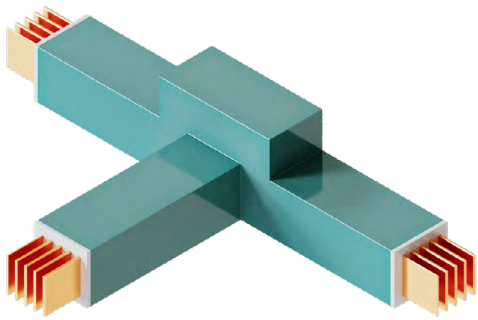
Horizontal cross-element



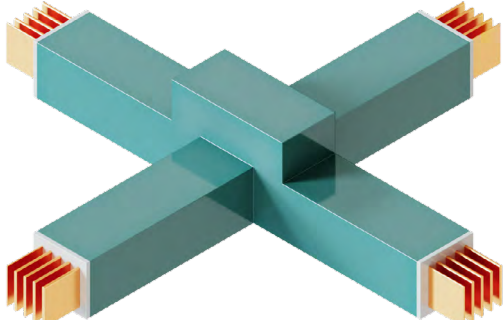
Vertical cross-element



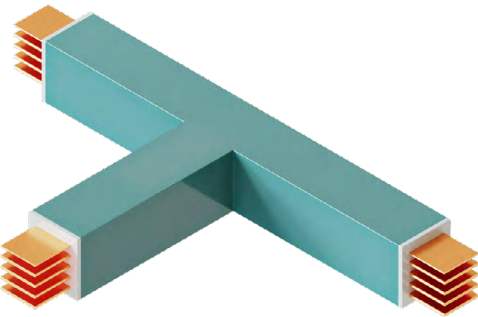
Horizontal t-joint



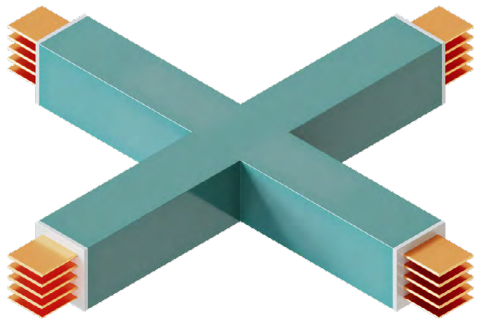
Horizontal cross-element



Vertical t-joint



Vertical cross-element



Al	A	Horizontal	Vertical	Hor. Min	Vert. Min
	800	8808 58 41	8808 58 42	300 mm	350 mm
	1000	8810 58 41	8810 58 42		
	1250	8812 58 41	8812 58 42		
	1600	8816 58 41	8816 58 42		
	2000	8820 58 41	8820 58 42		500 mm
	2500	8825 58 41	8825 58 42		
	3200	8832 58 41	8832 58 42		
	4000	8840 58 41	8840 58 42		
	5000	8850 58 41	8850 58 42		

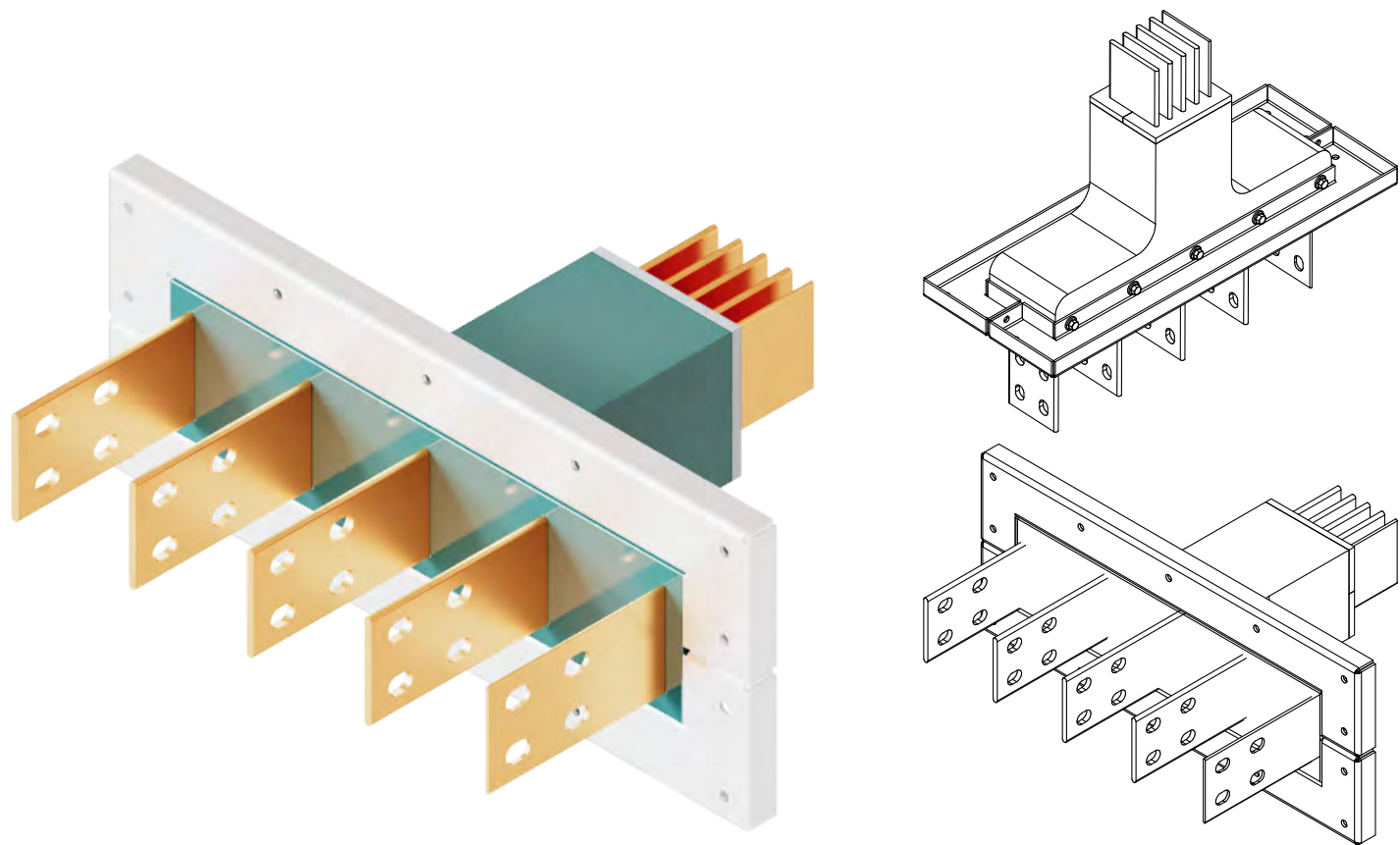
Cu	A	Horizontal	Vertical	Hor. Min	Vert. Min
	1000	8910 58 41	8810 58 42	300 mm	350 mm
	1250	8912 58 41	8812 58 42		
	1600	8916 58 41	8816 58 42		
	2000	8920 58 41	8820 58 42		500 mm
	2500	8925 58 41	8825 58 42		
	3200	8932 58 41	8832 58 42		
	4000	8940 58 41	8840 58 42		
	5000	8950 58 41	8850 58 42		
	6300	8963 58 41	8863 58 42		

Al	A	Horizontal	Vertical	Hor. Min	Vert. Min
	800	8808 58 43	8808 58 44	300 mm	350 mm
	1000	8810 58 43	8810 58 44		
	1250	8812 58 43	8812 58 44		
	1600	8816 58 43	8816 58 44		
	2000	8820 58 43	8820 58 44		500 mm
	2500	8825 58 43	8825 58 44		
	3200	8832 58 43	8832 58 44		
	4000	8840 58 43	8840 58 44		
	5000	8850 58 43	8850 58 44		

Cu	A	Horizontal	Vertical	Hor. Min	Vert. Min
	1000	8910 58 43	8810 58 44	300 mm	350 mm
	1250	8912 58 43	8812 58 44		
	1600	8916 58 43	8816 58 44		
	2000	8920 58 43	8820 58 44		500 mm
	2500	8925 58 43	8825 58 44		
	3200	8932 58 43	8832 58 44		
	4000	8940 58 43	8840 58 44		
	5000	8950 58 43	8850 58 44		
	6300	8963 58 43	8863 58 44		

