

BUSBARS

low-voltage, up to 1000 V

Using sandwich technology
Rated current – 250 to 7500A



metaenergy.ru

METAENERGY busbars are made of high-tech materials and are using modern processing technologies. This eliminates the possibility of internal defects that are not noticeable when manufacturing in the traditional but outdated way.

METAENERGY busbars are both compact and reliable. We use sandwich technology in their manufacture. The conductors are located very tightly inside the busbar housing, which ensures the best cooling.

The insulation is made of materials that provide a service life of at least 25 years. They do not contain halogens and phenolic resins (with an operating temperature of up to 150 ° C), and are safe to use indoors. This allows us to guarantee the faultless operation of **METAENERGY** busbars even in extreme conditions while also saving electricity throughout the entire service life of the busbar.

Video review of our company



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

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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.

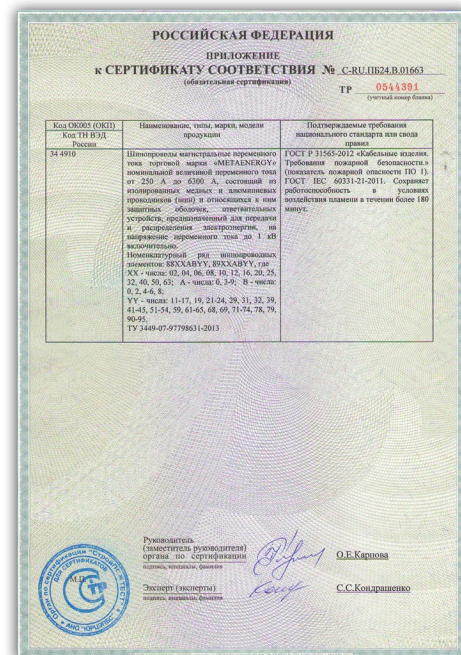
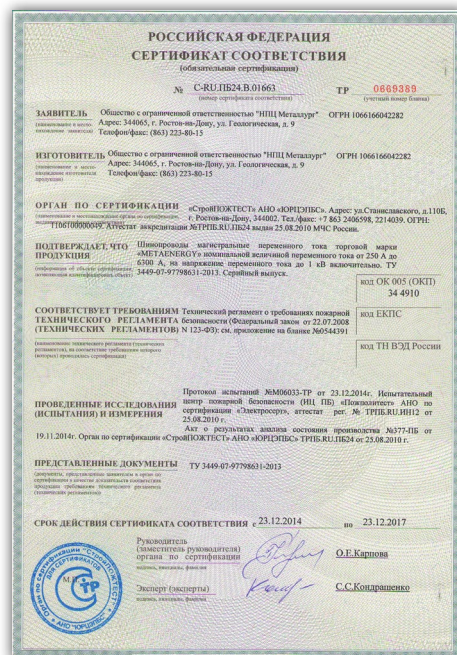
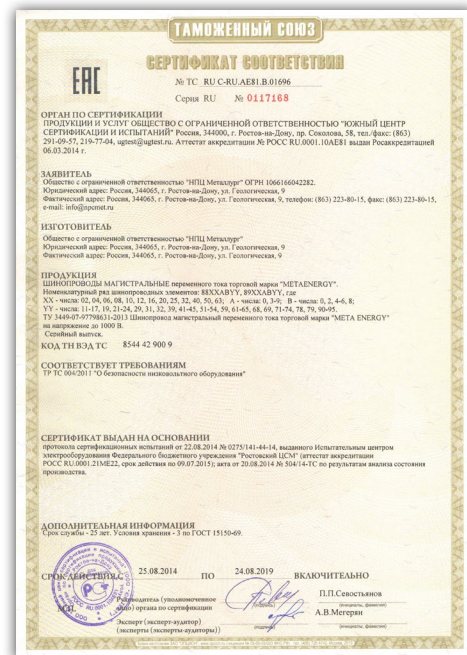
METAENERGY products are modern Russian production with global level of quality. This is what we focus on and pursue to contribute to build confidence in Russian manufacturers, both in Russia and abroad. We are able to work great on both delivery timethe and products quality, packaging, competence and 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.

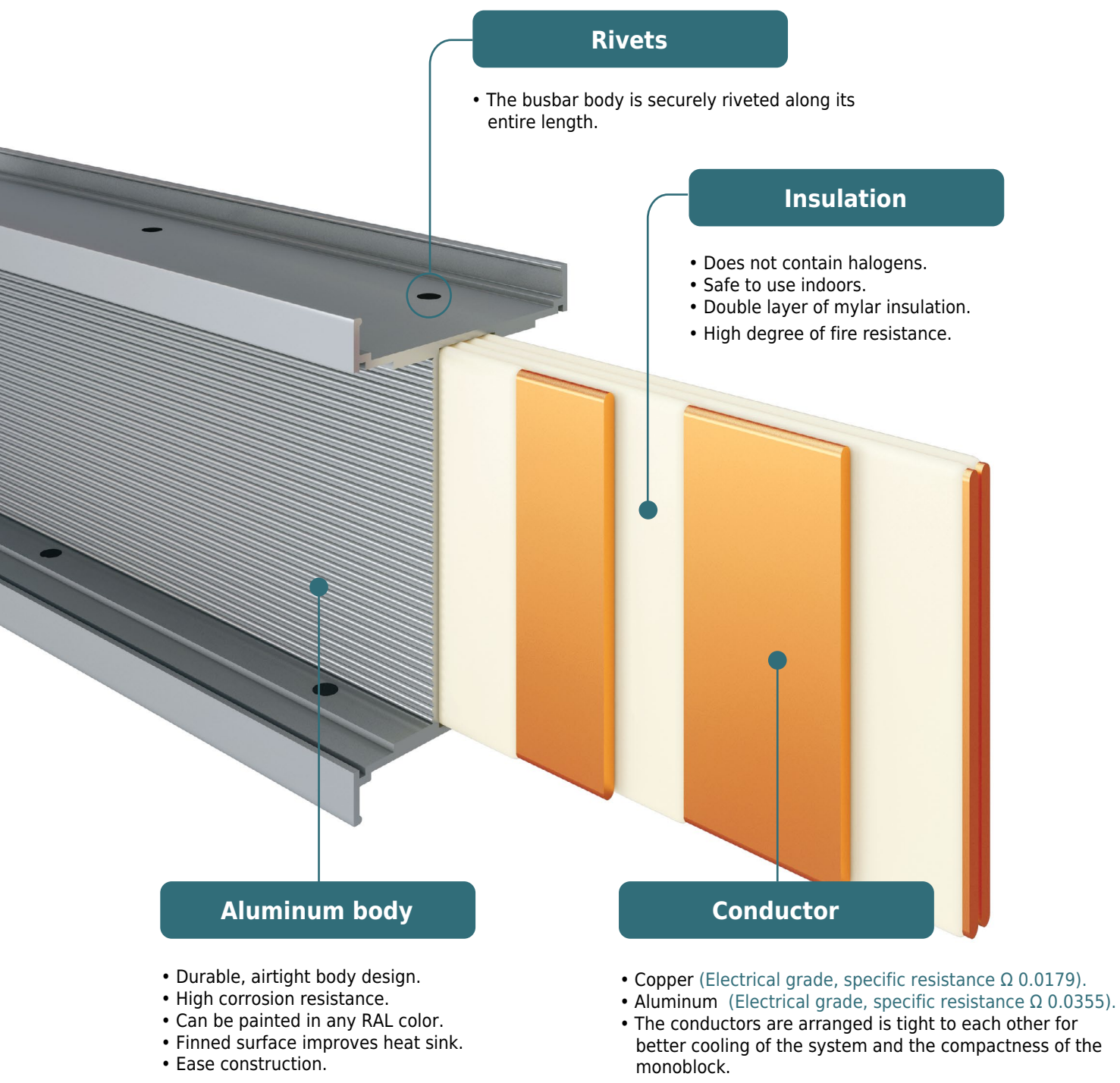
Every year, we confirm that our products comply with the stated requirements at the State Center for Standardization and Metrology. Upon shipment of each batch, a certificate of conformity is issued. This document is stored in an electronic database.

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:

- 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



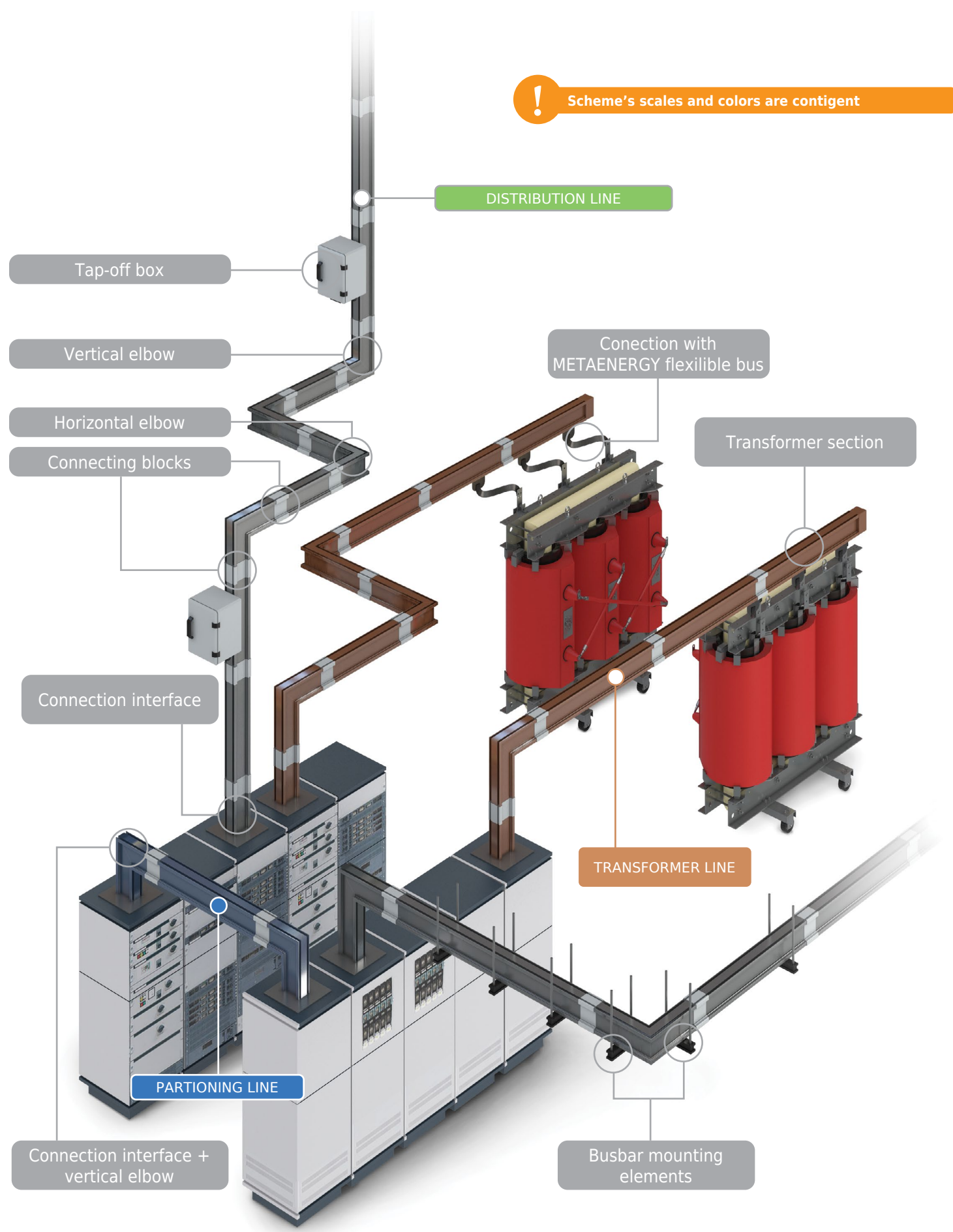


Deivery kit

- 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)





Convenience



Eco-friendly



Cost-effectiveness



Reliability



Quality



Versatility



Compactness



Safety

Busbar and cable channel comparison

Busbar sections are easy and quick to mount. 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.

Busbars have good 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.

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.

Aluminium body

- High degree of fire resistance.
- Ease construction and simple mounting.
- High corrosion resistance.
- Eco-friendly.

The busbar body is riveted along its entire length, like in aircraft constructions.

- Vibrations and time do not affect the strength of the rivet joint, unlike welding, screw and other joints.

Effective heat sink

- The busbar body is ribbed to increase the surface area.
- The aluminum body has a high heat transfer coefficient.
- The conductors are arranged tight and have no air gaps.

Other constructive features

- Simple connection of sections. The connection is using break heads blocks.
- Thermal compensation is carried out by installing special lengths. Their dimensions almost do not differ from the usual straight length of the busbar.

Competitive advantages

- Our busbars are aesthetically pleasing and have same quality as world's best units.
- Our warehouse maintains standard busbar elements: straight lengths from 800A to 3200A as well as connecting and diverting blocks.
- We can produce and supply any non-standard busbar element in no time (1-3 days, air delivery is possible).
- Our experienced designers will help with optimizing the route of the busbar.
- We are focused on long-term cooperation.



Aluminum conductor (Al)

Al			Single busbar					Single busbar			Double busbar			Triple busbar	
			250	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
	Rated current	A													
	Insulation voltage	V			1000				1000			1000			1000
	Operating voltage	V			1000				1000			1000			1000
	Frequency	Hz			50				50			50			50
	IP code	IP			55				55			55			55
	Permissible short-term fault current (t=1c), I _{cw}	kA	20	20	30	37	50	65	80	86	110	120	120	150	150
	Permissible peak current (t=0.1s), I _{pk}	kA	40	40	63	75	105	125	175	185	176	264	264	320	320
	Active resistance at rated current, R	mOm/m	0,263	0,210	0,160	0,105	0,072	0,061	0,039	0,030	0,029	0,023	0,015	0,010	0,008
	Reactance, X	mOm/m	0,046	0,031	0,027	0,020	0,015	0,019	0,090	0,080	0,01	0,008	0,006	0,005	0,003
	Dimensions of the conductor	mm/mm	5x40	5x50	5x65	5x80	5x105	5x140	5x190	5x230	2(5x140)	2(5x190)	2(5x230)	3(6x210)	3(7x230)
	Voltage drop at rated current and load concentrated at the end of the line, V/m	cos φ =1	0,088	0,112	0,136	0,140	0,134	0,125	0,118	0,134	0,125	0,118	0,113	0,110	0,106
	(When the load is evenly distributed along the line, the voltage drop is half as much as indicated in the table)	cos φ =0,9	0,085	0,110	0,134	0,139	0,134	0,127	0,121	0,137	0,128	0,119	0,111	0,107	0,101
		cos φ =0,8	0,078	0,101	0,125	0,130	0,126	0,120	0,115	0,13	0,121	0,111	0,103	0,098	0,093
		cos φ =0,7	0,071	0,092	0,114	0,119	0,116	0,111	0,107	0,121	0,113	0,103	0,094	0,088	0,085

Table 1

Copper conductor (Cu)

Cu			Single busbar					Single busbar			Double busbar			Triple busbar	
			400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	7500
	Rated current	A													
	Insulation voltage	V			1000				1000			1000			1000
	Operating voltage	V			1000				1000			1000			1000
	Frequency	Hz			50				50			50			50
	IP code	IP			55/65				55/65			55/65			55/65
	Permissible short-term fault current (t=1c), I _{cw}	kA	30	30	30	50	50	65	65	65	120	120	120	150	150
	Permissible peak current (t=0.1s), I _{pk}	kA	63	63	63	105	105	143	143	143	264	264	264	320	320
	Active resistance at rated current, R	mOm/m	0,171	0,128	0,102	0,078	0,053	0,043	0,032	0,024	0,021	0,016	0,012	0,011	0,01
	Reactance, X	mOm/m	0,036	0,037	0,032	0,026	0,019	0,015	0,012	0,011	0,008	0,006	0,005	0,002	0,001
	Dimensions of the conductor	mm/mm	5x40	5x40	5x55	5x65	5x90	5x125	5x160	5x210	2(5x125)	2(5x160)	2(5x210)	3(5x180)	3(5x210)
	Voltage drop at rated current and load concentrated at the end of the line, V/m	cos φ =1	0,068	0,108	0,100	0,105	0,095	0,088	0,086	0,082	0,090	0,086	0,082	0,080	0,078
	(When the load is evenly distributed along the line, the voltage drop is half as much as indicated in the table)	cos φ =0,9	0,071	0,112	0,105	0,113	0,104	0,098	0,098	0,094	0,104	0,097	0,089	0,079	0,076
		cos φ =0,8	0,068	0,107	0,101	0,109	0,102	0,097	0,097	0,093	0,103	0,096	0,086	0,074	0,073
		cos φ =0,7	0,063	0,100	0,096	0,103	0,097	0,093	0,094	0,091	0,100	0,093	0,082	0,068	0,065

Table 2

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.

THE COMPOSITION OF THE NAMING AND ARTICLE NUMBER DESIGNATION

Example of recording the designation of a 1m straight length, aluminum busbar for 3200 A, 3 phases + insulated neutral and IP 55:

88324511 [MBA 3200A 45] 1000 mm Straight length

Article number: 88 32 4 5 11

Naming: [MBA 3200A 4 5] 1000 mm Straight length

MBA	Aluminum busbars	88
MBC	Copper busbars	89

Code	Electric current (A)
02	250 A
04	400 A
06	630 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
75	7500 A

Layout type	Conductors' layout type
3	3L, PE body
4	3L+N, PE body
5	3L+N+PE100%

IP code in the naming	IP code
4	IP 54
5	IP 55
6	IP 66

11 1000 mm Straight length without outlets

12 2000 mm Straight length without outlets

13 3000 mm Straight length without outlets

14 4000 mm Straight length without outlets

19 Special straight length without outlets

21 1500 mm Straight length with 1 outlet

22 2000 mm Straight length with 2 outlets

23 3000 mm Straight length with 3 outlets

24 4000 mm Straight length with 4 outlets

29 Special straight length with 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

65 Feed unit

66 Special connection interface

67 Special connection interface + horizontal elbow

68 Special connection interface + vertical elbow

69 Special feed unit

71 T1 Side transformer connection joint

72 T2 Front transformer connection joint

79 Special 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

94 1300 mm ± 200 mm Adjustable length

95 Connecting block

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:

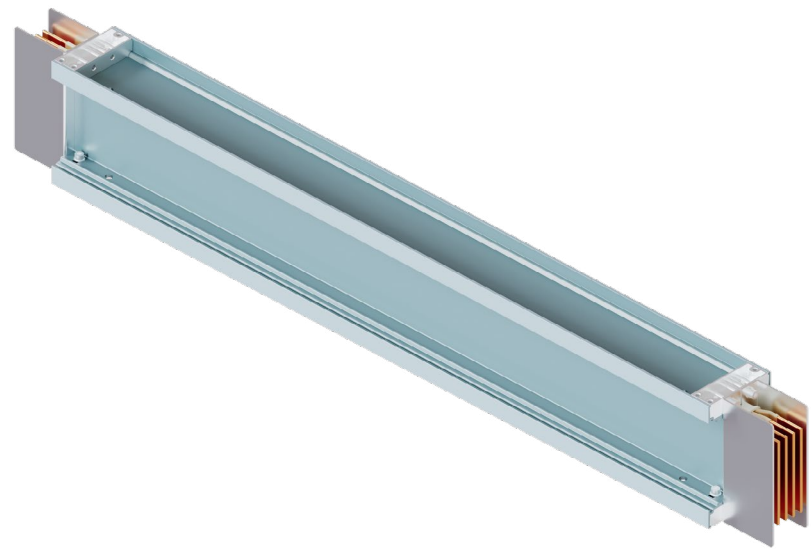
88324519 [MBA 3200A 45] 1250 mm Special straight length without outlets

The connecting block is delivered with each length of the busbar, additionally supplied separately.



Table 4

STRAIGHT LENGTH WITHOUT OUTLETS



The minimum possible length size is 500 mm.
The maximum size depends on the rated current of the busbar (see the table).
The length of the busbar is specified taking into account the gap for the connecting block (see page 35).

