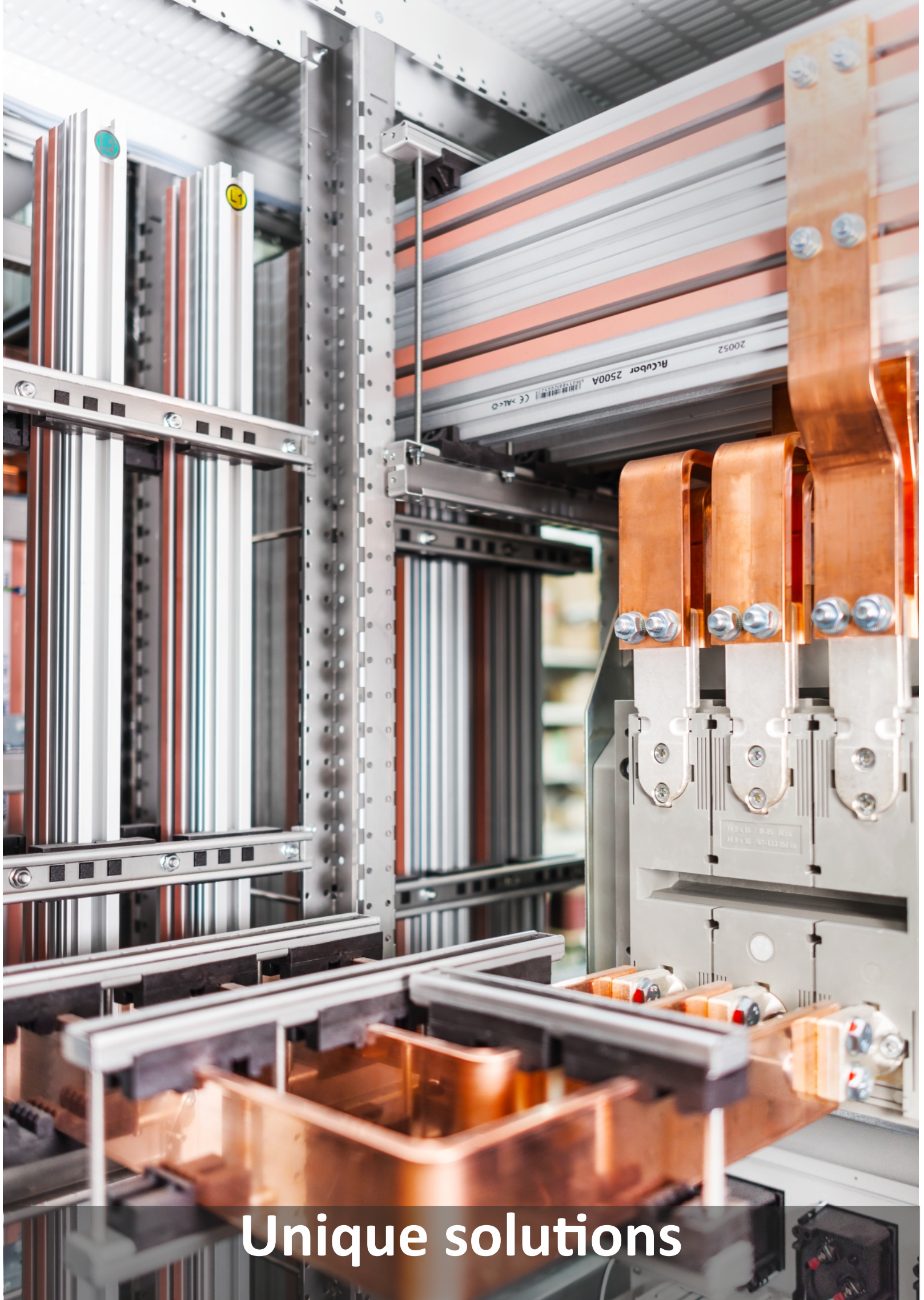


*We've Got The Power!*  
**Zenex**  
*- Sp. z o.o. -*

**Zenergy System  
up to 6300A**



**...considered in smallest details**



**Unique solutions**

Technical Performance

General characteristic

Rated current (In)	4400A at IP-55 and 6300A at IP-30	
Rated operational voltage (Ue)	up to 1000V AC / 700V DC	
Rated insulation voltage (Ui)	up to 1500V AC / 1800V DC	
Rated withstand voltage at network frequency 50 Hz	3800V	
Rated impulse withstand voltage	12000V	
Nominal frequency	50Hz	
Rated short-time / peak withstand current	(Icw) (1s)	(Ipk)
-main copper busbars up to 3x100x10	100kA	220kA
-main aluminum busbars up to 3x2500A AlCubar	100kA	220kA
-copper distribution busbars up to 2x100x10	85kA	187kA
-copper distribution busbars up to 60x10	65kA	143kA
-collecting busbars N, PE	60kA	132kA
Working conditions - ambient air temperature	-55°C dry to +40°C humid	
Degree of protection	IP30 – back plate and top plate ventilated, doors without gasket IP55 – plain back plate and top plate, doors with gaskets	
Resistance to mechanical impacts	IK10 / IK08 with transparent doors	
Insulation class	Class I	
Design	Indoor / outdoor installations	



Technical Performance

Framework dimensions, and functionality

More than twenty frame widths:

- Cable compartment  
W = 300; 600;
- Cable compartment or device compartment  
W = 400; 450;
- Device compartment or cable compartment  
W = 650; 850; 1000; 1200;
- Device compartment with busbar compartment  
W = 650+150; 650+200; 650+300; 650+400;
- Automation equipment plain plate compartment  
W = 800; 1200;
- Double frames  
W = 650+650; 650+850; 850+850; 850+400;
- Tripple frames  
W = 150+650+300; 150+650+400;



<p><b>Symmetric</b></p> <p><b>Frame</b></p>	<p><b>Double</b></p> <p><b>Frame</b></p>	<p><b>Multi</b></p> <p>2200</p> <p>1200</p> <p><b>Height</b></p>
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## Technical Performance

### Framework dimensions, and functionality

Six standard heights:

- H = 1200; 1400; 1600; 1800; 2000; 2200mm

Four available depth

- D = 300; 400; 600; 800mm

- All sides symmetric frame, allow to turn frame anyhow, also doors are sides universal
- Unique double, and even tripple frames make this system really cheap solution
- The number of height and depth is unparalleled by other manufacturers
- It's system that can completely integrate power distribution with automation systems
- Corner frame, and double doors increase user safety, and extend functionality

Automation



Ready

Double

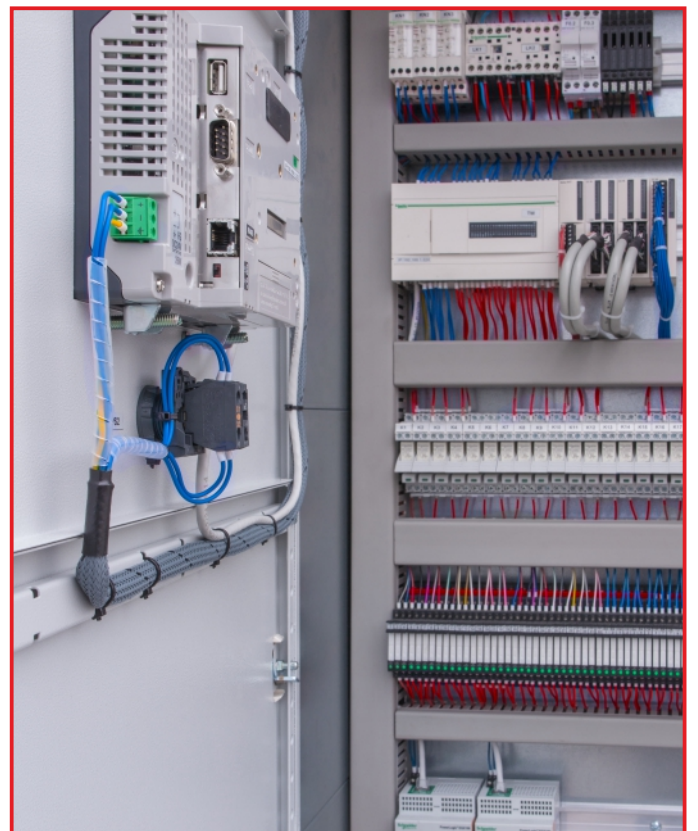


Doors

Corner



Frame



Technical Performance

## Advantages of Zenergy system

- The system ensure total compatibility for all known electrical equipment producers, like ABB; EATON, Hyundai, Legrand; Schneider Electric, and others on request. This is a key advantage in ensuring a high level of installation dependability. Design has been validated by type tests as per standards EN 61439-1; EN 61439-2; EN 61439-5;
- Every construction element is zinc coated, so it's the most resistant framework in aggressive enviroment.
- From current 1600A all internal supports are made of austenitic stainless steel, resulting with low active power losses, and low noise level.