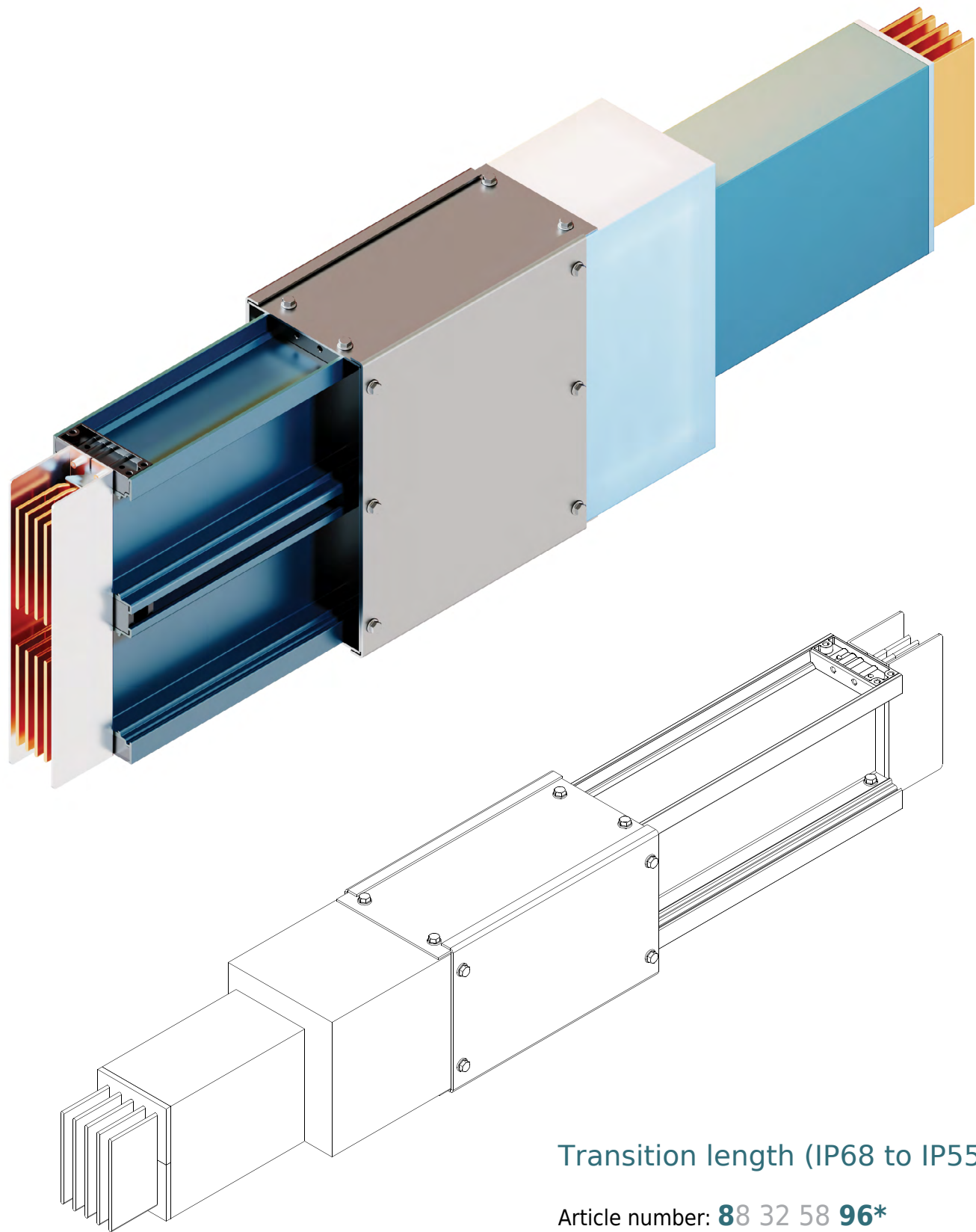
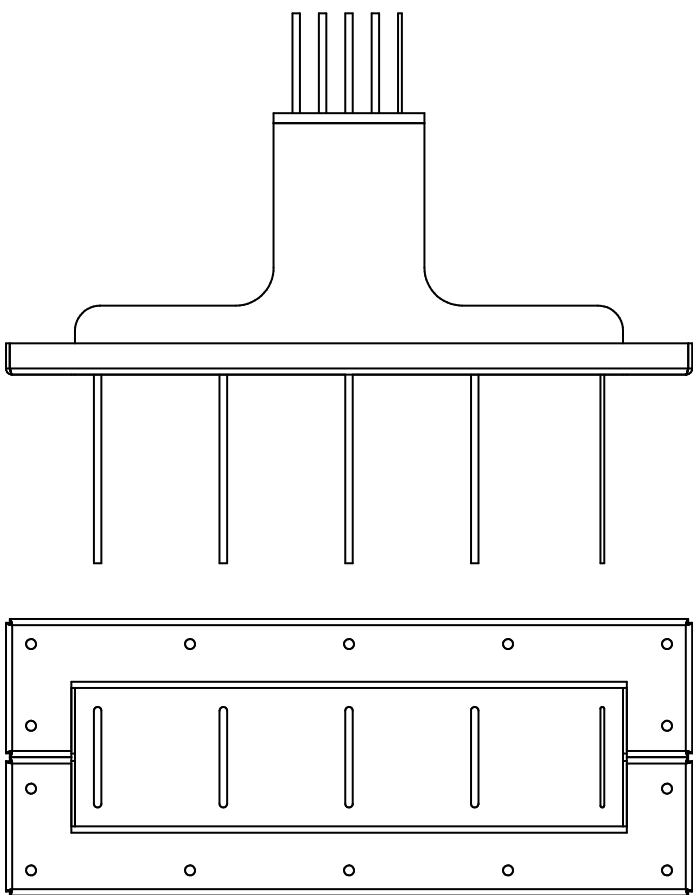
The standard size of the t-joint is 500x500x500 mm.

The standard size of the cross-element is 500x500x500 mm.



Al	A	Normal	Stansard, A
	800	8808 58 60	300 mm
	1 000	8810 58 60	
	1 250	8812 58 60	
	1 600	8816 58 60	
	2 000	8820 58 60	
	2 500	8825 58 60	
	3 200	8832 58 60	
	4 000	8840 58 60	
	5 000	8850 58 60	

Cu	A	Normal	Stansard, A
	1 000	8910 58 60	300 mm
	1 250	8912 58 60	
	1 600	8916 58 60	
	2 000	8920 58 60	
	2 500	8925 58 60	
	3 200	8932 58 60	
	4 000	8940 58 60	
	5 000	8950 58 60	
	6 300	8963 58 60	



Transition length (IP68 to IP55)

Article number: **88 32 58 96***

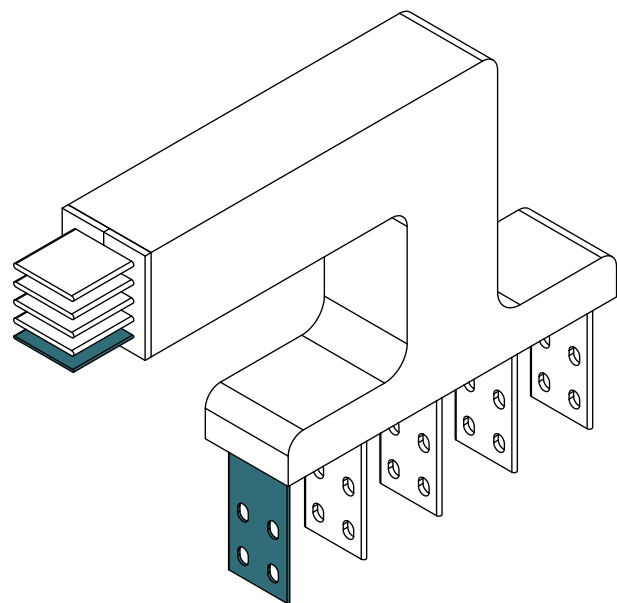
*Stock number serves as an example based on the following busbar parameters: 1600A, aluminum conductors, 5 conductors, IP68.