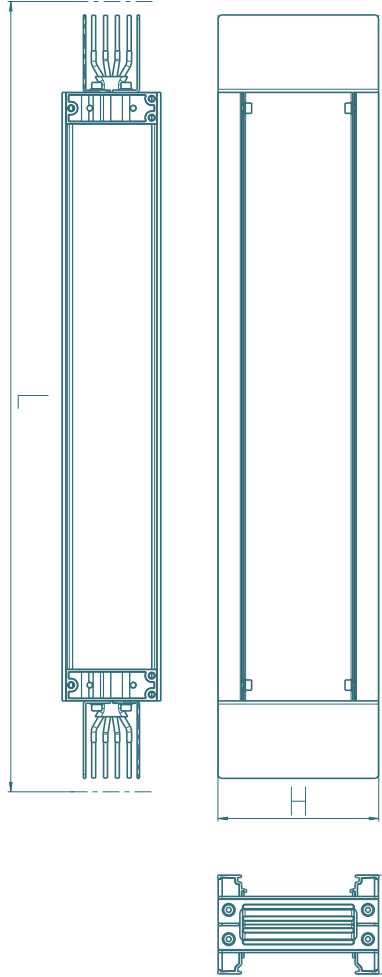


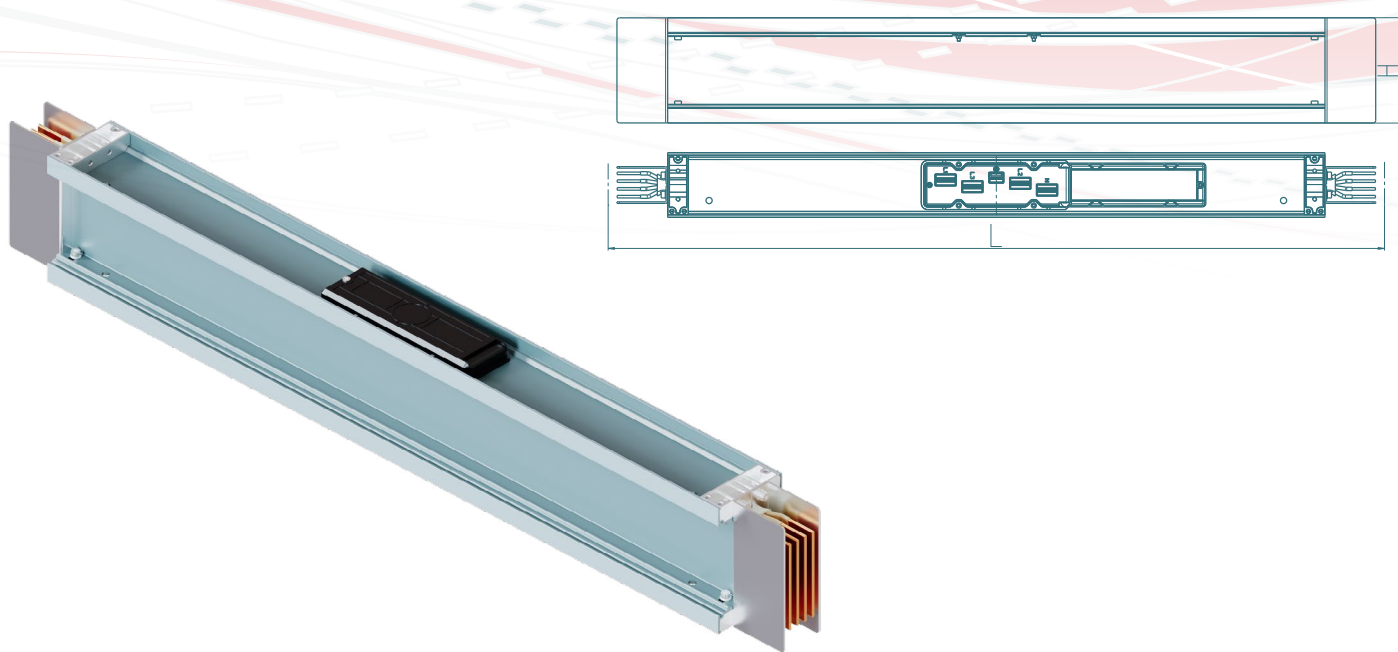
Table 5

A	L 4000 mm	L 3000 mm	L 2000 mm	L 1000 mm	Special	Min. mm	Max. mm	Weight for 1 m	Height, H	Al
250	8802 45 14	8802 45 13	8802 45 12	8802 45 11	8802 45 19	500	4000	7,2	103	
400	8804 45 14	8804 45 13	8804 45 12	8804 45 11	8804 45 19	500	4000	7,9	113	
630	8806 45 14	8806 45 13	8806 45 12	8806 45 11	8806 45 19	500	4000	9,0	128	
800	8808 45 14	8808 45 13	8808 45 12	8808 45 11	8808 45 19	500	4000	10,1	143	
1000	8810 45 14	8810 45 13	8810 45 12	8810 45 11	8810 45 19	500	4000	11,9	168	
1250	8812 45 14	8812 45 13	8812 45 12	8812 45 11	8812 45 19	500	4000	14,0	203	
1600	8816 45 14	8816 45 13	8816 45 12	8816 45 11	8816 45 19	500	4000	18,0	253	
2000	8820 45 14	8820 45 13	8820 45 12	8820 45 11	8820 45 19	500	4000	20,9	293	
2500	8825 45 14	8825 45 13	8825 45 12	8825 45 11	8825 45 19	500	4000	28,6	393	
3200	8832 45 14	8832 45 13	8832 45 12	8832 45 11	8832 45 19	500	4000	35,8	493	
4000	8840 45 14	8840 45 13	8840 45 12	8840 45 11	8840 45 19	500	4000	41,6	573	
5000	8850 45 14	8850 45 13	8850 45 12	8850 45 11	8850 45 19	500	3000	64,7	793	
6300	8863 45 14	8863 45 13	8863 45 12	8863 45 11	8863 45 19	500	3000	77,2	853	

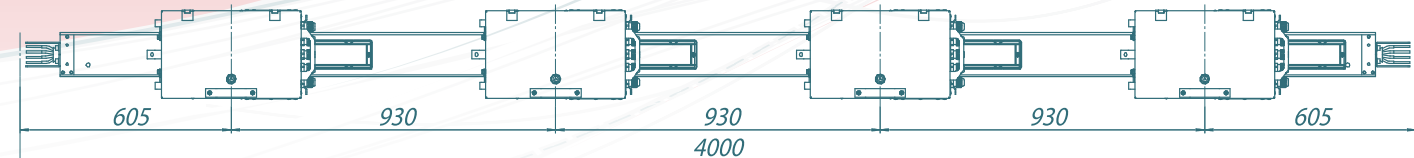
Table 6

A	L 4000 mm	L 3000 mm	L 2000 mm	L 1000 mm	Special	Min. mm	Max. mm	Weight for 1 m	Height, H	Cu
400	8904 45 14	8904 45 13	8904 45 12	8904 45 11	8904 45 10	500	4000	12,2	103	
630	8906 45 14	8906 45 13	8906 45 12	8906 45 11	8906 45 10	500	4000	12,2	103	
800	8908 45 14	8908 45 13	8908 45 12	8908 45 11	8908 45 10	500	4000	15,1	118	
1000	8910 45 14	8910 45 13	8910 45 12	8910 45 11	8910 45 10	500	4000	17,1	128	
1250	8912 45 14	8912 45 13	8912 45 12	8912 45 11	8912 45 10	500	4000	22,0	153	
1600	8916 45 14	8916 45 13	8916 45 12	8916 45 11	8916 45 10	500	4000	28,9	188	
2000	8920 45 14	8920 45 13	8920 45 12	8920 45 11	8920 45 10	500	4000	35,8	223	
2500	8925 45 14	8925 45 13	8925 45 12	8925 45 11	8925 45 10	500	4000	45,7	273	
3200	8932 45 14	8932 45 13	8932 45 12	8932 45 11	8932 45 10	500	3000	55,6	363	
4000	8940 45 14	8940 45 13	8940 45 12	8940 45 11	8940 45 10	500	3000	71,4	433	
5000	8950 45 14	8950 45 13	8950 45 12	8950 45 11	8950 45 10	500	3000	91,1	533	
6300	8963 45 14	8963 45 13	8963 45 12	8963 45 11	8963 45 10	500	3000	118,8	703	
7500	8975 45 14	8975 45 13	8975 45 12	8975 45 11	8975 45 10	500	3000	159,1	793	

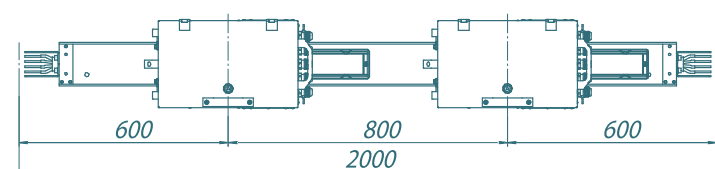
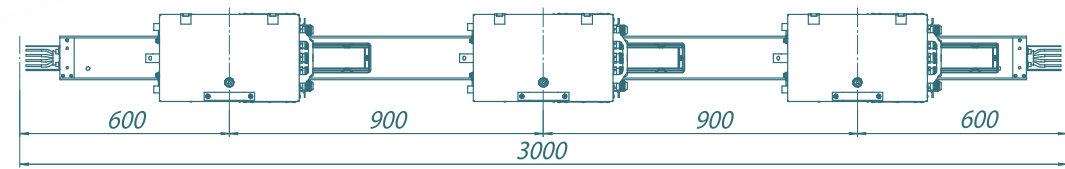
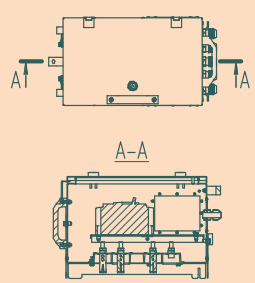
STRAIGHT LENGTH WITH OUTLETS



LAYOUT OF THE TAP-OFF UNITS



TO-250 Tap-off unit



The minimum size of straight lengths with TO-250 Tap-off unit is 1000 mm.

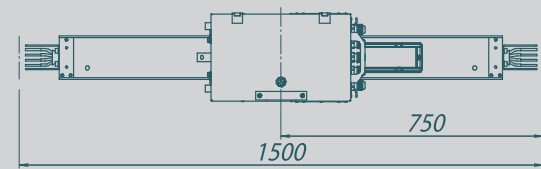
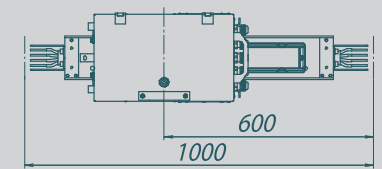
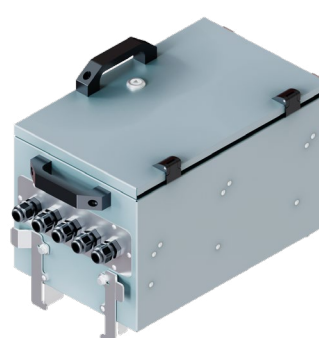
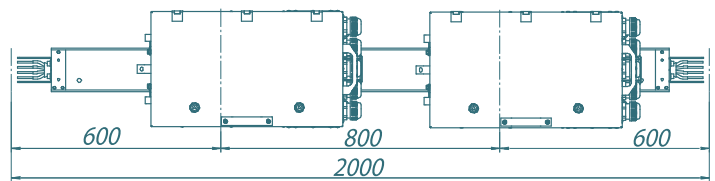
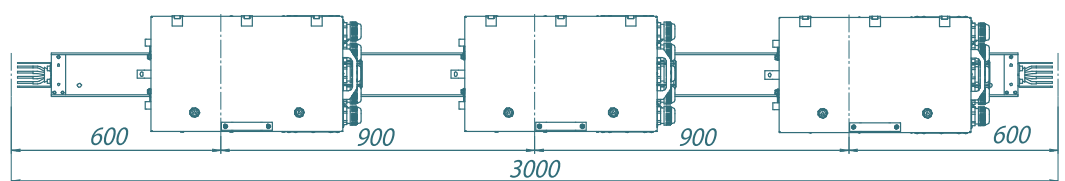
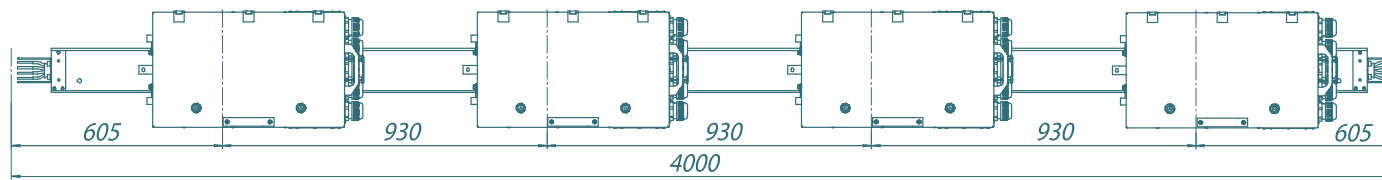


Table 7

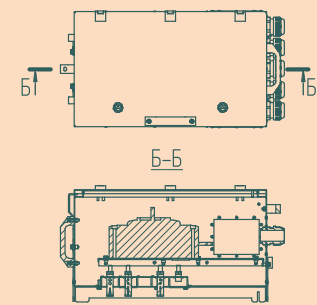
Al	A	L 4000 mm	L 3000 mm	L 2000 mm	L 1500 mm	Special	Min. mm	Max. mm	Weight for 1 m
	250	8802 45 24	8802 45 23	8802 45 22	8802 45 21	8802 45 29	1000	4000	7,2
	400	8804 45 24	8804 45 23	8804 45 22	8804 45 21	8804 45 29	1000	4000	7,9
	630	8806 45 24	8806 45 23	8806 45 22	8806 45 21	8806 45 29	1000	4000	9
	800	8808 45 24	8808 45 23	8808 45 22	8808 45 21	8808 45 29	1000	4000	10,1
	1000	8810 45 24	8810 45 23	8810 45 22	8810 45 21	8810 45 29	1000	4000	11,9
	1250	8812 45 24	8812 45 23	8812 45 22	8812 45 21	8812 45 29	1000	4000	14,4
	1600	8816 45 24	8816 45 23	8816 45 22	8816 45 21	8816 45 29	1000	4000	18
	2000	8820 45 24	8820 45 23	8820 45 22	8820 45 21	8820 45 29	1000	4000	20,9
	2500	8825 45 24	8825 45 23	8825 45 22	8825 45 21	8825 45 29	1000	4000	28,6
	3200	8832 45 24	8832 45 23	8832 45 22	8832 45 21	8832 45 29	1000	4000	35,8
	4000	8840 45 24	8840 45 23	8840 45 22	8840 45 21	8840 45 29	1000	4000	41,6
	5000	8850 45 24	8850 45 23	8850 45 22	8850 45 21	8850 45 29	1000	3000	64,7
	6300	8863 45 24	8863 45 23	8863 45 22	8863 45 21	8863 45 29	1000	3000	77,2



TO-250 Tap-off unit for modular devices



TO-630 Tap-off unit



The minimum size of straight lengths with TO-630 Tap-off unit is 1000 mm.

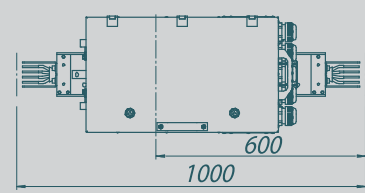
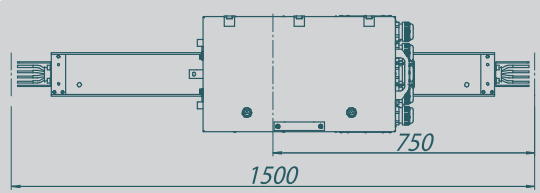


Table 8

Cu	A	L 4000 mm	L 3000 mm	L 2000 mm	L 1500 mm	Special	Min. mm	Max. mm	Weight for 1 m
	400	8904 45 24	8904 45 23	8904 45 22	8904 45 21	8904 45 29	1000	4000	12,2
	630	8906 45 24	8906 45 23	8906 45 22	8906 45 21	8906 45 29	1000	4000	12,2
	800	8908 45 24	8908 45 23	8908 45 22	8908 45 21	8908 45 29	1000	4000	15,1
	1000	8910 45 24	8910 45 23	8910 45 22	8910 45 21	8910 45 29	1000	4000	17,1
	1250	8912 45 24	8912 45 23	8912 45 22	8912 45 21	8912 45 29	1000	4000	22
	1600	8916 45 24	8916 45 23	8916 45 22	8916 45 21	8916 45 29	1000	4000	28,9
	2000	8920 45 24	8920 45 23	8920 45 22	8920 45 21	8920 45 29	1000	4000	35,8
	2500	8925 45 24	8925 45 23	8925 45 22	8925 45 21	8925 45 29	1000	4000	45,7
	3200	8932 45 24	8932 45 23	8932 45 22	8932 45 21	8932 45 29	1000	3000	55,6
	4000	8940 45 24	8940 45 23	8940 45 22	8940 45 21	8940 45 29	1000	3000	71,4
	5000	8950 45 24	8950 45 23	8950 45 22	8950 45 21	8950 45 29	1000	3000	91,1
	6300	8963 45 24	8963 45 23	8963 45 22	8963 45 21	8963 45 29	1000	3000	118,8
	7500	8975 45 24	8975 45 23	8975 45 22	8975 45 21	8975 45 29	1000	3000	159,1

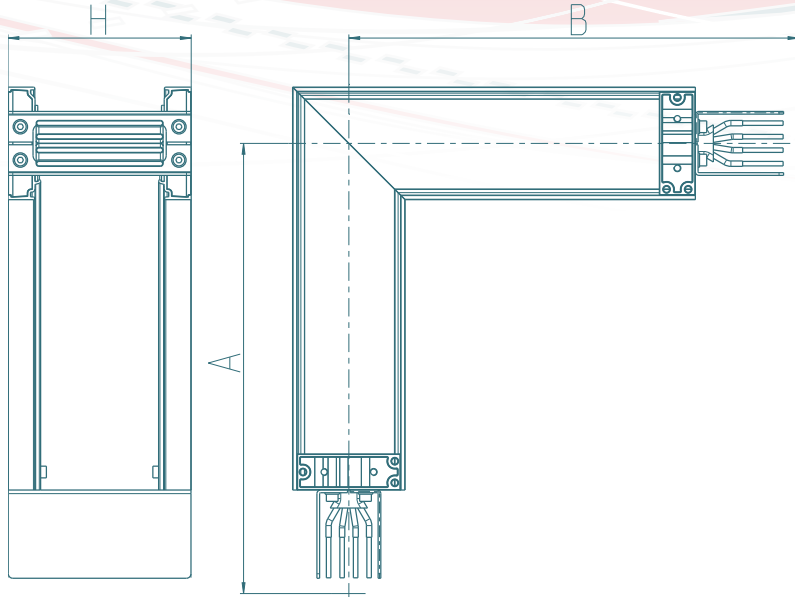
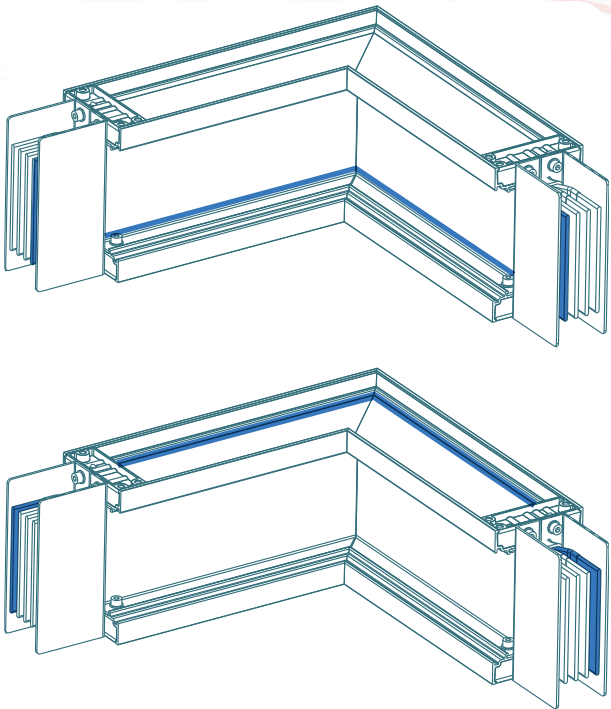


TO-630P Bolted tap-off unit

HORIZONTAL ELBOW

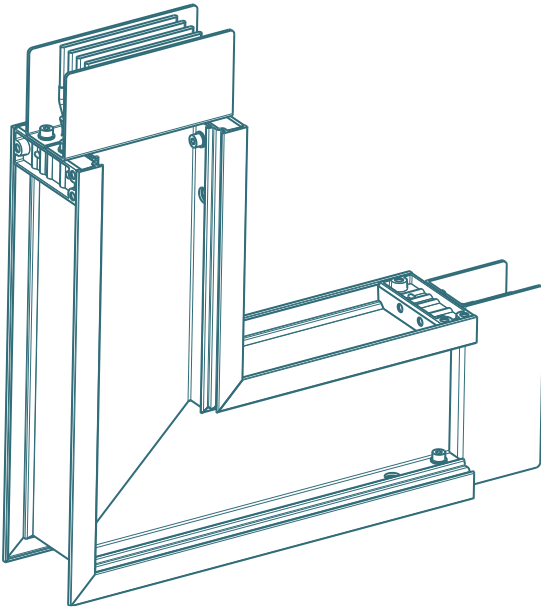
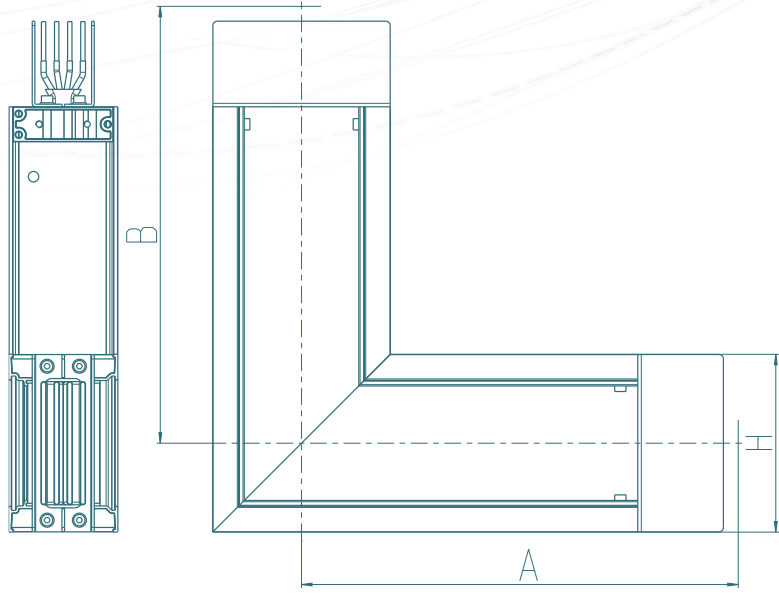
VERTICAL ELBOW

N1 (position of the neutral inside the elbow)



N1 (position of the neutral outside the elbow)

neutral designation



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

Table 9

A	N 1	N 2	Special	Standard	Min. mm	Max. mm	Weight for 1 m
250	8802 45 31	8802 45 32	8802 45 33	500×500	220	2000	7,2
400	8804 45 31	8804 45 32	8804 45 33	500×500	220	2000	7,9
630	8806 45 31	8806 45 32	8806 45 33	500×500	220	2000	9
800	8808 45 31	8808 45 32	8808 45 33	500×500	220	2000	10,1
1000	8810 45 31	8810 45 32	8810 45 33	500×500	220	2000	11,9
1250	8812 45 31	8812 45 32	8812 45 33	500×500	220	2000	14,4
1600	8816 45 31	8816 45 32	8816 45 33	500×500	220	2000	18
2000	8820 45 31	8820 45 32	8820 45 33	500×500	220	2000	20,9
2500	8825 45 31	8825 45 32	8825 45 33	500×500	220	2000	28,6
3200	8832 45 31	8832 45 32	8832 45 33	500×500	220	2000	35,8
4000	8840 45 31	8840 45 32	8840 45 33	500×500	220	2000	41,6
5000	8850 45 31	8850 45 32	8850 45 33	500×500	220	2000	64,7
6300	8863 45 31	8863 45 32	8863 45 33	500×500	220	2000	77,2