<b>Low</b>	<b>Zinc</b>	<b>Austenitic</b>
	<b>Zn</b>	
<b>Noise</b>	<b>Coated</b>	<b>Support</b>

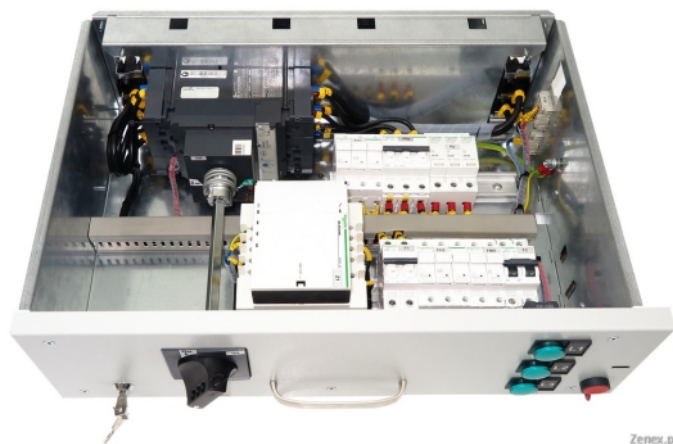


Technical Performance

## Advantages of Zenergy system

- Modular design of Zenergy switchboards can be modified easily to integrate new functions as needed.
- Maintenance operations or panel modification are fast, thanks to modular design, second internal doors, additional internal separations, shielded transfer terminals.
- The result is: Total safety for qualified personnel.
- Zenergy system combine all possible busbars layouts that other producers offers, together with dedicated mounting plates, or unique universal flexible plates makes it very adaptive solution.

<b>Multi</b>	<b>Flexible</b>	<b>Draw</b>
		<b>MCC</b>
<b>Busbars</b>	<b>Montage</b>	<b>Out</b>



Zenex.pl



Zenex.pl



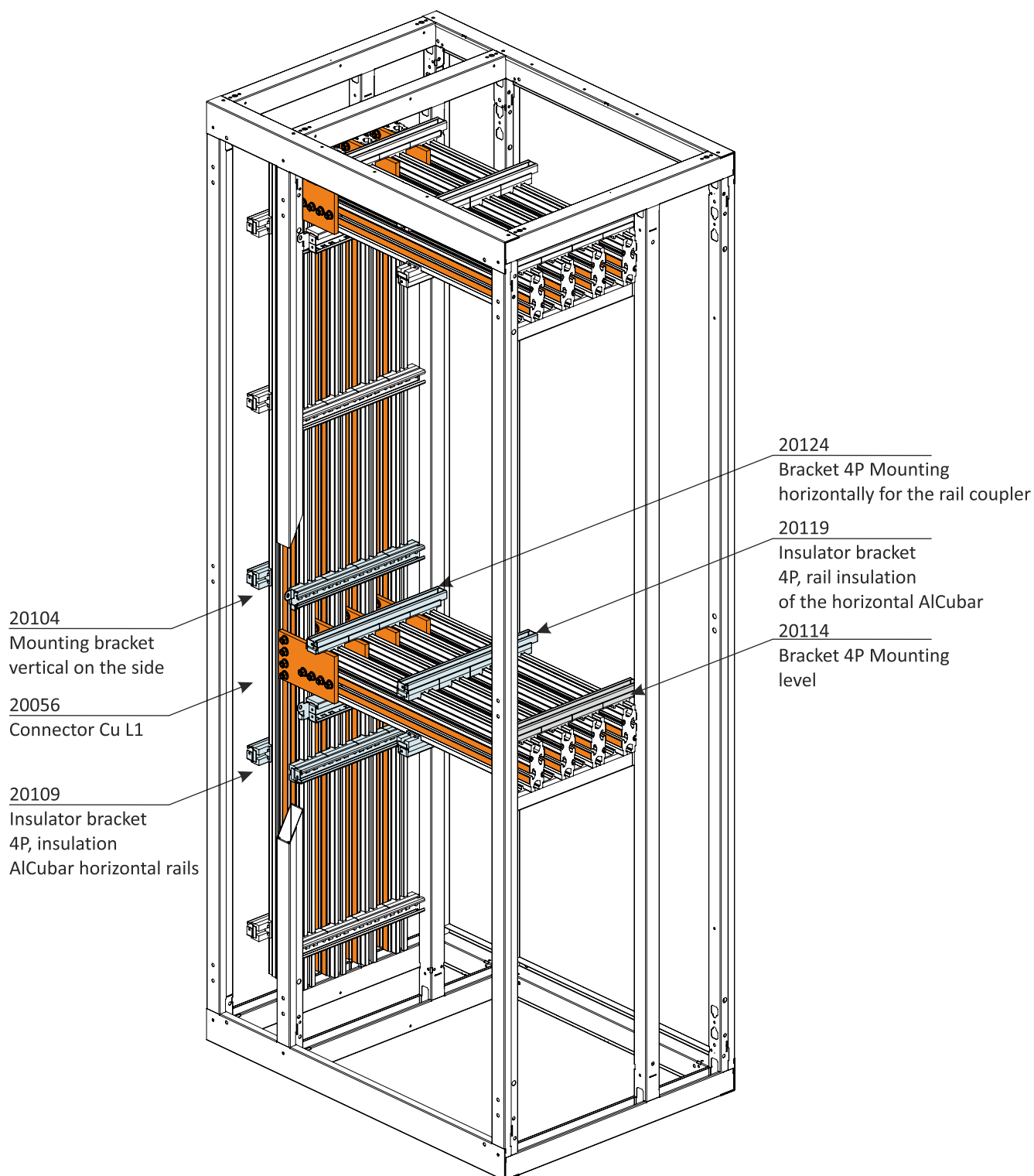
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Example Drawing

Alcubar H50, H80, H100 system presentation

Main energy distribution:

- Horizontal rails in fields W650 / W650+150mm
- Vertical rails in the rail compartment 150/200mm





## About the Product

### AlCubar profiled rail busbars - change ideas

From the days when the low-voltage switchgear used simple, painted aluminum flat busbars nothing has changed, except that today the flat copper busbar dominates. People have seen many disadvantages in aluminum: too soft electrical conductor, cannot withstand high short-circuit currents, kneading of aluminum joints, that cause subsequent overheating. Oxidation, cracking, and low conductivity of electricity in relation to copper. Is that true?



It is said that the conductivity of aluminum is only 66% of the conductivity of copper - yes, if we take into consideration the conductivity of the cross-sectional area. However, aluminum is much lightest: 2.7kg/dm<sup>3</sup>, while the copper weighs 8,9kg/dm<sup>3</sup>. Increasing cross-section \*1,508 we get the same conductivity of aluminum. Now the needed volume of the conductors, with the same nominal currents we need 4kg/dm<sup>3</sup> of aluminum, and 8,9kg/dm<sup>3</sup> of copper. So aluminum is twice lighter!

Comparing the prices of raw materials, where copper is more than twice as expensive, it follows that aluminum is not by half, but four times cheaper!!! So why there is domination of copper in the LV switchgears?

Many manufacturers from decades develops their own electrical conductors, for example cuponal that are still rectangular flat bars, with plenty of copper around the aluminum core of conductor, unfortunately this solution is not much lighter and much cheaper – mostly up to 20% cheaper. In addition, for example, for rated current 2500A to use cuponal conductor we have to use 2x100x10 rail instead of copper bars 2x80x10. The increase of this dimension means that we will not be able to connect most of such cuponal rails to the breakers designed for copper bars 80x10.

There were also developed various types of profile rails, copper, or aluminum. For the first type the only advantage could be ease of connection, because most often it is C-shape rail, where special screws gives the possibility of connecting the output circuit anywhere. However, the price of copper profiled rails is very high and manufacturers of switchgears prefers to make holes punching even at

the entire length of the usual flat copper. The second type is the profiled aluminum rail, which gives the same flexibility to connect, however, creates problems with connecting to copper flat busbars - you have to use cuponal washers. In addition, there is a question, what with the aforementioned disadvantages of aluminum?

Aluminum oxidizes - yes! But best is to use anodized profile which simultaneously has a larger hardness, corrosion resistance, higher thermal emissivity than copper, anodized coating further improves the electrical insulation and aesthetics. Aluminum is soft or crack - not necessarily! Today's aluminum-magnesium-silicon alloys are giving twice the stiffness of copper, thereby their short-circuit withstand is higher, and there is no kneading of aluminum at joints. Because pure aluminum profile has its disadvantages, and the anodized surface is an insulator, the best option is to cover the rail at the contact with a thin layer of copper.

Different technologies of surfacing by copper have been known for decades. In the market from many years there are profiled aluminum busbars, coated partly with copper, so why the copper busbar still dominates?

Zenex as a manufacturer of Zenergy switchgear system, aiming to continuously improve the quality and price competitiveness has developed a system AlCubar profiled rails, which we believe has ruled out all the disadvantages of earlier solutions, and used up the advantages of aluminum. Cuponal solution is not perfect – same as copper bar bending possibility is advantage, but causing trouble with the size and a small profit in price.