CONNECTION INTERFACE + HORIZONTAL ELBOW

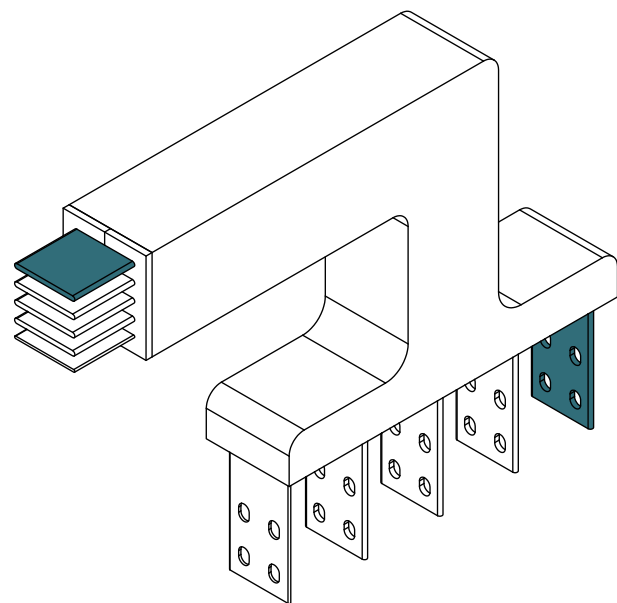
CONNECTION INTERFACE + VERTICAL ELBOW

neutral designation

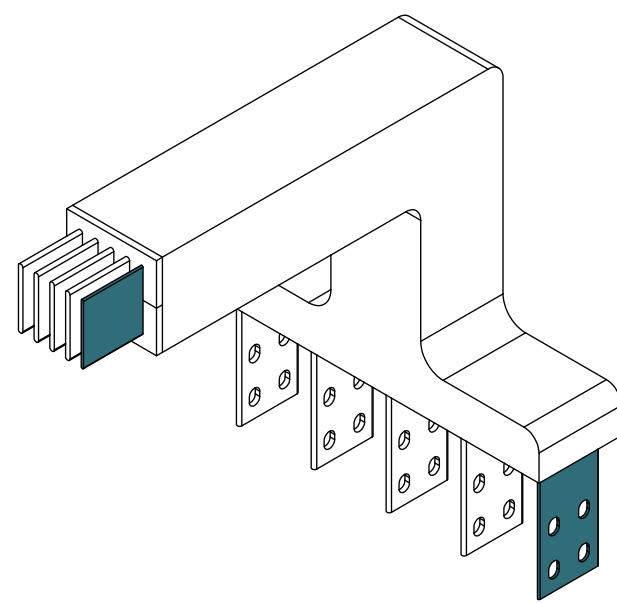
neutral designation



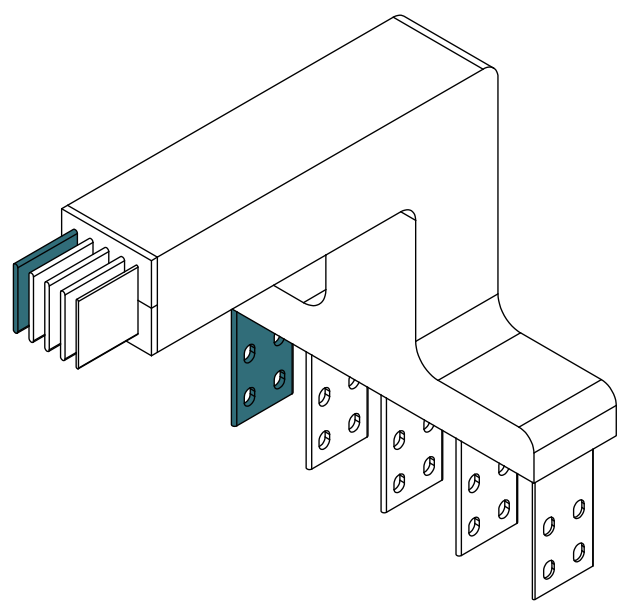
N1



N2



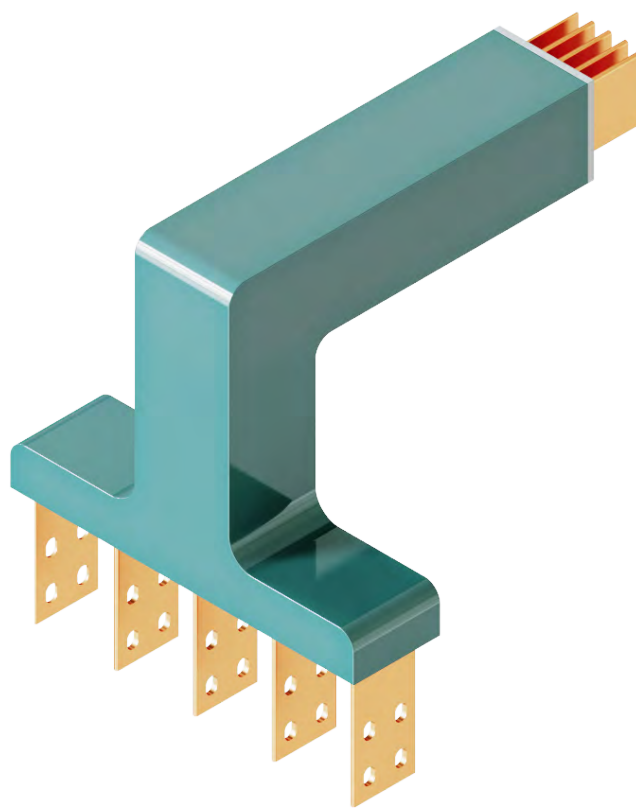
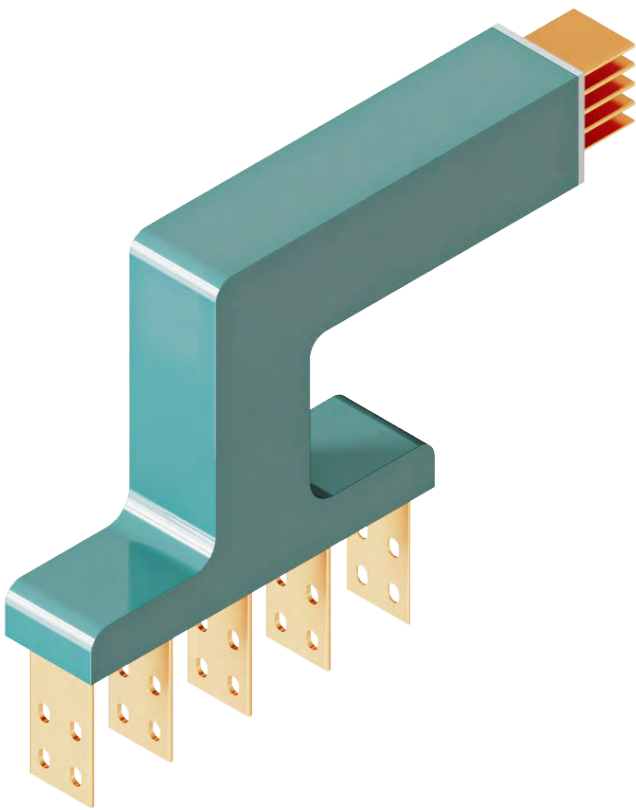
N3



N4

Al	A	N1	N2	A x B	Hor. Min
	800	8808 58 61	8808 58 62	300x500 mm	250x300 mm
	1 000	8810 58 61	8810 58 62		
	1 250	8812 58 61	8812 58 62		
	1 600	8816 58 61	8816 58 62		
	2 000	8820 58 61	8820 58 62		
	2 500	8825 58 61	8825 58 62		
	3 200	8832 58 61	8832 58 62		
	4 000	8840 58 61	8840 58 62		
	5 000	8850 58 61	8850 58 62		

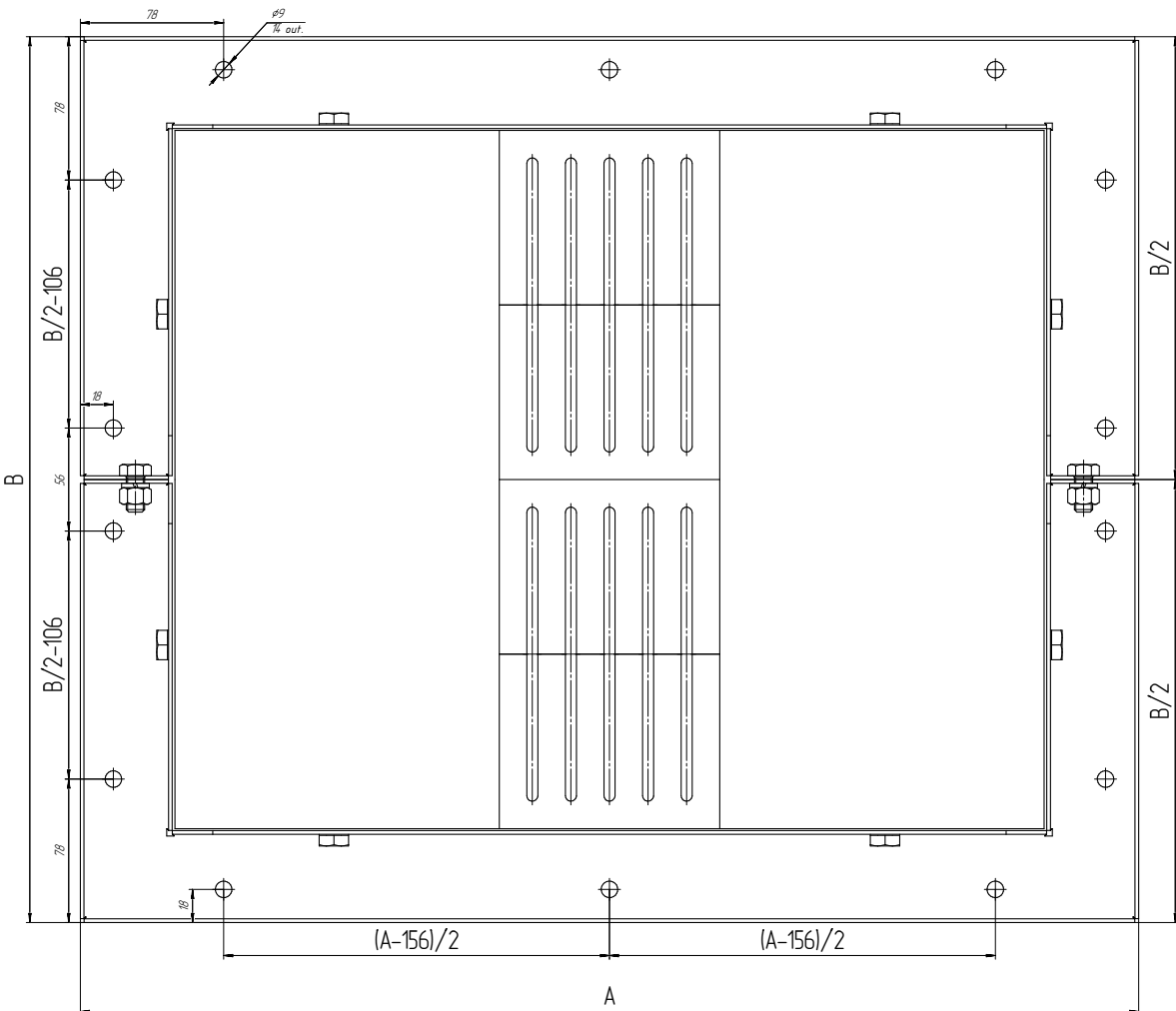
Cu	A	N1	N2	A x B	Hor. Min
	1 000	8910 58 61	8810 58 62	300x500 mm	250x300 mm
	1 250	8912 58 61	8812 58 62		
	1 600	8916 58 61	8816 58 62		
	2 000	8920 58 61	8820 58 62		
	2 500	8925 58 61	8825 58 62		
	3 200	8932 58 61	8832 58 62		
	4 000	8940 58 61	8840 58 62		
	5 000	8950 58 61	8850 58 62		
	6 300	8963 58 61	8863 58 62		