Table 10

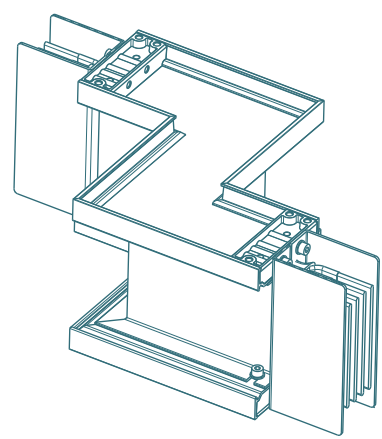
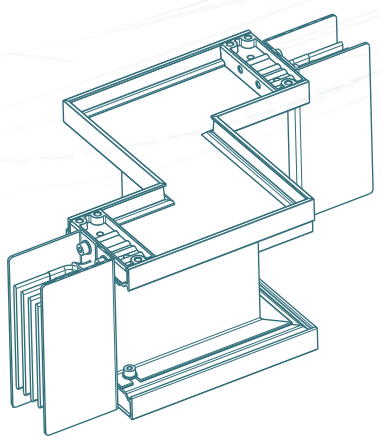
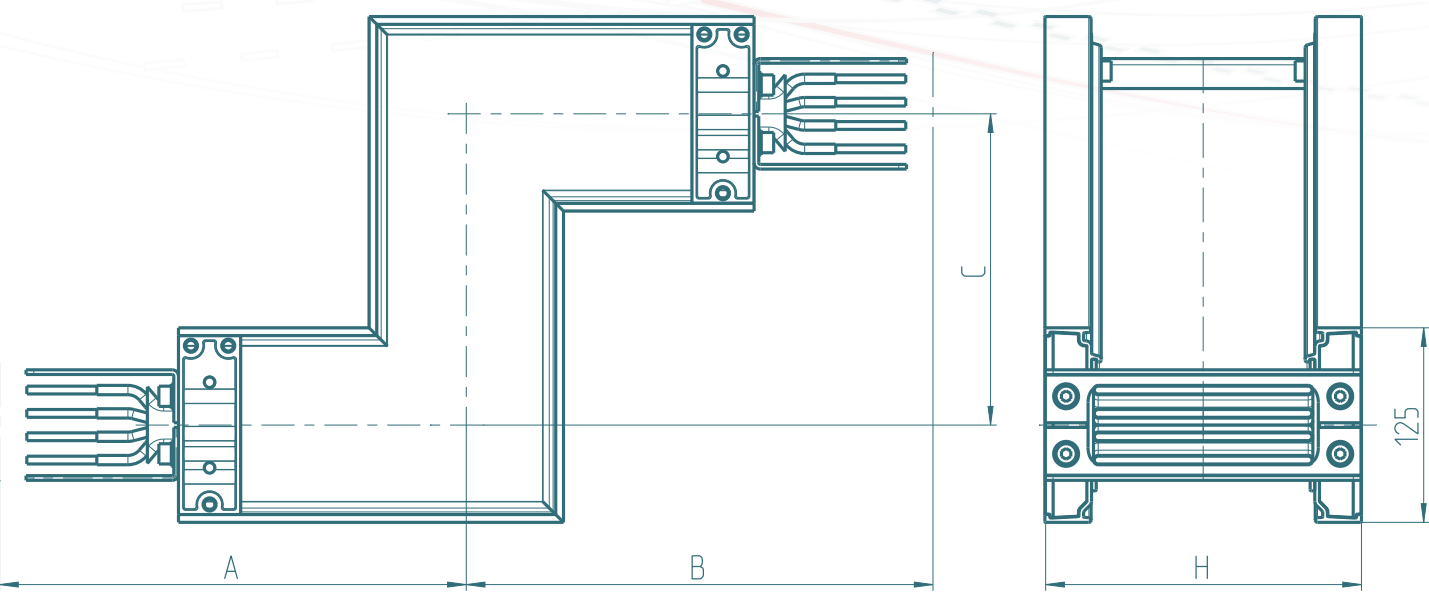
A	N 1	N 2	Special	Standard	Min. mm	Max. mm	Weight for 1 m
400	8904 45 31	8804 45 32	8804 45 33	500×500	220	2000	12,2
630	8906 45 31	8806 45 32	8806 45 33	500×500	220	2000	12,2
800	8908 45 31	8808 45 32	8808 45 33	500×500	220	2000	15,1
1000	8910 45 31	8810 45 32	8810 45 33	500×500	220	2000	17,1
1250	8912 45 31	8812 45 32	8812 45 33	500×500	220	2000	22
1600	8916 45 31	8816 45 32	8816 45 33	500×500	220	2000	28,9
2000	8920 45 31	8820 45 32	8820 45 33	500×500	220	2000	35,8
2500	8925 45 31	8825 45 32	8825 45 33	500×500	220	2000	45,7
3200	8932 45 31	8832 45 32	8832 45 33	500×500	220	2000	55,6
4000	8940 45 31	8840 45 32	8840 45 33	500×500	220	2000	71,4
5000	8950 45 31	8850 45 32	8850 45 33	500×500	220	2000	91,1
6300	8963 45 31	8863 45 32	8863 45 33	500×500	220	2000	118,8
7500	8975 45 31	8875 45 32	8875 45 33	500×500	220	2000	159,1

Table 11

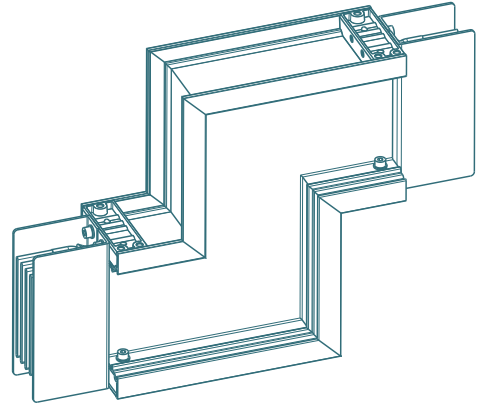
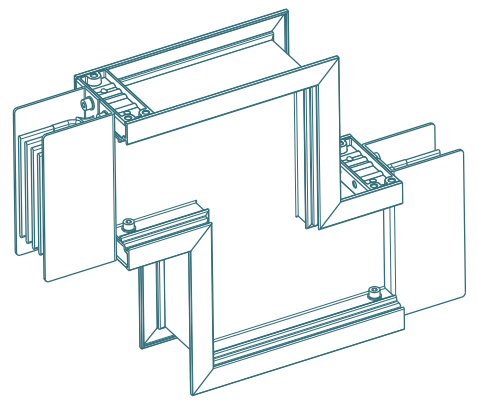
A	Vertical	Special.	Standard	Min. mm	Max. mm	Weight for 1 m
250	8802 45 34	8802 45 35	500×500	220	2000	7,2
400	8804 45 34	8804 45 35	500×500	220	2000	7,9
630	8806 45 34	8806 45 35	500×500	230	2000	9
800	8808 45 34	8808 45 35	500×500	240	2000	10,1
1000	8810 45 34	8810 45 35	500×500	250	2000	11,9
1250	8812 45 34	8812 45 35	500×500	270	2000	14,4
1600	8816 45 34	8816 45 35	500×500	290	2000	18
2000	8820 45 34	8820 45 35	500×500	310	2000	20,9
2500	8825 45 34	8825 45 35	500×500	360	2000	28,6
3200	8832 45 34	8832 45 35	500×500	410	2000	35,8
4000	8840 45 34	8840 45 35	500×500	450	2000	41,6
5000	8850 45 34	8850 45 35	600×600	560	2000	64,7
6300	8863 45 34	8863 45 35	600×600	590	2000	77,2

Table 12

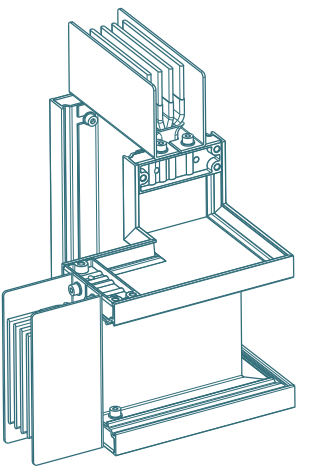
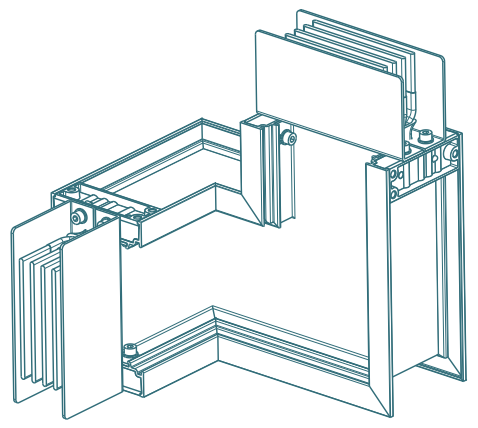
A	Vertical	Special.	Standard	Min. mm	Max. mm	Weight for 1 m
400	8804 45 34	8804 45 35	500×500	220	2000	12,2
630	8806 45 34	8806 45 35	500×500	220	2000	12,2
800	8808 45 34	8808 45 35	500×500	220	2000	15,1
1000	8810 45 34	8810 45 35	500×500	230	2000	17,1
1250	8812 45 34	8812 45 35	500×500	240	2000	22
1600	8816 45 34	8816 45 35	500×500	260	2000	28,9
2000	8820 45 34	8820 45 35	500×500	280	2000	35,8
2500	8825 45 34	8825 45 35	500×500	300	2000	45,7
3200	8832 45 34	8832 45 35	500×500	340	2000	55,6
4000	8840 45 34	8840 45 35	500×500	380	2000	71,4
5000	8850 45 34	8850 45 35	500×500	430	2000	91,1
6300	8863 45 34	8863 45 35	600×600	520	2000	118,8
7500	8875 45 34	8875 45 35	600×600	560	2000	159,1



Horizontal z-joint



Vertical z-joint



Universal z-joint

Al

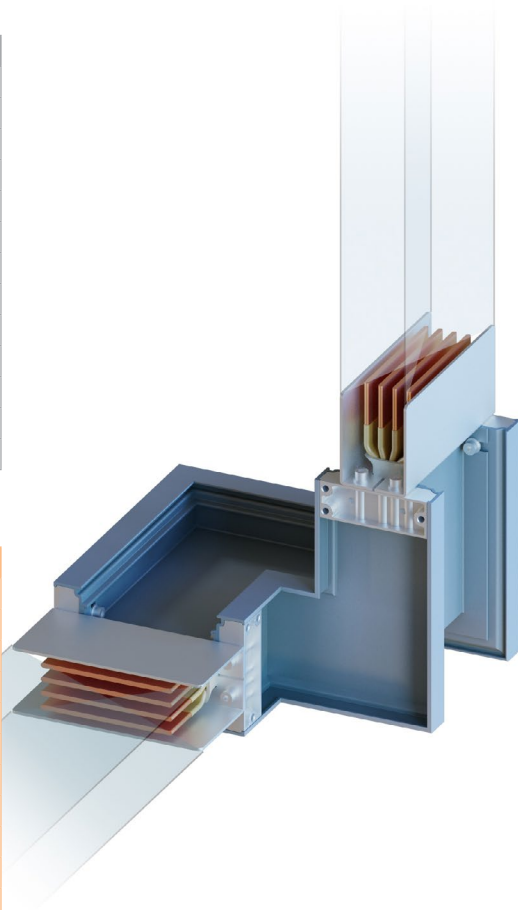
Table 13

A	Z-type	A,B Hor. Min	A,B Vert. Min	C Hor. Min	C Vert. Min	C Uni. Min	Weight for 1 m
250	8802 45 39	300	220	130	100	275	7,2
400	8804 45 39	300	220	130	100	280	7,9
630	8806 45 39	300	230	130	100	295	9
800	8808 45 39	300	240	130	100	315	10,1
1000	8810 45 39	300	250	130	100	335	11,9
1250	8812 45 39	300	270	130	100	375	14,4
1600	8816 45 39	300	290	130	100	420	18
2000	8820 45 39	300	310	130	100	460	20,9
2500	8825 45 39	300	360	130	100	560	28,6
3200	8832 45 39	300	410	130	100	660	35,8
4000	8840 45 39	300	450	130	100	740	41,6
5000	8850 45 39	300	560	130	100	960	64,7
6300	8863 45 39	300	590	130	100	1020	77,2

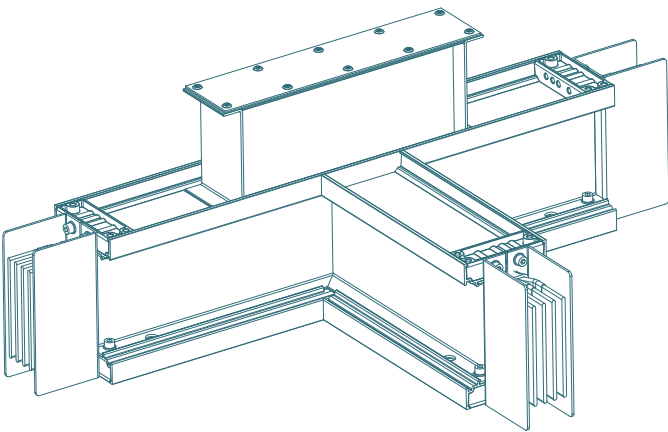
Cu

Table 14

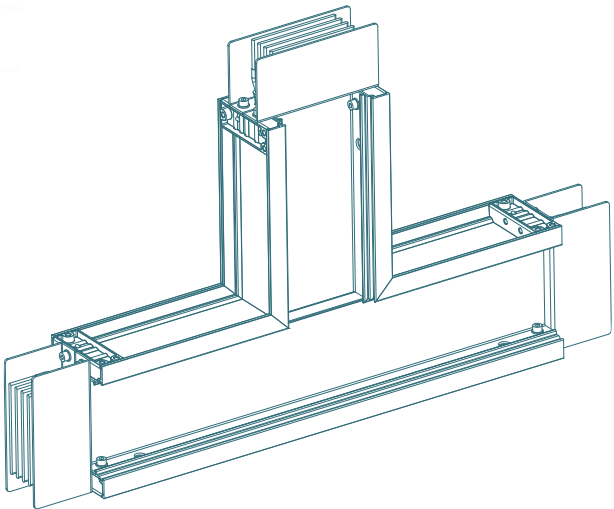
A	Z-type	A,B Hor. Min	A,B Vert. Min	C Hor. Min	C Vert. Min	C Uni. Min	Weight for 1 m
400	8904 45 39	300	220	130	100	275	12,2
630	8906 45 39	300	220	130	100	275	12,2
800	8908 45 39	300	220	130	100	280	15,1
1000	8910 45 39	300	230	130	100	295	17,1
1250	8912 45 39	300	240	130	100	320	22
1600	8916 45 39	300	260	130	100	355	28,9
2000	8920 45 39	300	280	130	100	395	35,8
2500	8925 45 39	300	300	130	100	440	45,7
3200	8932 45 39	300	340	130	100	520	55,6
4000	8940 45 39	300	380	130	100	600	71,4
5000	8950 45 39	300	430	130	100	700	91,1
6300	8963 45 39	300	520	130	100	875	118,8
7500	8975 45 39	300	560	130	100	960	159,1



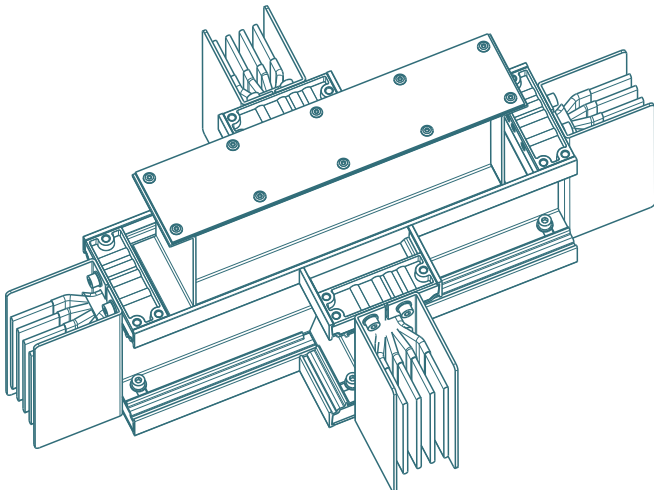
Horizontal t-joint



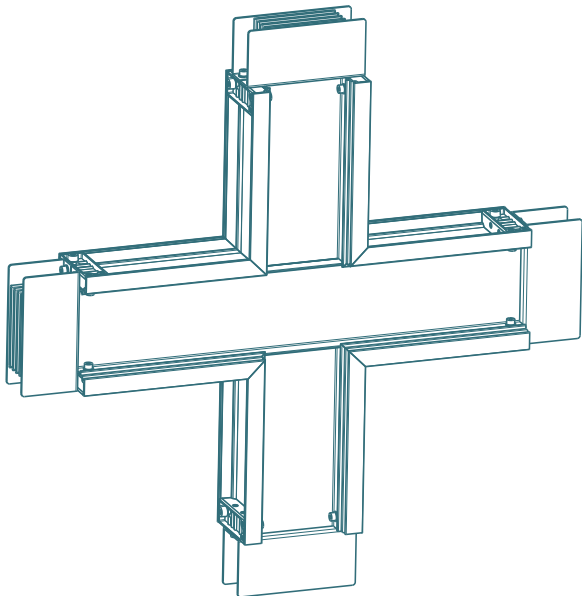
Vertical t-joint



Horizontal cross-element



Vertical cross-element



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

Table 15

A	Horizontal	Vertical	Hor. Min	Vert. Min	Weight for 1 m
250	8802 45 41	8802 45 42	300	320	7,2
400	8804 45 41	8804 45 42	300	320	7,9
630	8806 45 41	8806 45 42	300	330	9
800	8808 45 41	8808 45 42	300	340	10,1
1000	8810 45 41	8810 45 42	300	350	11,9
1250	8812 45 41	8812 45 42	300	370	14,4
1600	8816 45 41	8816 45 42	300	390	18
2000	8820 45 41	8820 45 42	300	410	20,9
2500	8825 45 41	8825 45 42	300	460	28,6
3200	8832 45 41	8832 45 42	300	510	35,8
4000	8840 45 41	8840 45 42	300	550	41,6
5000	8850 45 41	8850 45 42	300	660	64,7
6300	8863 45 41	8863 45 42	300	690	77,2

Table 16

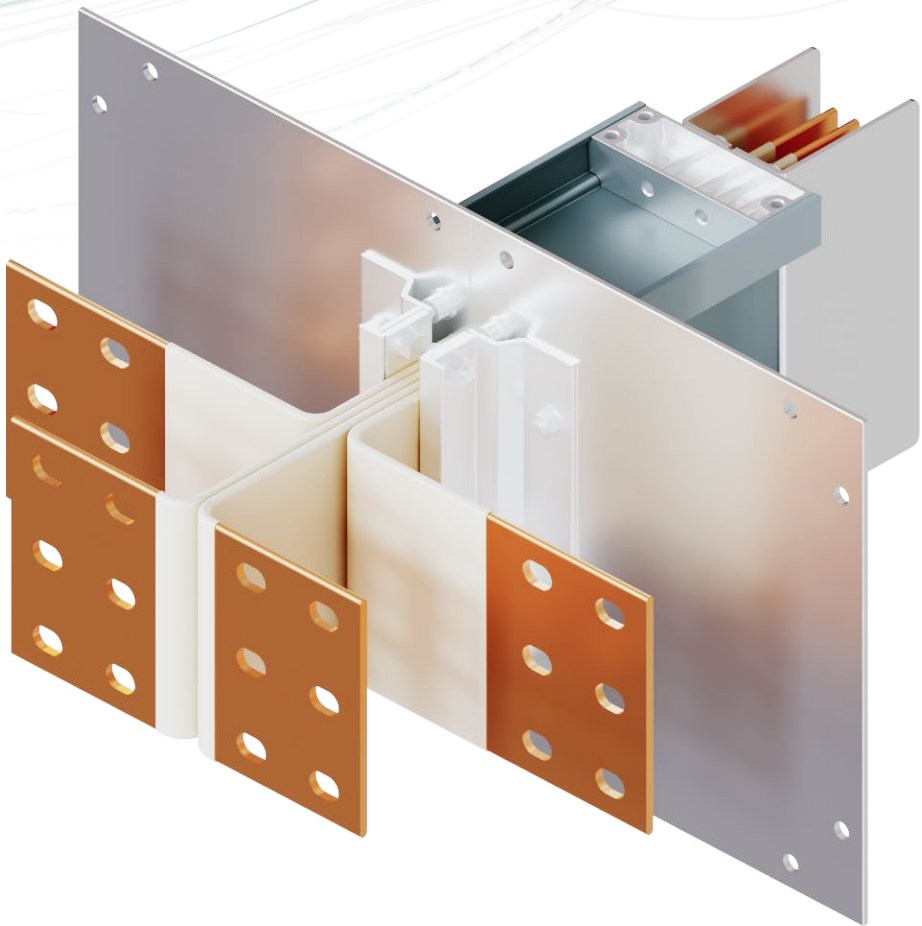
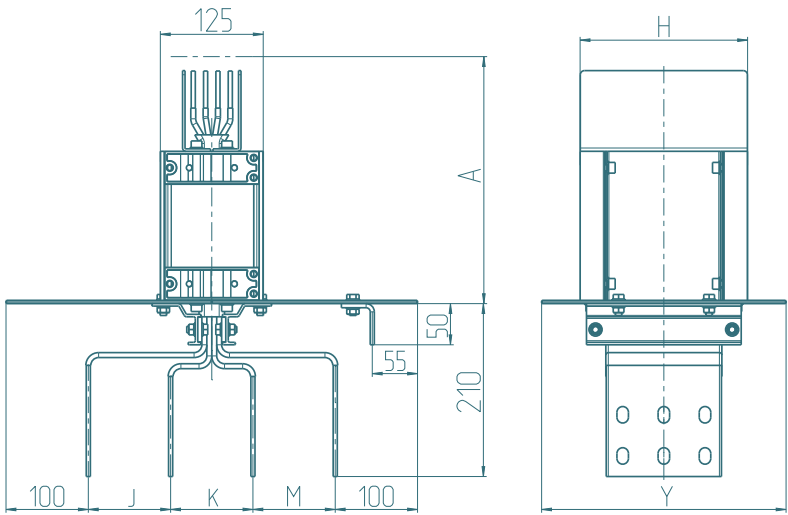
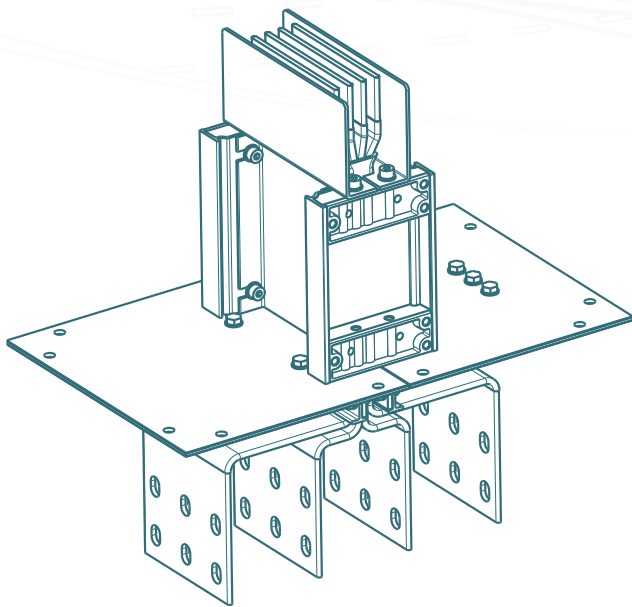
A	Horizontal	Vertical	Hor. Min	Vert. Min	Weight for 1 m
400	8904 45 41	8804 45 42	300	320	12,2
630	8906 45 41	8806 45 42	300	320	12,2
800	8908 45 41	8808 45 42	300	320	15,1
1000	8910 45 41	8810 45 42	300	330	17,1
1250	8912 45 41	8812 45 42	300	340	22
1600	8916 45 41	8816 45 42	300	360	28,9
2000	8920 45 41	8820 45 42	300	380	35,8
2500	8925 45 41	8825 45 42	300	400	45,7
3200	8932 45 41	8832 45 42	300	440	55,6
4000	8940 45 41	8840 45 42	300	480	71,4
5000	8950 45 41	8850 45 42	300	530	91,1
6300	8963 45 41	8863 45 42	300	620	118,8
7500	8975 45 41	8875 45 42	300	660	159,1