Conclusion is that connecting apparatus like ACB or MCCB still need to be made by flat copper busbar,

which is easy forming and has the smallest dimensions. There is no possibility to develop a copper profiles that would be convenient in connection but not extremely expensive, as well as cannot use pure aluminum posing problems with connection.

That is why we focused on rigid anodized aluminum profiles, coated with copper. Dedicated exclusively on the straight sections of switchgear system internal busduct. The important thing was to develop a profile shape, that would be easily connectable between it, giving the possibility to mount in standard insulators, and connect without any complicated fasteners intermediary with flat copper bars.

The biggest drawback of existing profiles so far is illusory profit - producers set market price around 30% cheaper than the price of a standard flat copper busbar.

Unfortunately, these profiles are available in certain lengths, mostly two-meter, which when installed in the switchgear have a useless waste that absorbs theoretical profit. The only remaining ease of installation is that the profiles contain a groove providing the possibility to insert the screw in any place. However, the already known solutions are usually with only one T-shaped groove.



Straight 50x10 copper connector for H50 AlCubar profile

## About the Product

### AlCubar profiled rail busbars - change ideas

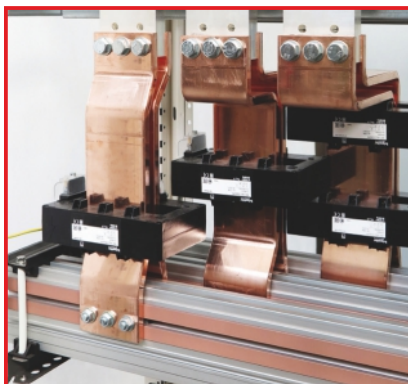
For example, for a profile of rated current of 2500A it is very difficult to connect in one place two copper bars 80x10. Also there is the need to use special shaped copper connectors to connect neighboring fields. Such solution in fact is having so much drawbacks, that appears much more expensive than standard copper busbars solution.

Therefore, during development of a profiled rail AlCubar 2500A we focused on how to develop an electrical conductor that unfortunately must have a larger cross-section and have availability to connect directly two copper busbars in one place, and maintain proper clearances between the individual phases.

The solution is two-sided, and even as additional option can be connected by four flat copper busbars, which had none of previous profiled busbars manufacturer. In our solution two-sides groove connection does not require a thicker electrical conductor, which in most cases you cannot afford due to the width of small phase distances in switchgear panel. It has appear that the most important was shape of the profile. Minimal size has been achieved by making it symmetric by the midpoint of the profile, with offset between the grooves in case of largest cross-section. It appeared that additional 8mm thickness, which takes AlCubar comparing to two flat copper 80x10 with 10mm spacing, for the current interval 2500 is only advantage! Because of it thickness short-circuit withstand is much higher in comparison with flat copper busbars. Advanced profile shape also significantly increase the heat dissipation surface area so the temperature increases are less than their copper counterparts.

The breakthrough fact which brings a significant gain for the customer is that we deliver profiles in any length specified by the customer without cutting costs, so that the client does not have any waste. Additionally we developed specific insulators dedicated to Zenergy switchgear that the customer can connect simple copper connector between the fields of the switchgear, just as it is done in the case of copper busbars. Taking into consideration the costs of the entire system, including insulators,

AlCubar Profile	Section [mm <sup>2</sup> ]	Section comp. to Cu	Circuit [mm]	Circuit comp. to Cu	Weight comp. to Cu	Equivalent of Cu bar
H27	360	x1.20	210	x2.62	36%	30x10
H50	670	x1.34	400	x3.33	41%	50x10
H80	1160	x1.45	460	x2.50	44%	80x10
H100	2500	x1.56	510	x1.42	47%	2x80x10



**Bilateral connection of 2x80x10 mm busbars**

special screws to connect the profiles, and copper connectors, for 2500A switchgear rated current with AlCubar is:

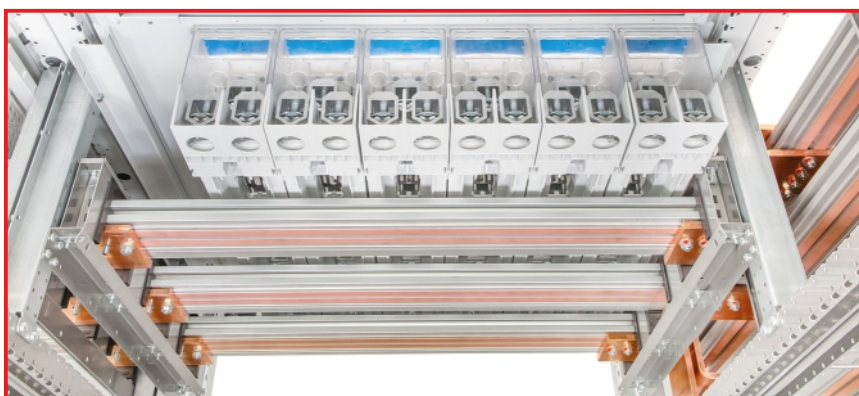
- more than 50% lighter
- 40% cheaper material

Moreover, the system AlCubar significantly reduces installation time by eliminating laborious copper bar cutting and punching. Another advantage is the possibility of making additional connection of output circuit anywhere, anytime even at short maintenance breaks. In the case of copper bridges it is often very difficult, or it require removal of the busbars



**Two sides connection to AlCubar by copper rails 80x10**

from switchgear for modification. The AlCubar system provides several fastening elements in the form of a hammer screws, T-slot nuts that can provide connection of the output circuits anywhere along the rail AlCubar without removing adjacent existing connections. Also there are used sets from single till quadruple screws for fast and reliable (reinforced) connection between AlCubar profiles, or for output circuits.

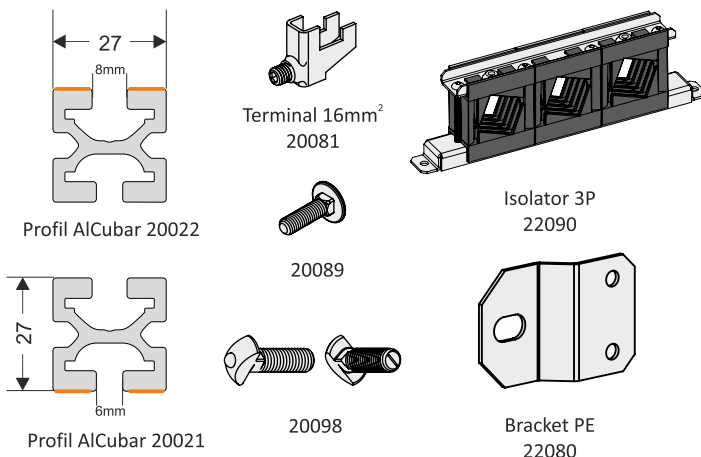
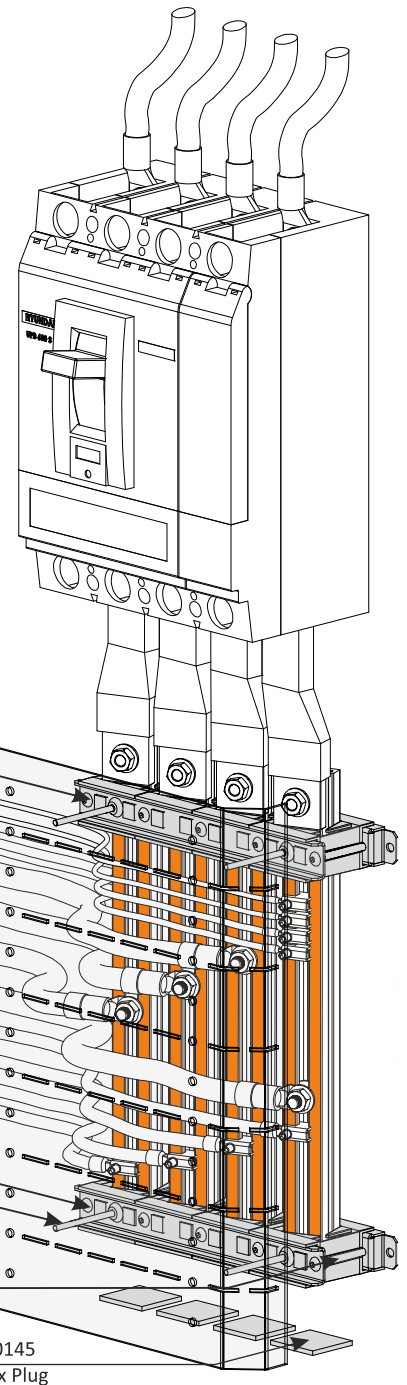


<b>Energy</b>	<b>Even</b>	<b>Multi</b>	<b>Bi-metal</b>	<b>2 sided</b>
<b>Max Δt +55K</b>	<b>-40%</b>	<b>+/- 1mm</b>	<b>Al/Cu</b>	
<b>Safe</b>	<b>Cheaper</b>	<b>Length</b>	<b>Busbar</b>	<b>Grooves</b>