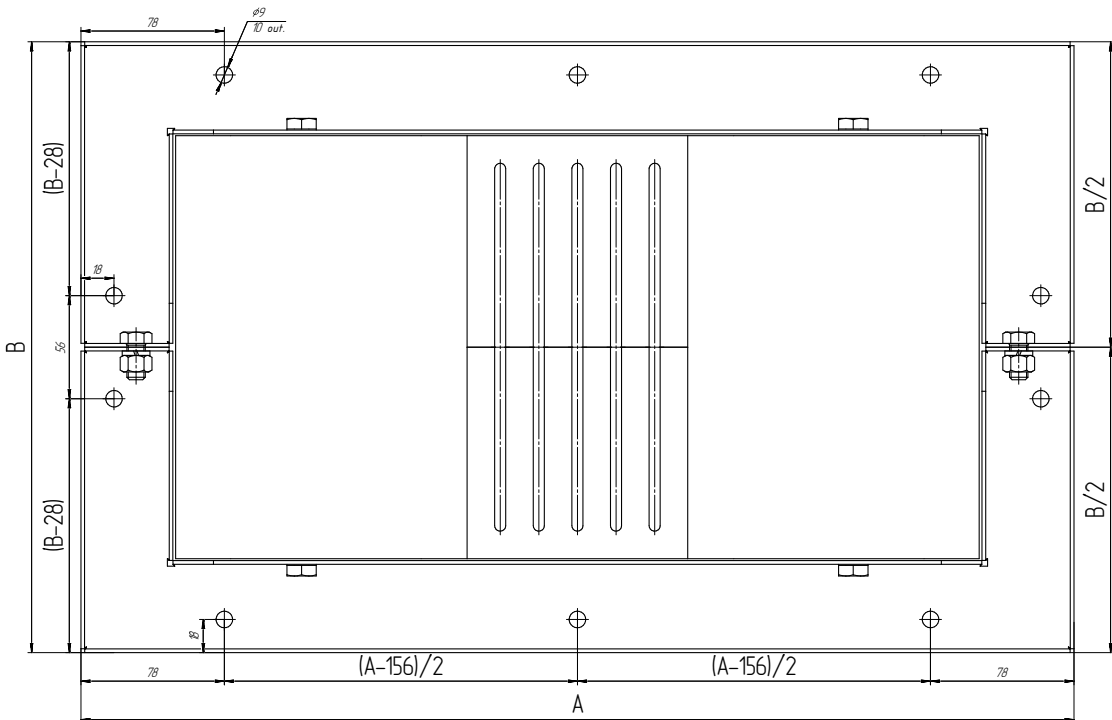
A	N3	N4	A x B	верт. Min.	Al
800	8808 58 63	8808 58 64	300x500 mm	250x350 mm	
1 000	8810 58 63	8810 58 64			
1 250	8812 58 63	8812 58 64			
1 600	8816 58 63	8816 58 64			
2 000	8820 58 63	8820 58 64			
2 500	8825 58 63	8825 58 64			
3 200	8832 58 63	8832 58 64	300x500 mm		
4 000	8840 58 63	8840 58 64			
5 000	8850 58 63	8850 58 64			

A	N3	N4	A x B	верт. Min.	Cu
1 000	8910 58 63	8810 58 64	300x500 mm	250x350 mm	
1 250	8912 58 63	8812 58 64			
1 600	8916 58 63	8816 58 64			
2 000	8920 58 63	8820 58 64			
2 500	8925 58 63	8825 58 64			
3 200	8932 58 63	8832 58 64		300x500 mm	
4 000	8940 58 63	8840 58 64			
5 000	8950 58 63	8850 58 64			
6 300	8963 58 63	8863 58 64			

CONNECTION INTERFACE INSTALLATION TEMPLATES

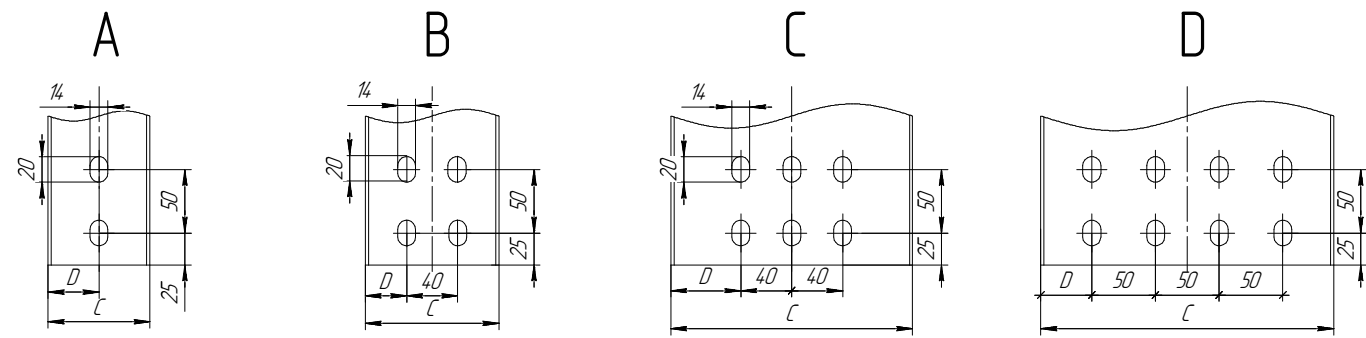


Picture 1



Picture 2

BUSBAR CONNECTION PATTERN



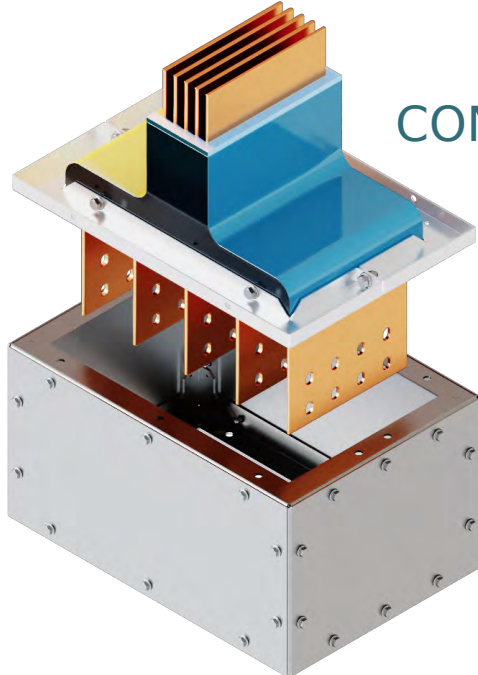
Rated current, A	800	1000	1250	1600	2000	2500	3200	4000	5000	Al
Hole type	A	A	B	C	D	D	C	D	D	
C dim., mm	60	80	100	160	200	240	160	200	240	
D dim., mm	30	40	30	40	25	45	40	25	45	

Rated current, A	1000	1250	1600	2000	2500	3200	4000	5000	6300	Cu
Hole type	A	A	B	C	D	D	C	D	D	
C dim., mm	60	80	100	160	200	240	160	200	240	
D dim., mm	30	40	30	40	25	45	40	25	45	

Al				Cu			
R. curr., A	A, mm	B, mm	Pic.	R. curr., A	A, mm	B, mm	Pic.
800	540	192	2	1000	540	192	2
1000	540	212		1250	540	212	
1250	540	232		1600	540	232	
1600	540	292		2000	540	292	
2000	540	332		2500	540	332	
2500	540	372		3200	540	372	
3200	576	482	1	4000	576	482	1
4000	576	562		5000	576	562	
5000	576	642		6300	576	642	

! Tips:

We recommend using adapter plates with the same width as the flexible copper busbar to connect copper conductors to aluminum ones.



CONNECTION INTERFACE CASING

Al			Cu		
R. curr., A	A, mm	B, mm	R. curr., A	A, mm	B, mm
800	540	192	1000	540	192
1000	540	212	1250	540	212
1250	540	232	1600	540	232
1600	540	292	2000	540	292
2000	540	332	2500	540	332
2500	540	372	3200	540	372
3200	576	482	4000	576	482
4000	576	562	5000	576	562
5000	576	642	6300	576	642

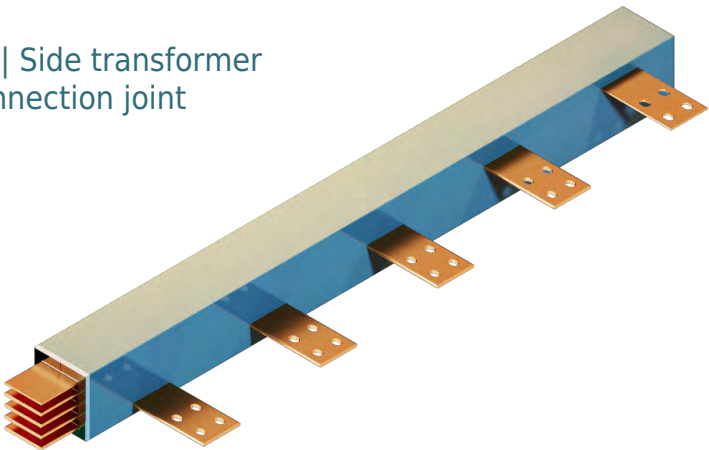
The location of the neutral conductor and the distances between the bus outlets are determined before manufacture. They depend on the model and drawing of the transformer used.

! Tips:

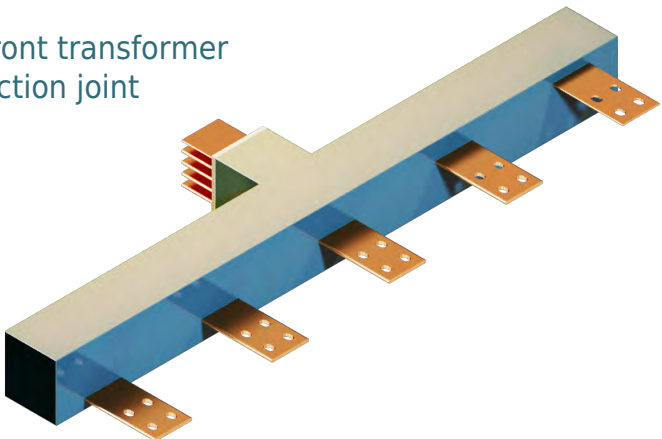
We recommended to use an Insulated Flexible Copper Busbar (IFCB) to connect the transformer to the bus.

Usage of flexible bus is determined by the need to compensate the transformer vibration, construction shrinkage, and ease of connection.