Table 17

A	Horizontal	Vertical	Hor. Min	Vert. Min	Weight for 1 m
250	8802 45 43	8802 45 44	300	320	7,2
400	8804 45 43	8804 45 44	300	320	7,9
630	8806 45 43	8806 45 44	300	330	9
800	8808 45 43	8808 45 44	300	340	10,1
1000	8810 45 43	8810 45 44	300	350	11,9
1250	8812 45 43	8812 45 44	300	370	14,4
1600	8816 45 43	8816 45 44	300	390	18
2000	8820 45 43	8820 45 44	300	410	20,9
2500	8825 45 43	8825 45 44	300	460	28,6
3200	8832 45 43	8832 45 44	300	510	35,8
4000	8840 45 43	8840 45 44	300	550	41,6
5000	8850 45 43	8850 45 44	300	660	64,7
6300	8863 45 43	8863 45 44	300	690	77,2

Table 18

A	Horizontal	Vertical	Hor. Min	Vert. Min	Weight for 1 m
400	8904 45 43	8804 45 44	300	320	12,2
630	8906 45 43	8806 45 44	300	320	12,2
800	8908 45 43	8808 45 44	300	320	15,1
1000	8910 45 43	8810 45 44	300	330	17,1
1250	8912 45 43	8812 45 44	300	340	22
1600	8916 45 43	8816 45 44	300	360	28,9
2000	8920 45 43	8820 45 44	300	380	35,8
2500	8925 45 43	8825 45 44	300	400	45,7
3200	8932 45 43	8832 45 44	300	440	55,6
4000	8940 45 43	8840 45 44	300	480	71,4
5000	8950 45 43	8850 45 44	300	530	91,1
6300	8963 45 43	8863 45 44	300	620	118,8
7500	8975 45 43	8875 45 44	300	660	159,1

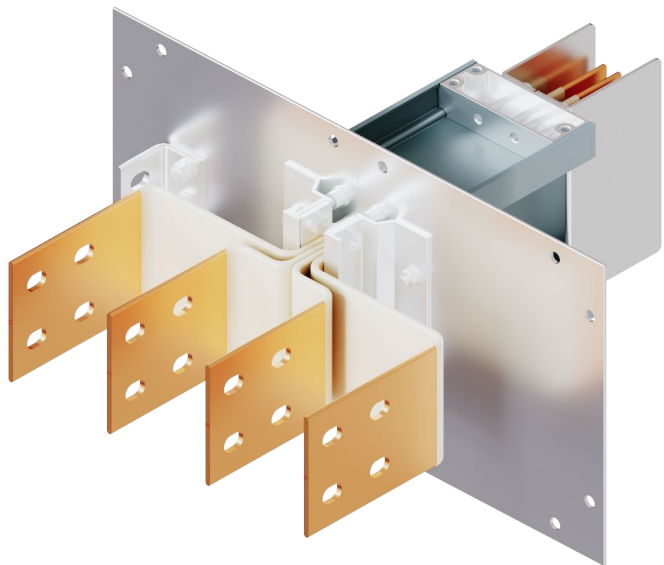


AI Table 20

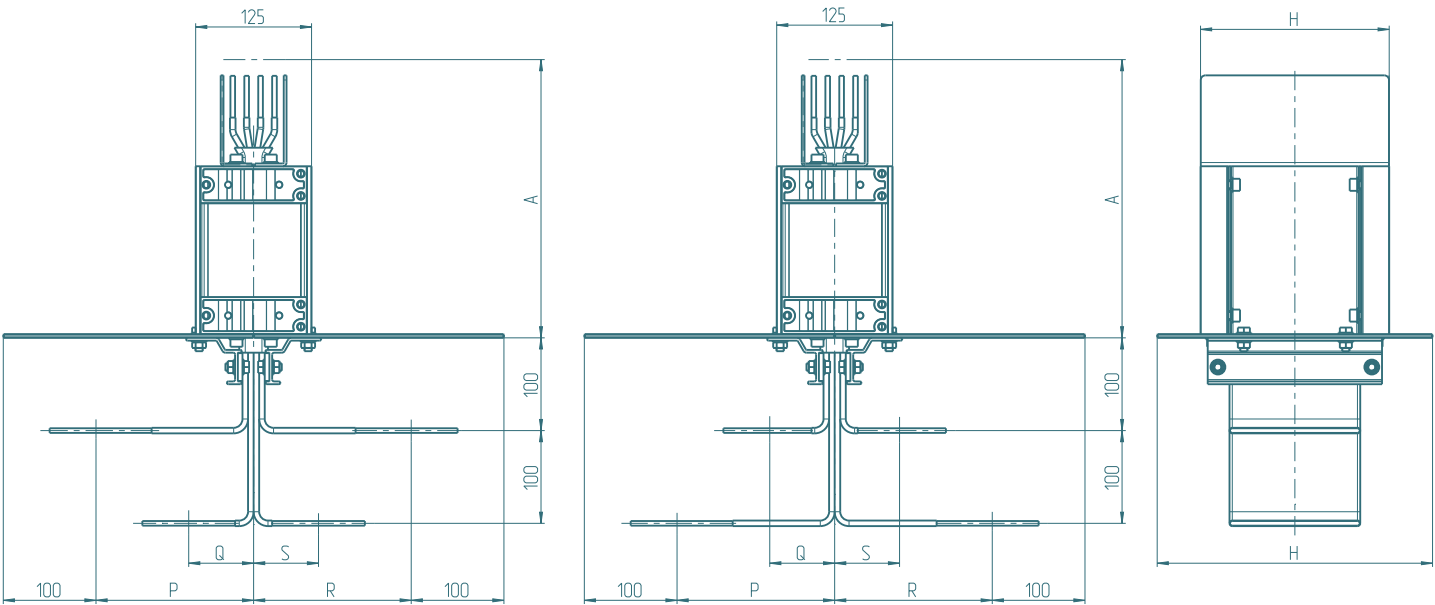
A	Normal	Special	Stansard, A	Min., A	Weight for 1 m
250	8802 45 60	8802 45 66	300	200	7,2
400	8804 45 60	8804 45 66	300	200	7,9
630	8806 45 60	8806 45 66	300	200	9
800	8808 45 60	8808 45 66	300	200	10,1
1 000	8810 45 60	8810 45 66	300	200	11,9
1 250	8812 45 60	8812 45 66	300	200	14,4
1 600	8816 45 60	8816 45 66	300	200	18
2 000	8820 45 60	8820 45 66	300	200	20,9
2 500	8825 45 60	8825 45 66	300	200	28,6
3 200	8832 45 60	8832 45 66	300	200	35,8
4 000	8840 45 60	8840 45 66	300	200	41,6
5 000	8850 45 60	8850 45 66	300	200	64,7
6 300	8863 45 60	8863 45 66	300	200	77,2

Cu Table 21

A	Normal	Special	Stansard, A	Min., A	Weight for 1 m
400	8904 45 60	8804 45 66	300	200	12,2
630	8906 45 60	8806 45 66	300	200	12,2
800	8908 45 60	8808 45 66	300	200	15,1
1 000	8910 45 60	8810 45 66	300	200	17,1
1 250	8912 45 60	8812 45 66	300	200	22
1 600	8916 45 60	8816 45 66	300	200	28,9
2 000	8920 45 60	8820 45 66	300	200	35,8
2 500	8925 45 60	8825 45 66	300	200	45,7
3 200	8932 45 60	8832 45 66	300	200	55,6
4 000	8940 45 60	8840 45 66	300	200	71,4
5 000	8950 45 60	8850 45 66	300	200	91,1
6 300	8963 45 60	8863 45 66	300	200	118,8
7 500	8975 45 60	8875 45 66	300	200	159,1

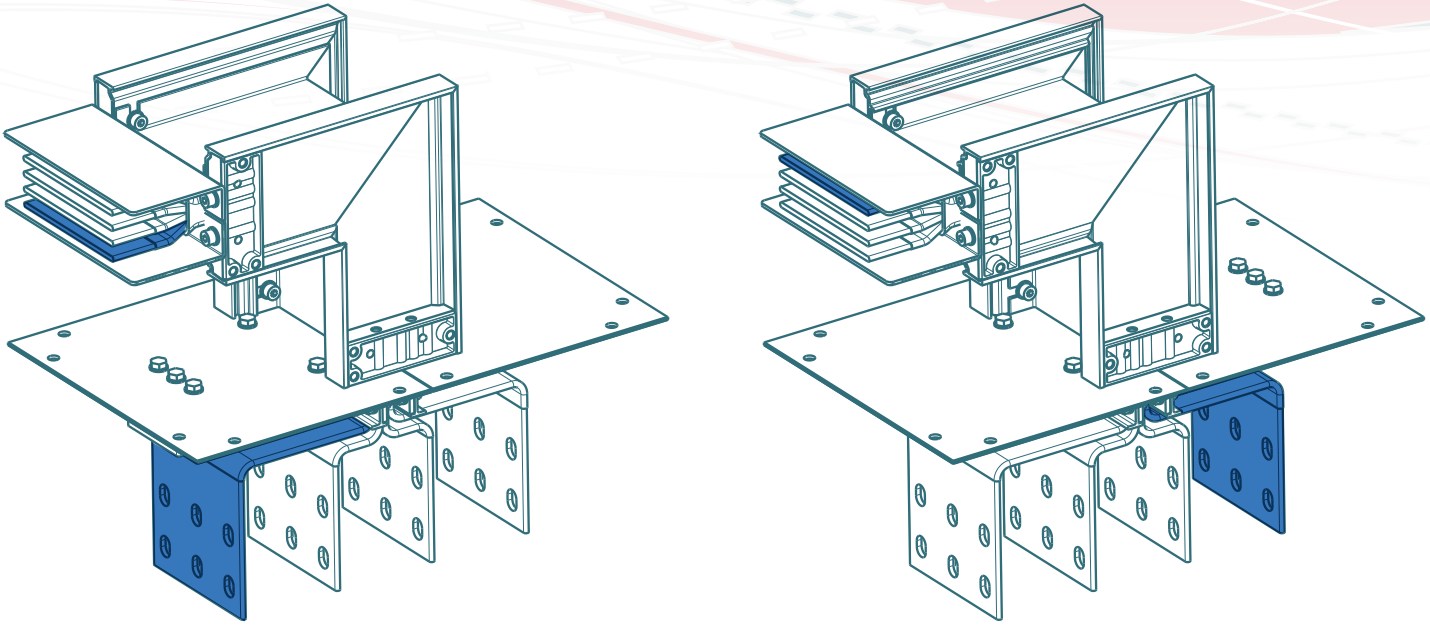


We can manufacture connection interfaces adapted to any serial or exclusive equipment if there is a drawing of the connection point.



CONNECTION INTERFACE

neutral designation

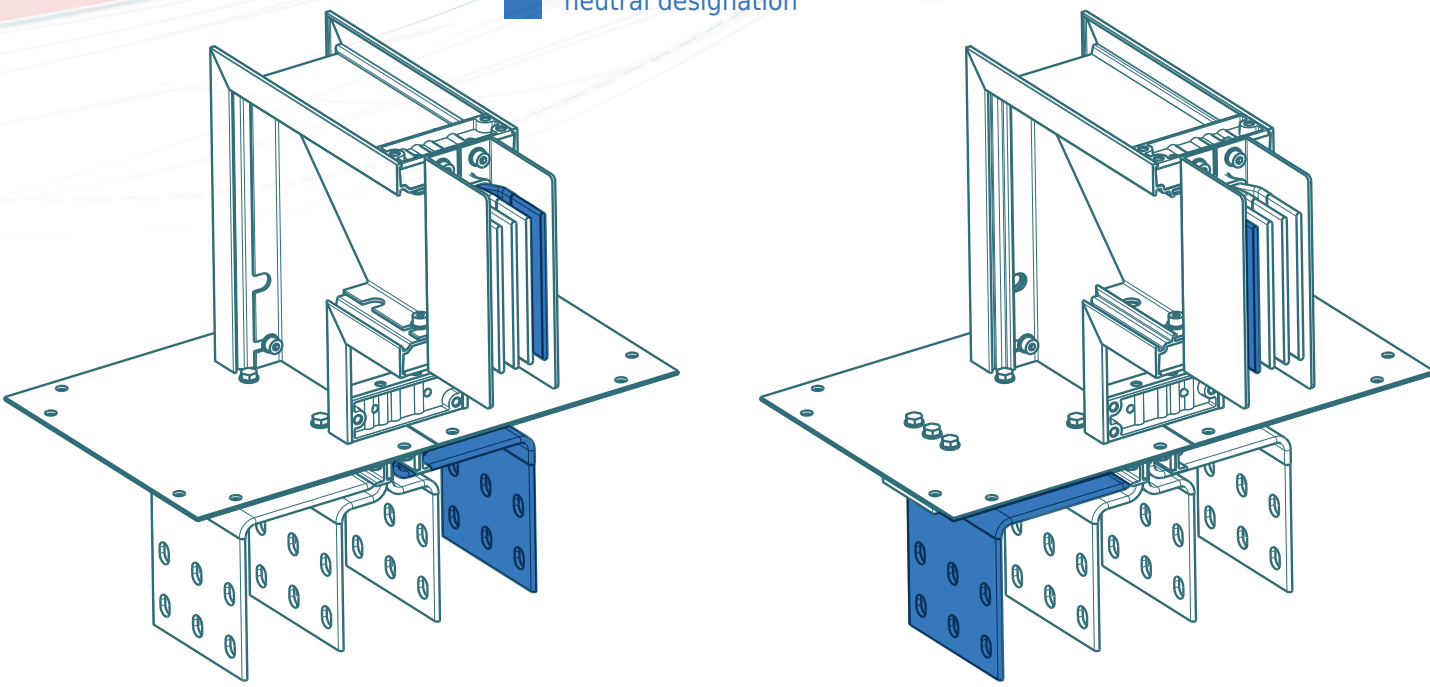


N1

N2

CONNECTION INTERFACE

neutral designation



N3

N4

AI

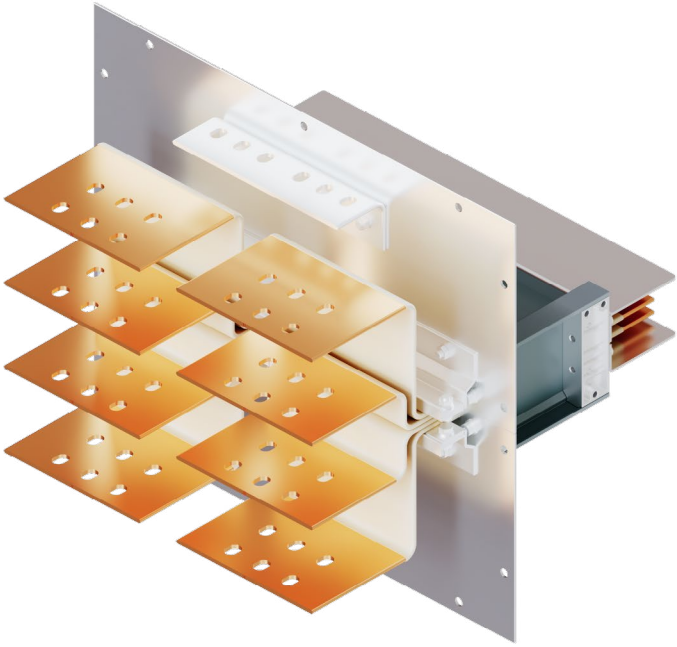
Table 22

A	N1	N2	Special	A x B	Hor. Min.	Weight for 1 m
250	8802 45 61	8802 45 62	8802 45 67	300x500	200x300	7,2
400	8804 45 61	8804 45 62	8804 45 67	300x500	200x300	7,9
630	8806 45 61	8806 45 62	8806 45 67	300x500	200x300	9
800	8808 45 61	8808 45 62	8808 45 67	300x500	200x300	10,1
1 000	8810 45 61	8810 45 62	8810 45 67	300x500	200x300	11,9
1 250	8812 45 61	8812 45 62	8812 45 67	300x500	200x300	14,4
1 600	8816 45 61	8816 45 62	8816 45 67	300x500	200x300	18
2 000	8820 45 61	8820 45 62	8820 45 67	300x500	200x300	20,9
2 500	8825 45 61	8825 45 62	8825 45 67	300x500	200x300	28,6
3 200	8832 45 61	8832 45 62	8832 45 67	300x500	200x300	35,8
4 000	8840 45 61	8840 45 62	8840 45 67	300x500	200x300	41,6
5 000	8850 45 61	8850 45 62	8850 45 67	300x500	200x300	64,7
6 300	8863 45 61	8863 45 62	8863 45 67	300x500	200x300	77,2

Cu

Table 23

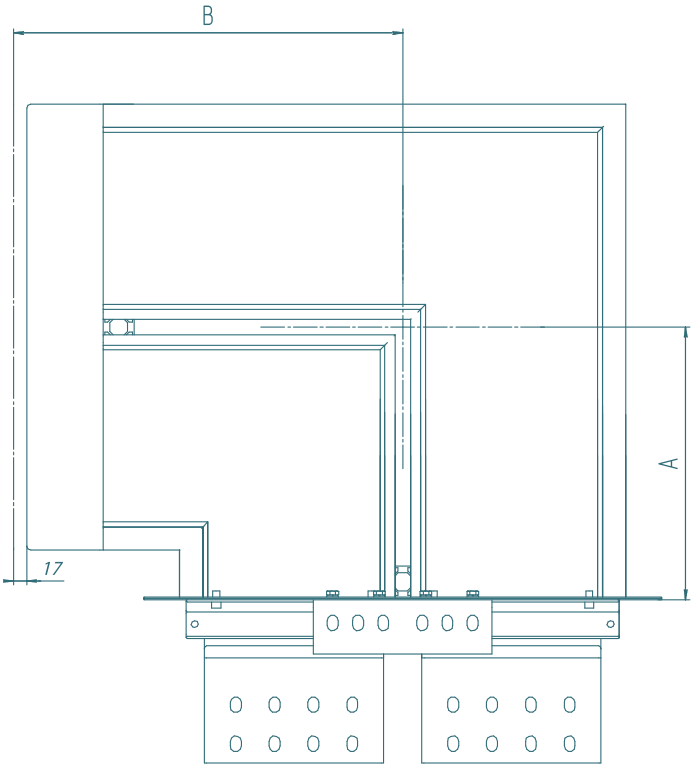
A	N1	N2	Special	A x B	Hor. Min.	Weight for 1 m
400	8904 45 61	8804 45 62	8804 45 67	300x500	200x300	12,2
630	8906 45 61	8806 45 62	8806 45 67	300x500	200x300	12,2
800	8908 45 61	8808 45 62	8808 45 67	300x500	200x300	15,1
1 000	8910 45 61	8810 45 62	8810 45 67	300x500	200x300	17,1
1 250	8912 45 61	8812 45 62	8812 45 67	300x500	200x300	22
1 600	8916 45 61	8816 45 62	8816 45 67	300x500	200x300	28,9
2 000	8920 45 61	8820 45 62	8820 45 67	300x500	200x300	35,8
2 500	8925 45 61	8825 45 62	8825 45 67	300x500	200x300	45,7
3 200	8932 45 61	8832 45 62	8832 45 67	300x500	200x300	55,6
4 000	8940 45 61	8840 45 62	8840 45 67	300x500	200x300	71,4
5 000	8950 45 61	8850 45 62	8850 45 67	300x500	200x300	91,1
6 300	8963 45 61	8863 45 62	8863 45 67	300x500	200x300	118,8
7 500	8975 45 61	8875 45 62	8875 45 67	300x500	200x300	159,1