**Wall and standing constructions up to 800A**

**Selection of the AlCubar H27 rail system**

Type	Referencje
AlCubar - anodized profile Al-Cu H27, 360mm <sup>2</sup> , h=27mm, 1 Cu groove, 6mm	20021
AlCubar - anodized profile Al-Cu H27, 360mm <sup>2</sup> , h=27mm, 1 Cu groove, 8mm	20022
Terminal U16/6, 16mm <sup>2</sup> , for 6mm groove, set of 100pcs, can be mounted anywhere	20080
Terminal U16/8, 16mm <sup>2</sup> , for 8mm groove, set of 100pcs, can be mounted anywhere	20081
Hammer screw M6x16, cl. 8.8 + washers, nuts, cpl. 100pcs, inserted from the end of the profile	20086
Hammer screw M6x20, cl. 8.8 + washers, nuts, cpl. 100pcs, inserted from the end of the profile	20087
Hammer screw M8x20, cl. 8.8 + washers, nuts, cpl. 100pcs, inserted from the end of the profile	20088
Hammer screw M8x25, cl. 8.8 + washers, nuts, cpl. 100pcs, inserted from the end of the profile	20089
Sliding screw, hammer screw with ball M8x25 for groove 8mm + washers, nuts, nuts, cpl. 20pcs	20098
Sliding screw, hammer screw with ball M8x39 for groove 8mm + washers, nuts, nuts, cpl. 20pcs	20099
Bridge cover, polycarbonate 40x240x2000mm	20129
PE bracket	22080
Nut with washer M5 x 0,8 - set of 100 pcs.	31901
M5x50 countersunk metal bolt, galvanized - set of 100 pcs.	31906
M5x70 countersunk metal bolt, galvanized - set of 100 pcs.	31907
Mushroom screw M5X50 for AlCubara 630A - 100pcs.	31923



**Isolator**

Type	W=300 7 Mod	W=400 12 Mod	W=600 24 Mod	W=800 35 Mod	W=1000 46 Mod
H27, 1P, rail N	-	22098	22098	22098	22098
H27, 3P	-	22090	22091	22092	22093
H27, 4P	-	22094	22095	22096	22097

**Permissible current (A) for a given conductor temperature increment**

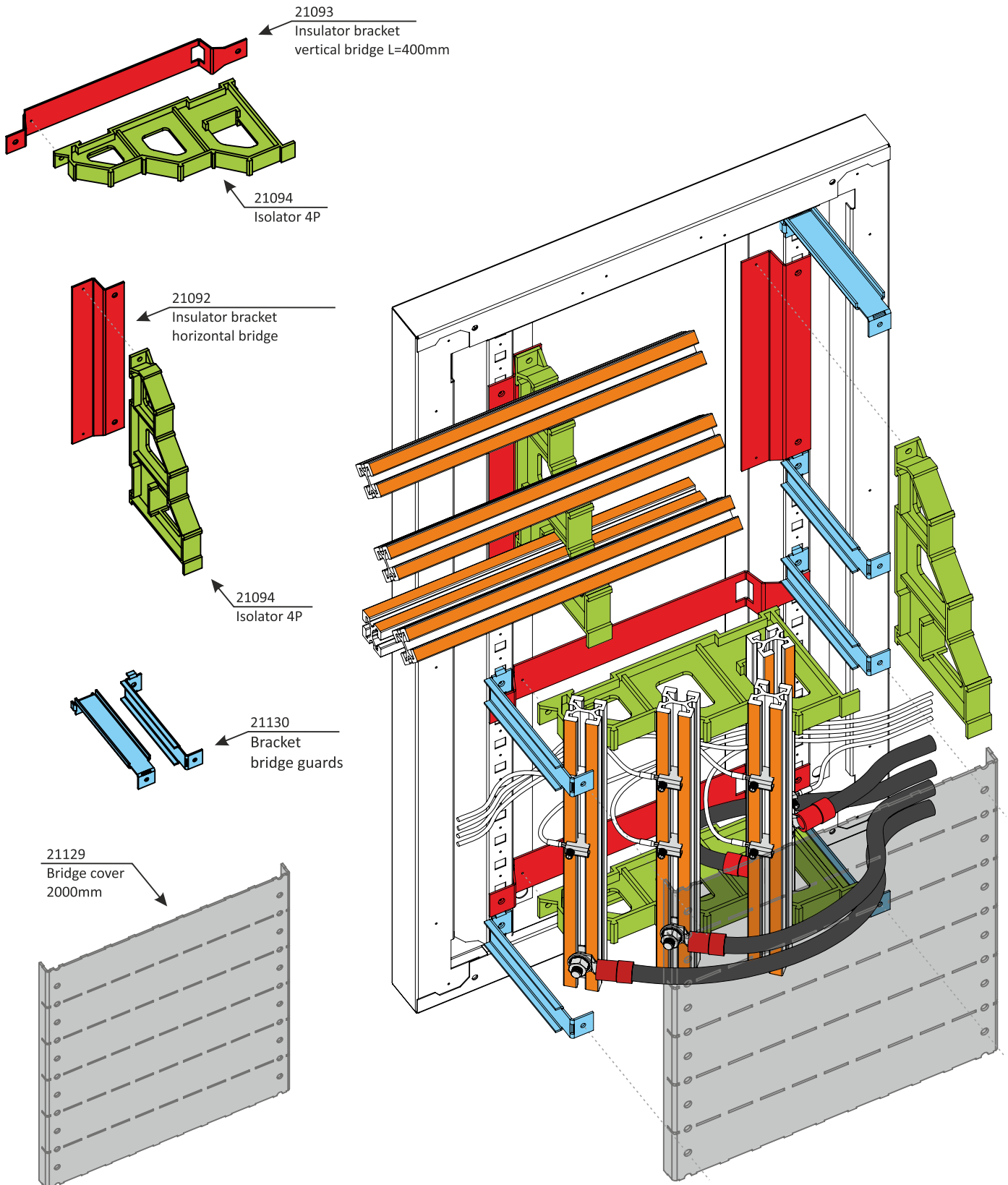
Profil AlCubar	Degree protections	Δt 20 K	Δt 25 K	Δt 30 K	Δt 35 K	Δt 40 K	Δt 45 K	Δt 50 K	Δt 55 K	Δt 60 K	Δt 65 K	Δt 70 K
H27	IP≥43	370	440	500	550	590	<b>630</b>	665	700	735	765	800
H27	IP≤31	455	510	560	610	<b>655</b>	700	740	<b>785</b>	<b>840</b>	870	900

<b>Energy</b>	<b>Even</b>	<b>Multi</b>	<b>Bi-metal</b>	<b>2 sided</b>
<b>Max Δt +55K</b>	<b>-40%</b>	<b>+/- 1mm</b>	<b>Al/Cu</b>	
<b>Safe</b>	<b>Cheaper</b>	<b>Length</b>	<b>Busbar</b>	<b>Grooves</b>