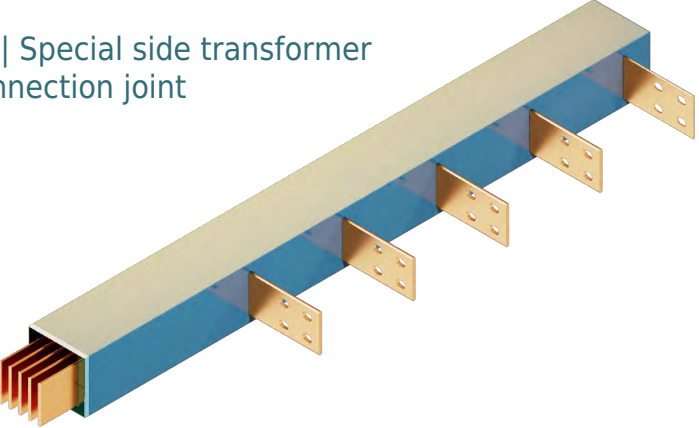
T1 | Side transformer connection joint



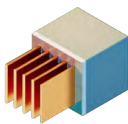
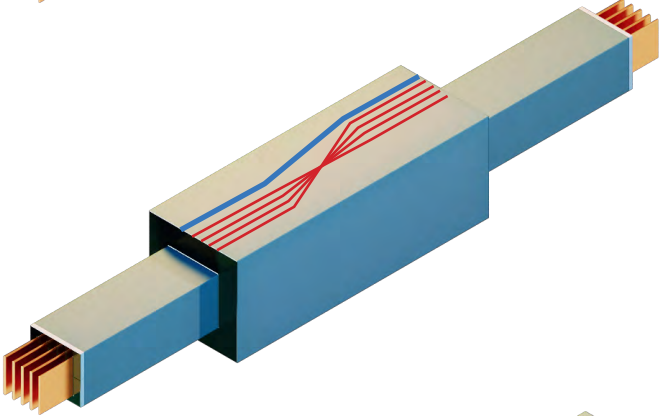
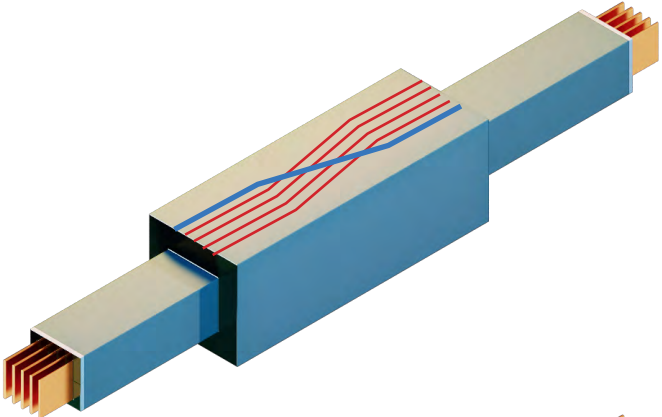
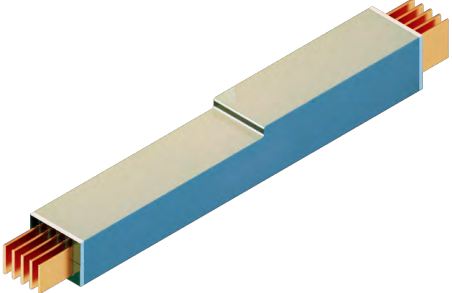
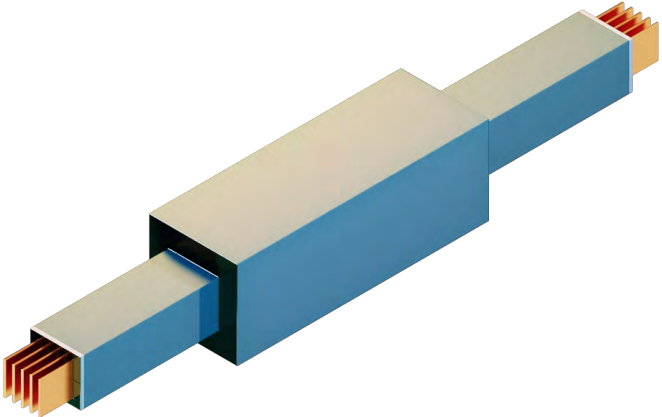
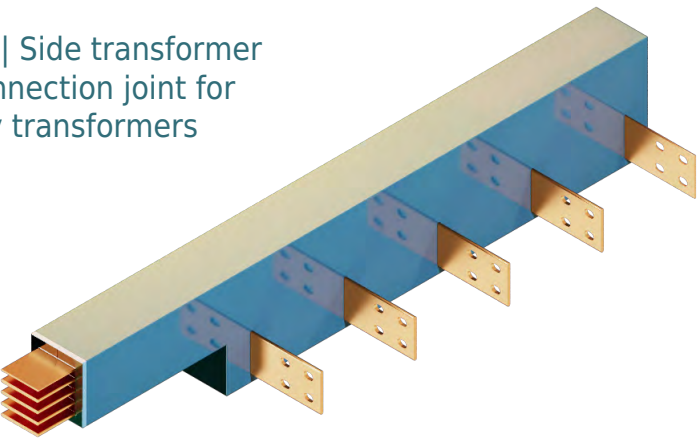
T2 | Front transformer connection joint



T3 | Special side transformer connection joint



T4 | Side transformer connection joint for dry transformers



The 1500 mm thermal compensation length is used to compensate thermal expansion. It is usually installed on straight lengths of more than 30 m. In areas over 60 m two are installed, over 90 m – three, etc.

Article number: 88 16 58 90

The 1500 mm lowering length is used to reduce the cross-section of the bus feeding the end user. This allows to save money by ensuring optimal distribution of electricity. We can manufacture lowering lengths with protection of a less powerful section of the line (circuit breaker, release, fuse)

Article number: 88 16 58 91

1000 mm Neutral permutation length is designed to change the alternating normal of the busbar. Minimum size – 1500 mm.

Article number: 88 16 58 92

1000 mm Phase permutation length is designed to change the phase alternation of the busbar. Minimum size – 1500 mm. The sequence of phases on both sides is determined by the customer.

Article number: 88 16 58 93

Side cap

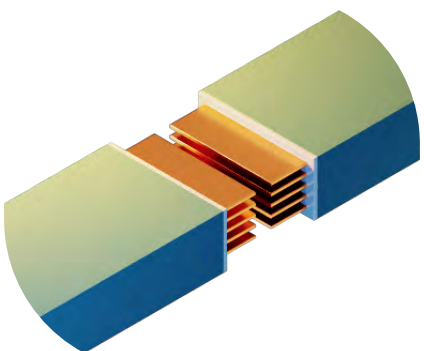
Article number: 88 32 58 99

Stock number serves as an example based on the following busbar parameters: 1600A; aluminum conductors; 5 conductors; IP68.

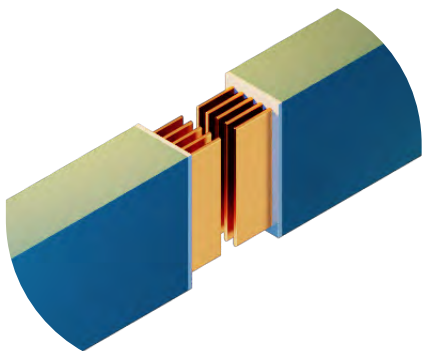
A1	A	T1	T2	T3	T4
	800	8808 58 71	8808 58 72	8808 58 73	8808 58 74
	1 000	8810 58 71	8810 58 72	8810 58 73	8810 58 74
	1 250	8812 58 71	8812 58 72	8812 58 73	8812 58 74
	1 600	8816 58 71	8816 58 72	8816 58 73	8816 58 74
	2 000	8820 58 71	8820 58 72	8820 58 73	8820 58 74
	2 500	8825 58 71	8825 58 72	8825 58 73	8825 58 74
	3 200	8832 58 71	8832 58 72	8832 58 73	8832 58 74
	4 000	8840 58 71	8840 58 72	8840 58 73	8840 58 74
	5 000	8850 58 71	8850 58 72	8850 58 73	8850 58 74

Cu	A	T1	T2	T3	T4
	1 000	8910 58 71	8810 58 72	8810 58 73	8810 58 74
	1 250	8912 58 71	8812 58 72	8812 58 73	8812 58 74
	1 600	8916 58 71	8816 58 72	8816 58 73	8816 58 74
	2 000	8920 58 71	8820 58 72	8820 58 73	8820 58 74
	2 500	8925 58 71	8825 58 72	8825 58 73	8825 58 74
	3 200	8932 58 71	8832 58 72	8832 58 73	8832 58 74
	4 000	8940 58 71	8840 58 72	8840 58 73	8840 58 74
	5 000	8950 58 71	8850 58 72	8850 58 73	8850 58 74
	6 300	8963 58 71	8863 58 72	8863 58 73	8863 58 74

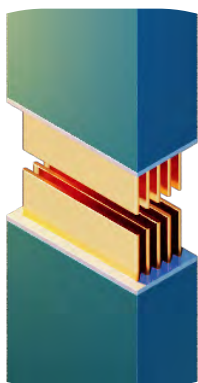
1. Installation of the length at a preset distance between the ends of the busbars.



Flat mounting

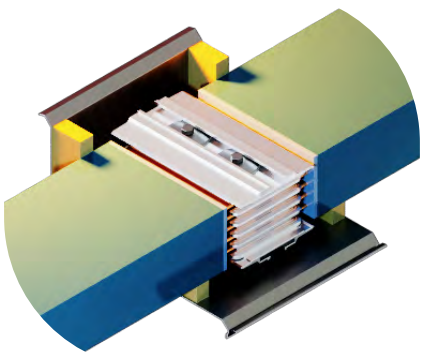


On-edge mounting

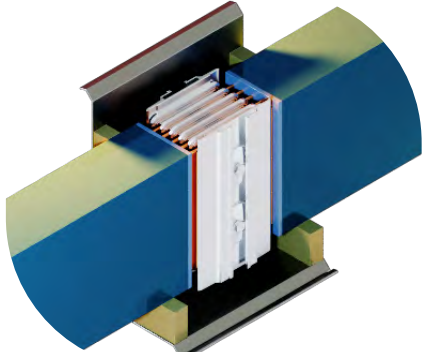


Vertical mounting

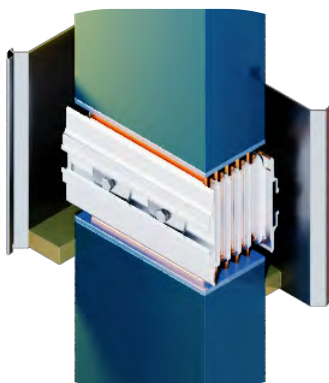
2. A connecting block, the first lower shell and a lock are installed at the junction of the two lengths.