AI

Table 24

A	N3	N4	Special	A x B	Vert. Min.	Weight for 1 m
250	8802 45 63	8802 45 64	8802 45 68	250x500	120x220	7,2
400	8804 45 63	8804 45 64	8804 45 68	250x500	120x220	7,9
630	8806 45 63	8806 45 64	8806 45 68	250x500	130x230	9
800	8808 45 63	8808 45 64	8808 45 68	250x500	140x240	10,1
1 000	8810 45 63	8810 45 64	8810 45 68	250x500	150x250	11,9
1 250	8812 45 63	8812 45 64	8812 45 68	250x500	170x270	14,4
1 600	8816 45 63	8816 45 64	8816 45 68	250x500	190x290	18
2 000	8820 45 63	8820 45 64	8820 45 68	250x500	210x310	20,9
2 500	8825 45 63	8825 45 64	8825 45 68	350x500	260x360	28,6
3 200	8832 45 63	8832 45 64	8832 45 68	350x500	310x410	35,8
4 000	8840 45 63	8840 45 64	8840 45 68	350x500	350x450	41,6
5 000	8850 45 63	8850 45 64	8850 45 68	500x600	460x560	64,7
6 300	8863 45 63	8863 45 64	8863 45 68	500x600	490x590	77,2

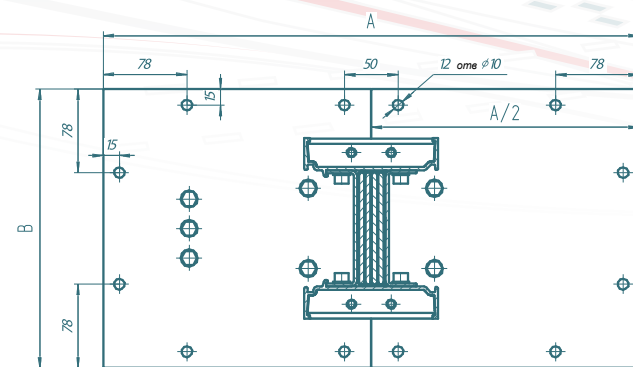


Cu

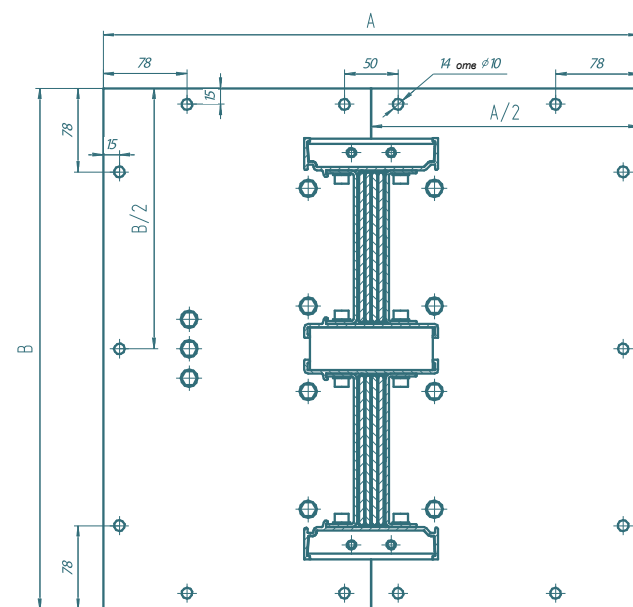
Table 25

A	N3	N4	Special	A x B	Vert. Min.	Weight for 1 m
400	8904 45 63	8804 45 64	8804 45 68	250x500	120x220	12,2
630	8906 45 63	8806 45 64	8806 45 68	250x500	120x220	12,2
800	8908 45 63	8808 45 64	8808 45 68	250x500	120x220	15,1
1 000	8910 45 63	8810 45 64	8810 45 68	250x500	130x230	17,1
1 250	8912 45 63	8812 45 64	8812 45 68	250x500	140x240	22
1 600	8916 45 63	8816 45 64	8816 45 68	250x500	160x260	28,9
2 000	8920 45 63	8820 45 64	8820 45 68	250x500	180x280	35,8
2 500	8925 45 63	8825 45 64	8825 45 68	250x500	200x300	45,7
3 200	8932 45 63	8832 45 64	8832 45 68	350x500	240x340	55,6
4 000	8940 45 63	8840 45 64	8840 45 68	350x500	280x380	71,4
5 000	8950 45 63	8850 45 64	8850 45 68	350x500	330x430	91,1
6 300	8963 45 63	8863 45 64	8863 45 68	500x600	420x520	118,8
7 500	8975 45 63	8875 45 64	8875 45 68	500x600	460x560	159,1

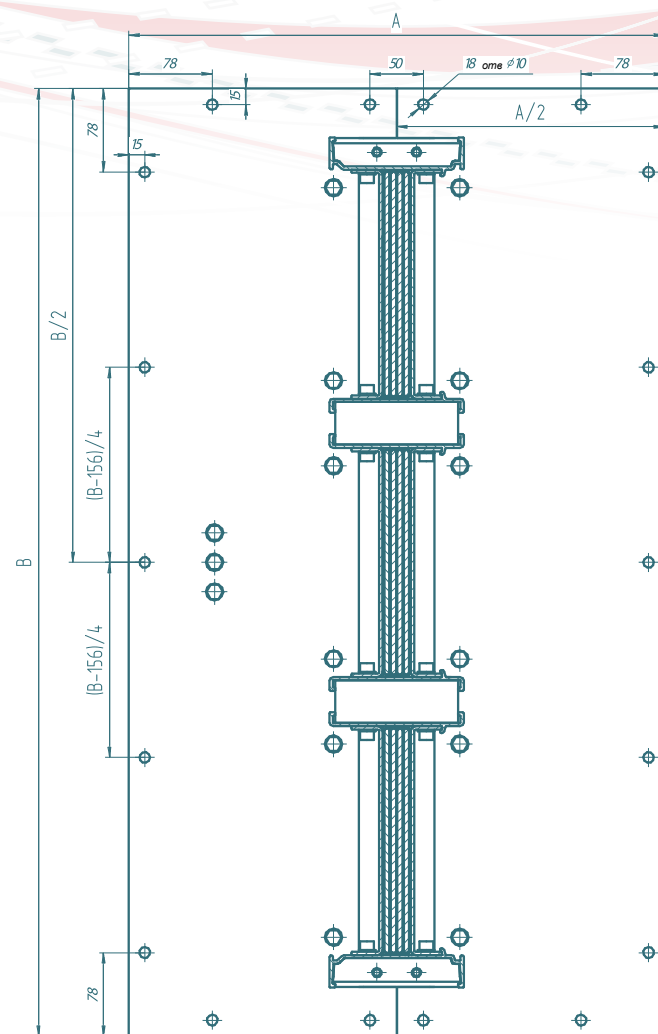
CONNECTION INTERFACE INSTALLATION TEMPLATES



▲ Рисунок 1



Picture 2



▲ Picture 3

AI		Table 30			
3P4W busbar			3P5W busbar		Picture
R. current, A	A, mm	B, mm	A, mm	B, mm	
250	500	260	600	260	1
400	500	260	600	260	
630	500	260	600	260	
800	500	260	600	260	
1000	500	260	600	260	
1250	500	386	600	386	
1600	500	386	600	386	
2000	500	386	600	386	
2500	500	486	600	486	2
3200	500	586	600	586	
4000	500	665	600	665	
5000	500	884	600	884	3
6300	500	944	600	944	

Cu

Table 31

3P4W busbar			3P5W busbar		Picture
R. current, A	A, mm	B, mm	A, mm	B, mm	
400	500	260	600	260	1
630	500	260	600	260	
800	500	260	600	260	
1000	500	260	600	260	
1250	500	260	600	260	
1600	500	315	600	315	
2000	500	315	600	315	
2500	500	366	600	366	
3200	500	456	600	456	2
4000	500	526	600	526	
5000	500	626	600	626	
6300	500	794	600	794	3
7500	500	884	600	884	

BUSBAR CONNECTION PATTERN

Tips:

We recommend using adapter plates with a width corresponding to the width of the flexible copper busbar to connect copper conductors to aluminum ones.

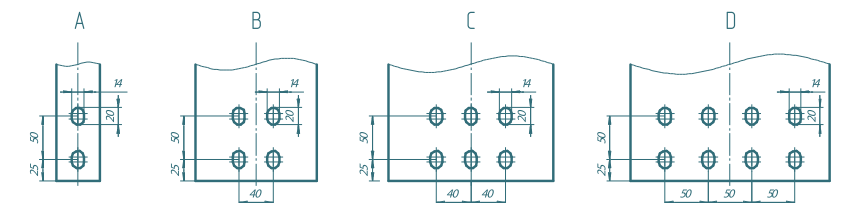
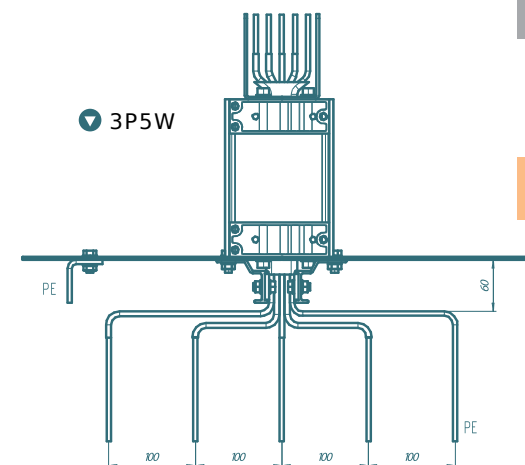
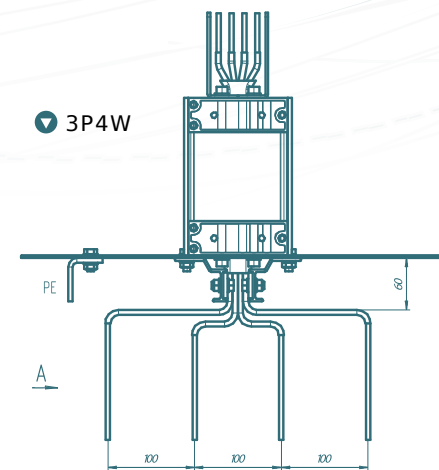


Table 32

A1 R. curr. A														
		250	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
	Hole type	A	A	A	A	B	B	C	D	B	C	D	D	D

Table 33

Cu		R. curr., A	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	7500
	Hole type	A	A	A	A	B	B	C	D	B	C	D	C	D	

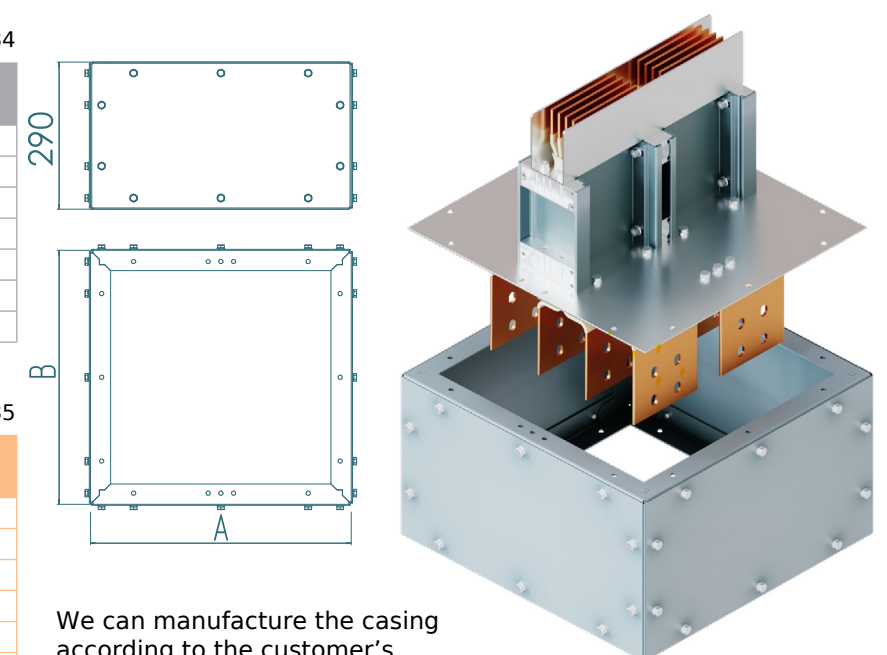
CONNECTION INTERFACE CASING

AI

Table 34

R. current, A	3P4W busbar		3P5W busbar	
	A, mm	B, mm	A, mm	B, mm
250 - 1000	514	274	614	274
1250 - 2000	514	400	614	400
2500	514	500	614	500
3200	514	600	614	600
4000	514	680	614	680
5000	514	898	614	898
6300	514	956	614	956

Cu		Table 35		
R. current, A	3P4W busbar		3P5W busbar	
	A, mm	B, mm	A, mm	B, mm
400 - 1250	514	274	614	274
1600 - 2500	514	330	614	330
3200	514	460	614	460
4000	514	540	614	540
5000	514	540	614	540
6300	514	808	614	808
7500	514	808	614	808



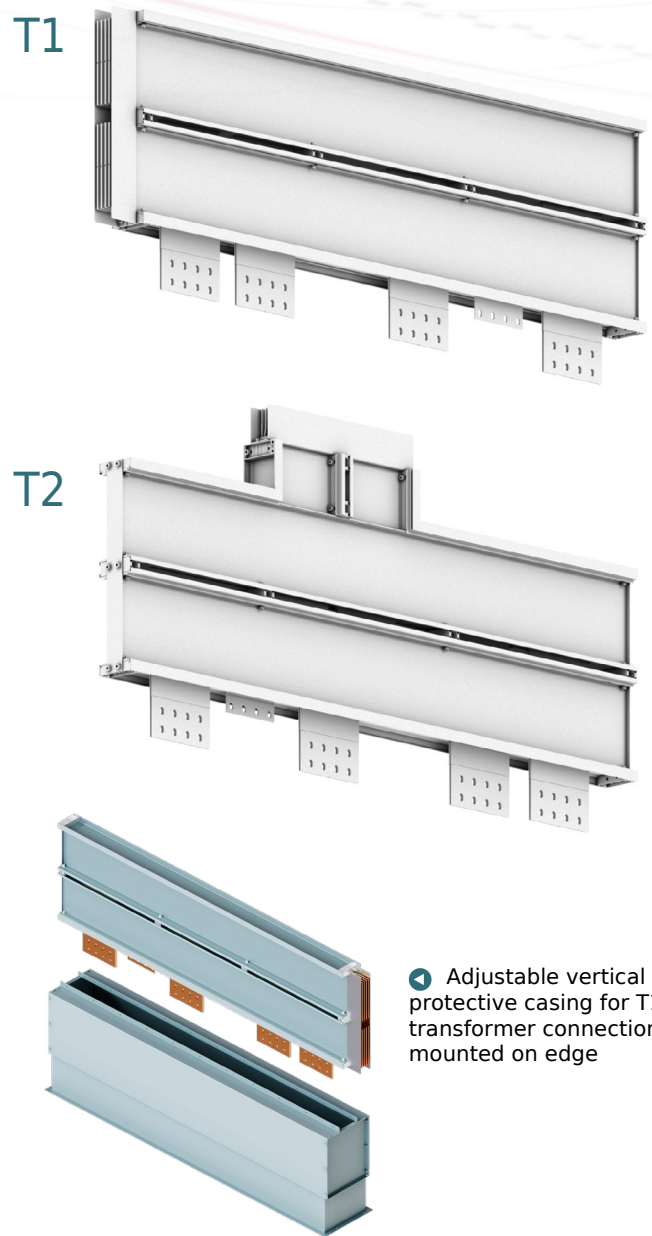
We can manufacture the casing according to the customer's drawing, including one with a lateral connection interface arrangement.

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 (see page 48).

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



Adjustable vertical protective casing for T1 and T2 transformer connection joints mounted on edge

Adjustable horizontal protective casing for T1 and T2 transformer connection joints mounted flat

AI

Table 26

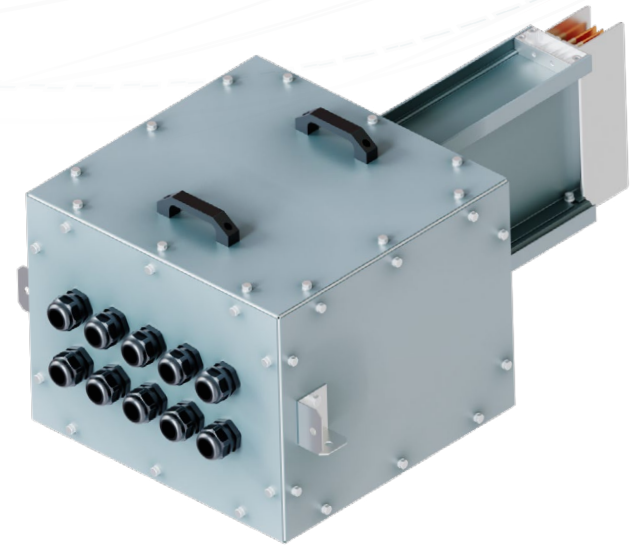
A	T1	T2	Special	Stansard, A	Weight for 1 m
250	8802 45 71	8802 45 72	8802 45 70	1 200	7,2
400	8804 45 71	8804 45 72	8804 45 70	1 200	7,9
630	8806 45 71	8806 45 72	8806 45 70	1 200	9,0
800	8808 45 71	8808 45 72	8808 45 70	1 200	10,1
1 000	8810 45 71	8810 45 72	8810 45 70	1 500	11,9
1 250	8812 45 71	8812 45 72	8812 45 70	1 500	14,4
1 600	8816 45 71	8816 45 72	8816 45 70	1 800	18,0
2 000	8820 45 71	8820 45 72	8820 45 70	1 800	20,9
2 500	8825 45 71	8825 45 72	8825 45 70	2 000	28,6
3 200	8832 45 71	8832 45 72	8832 45 70	2 000	35,8
4 000	8840 45 71	8840 45 72	8840 45 70	2 000	41,6
5 000	8850 45 71	8850 45 72	8850 45 70	2 100	64,7
6 300	8863 45 71	8863 45 72	8863 45 70	2 200	77,2

Cu

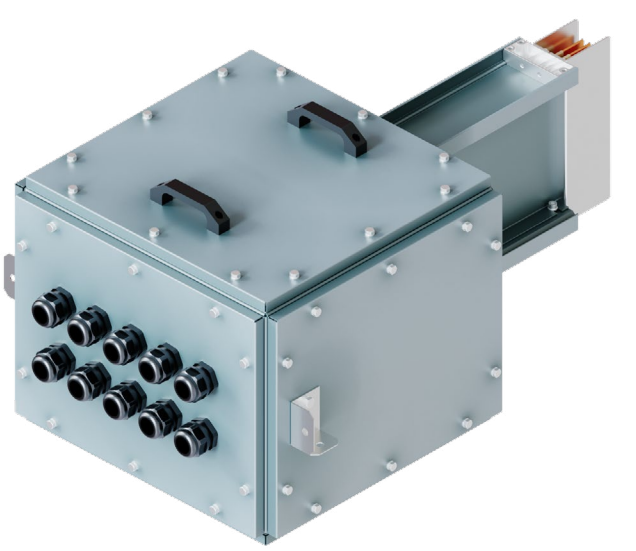
Table 27

A	T1	T2	Special	Stansard, A	Weight for 1 m
400	8904 45 71	8804 45 72	8804 45 70	1 800	12,2
630	8906 45 71	8806 45 72	8806 45 70	1 800	12,2
800	8908 45 71	8808 45 72	8808 45 70	1 800	15,1
1 000	8910 45 71	8810 45 72	8810 45 70	1 800	17,1
1 250	8912 45 71	8812 45 72	8812 45 70	1 800	22,0
1 600	8916 45 71	8816 45 72	8816 45 70	1 800	28,9
2 000	8920 45 71	8820 45 72	8820 45 70	1 800	35,8
2 500	8925 45 71	8825 45 72	8825 45 70	1 800	45,7
3 200	8932 45 71	8832 45 72	8832 45 70	2 000	55,6
4 000	8940 45 71	8840 45 72	8840 45 70	2 000	71,4
5 000	8950 45 71	8850 45 72	8850 45 70	2 000	91,1
6 300	8963 45 71	8863 45 72	8863 45 70	2 100	118,8
7 500	8975 45 71	8875 45 72	8875 45 70	2 200	159,1

IP55 feed unit



IP66 feed unit

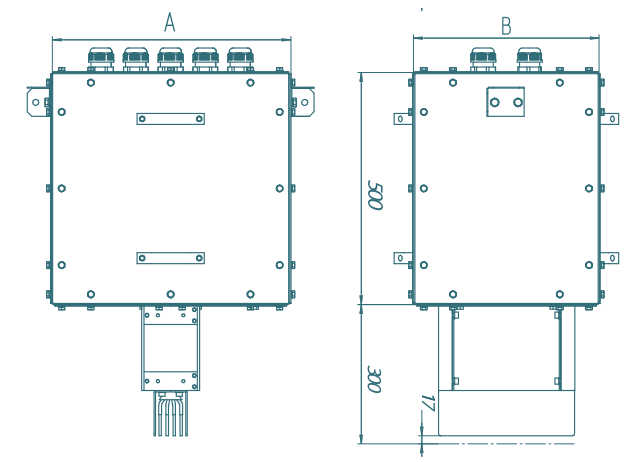


AI

Table 28

Current strength, A	3P4W busbar		3P5W busbar		3P4W	3P5W
	Article number:	A, mm	B, mm	Article number:	A, mm	B, mm
250	8802 45 65	514	274	8802 55 65	614	274
400	8804 45 65	514	274	8804 55 65	614	274
630	8806 45 65	514	274	8806 55 65	614	274
800	8808 45 65	514	274	8808 55 65	614	274
1 000	8810 45 65	514	274	8810 55 65	614	274
1 250	8812 45 65	514	400	8812 55 65	614	400
1 600	8816 45 65	514	400	8816 55 65	614	400
2 000	8820 45 65	514	400	8820 55 65	614	400
2 500	8825 45 65	514	500	8825 55 65	614	500
3 200	8832 45 65	514	600	8832 55 65	614	600
4 000	8840 45 65	514	680	8840 55 65	614	680
5 000	8850 45 65	514	898	8850 55 65	614	898
6 300	8863 45 65	514	956	8863 55 65	614	956