**Wall and standing constructions up to 800A**

**Brackets for AlCubar H27 profiles**

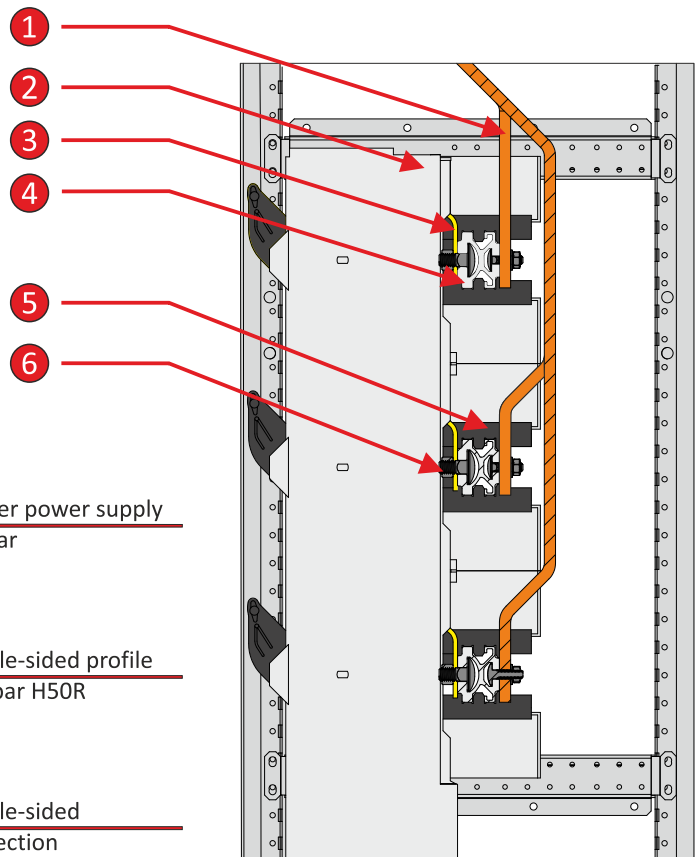
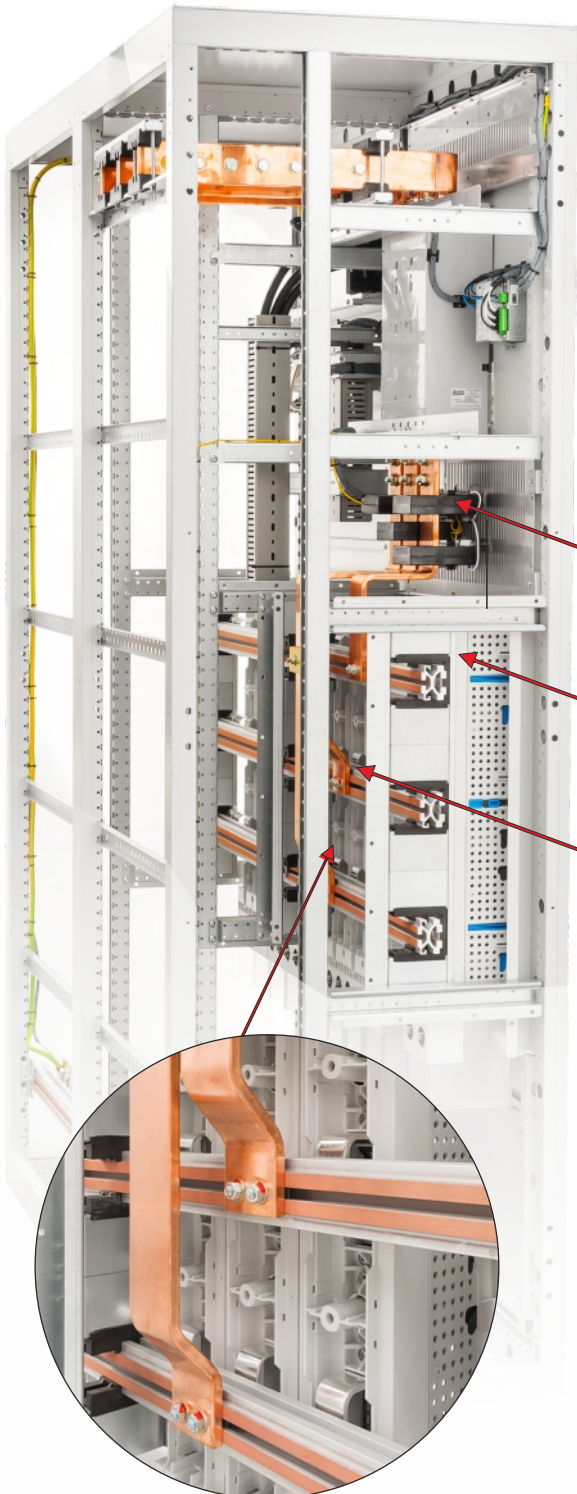
Accessories



AlCubar H50R / H100R profile

The advantages of double - sided  
Alcubar H50R / H100R profile application

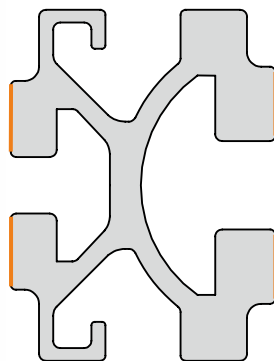
- Dedicated for standard switch disconnectors and typical connection screws
- Screws in profile don't interfere with each other and can be located in any position
- Double - sided profile allows to connect power supply busbars from one side and switch disconnectors from another. Such solution eliminate screws collision occurring in case on solid busbars installation.



Copper power supply flat bar

Double-sided profile AlCubar H50R

Double-sided connection



- 1 Copper power supply flat bars
- 2 Fuse switch disconnecter
- 3 Fuse switch disconnectors connection
- 4 Double-sided connection AlCubar H50R
- 5 Insulator 3P ref.: 36110
- 6 Square neck bolt 12x35mm

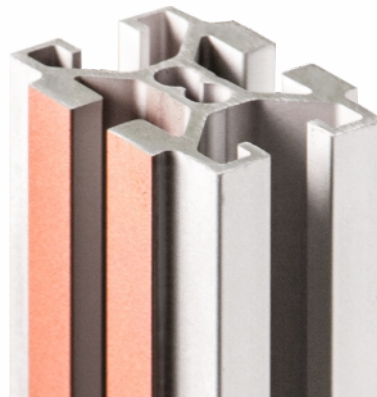
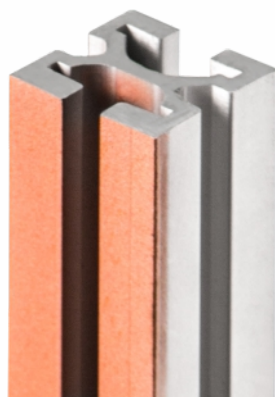
... flexible mounting

# AlCubar busbars



**H27**

**H50/H50R**

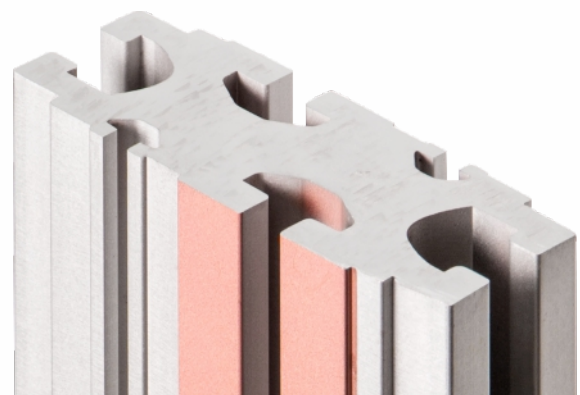
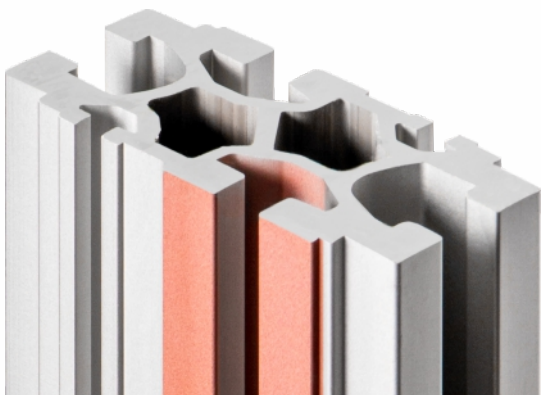


...change ideas



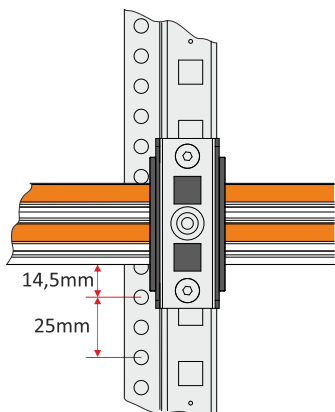
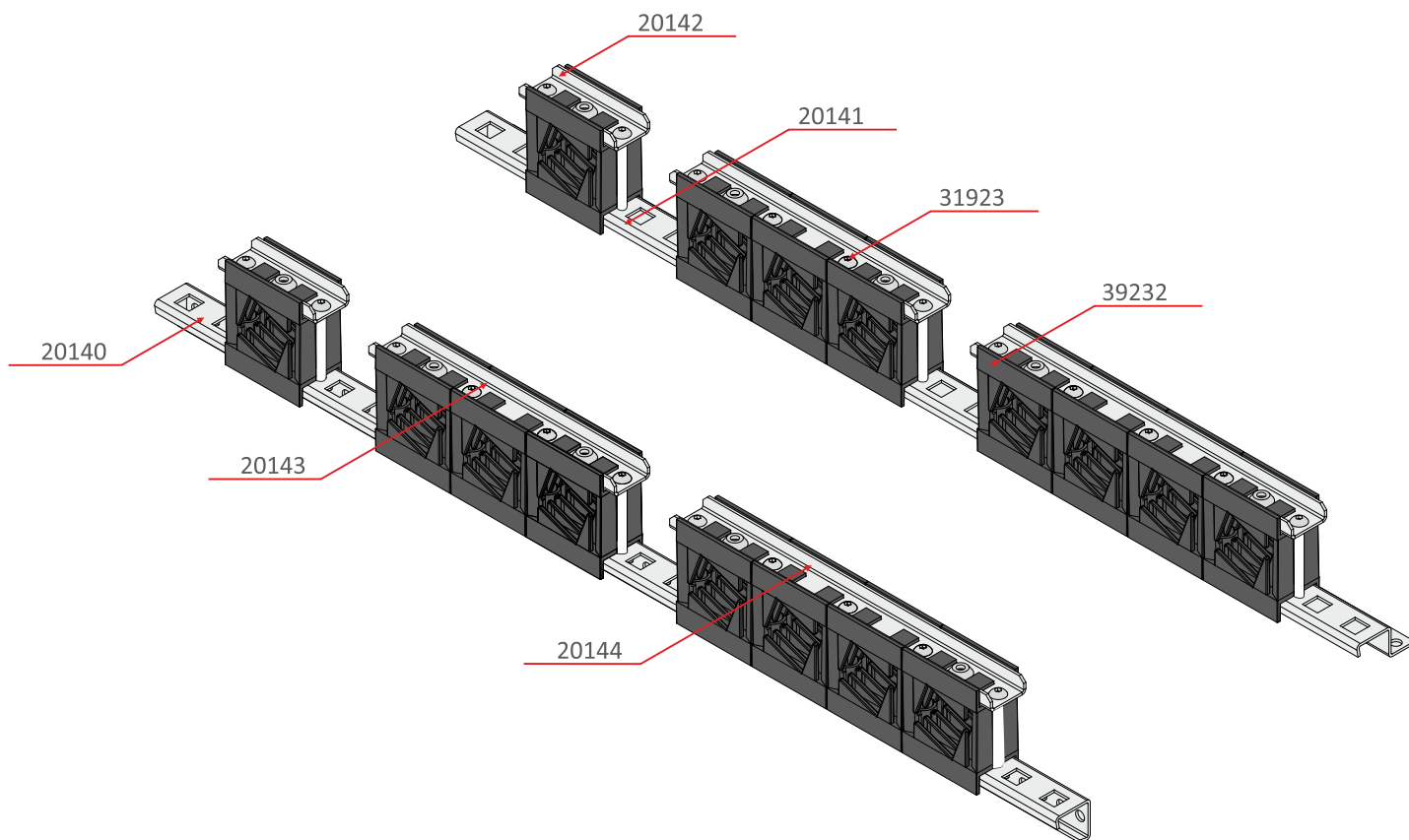
**H80**