Flat mounting

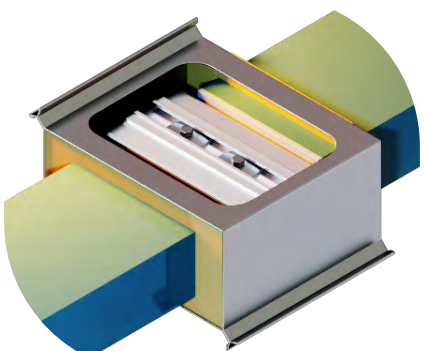


On-edge mounting

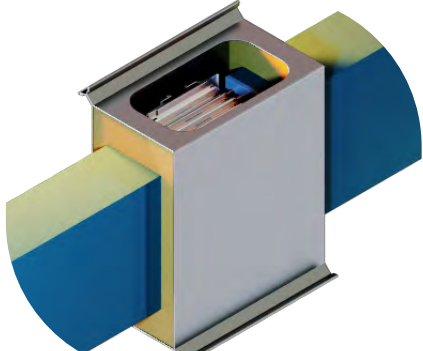


Vertical mounting

3. The second upper shell for filling is installed and fixed with a second lock.



Flat mounting

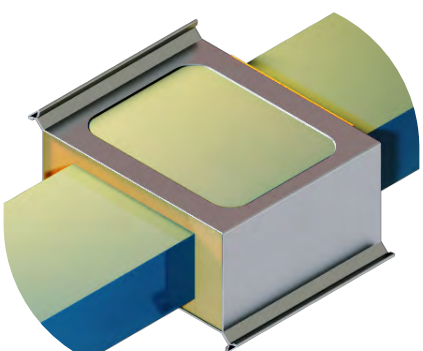


On-edge mounting

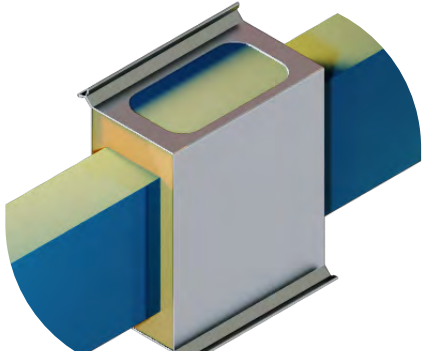


Vertical mounting

4. The filling is carried out with a compound (see the «Instructions for filling the connecting block of the busbar manufactured by SIC Metallurg LLC») to the surface of the hole in the upper shell. For vertical installation, the filling level of the compound does not reach the edge of the formwork for 30 mm. To remove air bubbles from the the solution, we recommend to tap the ends of the formwork with a rubber mallet immediately after filling.



Flat mounting

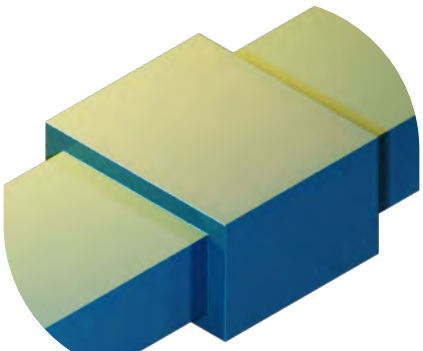


On-edge mounting

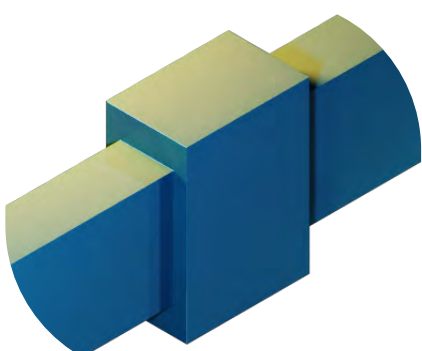


Vertical mounting

5. The solidification time of the compound is 24 hours. After that the locks are removed and the formwork may be reused.



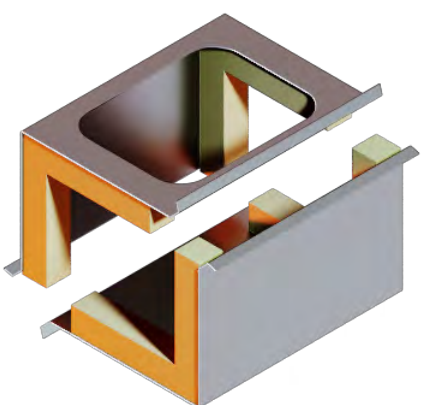
Flat mounting



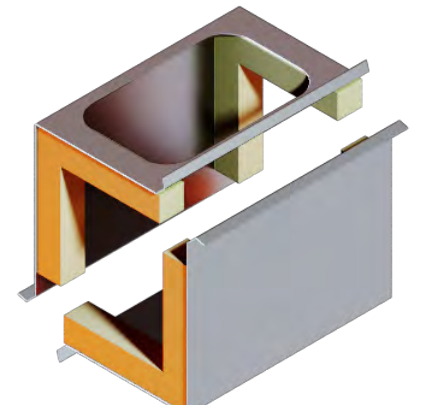
On-edge mounting



Vertical mounting



Upper shell for flat mounting



Upper shell for mounting on edge



Upper shell for vertical mounting

The connecting block is delivered with each length of the busbar and may be delivered separately.



Recommended when using
METAENERGY busbars



Flexible busbars are widely used in the installation of busbars, in particular for connection to transformers and switchgear. METAENERGY flexible busbars have high quality and reliability.

Connection using flexible busbars has a number of advantages:

- Convenience when connecting directly on the site.
- Equipment vibration compensation.
- Compensation of thermal expansion and building shrinkage.
- Isolation of open areas between connection zones.

Flexible busbars' standard length is 2000mm. If there are drawings and connection diagrams, we can produce them of any the required length with mounting holes and pressure plates.

The table with most commonly used flexible busbars for connection is below. It indicates the recommended connection parameters.

No	Electric current	Recommended dimensions of flexible busbars		
1	800A	I × IFCB 8×32×1	I × IFCB 6×40×1	I × IFCB 5×50×1
2	1000A	I × IFCB 4×100×1	I × IFCB 5×80×1	I × IFCB 6×63×1
3	1250A	I × IFCB 5×100×1	I × IFCB 8×63×1	I × IFCB 10×50×1
4	1600A	I × IFCB 8×100×1	I × IFCB 10×80×1	I × IFCB 10×63×1
5	2000A	I × IFCB 10×120×1	I × IFCB 12×100×1	I × IFCB 10×100×1
6	2500A	I × IFCB 10×160×1	II × IFCB 8×100×1	II × IFCB 10×80×1
7	3200A	I × IFCB 10×160×1	II × IFCB 10×120×1	II × IFCB 12×100×1
8	4000A	II × IFCB 10×160×1	III × IFCB 10×100×1	III × IFCB 10×120×1
9	5000A	II × IFCB 10×160×1	IV × IFCB 12×120×1	VI × IFCB 10×100×1
10	6300A	III × IFCB 10×160×1	VI × IFCB 12×120×1	

At the request of the customer, we can produce:

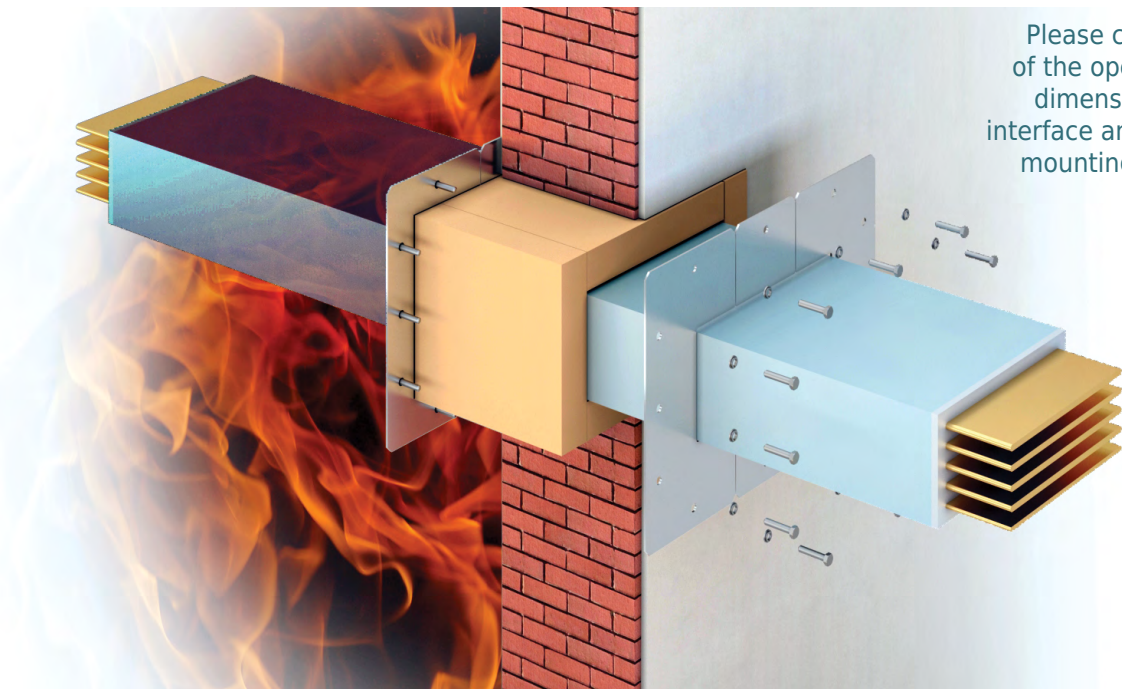
- Transition plates.
- Enlarged contact platforms.
- Contact elbows.



All ordered items are supplied with a busbar. Our technical specialists are always ready to assist at any stage of the project, from the preliminary calculation to issues arising during mounting and operation.

Fire-resistant barriers are designed to prevent the spread of flames in the places where the busbar passes through the walls. The barrier provides greater resistance to flame than walls or floors. The distance from the busbar dimensions to the wall must be at least 100 mm. This gap in the wall opening must be tightly filled with non-flammable material.

METAENERGY fire-resistant barrier uses mineral fireproof plates with a busbar surface configuration. A special heat-resistant adhesive is used to eliminate gaps in the barrier's body.