IP55 feed unit drawing

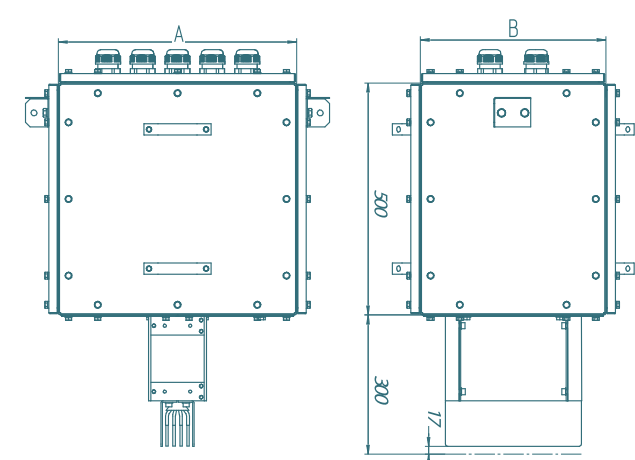


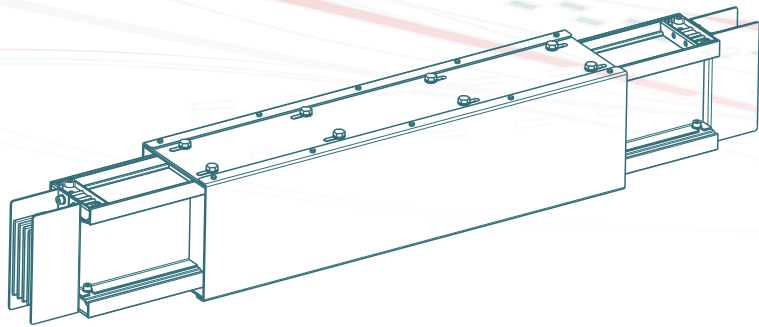
Cu

Table 29

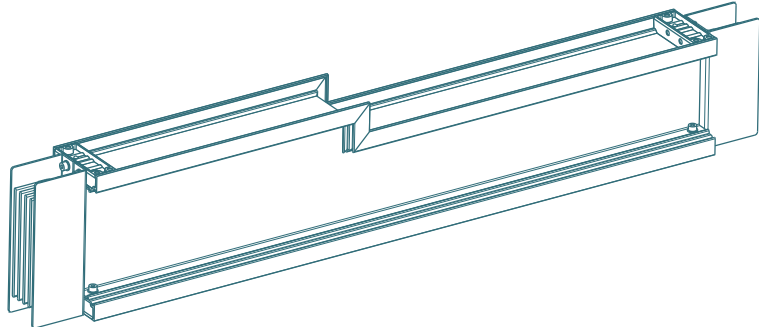
Current strength, A	3P4W busbar		3P5W busbar		3P4W	3P5W
	Article number:	A, mm	B, mm	Article number:	A, mm	B, mm
40	8904 45 65	514	274	8804 55 65	614	274
630	8906 45 65	514	274	8806 55 65	614	274
800	8908 45 65	514	274	8808 55 65	614	274
1 000	8910 45 65	514	274	8810 55 65	614	274
1 250	8912 45 65	514	274	8812 55 65	614	274
1 600	8916 45 65	514	330	8816 55 65	614	330
2 000	8920 45 65	514	330	8820 55 65	614	330
2 500	8925 45 65	514	330	8825 55 65	614	330
3 200	8932 45 65	514	540	8832 55 65	614	540
4 000	8940 45 65	514	540	8840 55 65	614	540
5 000	8950 45 65	514	808	8850 55 65	614	808
6 300	8963 45 65	514	808	8863 55 65	614	808
7 500	8975 45 65	514	808	8875 55 65	614	808

IP66 feed unit drawing

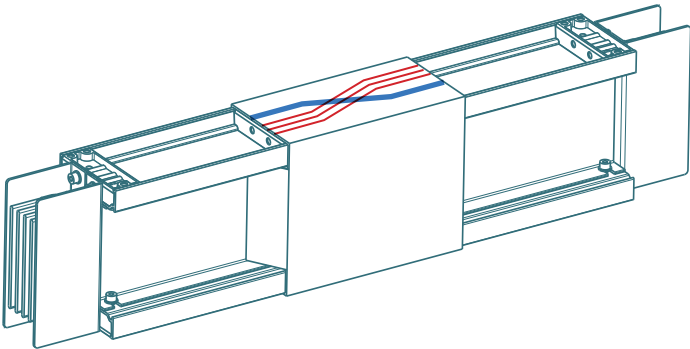




The 1500 mm thermal compensation length is used to compensate thermal expansion. It is usually installed on straight lengths of more than 30 m. In areas over 60 m two are installed, over 90 m – three, etc.
Article number **88 16 45 90**

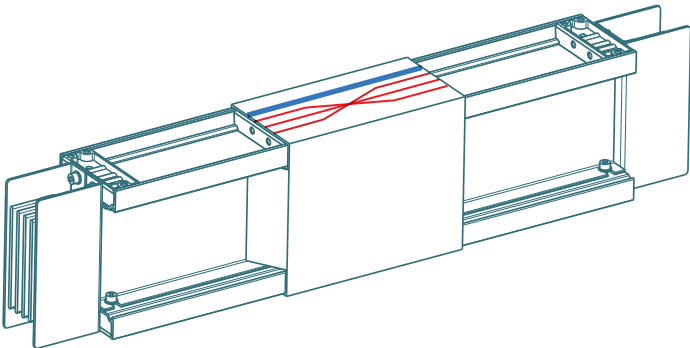


The 1500 mm lowering length is used to reduce the cross-section of the bus feeding the end user. This allows to save money by ensuring optimal distribution of electricity. We can manufacture lowering lengths with protection of a less powerful section of the line (circuit breaker, release, fuse).
Article number **88 16 45 91**



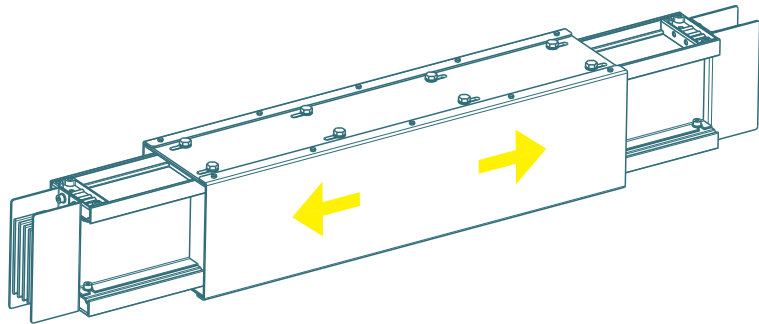
1000 mm Neutral permutation length is designed to change the alternating normal of the busbar. Minimum size – 1500 mm.

Article number **88 16 45 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 45 93**

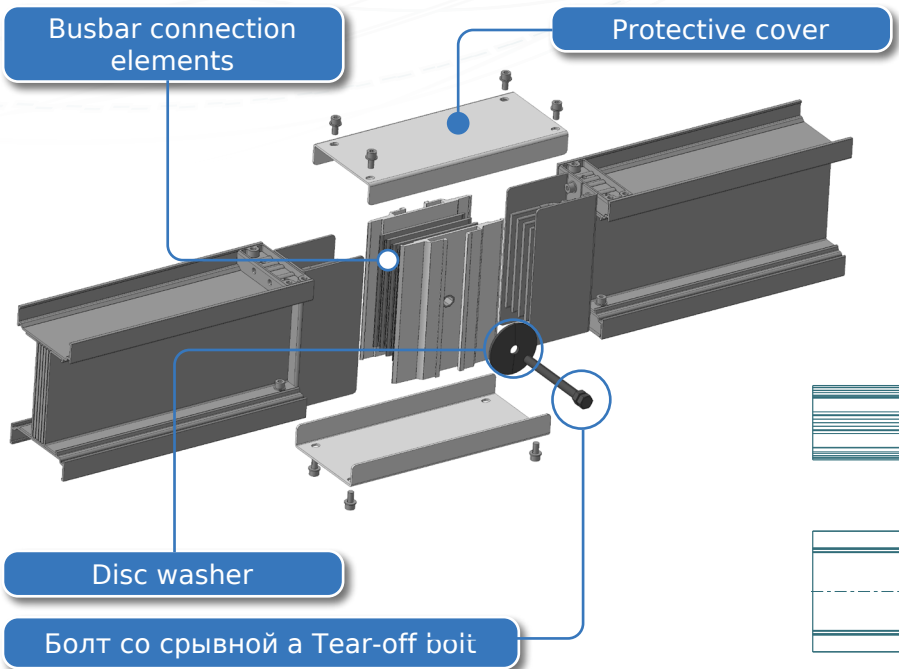


1300 mm ± 200 mm Adjustable length
Article number **88 16 45 94**

Stock number serves as an example based on the following busbar parameters: 1600A; aluminum conductors; 4 conductors; IP55.

IP55 Connecting block

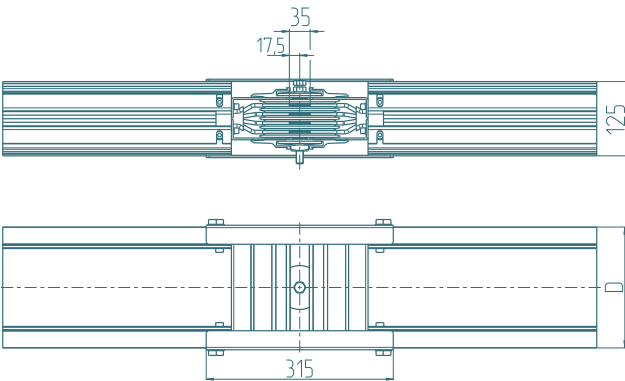
Article number **88 16 45 95**



Thanks to the design features of the connecting block, the connections do not need maintenance throughout the entire service life of the busbar.

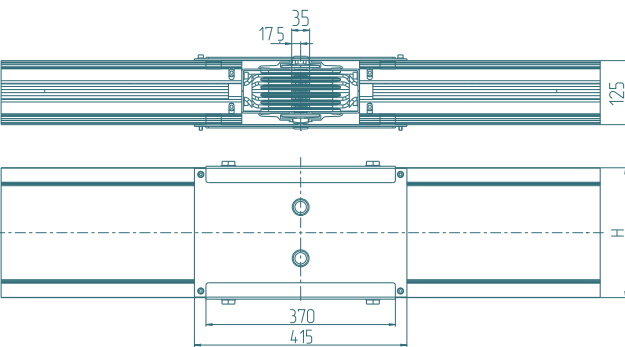
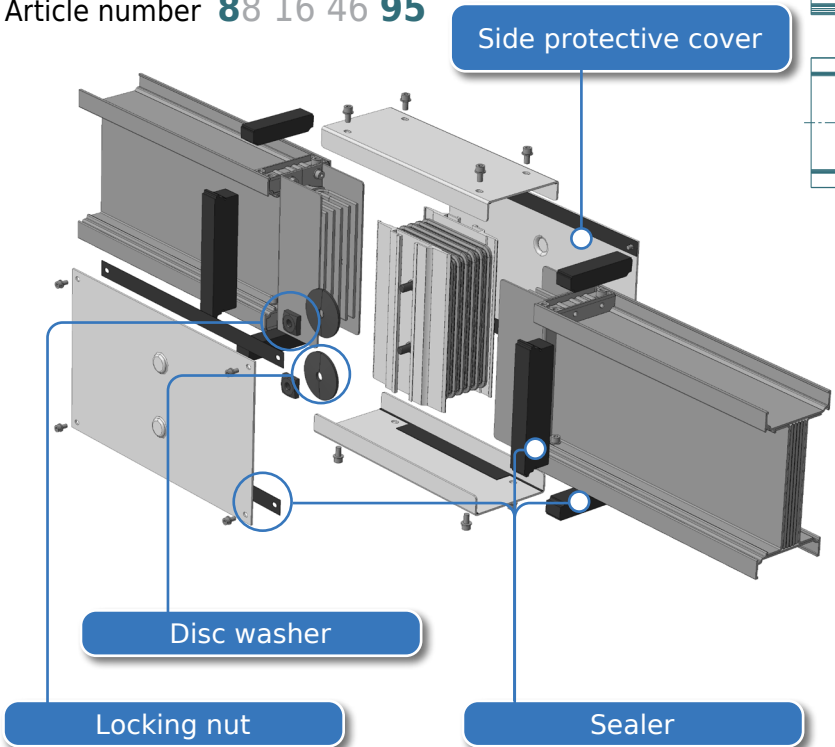
A video clip of the IP55 and IP66 busbar assembly process is available on our website:
metaenergy.ru/ru/video

You Tube



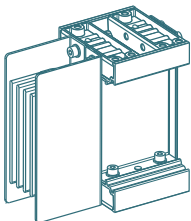
IP66 Connecting block

Article number **88 16 46 95**



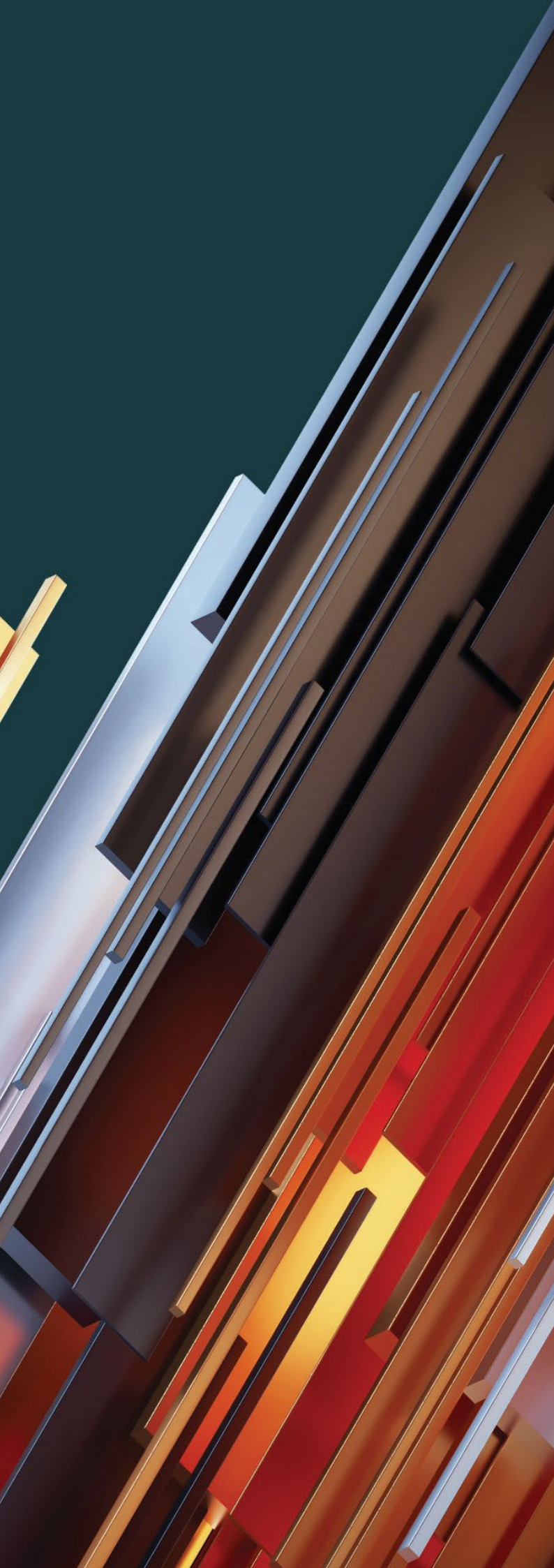
Side cap

Article number **88 32 45 99**



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





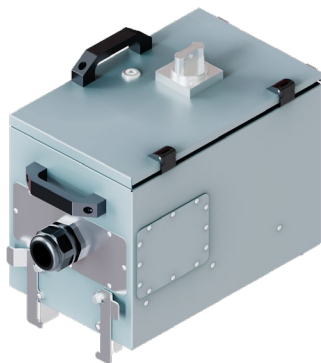
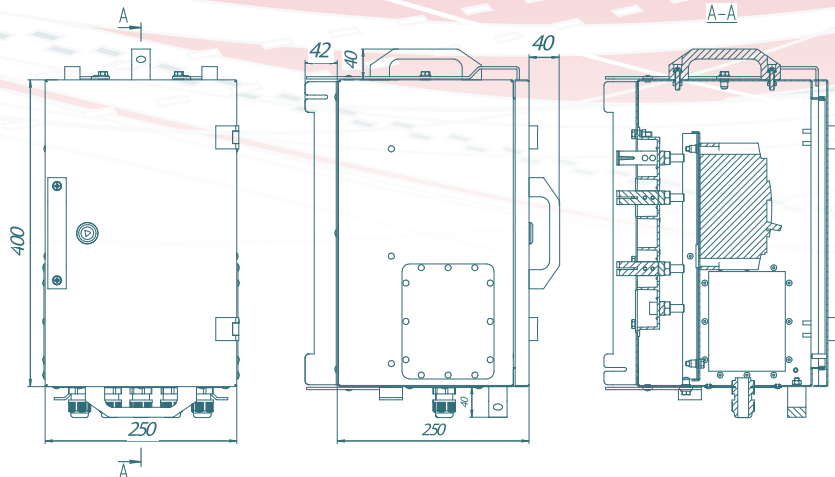
Tap-off boxes

250 TAP-OFF UNIT

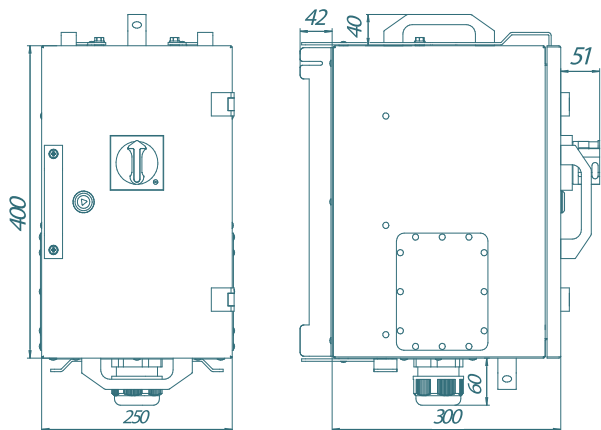
630 TAP-OFF UNIT



TO-250 Tap-off unit



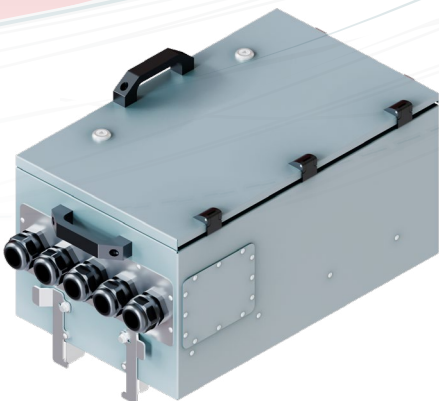
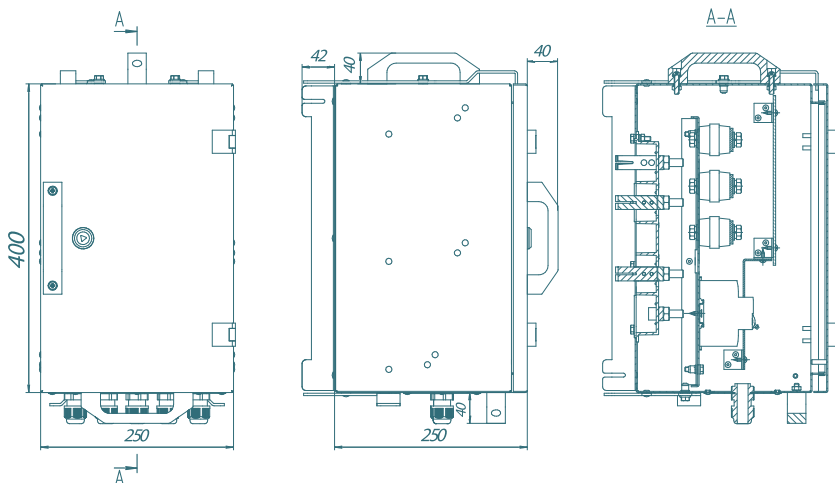
TO-250P Bolted tap-off unit



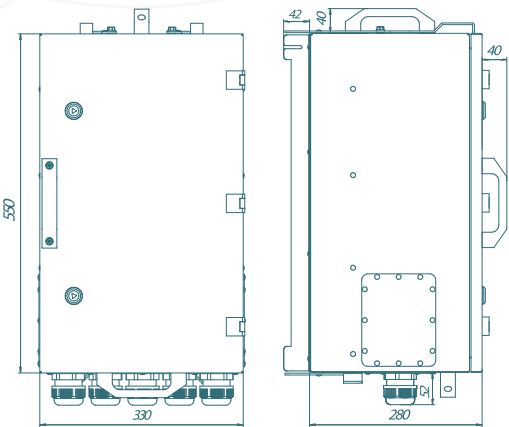
Plug-in tap-off units are installed on specially provided power take-off outlets (see page 18).