**H100/H100R**



Selection rail system

AlCubar H27 Universal insulation supports



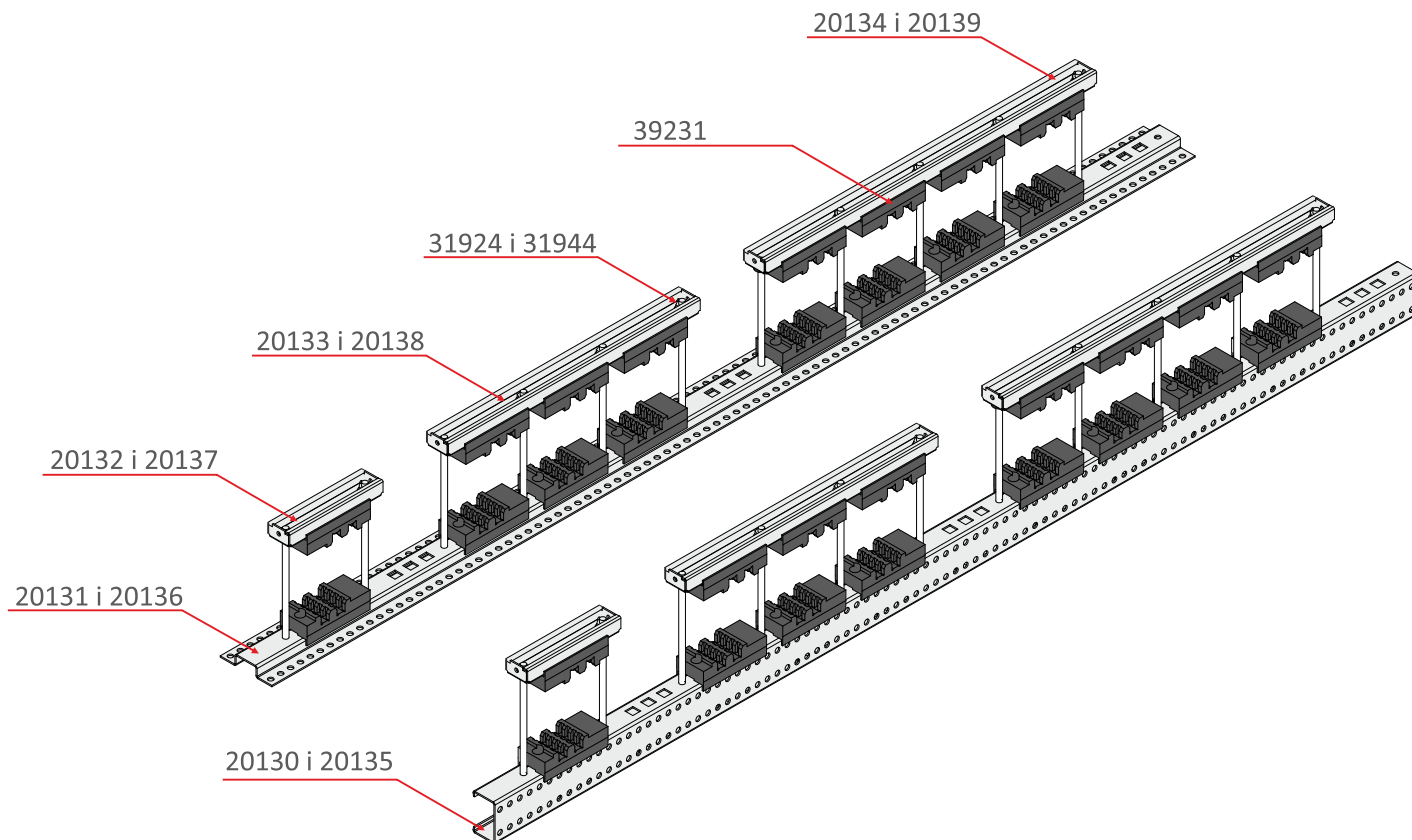
Accessories

Type	Catalog number
Universal Horizontal busbar insulator support, Zinc H27, 2meter, Spacing 50mm	20140
Universal Vertical busbar insulator support, Zinc H27, 2meter, Spacing 50mm	20141
Universal upper element of insulator support, Zinc H27, 1P	20142
Universal upper element of insulator support, Zinc H27, 3P, Spacing 50mm	20143
Universal upper element of insulator support, Zinc H27, 4P, Spacing 50mm	20144
Zenergy - Screw M5x50 hexagonal fillister head ISO 7380 Zinc - 100 pieces	31923
Zenergy - Polyamide support insulator V0 class AlCubar H27, 27x27mm - 1set of 2	39232

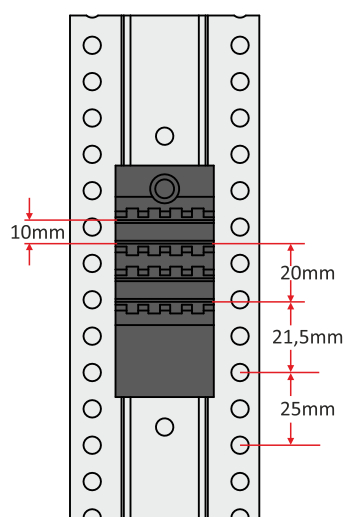


**Selection rail system**

**Universal Brackets Insulation H50, H80, H100**



**Accessories**

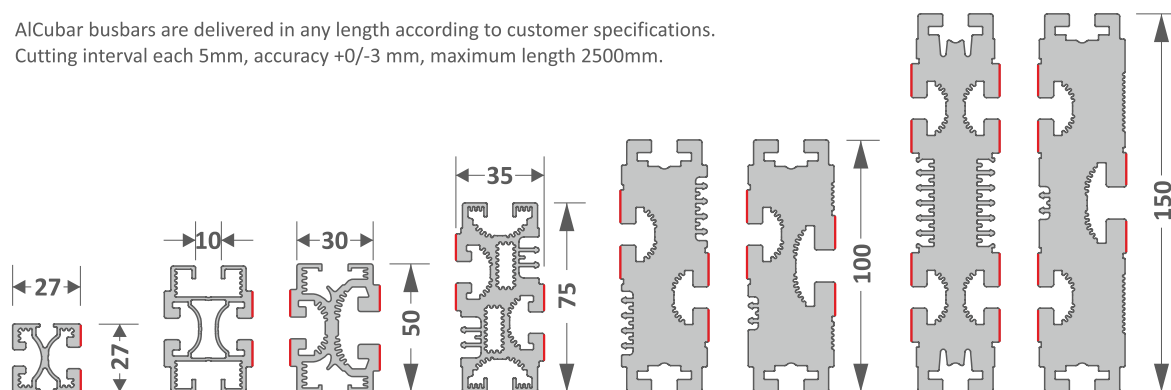


Type	Catalog Number
Universal Horizontal busbar insulator support, INOX, AlCubar H80, 2meter, Spacing 100mm	20130
Universal Vertical busbar insulator support, INOX, AlCubar H80, 2meter, Spacing 100mm	20131
Universal upper element of insulator support, INOX, AlCubar H80, 1P	20132
Universal upper element of insulator support, INOX, AlCubar H80, 3P, Spacing 100mm	20133
Universal upper element of insulator support, INOX, AlCubar H80, 4P, Spacing 100mm	20134
Universal Horizontal busbar insulator support, Zinc, AlCubar H50, 2meter, Spacing 100mm	20135
Universal Vertical busbar insulator support, Zinc, AlCubar H50, 2meter, Spacing 100mm	20136
Universal upper element of insulator support, Zinc, AlCubar H50, 1P	20137
Universal upper element of insulator support, Zinc, AlCubar H50, 3P, Spacing 100mm	20138
Universal upper element of insulator support, Zinc, AlCubar H50, 4P, Spacing 100mm	20139
Polyamide support insulator V0 class AlCubar 1R	39230
Polyamide support insulator V0 class AlCubar 2R	39231
Hex Head Screw M6x80 DIN933 Zinc - 100 pieces	31924
Hex Head Screw M6x110 DIN933 A2 INOX AISI316 - 100 pieces	31944

Equipment selection

AlCubar busbars part numbers

AlCubar busbars are delivered in any length according to customer specifications.  
Cutting interval each 5mm, accuracy +0/-3 mm, maximum length 2500mm.