Please check the dimensions of the opening in the wall, the dimensions of the connection interface and the position of the mounting holes in the busbar mounting guide.

Fire-resistant barriers can be equipped with metal flanges to close the wall opening.
! The material of the barrier must be positioned evenly from the center of the wall !

Main features:

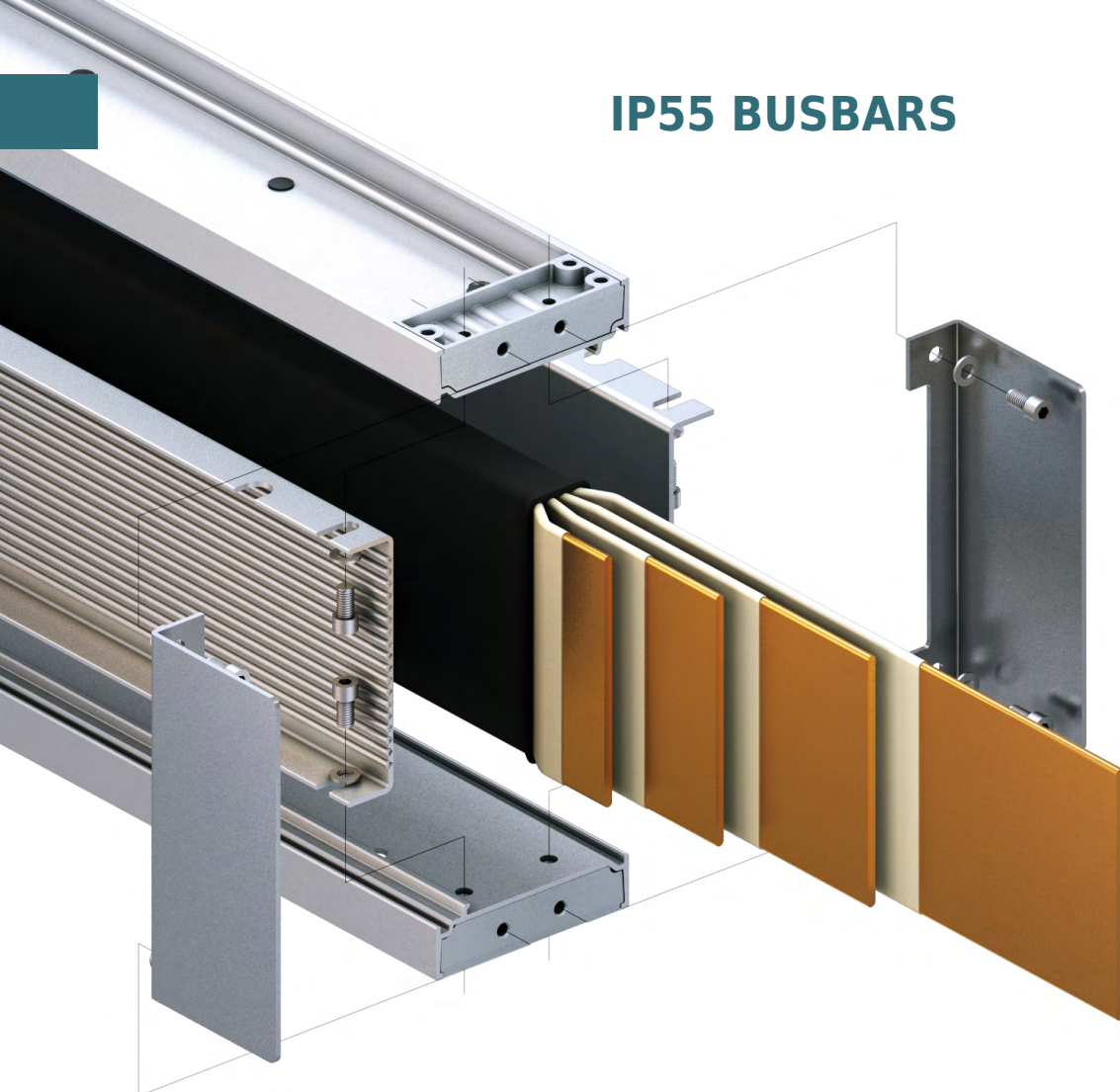
-  Eco-friendly (does not emit or contain toxic substances)
-  Incombustibility
-  Fire resistance limit up to 240 minutes
-  Temperature range is from -270 ° C to +1200 ° C
-  Melting point is 1350 ° C

You can watch the video clip of the fire-resistance barrier assembly process on our website:

metaenergy.ru/ru/video



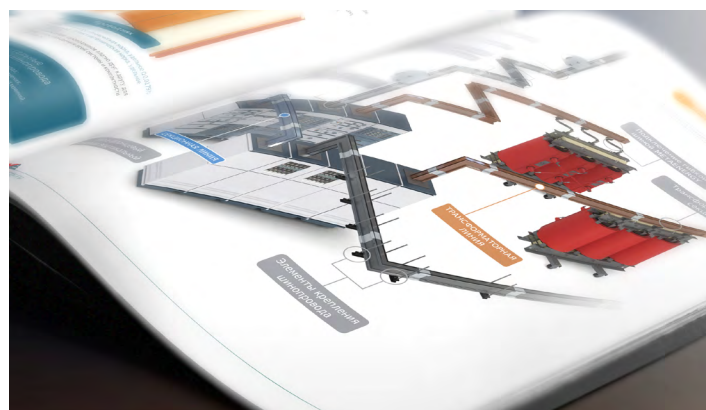
IP55 BUSBARS



IP55 Busbars are designed for the transmission and distribution of electricity in industrial, commercial, administrative buildings, infrastructure facilities, multi-storey and multifunctional buildings, where there is a need for high energy distribution density between and on floors, as well as high requirements for electrical safety and building operation.

Thus, highly reliable **METAENERGY** IP55 busbars can be used in a wide range of situations:

- IN INDUSTRY, IN ENTERPRISES
- IN HIGH-RISE RESIDENTIAL AND OFFICE BUILDINGS
- IN LARGE SOCIAL FACILITIES SUCH AS:
 - Academic institutions
 - Shopping malls
 - Stadiums and sports complexes
 - Train stations
 - Airports
 - Hotels



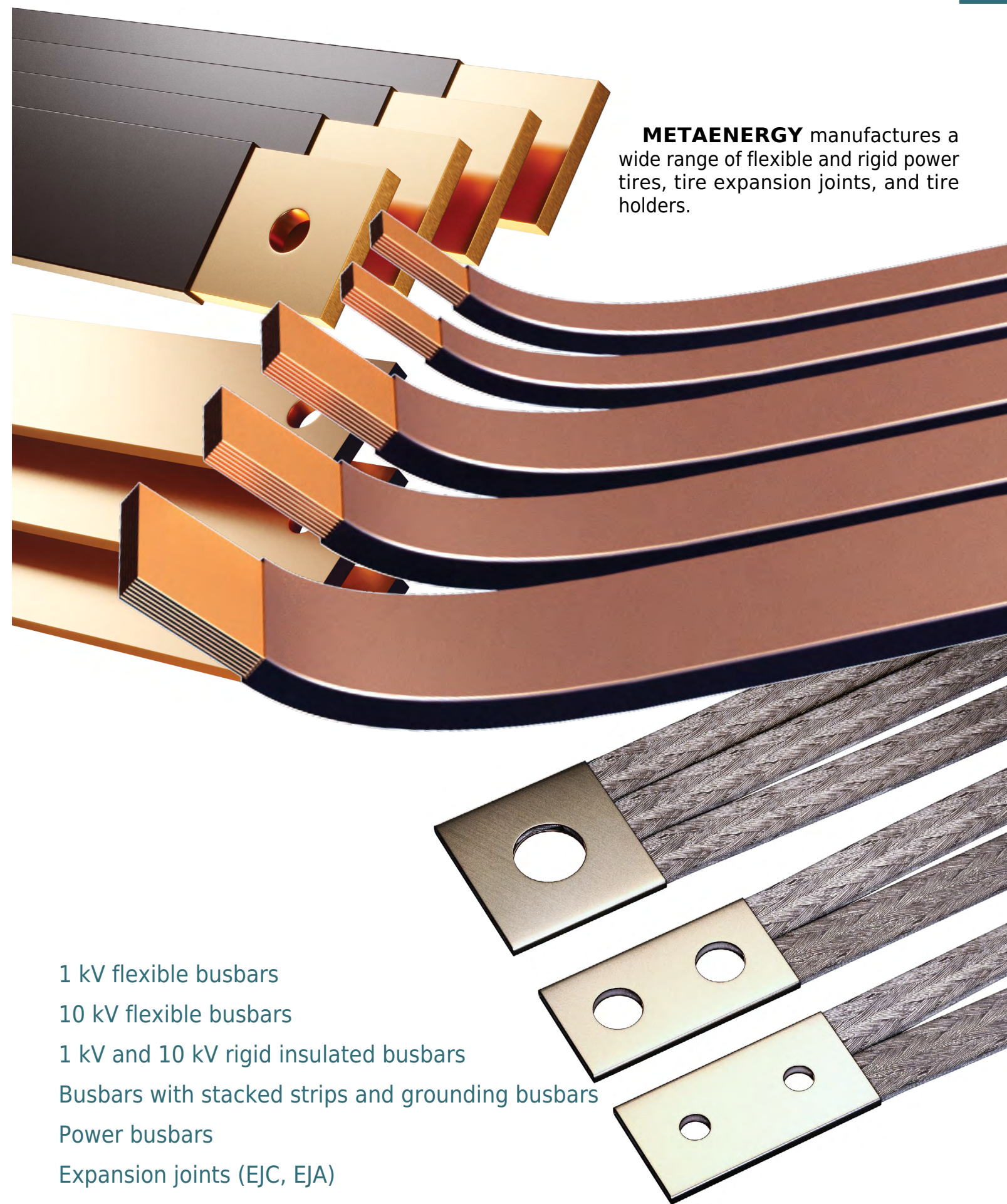
You can get detailed information about IP55 busbars on our website metaenergy.ru

You can also download the current electronic version of the catalog from here:



 <https://metaenergy.ru/download.html>

FLEXIBLE AND RIGID METAENERGY BUSBARS



METAENERGY manufactures a wide range of flexible and rigid power tires, tire expansion joints, and tire holders.