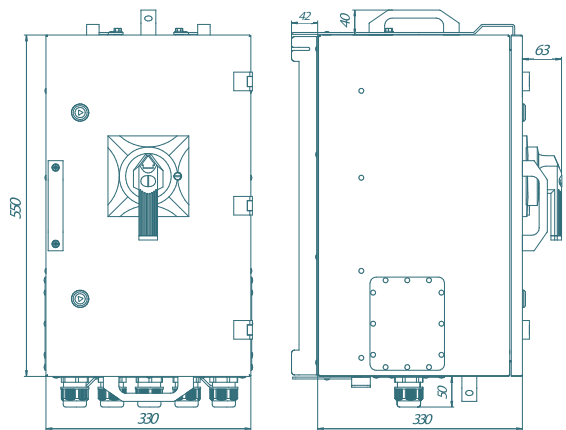
TO-250M Tap-off unit for modular devices



TO-630 Tap-off unit



TO-630P Bolted tap-off unit



Delivery is possible both with and without installed circuit breakers.

Names and dimensions of the tap-off units

Table 36

Article number	Naming	Body dimensions (LxWxH)
8701 02 00	TO-250 Tap-off unit	400x250x250
8701 02 01	TO-250P Bolted tap-off unit	400x250x300
8701 02 02	TO-250M Tap-off unit for modular devices	400x250x250
8701 06 00	TO-630 Tap-off unit	550x330x280
8701 06 01	TO-630P Tap-off unit	550x330x330

Recommendations for the selection of cables and oil seals for branch blocks

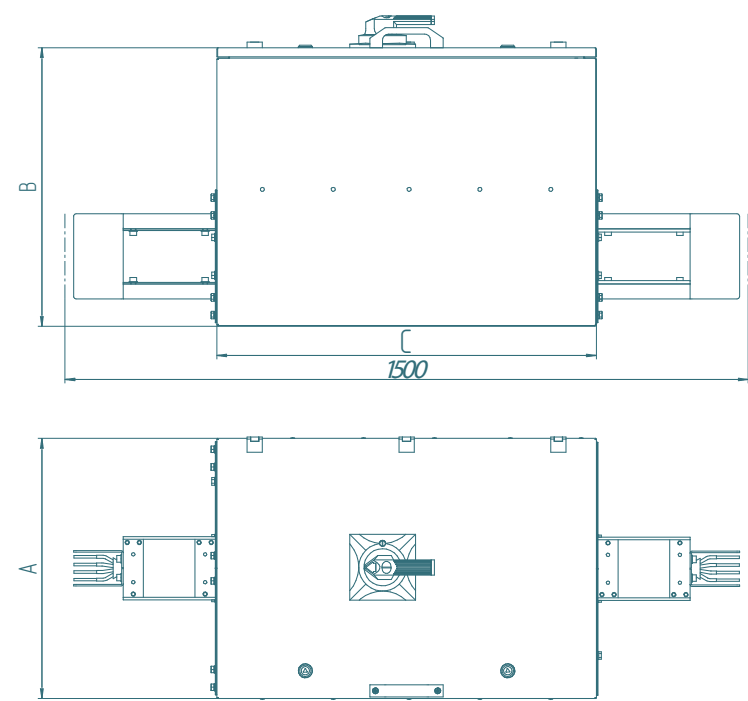
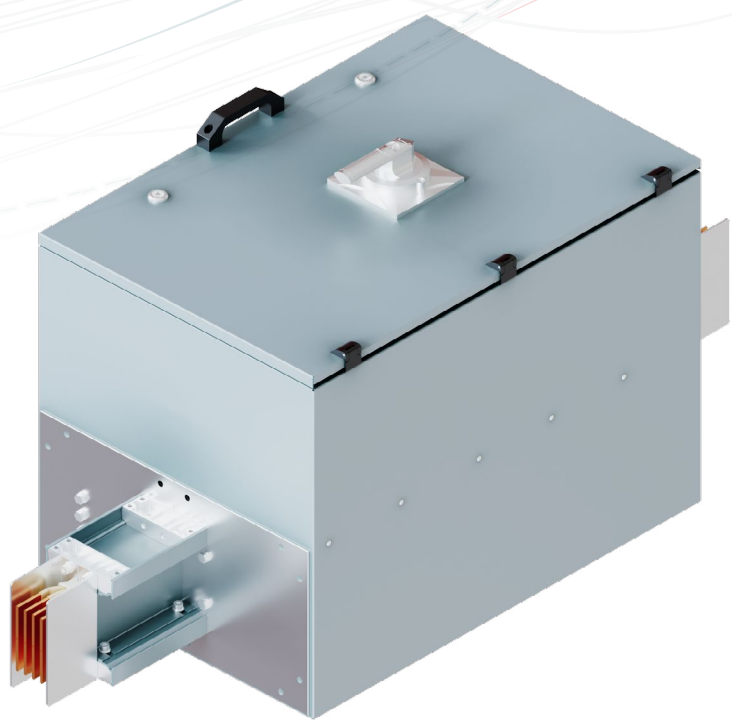
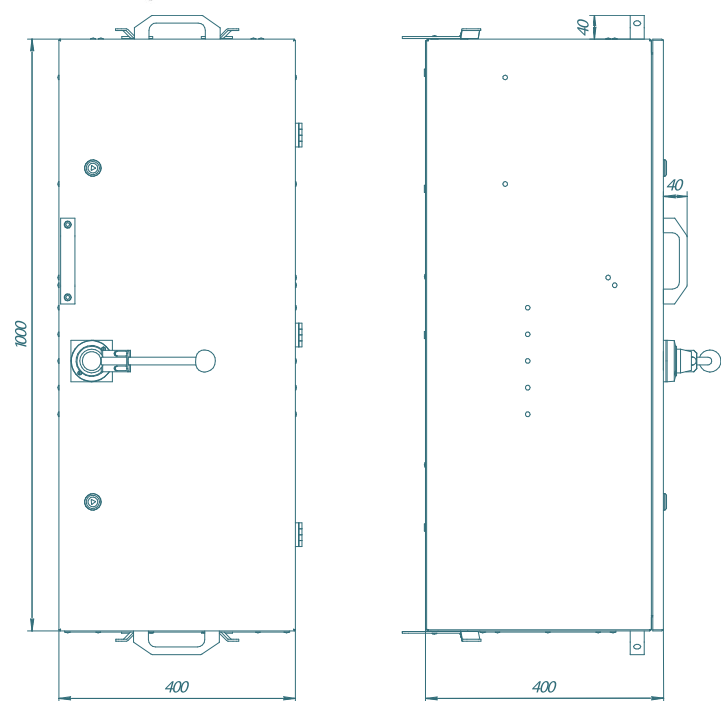
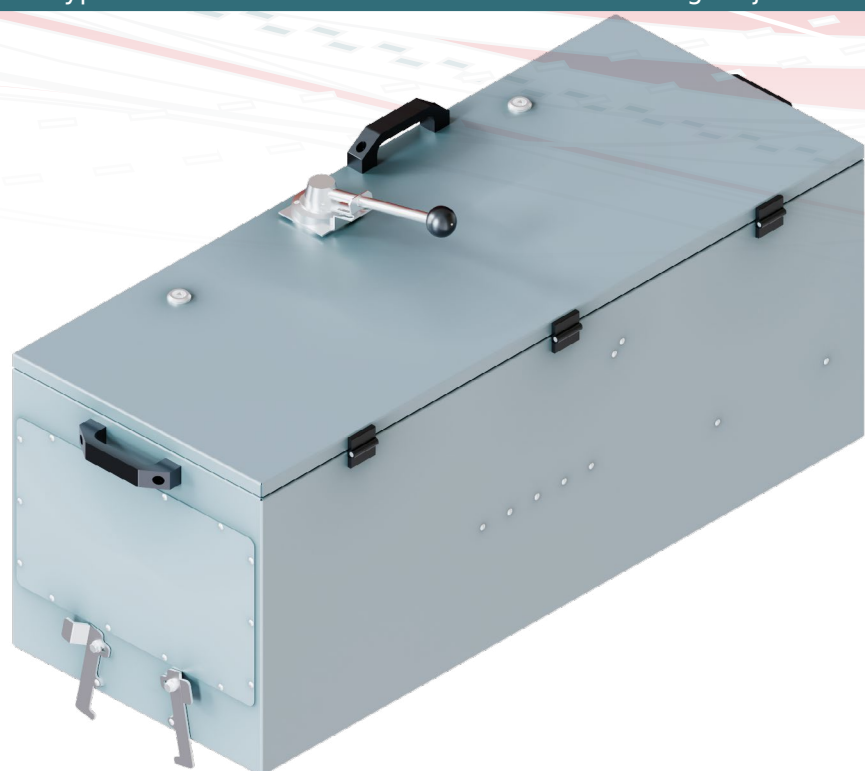
Table 37

Tap-off unit type	Rated current of the circuit breaker	Type of installed oil seal MG	Type of cable
TO-250 Tap-off unit	32A – 100A	5x(MG-16); 1x(MG-20 – MG50)	NYM – 1x3 ÷ 1x16; H07RN-F 5x6 – 5x16
TO-250P Bolted tap-off unit	32A – 100A	5x(MG-16); 1x(MG-20 – MG50)	NYM – 1x3 ÷ 1x16; H07RN-F 5x6 – 5x16
TO-250 Tap-off unit	125A – 160A	5x(MG-20); 1x(MG-50 – MG63)	NYM – 1x25 и 1x35; H07RN-F 5x25 – 5x35
TO-250P Bolted tap-off unit	125A – 160A	5x(MG-20); 1x(MG-50 – MG63)	NYM – 1x25 и 1x35; H07RN-F 5x25 – 5x35
TO-250 Tap-off unit	200A – 250A	5x(MG-25); 1x(MG63)	NYM – 1x50 и 1x70; H07RN-F 5x50 – 5x70
TO-250P Bolted tap-off unit	200A – 250A	5x(MG-25); 1x(MG63)	NYM – 1x50 и 1x70; H07RN-F 5x50 – 5x70
TO-630 Tap-off unit	300A – 400A	MG-32	NYM – 1x95 ÷ 1x150
TO-630P Bolted tap-off unit	300A – 400A	MG-32	NYM – 1x95 ÷ 1x150
TO-630 Tap-off unit	500A – 630A	For 500-600A: 5x(MG-40); For 630A: 10x(MG-32)	NYM – 1x185 ÷ 1x240; for 630A: NYM – 2x(1x120)
TO-630P Bolted tap-off unit	500A – 630A	For 500-600A: 5x(MG-40); For 630A: 10x(MG-32)	NYM – 1x185 ÷ 1x240; for 630A: NYM – 2x(1x120)

800-1600A (UP TO 3150A) TAP-OFF UNIT

SECTIONING BLOCK

Bolt-type outlet blocks are installed at the busbar legths junction places.



We can manufacture tap-off units busbar legths junction places for power take-off above 1600A.

Names and dimensions of the tap-off units Table 38

Article number	Naming	Body dimensions (LxWxH)
8701 08 00	TO-800 Tap-off unit	700x330x430
8701 10 00	TO-1000 Tap-off unit	700x330x430
8701 12 00	TO-1250 Tap-off unit	700x330x430
8701 16 00	TO-1600 Tap-off unit	700x330x430

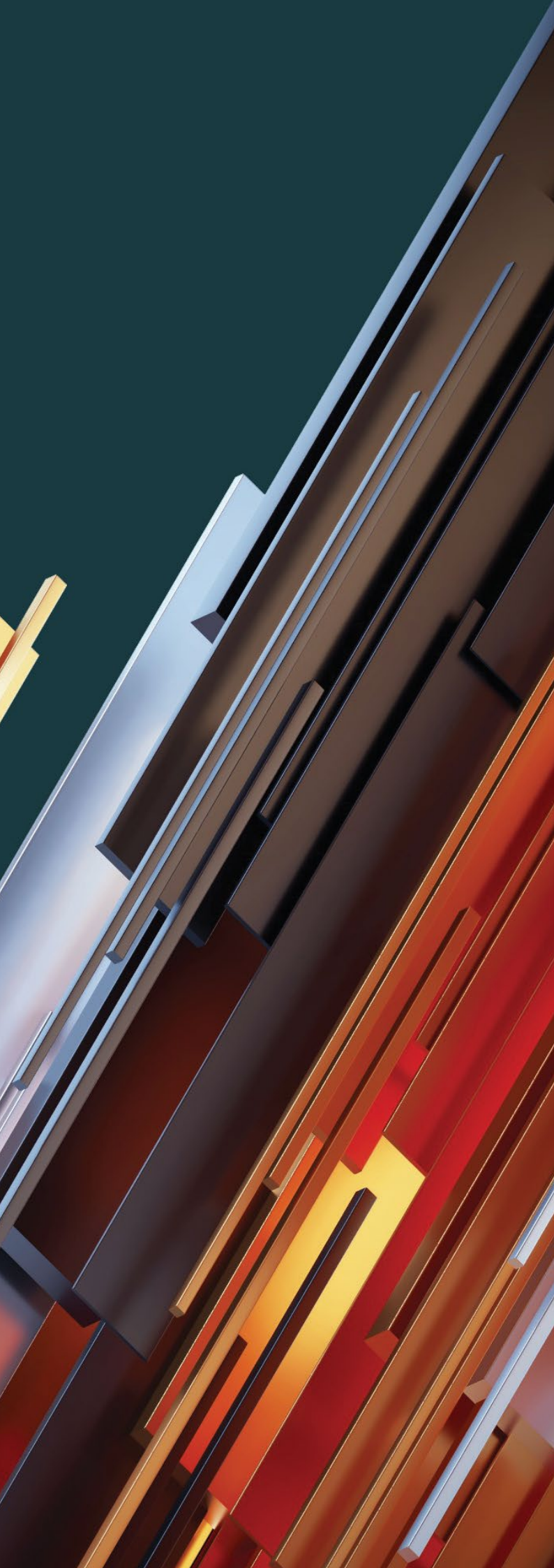
With a circiut breaker up to 1600 A.
With a load switch up to 3150 A.

Al Table 39

3P4W Busbar					3P5W Busbar			
Current strength, A	Article number	A, mm	B, mm	C, mm	Article number	A, mm	B, mm	C, mm
1 000	8701 10 84	514	450	750	8701 10 85	614	450	750
1 250	8701 12 84	514	450	750	8701 12 85	614	450	750
1 600	8701 16 84	514	450	750	8701 16 85	614	450	750
2 000	8701 20 84	514	550	750	8701 20 85	614	550	750
2 500	8701 25 84	514	550	750	8701 25 85	614	550	750
3 200	8701 32 84	514	650	900	8701 32 85	614	650	900
4 000	8701 40 84	514	650	900	8701 40 85	614	650	900

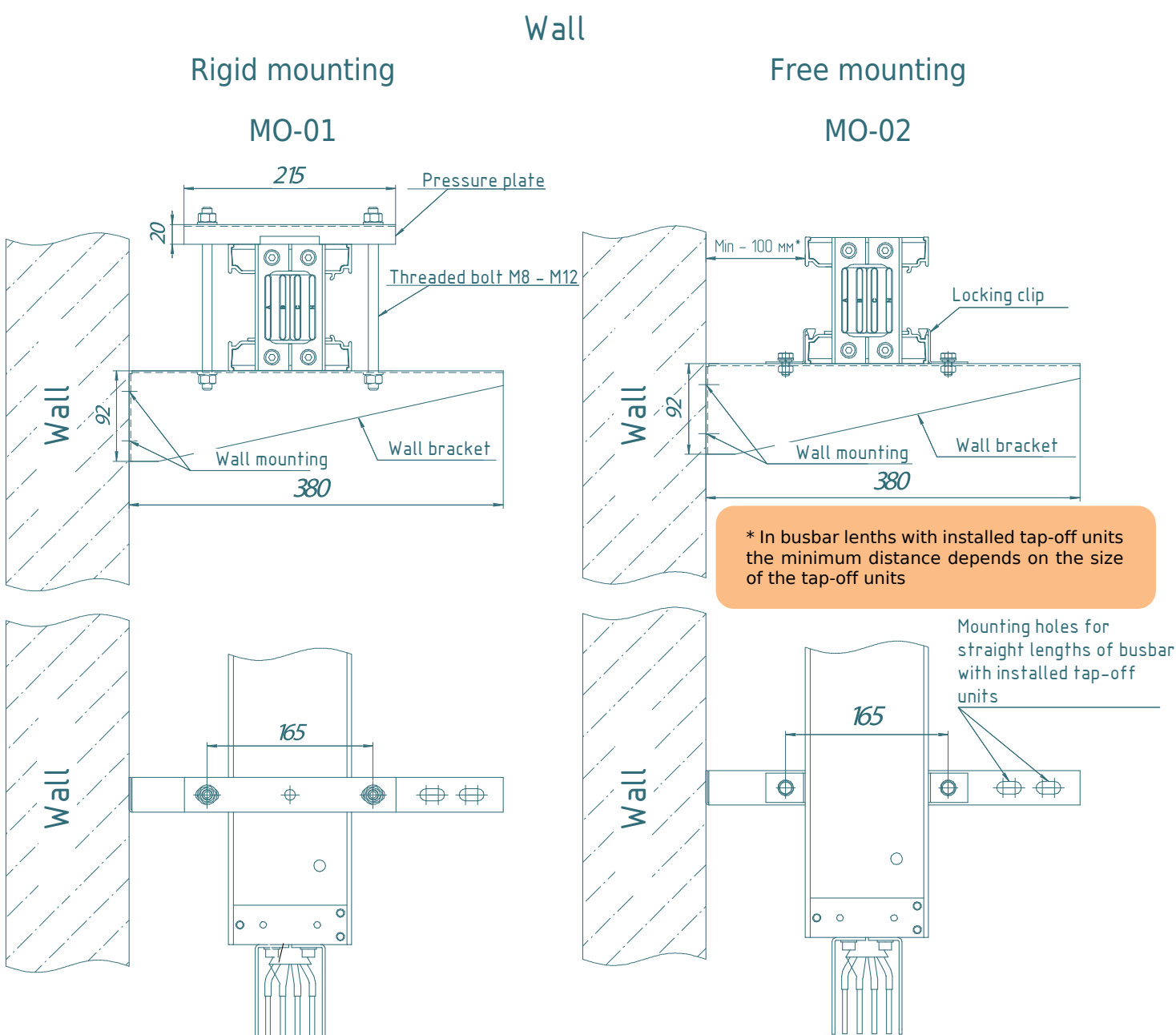
Cu Table 40

3P4W Busbar					3P5W Busbar			
Current strength, A	Article number	A, mm	B, mm	C, mm	Article number	A, mm	B, mm	C, mm
1 000	8701 10 94	514	450	750	8701 10 95	614	450	750
1 250	8701 12 94	514	450	750	8701 12 95	614	450	750
1 600	8701 16 94	514	450	750	8701 16 95	614	450	750
2 000	8701 20 94	514	550	750	8701 20 95	614	550	750
2 500	8701 25 94	514	550	750	8701 25 95	614	550	750
3 200	8701 32 94	514	650	900	8701 32 95	614	650	900
4 000	8701 40 94	514	650	900	8701 40 95	614	650	900



Mounting

MOUNTING THE BUSBAR TO THE WALL (ON EDGE)



Rigid mounting is used in areas without thermal compensation elements and for mounting elements that change the direction of the busbar (elbows, t-joints, etc.)