Size type:	<b>H27</b>	<b>H50</b>	<b>H50R</b>	<b>H75</b>	<b>H100</b>	<b>H100R</b>	<b>H150</b>	<b>H150R</b>
Nominal current Δt=55°C IP-30	<b>630A</b>	<b>1000A</b>	<b>1250A</b>	<b>1600A</b>	<b>2500A</b>	<b>2500A</b>	<b>3200A</b>	<b>3400A</b>
Cooper coating:	1	1	2	2	2	2	4	3
Part number:	10027	10051	10050	10075	10102	10100	10154	10150
Double busbar:			2000A		4000A	4000A	4800A	5000A
Quadruple bus:					6300A	6300A		

AlCubar Profile	Protection Degree	Δt 20°K	Δt 25°K	Δt 30°K	Δt 35°K	Δt 40°K	Δt 45°K	Δt 50°K	Δt 55°K	Δt 60°K	Δt 65°K	Δt 70°K
H27	IP≤31	355	400	440	485	525	565	600	<b>630</b>	655	680	700
	IP≥41	305	350	390	425	460	490	520	550	575	600	630
H50	IP≤31	530	600	680	735	<b>800</b>	850	910	950	<b>1000</b>	1030	1070
	IP≥41	475	540	610	655	710	760	<b>810</b>	850	890	930	970
50R	IP≤31	805	870	930	<b>1000</b>	1060	1130	1200	<b>1265</b>	1330	1385	1445
	IP≥41	690	745	800	850	905	965	<b>1020</b>	1070	1130	1180	1230
H75	IP≤31	960	1060	1150	1240	1340	1430	1520	<b>1600</b>	1680	1760	1840
	IP≥41	850	935	1025	1110	1200	<b>1290</b>	1370	1450	1515	1585	1660
2x 50R	IP≤31	1240	1335	1425	1530	1640	1770	1870	<b>2000</b>	2095	2180	2285
	IP≥41	1080	1165	1240	1310	1400	1505	<b>1600</b>	1680	1785	1880	1970
H100	IP≤31	1550	1700	1850	<b>2000</b>	2130	2250	2400	<b>2500</b>	2650	2800	2900
	IP≥41	1350	1500	<b>1650</b>	1800	1900	<b>2000</b>	2100	2200	2300	2400	2500
H150	IP≤31	2200	2350	<b>2500</b>	2655	2810	2980	3120	<b>3260</b>	3380	3500	3600
	IP≥41	1815	1970	2130	2300	<b>2450</b>	2617	2750	2870	2985	3095	3200
H150R	IP≤31	2300	<b>2460</b>	2620	2780	2940	3100	<b>3250</b>	3415	3560	3770	3830
	IP≥41	1900	<b>2060</b>	2230	2400	<b>2570</b>	2740	2880	3000	3125	3240	3350
2x H100	IP≤31	2700	2900	3100	3300	3500	3750	<b>4000</b>	4200			
	IP≥41	2300	2450	2600	2750	2900	3050	<b>3200</b>	3400	3600	3800	4000
2x H150	IP≤31	<b>3210</b>	3440	3660	3885	<b>4100</b>	4360	4565	<b>4800</b>	4950	5120	5250
	IP≥41	2390	2590	2800	3020	<b>3230</b>	3445	3620	3780	3930	4075	4210
2x H150R	IP≤31	3365	3600	3835	<b>4070</b>	4300	4535	4760	<b>5000</b>	5200	5400	5600
	IP≥41	2500	2710	2940	<b>3160</b>	3385	3610	3790	<b>3960</b>	4110	4260	4400
4x H100	IP≤31	3900	4230	4540	4850	<b>5160</b>	5470	5780	6070	<b>6300</b>	6500	6700
	IP≥41	3030	3230	3420	3620	3820	<b>4015</b>	4210	4410	4580	4740	4900

Allowed constant current (A) for each level of temperature rise

Energy	Even	Multi	Bi-metal	2 sided
Max Δt +55K	-40%	+/- 1mm	Al/Cu	
Saving	Cheaper	Length	Busbar	Grooves

Equipment selection

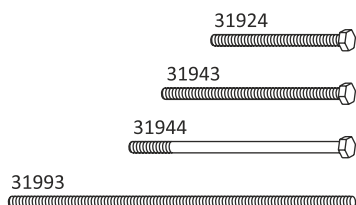
AlCubar system accessories



M6 - 31922



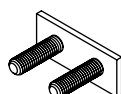
M6 - 20071



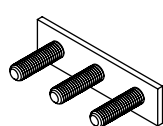
31993



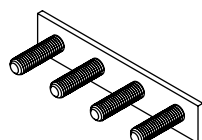
M8 - 20091  
M12 - 20094



20082



20083



20084



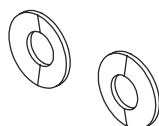
H27 - 20081  
H50 - 20085



M8 - 20096  
M12 - 20099



20070



M12 - 20075

AlCubar busbars washers

Part Number	Size	Washers type / Application
20071	M6/14	French lock washer toothed contact / Insulator support grip
20072	M6/14	
20073	M8/18	
20074	M10/22	
20075	M12/27	French lock washer / Every connection
20077	M8/24	
20078	M8/28	Steel flat washer / Ensuring contact of Flexible busbar
20079	Cu M8/16	
20089	Cu M12/16	Copper flat washer / Ensuring contact for small cable ring terminals

Insulators supports bolts

Part Number	Size	Bolt type / Application
31924	M6/80	Bolt zinc / AlCuabr H50, H50R, busbars 30-50mm
31943	M6/110	Bolt inox / AlCuabr H75, busbars 60-80mm
31944	M6/130	Bolt inox / AlCuabr H100, H100R, busbars 100mm
31992	M6/160	Threaded rod inox / busbars 120mm
31993	M6/190	Threaded rod inox / AlCuabr H150, H150R
31947	M6/1000	Threaded rod inox / Universal, to cut