1 kV flexible busbars

10 kV flexible busbars

1 kV and 10 kV rigid insulated busbars

Busbars with stacked strips and grounding busbars

Power busbars

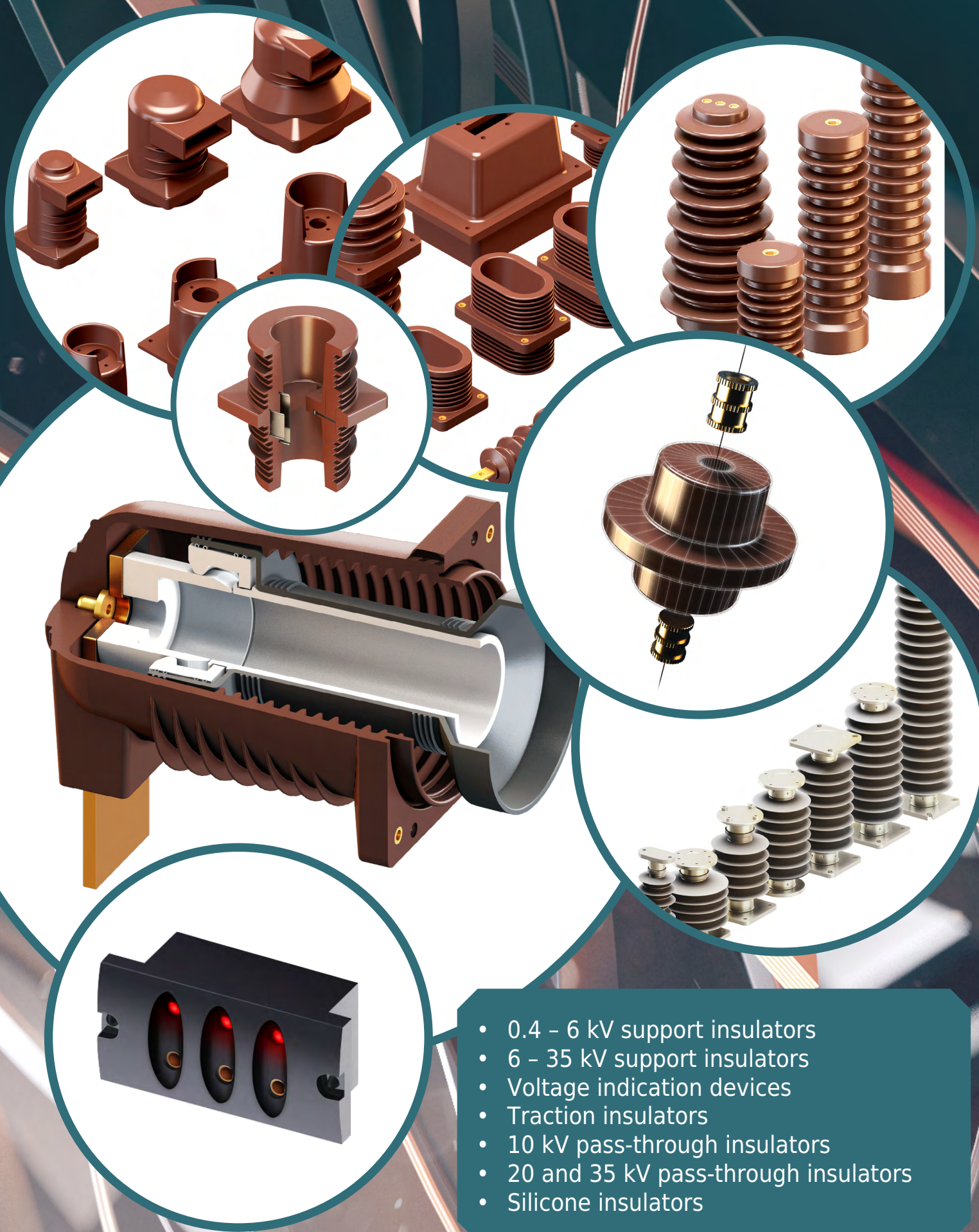
Expansion joints (EJC, EJA)

Holders

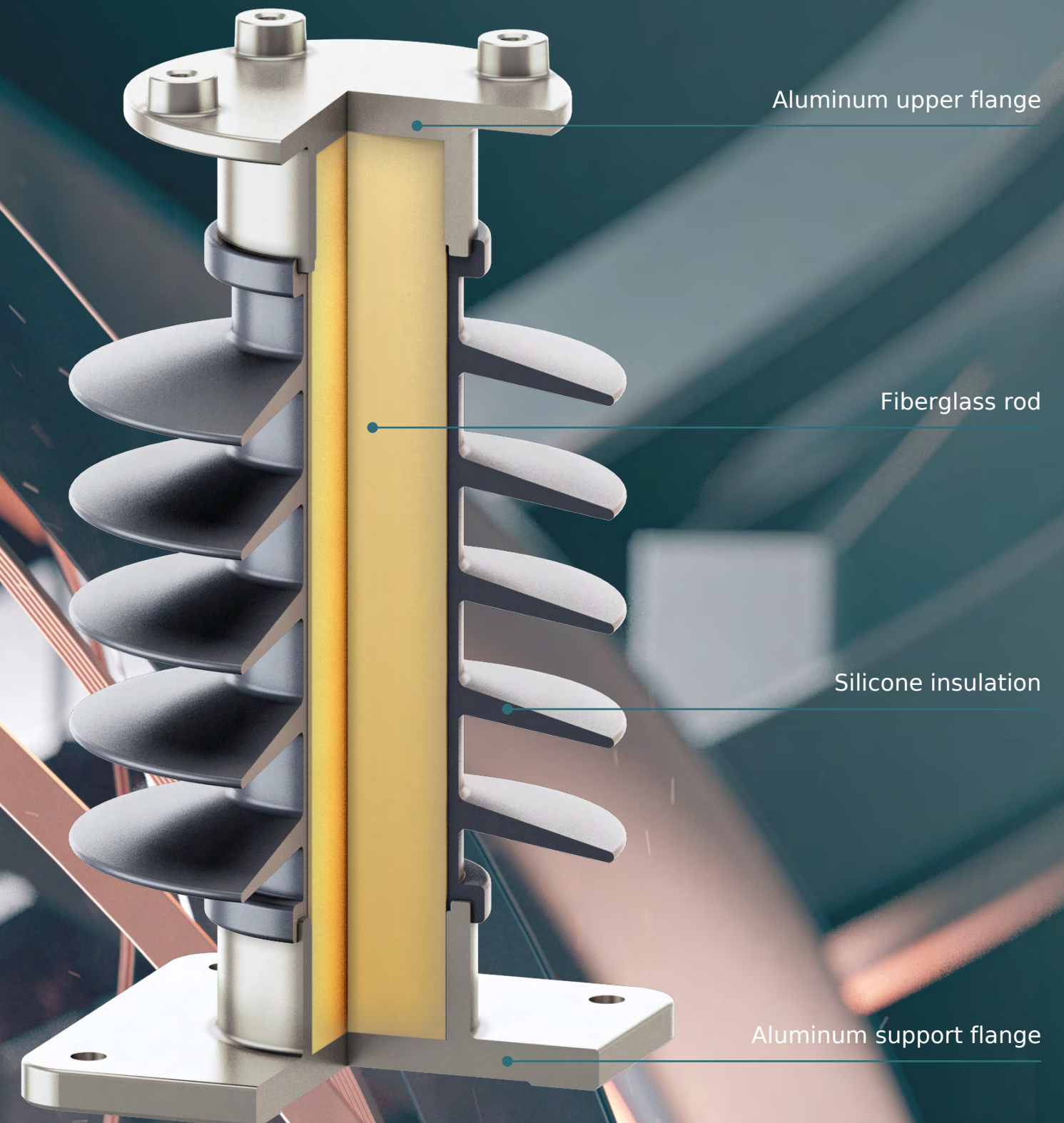
A WIDE RANGE OF INSULATORS

METAENERGY SILICONE INSULATORS

Silicone insulators are designed for outdoor use. Due to a number of modifiers, the silicone composition is highly resistant to UV, as well as to atmospheric and temperature influences. The supporting function is performed by a column made of fiberglass rod and pressed aluminum flanges.



- 0.4 – 6 kV support insulators
- 6 – 35 kV support insulators
- Voltage indication devices
- Traction insulators
- 10 kV pass-through insulators
- 20 and 35 kV pass-through insulators
- Silicone insulators



GEOGRAPHY OF DELIVERIES

Our products delivery is always convenient for the customer.

We deliver by road, rail and air transport across Russia from Kaliningrad to Sakhalin. We also deliver to major transport centers in other countries.. High-quality packaging ensures product safety and meets the requirements of international standards.



CONTACT INFORMATION

In Russia: (8800) 301 24 07

■ Rostov-on-Don

SIC Metallurg LLC

Rostov Region, Aksaysky District,
Bolshelogskeye Rural Settlement,
Industrial Zone, Novocherkasskoye
Highway, Building 79, Office 203

sale@metaenergy.ru

+7 (863) 322 33 90»

■ Moscow Office

13B Kashirskoye Highway, Office 502,
Moscow, Russia

+7 (499) 322 33 90»

■ St. Petersburg Office

49 Nepokorennnykh Avenue, Office
427, St. Petersburg, Russia

+7 (812) 317 33 90

■ Tashkent (Uzbekistan) Branch

29A Nukus Street, Office 105, 100000,
Tashkent, Uzbekistan

+998 93 555 99 48

■ Minsk, Official Partner «FerdinalGroup»

7 Goretskogo Street, Room 114, 220078,
Minsk, Republic of Belarus

+375 (17) 238 12 01

metaenergy.ru