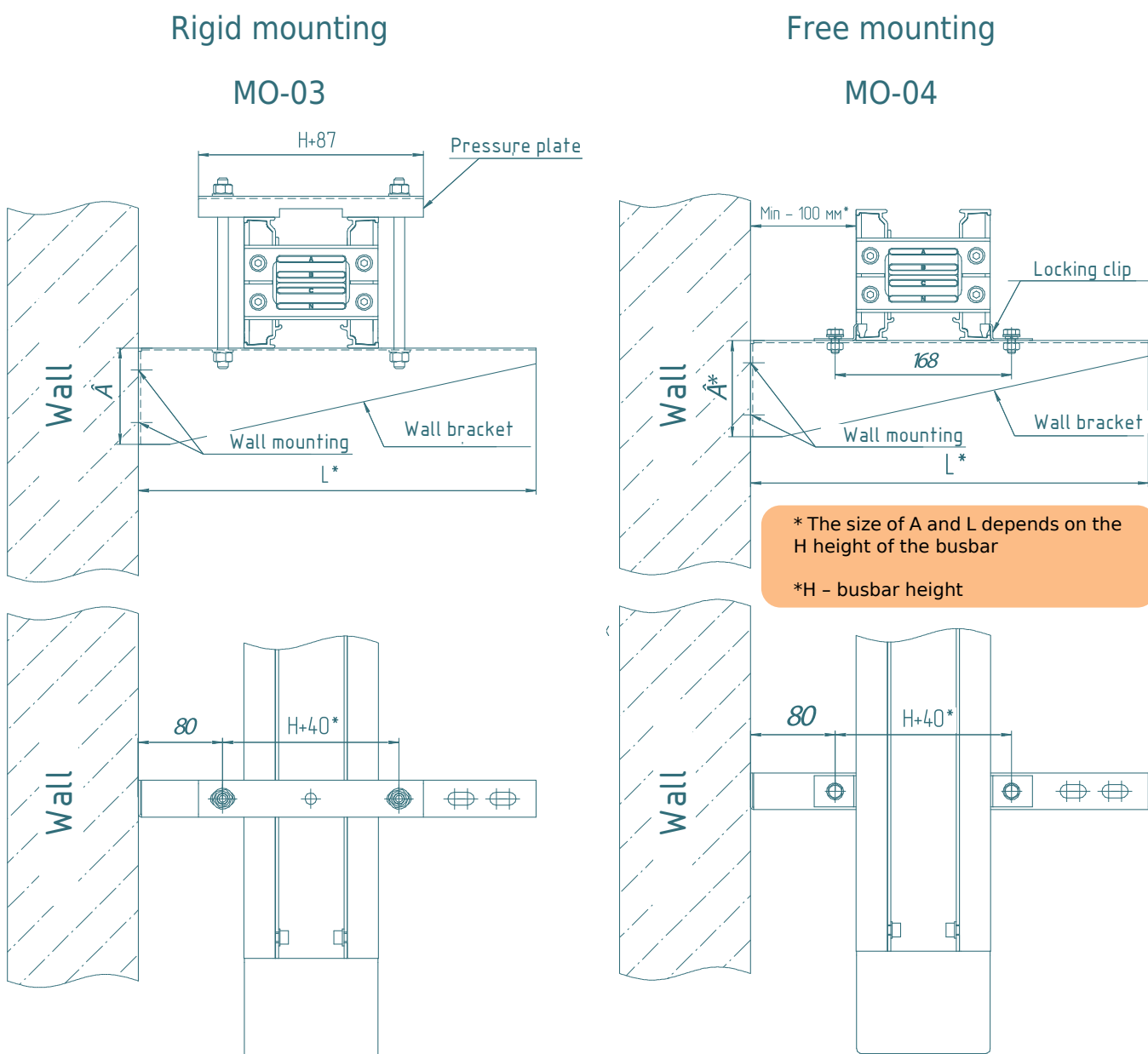
Table 41

Al	Тип	250	400	630	800	1000	1250		1600	2000	2500	3200	4000	5000	6300	Al
	KP-01	8750 02 01	8750 04 01	8750 06 01	8750 08 01	8750 10 01	8750 12 01		8750 16 01	8750 20 01	8750 25 01	8750 32 01	8750 40 01	8750 50 01	8750 63 01	
	KP-02	8750 02 02	8750 04 02	8750 06 02	8750 08 02	8750 10 02	8750 12 02		8750 16 02	8750 20 02	8750 25 02	8750 32 02	8750 40 02	8750 50 02	8750 63 02	
	KP-03	8750 02 03	8750 04 03	8750 06 03	8750 08 03	8750 10 03	8750 12 03		8750 16 03	8750 20 03	8750 25 03	8750 32 03	8750 40 03	8750 50 03	8750 63 03	
	KP-04	8750 02 04	8750 04 04	8750 06 04	8750 08 04	8750 10 04	8750 12 04		8750 16 04	8750 20 04	8750 25 04	8750 32 04	8750 40 04	8750 50 04	8750 63 04	

Cu	Тип	400	630	800	1000	1250	1600		2000	2500	3200	4000	5000	6300	7500	Cu
	KP-01	8751 04 01	8751 06 01	8751 08 01	8751 10 01	8751 12 01	8751 16 01		8751 20 01	8751 25 01	8751 32 01	8751 40 01	8751 50 01	8751 63 01	8751 75 01	
	KP-02	8751 04 02	8751 06 02	8751 08 02	8751 10 02	8751 12 02	8751 16 02		8751 20 02	8751 25 02	8751 32 02	8751 40 02	8751 50 02	8751 63 02	8751 75 02	
	KP-03	8751 04 03	8751 06 03	8751 08 03	8751 10 03	8751 12 03	8751 16 03		8751 20 03	8751 25 03	8751 32 03	8751 40 03	8751 50 03	8751 63 03	8751 75 03	
	KP-04	8751 04 04	8751 06 04	8751 08 04	8751 10 04	8751 12 04	8751 16 04		8751 20 04	8751 25 04	8751 32 04	8751 40 04	8751 50 04	8751 63 04	8751 75 04	

Table 42

MOUNTING THE BUSBAR TO THE WALL (FLAT)



Free moutingng is used on straight lengths with installed thermal compensation elements. It fixes the busbar, but does not prevent the thermal expansion of the line. It is installed on straight sections over 30m.

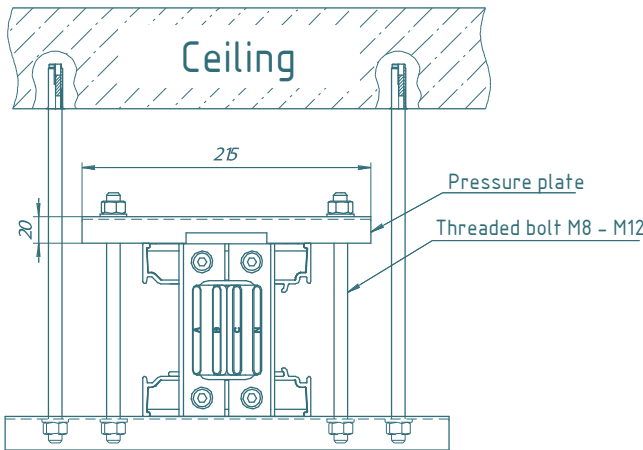
Table 41

Table 42

MOUNTING THE BUSBAR TO THE CEILING

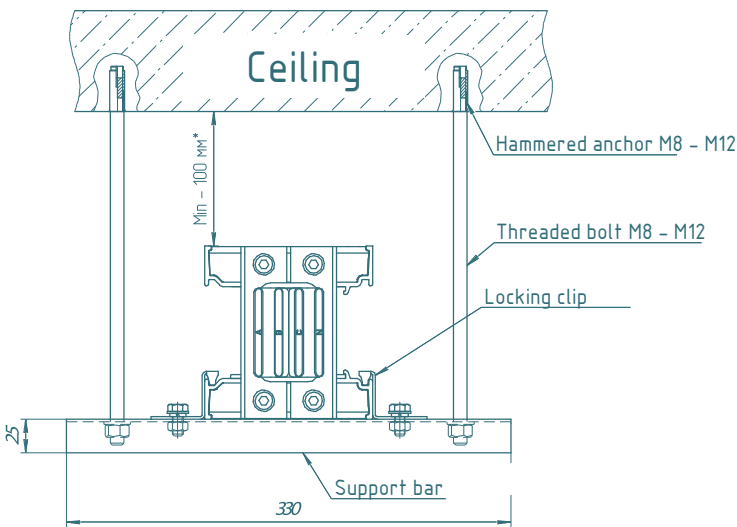
Rigid mounting

MO-05



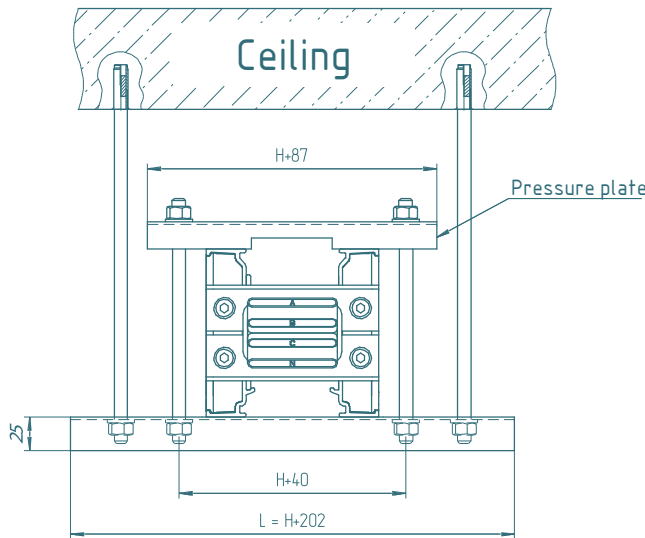
Free mounting

MO-06

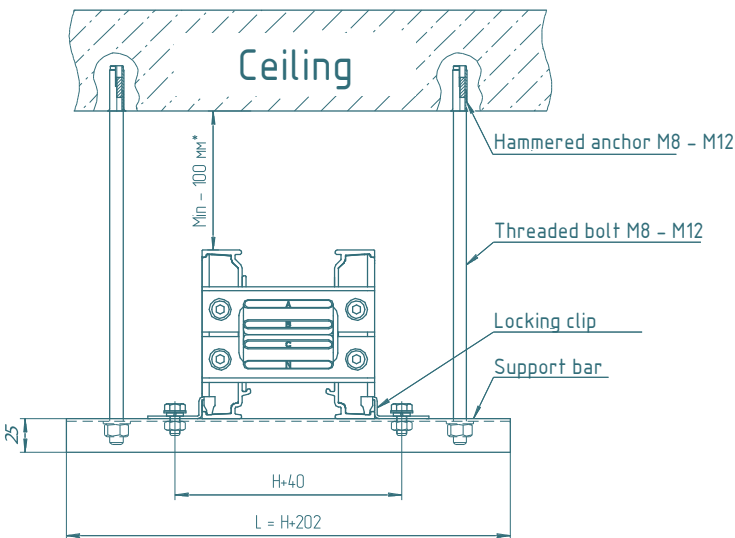


* In busbar lenth with installed tap-off units the minimum distance depends on the size of the tap-off units

MO-07



MO-08



* The size of L depends on the H height of the busbar

Table 43

Al	Тип	250	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	Al
	КР-05	8750 02 05	8750 04 05	8750 06 05	8750 08 05	8750 10 05	8750 12 05	8750 16 05	8750 20 05	8750 25 05	8750 32 05	8750 40 05	8750 50 05	8750 63 05	
Cu	КР-06	8750 02 06	8750 04 06	8750 06 06	8750 08 06	8750 10 06	8750 12 06	8750 16 06	8750 20 06	8750 25 06	8750 32 06	8750 40 06	8750 50 06	8750 63 06	Cu
	КР-07	8750 02 07	8750 04 07	8750 06 07	8750 08 07	8750 10 07	8750 12 07	8750 16 07	8750 20 07	8750 25 07	8750 32 07	8750 40 07	8750 50 07	8750 63 07	
	КР-08	8750 02 08	8750 04 08	8750 06 08	8750 08 08	8750 10 08	8750 12 08	8750 16 08	8750 20 08	8750 25 08	8750 32 08	8750 40 08	8750 50 08	8750 63 08	

Al	Тип	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	7500	Cu
	КР-05	8751 04 05	8751 06 05	8751 08 05	8751 10 05	8751 12 05	8751 16 05	8751 20 05	8751 25 05	8751 32 05	8751 40 05	8751 50 05	8751 63 05	8751 75 05	
Cu	КР-06	8751 04 06	8751 06 06	8751 08 06	8751 10 06	8751 12 06	8751 16 06	8751 20 06	8751 25 06	8751 32 06	8751 40 06	8751 50 06	8751 63 06	8751 75 06	Cu
	КР-07	8751 04 07	8751 06 07	8751 08 07	8751 10 07	8751 12 07	8751 16 07	8751 20 07	8751 25 07	8751 32 07	8751 40 07	8751 50 07	8751 63 07	8751 75 07	
	КР-08	8751 04 08	8751 06 08	8751 08 08	8751 10 08	8751 12 08	8751 16 08	8751 20 08	8751 25 08	8751 32 08	8751 40 08	8751 50 08	8751 63 08	8751 75 08	

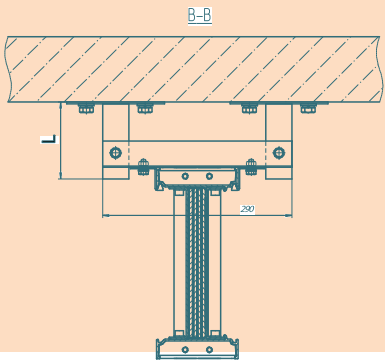
Al	Тип	250	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	Al
	КР-09	8750 02 09	8750 04 09	8750 06 09	8750 08 09	8750 10 09	8750 12 09	8750 16 09	8750 20 09	8750 25 09	8750 32 09	8750 40 09	8750 50 09	8750 63 09	
Cu	КР-10	8750 02 10	8750 04 10	8750 06 10	8750 08 10	8750 10 10	8750 12 10	8750 16 10	8750 20 10	8750 25 10	8750 32 10	8750 40 10	8750 50 10	8750 63 10	Cu
	КР-09	8751 04 09	8751 06 09	8751 08 09	8751 10 09	8751 12 09	8751 16 09	8751 20 09	8751 25 09	8751 32 09	8751 40 09	8751 50 09	8751 63 09	8751 75 09	
	КР-10	8751 04 10	8751 06 10	8751 08 10	8751 10 10	8751 12 10	8751 16 10	8751 20 10	8751 25 10	8751 32 10	8751 40 10	8751 50 10	8751 63 10	8751 75 10	

Table 44

MOUNTING THE BUSBAR VERTICALLY

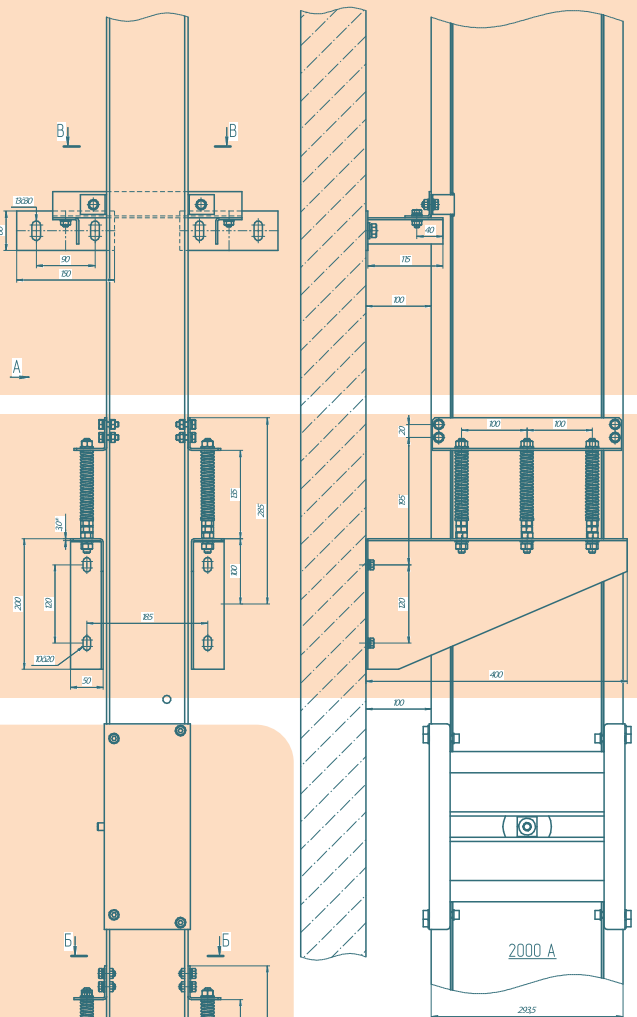
MO-00. Universal mounting for vertical installation of the busbar.

Fasteners for vertical installation of the busbar, mounted on the wall, between two floors. They serve to prevent horizontal movement of the busbar and are suitable for all rated currents. The size of L depends on the specific project. Standard is 118 mm.



MO-09. Spring suspension for 2000A busbar, wall mounting.

Used when it's necessary to mount vertically installed busbars. Mounted on the wall, between two floors. The spring suspension is attached to the busbar using M8 bolts. The number of springs varies depending on the rated current of the busbar.



MO-10. Spring suspension for busbar 2000A, floor mounting. Used to support the weight of vertically mounted busbars. The spring suspension is attached to the busbar using M8 bolts. The number of springs varies depending on the rated current of the busbar.

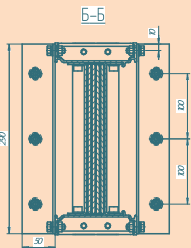


Table 43

Al	Тип	250	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	Al
	КР-05	8750 02 05	8750 04 05	8750 06 05	8750 08 05	8750 10 05	8750 12 05	8750 16 05	8750 20 05	8750 25 05	8750 32 05	8750 40 05	8750 50 05	8750 63 05	
Cu	КР-06	8750 02 06	8750 04 06	8750 06 06	8750 08 06	8750 10 06	8750 12 06	8750 16 06	8750 20 06	8750 25 06	8750 32 06	8750 40 06	8750 50 06	8750 63 06	Cu
	КР-07	8750 02 07	8750 04 07	8750 06 07	8750 08 07	8750 10 07	8750 12 07	8750 16 07	8750 20 07	8750 25 07	8750 32 07	8750 40 07	8750 50 07	8750 63 07	
	КР-08	8750 02 08	8750 04 08	8750 06 08	8750 08 08	8750 10 08	8750 12 08	8750 16 08	8750 20 08	8750 25 08	8750 32 08	8750 40 08	8750 50 08	8750 63 08	

Al	Тип	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	7500	Cu
	КР-05	8751 04 05	8751 06 05	8751 08 05	8751 10 05	8751 12 05	8751 16 05	8751 20 05	8751 25 05	8751 32 05	8751 40 05	8751 50 05	8751 63 05	8751 75 05	
Cu	КР-06	8751 04 06	8751 06 06	8751 08 06	8751 10 06	8751 12 06	8751 16 06	8751 20 06	8751 25 06	8751 32 06	8751 40 06	8751 50 06	8751 63 06	8751 75 06	Cu
	КР-07	8751 04 07	8751 06 07	8751 08 07	8751 10 07	8751 12 07	8751 16 07	8751 20 07	8751 25 07	8751 32 07	8751 40 07	8751 50 07	8751 63 07	8751 75 07	
	КР-08	8751 04 08	8751 06 08	8751 08 08	8751 10 08	8751 12 08	8751 16 08	8751 20 08	8751 25 08	8751 32 08	8751 40 08	8751 50 08	8751 63 08	8751 75 08	

Table 44

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.

Table 45

No	Electric current	Recommended dimensions of flexible busbars		
1	250A	I × IFCB 3×20×1		
2	400A	I × IFCB 5×20×1	I × IFCB 4×24×1	I × IFCB 3×32×1
3	630A	I × IFCB 5×32×1	I × IFCB 8×24×1	I × IFCB 10×20×1
4	800A	I × IFCB 8×32×1	I × IFCB 6×40×1	I × IFCB 5×50×1
5	1000A	I × IFCB 4×100×1	I × IFCB 5×80×1	I × IFCB 6×63×1
6	1250A	I × IFCB 5×100×1	I × IFCB 8×63×1	I × IFCB 10×50×1
7	1600A	I × IFCB 8×100×1	I × IFCB 10×80×1	I × IFCB 10×63×1
8	2000A	I × IFCB 10×120×1	I × IFCB 12×100×1	I × IFCB 10×100×1
9	2500A	I × IFCB 10×160×1	II × IFCB 8×100×1	II × IFCB 10×80×1
10	3200A	I × IFCB 10×160×1	II × IFCB 10×120×1	II × IFCB 12×100×1
11	4000A	II × IFCB 10×160×1	III × IFCB 10×100×1	III × IFCB 10×120×1
12	5000A	II × IFCB 10×160×1	IV × IFCB 12×120×1	VI × IFCB 10×100×1
13	6300A	III × IFCB 10×160×1	VI × IFCB 12×120×1	
14	7500A	IV × IFCB 10×160×1		

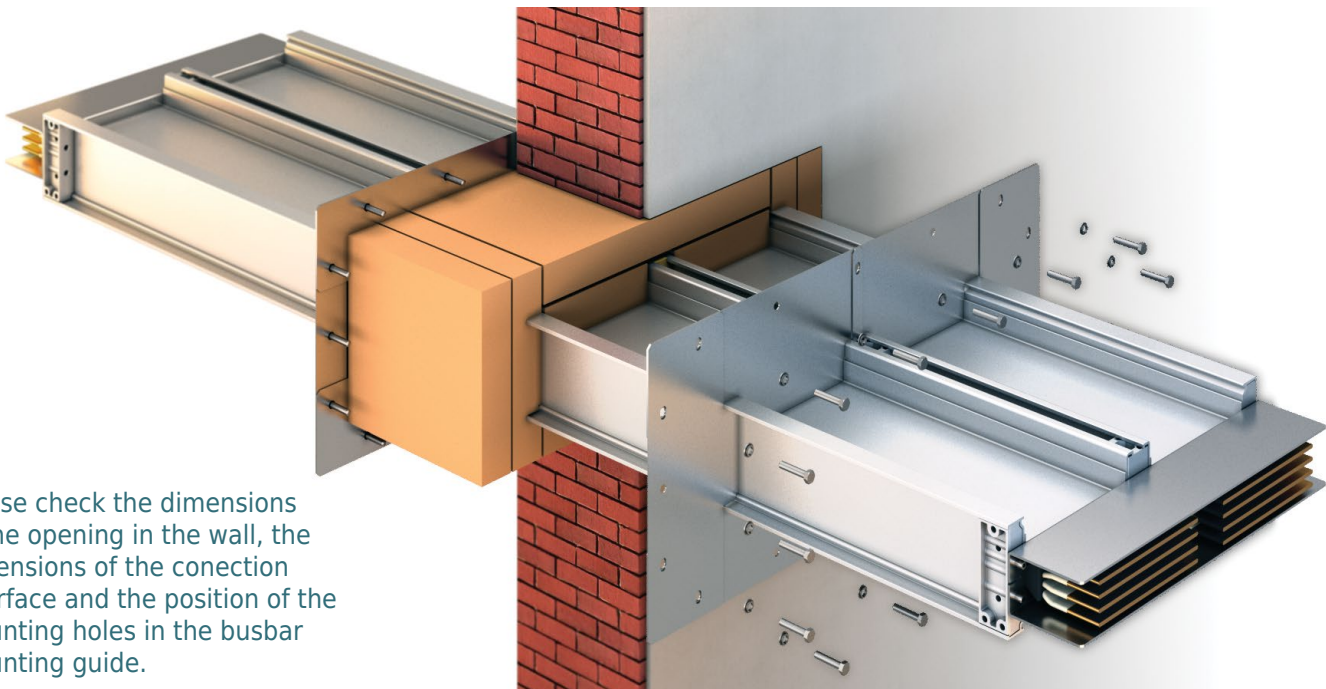
At the request of the customer, we can produce:

- 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



Article number	Naming	Busbar type
8720 01 00	FRB-1 Fire-resistance barrier	single
8720 02 00	FRB-2 Fire-resistance barrier	double
8720 03 00	FRB-3 Fire-resistance barrier	triple

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.

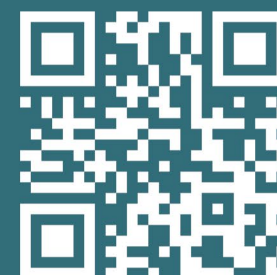
It also gives full moisture protection – the busbar can be placed underwater to a depth of 1m for up to 30 minutes.

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).

Detailed information about the cast-insulated busbar can be found on our website or in the IP68 Cast Busbar catalog.

METAENERGY.RU



MOLDED

P68

BUSBAR

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