Bolts for AlCubar busbars

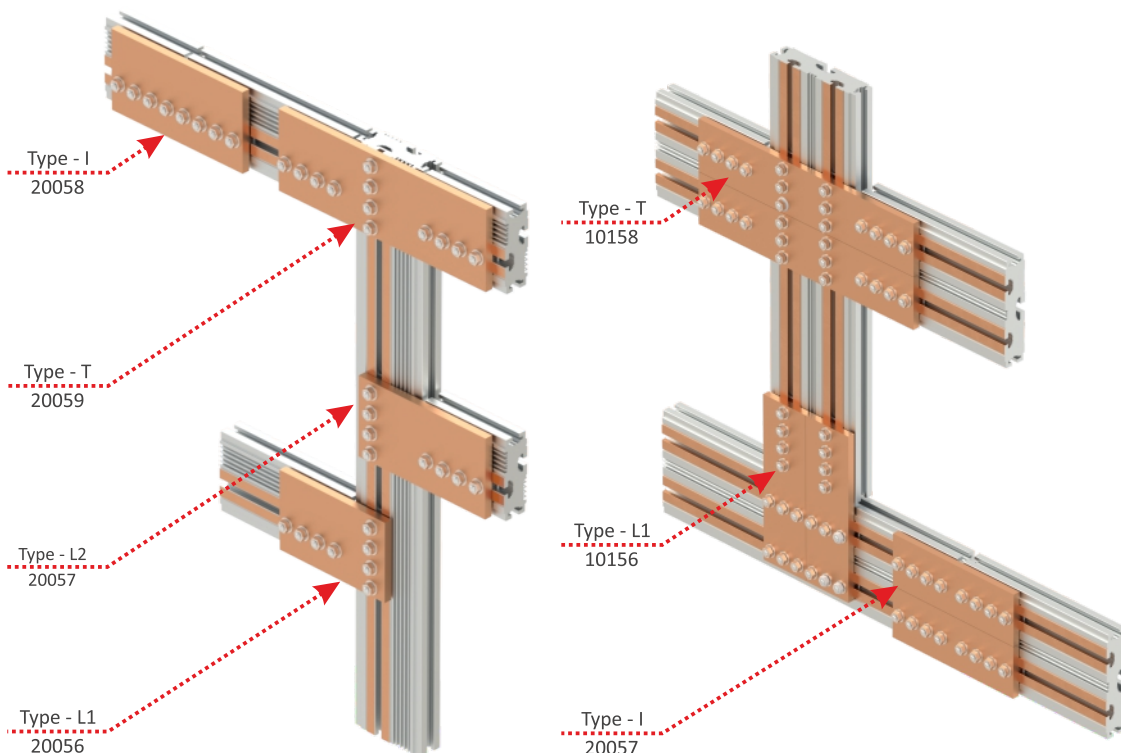
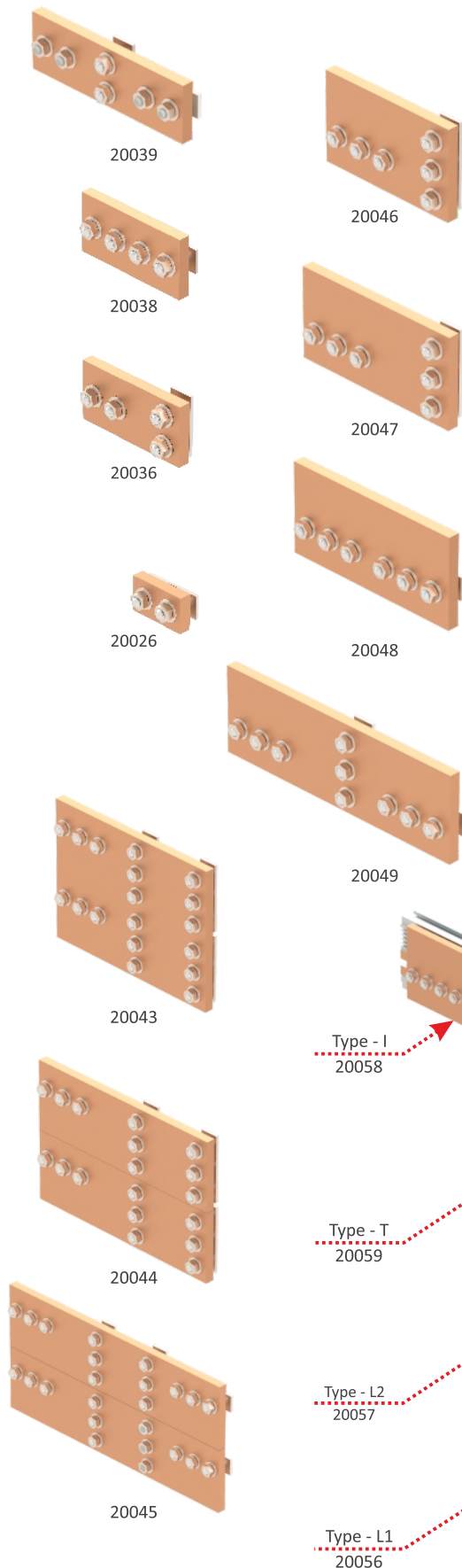
Part Number	Connection Qty. / Size	Application	AlCubar type	Connection type for AlCubar application	
20082	10x 2xM8x27	AlCubar connection	H50	Sliding bolts entered from the end of row	
20297	10x 2xM8x27		H50R		
20083	10x 3xM8x27		H75		
20084	10x 4xM8x27		H100, H150		
20299	10x 4xM8x27		H100R, H150R		
20081	100x U16/8mm	Output circuits connections	H27	U shape connector 16mm <sup>2</sup> 8mm groove	
20085	100x U16/8mm		H50 to H150		
20096	20x M8x25		H27 to H150	H27 to H150	Hammerhead bolt for maximum 630A
20097	20x M8x39				
20098	20x M12x30	H50R, H100R H150R	H50R, H100R H150R	Hammerhead bolt	
20099	20x M12x35				
20090	100x M6x20				
20068	100x M8x25	Output circuits or AlCubar connections	H27	Square neck bolt	
20069	100x M8x30				
20092	100x M8x25		H50 to H150	H50 to H150	Square neck bolt
20093	100x M8x35				
20094	10x M12x30				
20095	10x M12x35		H50R, H100R H150R	H50R, H100R H150R	Square neck bolt only for fuse switches
20296	10x 2xM8x27				Square neck bolt
20298	10x 4xM8x27	Vertical busbar	H27	Sliding bolts entered from the end of row for vertical fuse switches size 00	
20060	100x 1P		H50 to H150		
20070	100x 1P			Busbar vertical support	

Equipment selection

AlCubar busbars connectors

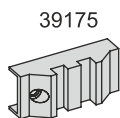
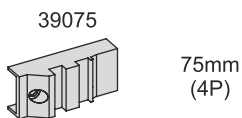
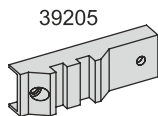
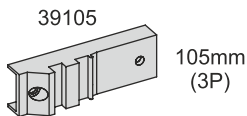
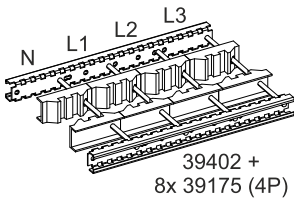
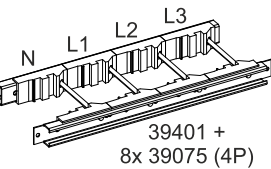
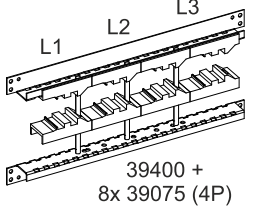
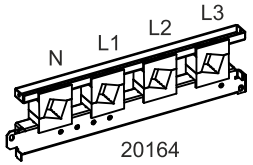
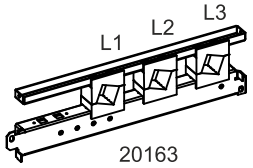
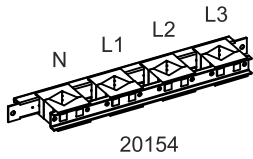
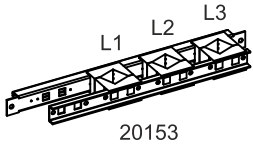
AlCubar busbars copper connectors

Part Number	Nominal Current	Connector Type	Size	AlCubar busbar Part Number
20026	630A	L1	60x30x10	10027
20028	630A	I	60x30x10	10027
20029	630A	T	90x30x10	10027
20036	1000A	L1	100x50x10	10050
20038	1000A	I	100x50x10	10050
20039	1000A	T	160x50x10	10050
20046	1600A	L1	130x80x10	20042
20047	1600A	L2	155x80x10	20042
20048	1600A	I	165x80x10	20042
20049	1600A	T	250x80x10	20042
20056	2500A	L1	160x100x10	10102
20057	2500A	L2	190x100x10	10102
20058	2500A	I	200x100x10	10102
20059	2500A	T	310x100x10	10102
20043	3200A(2x1600)	L1	2x(210x80x10)	20042
20044	3200A(2x1600)	L2	2x(235x80x10)	20042
20045	3200A(2x1600)	T	2x(330x80x10)	20042
20053	4000A(2x2500)	L1	2x(260x100x10)	10102
20054	4000A(2x2500)	L2	2x(290x100x10)	10102
20055	4000A(2x2500)	T	2x(410x100x10)	10102
20065	2500A	I	200x100x10	10100
10076	1600A	L1	125x75x10	10075
10077	1600A	L2	145x75x10	10075
10078	1600A	I	165x75x10	10075
10079	1600A	T	240x75x10	10075
10156	3200A	L1	2x(240x75x10)	10150 / 10154
10157	3200A	I	2x(210x75x10)	10150 / 10154
10158	3200A	T	2x(370x75x10)	10150 / 10154

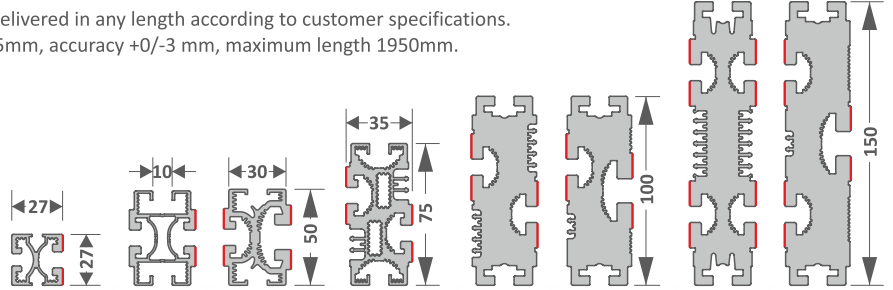


Equipment selection

AlCubar busbars and installation supports



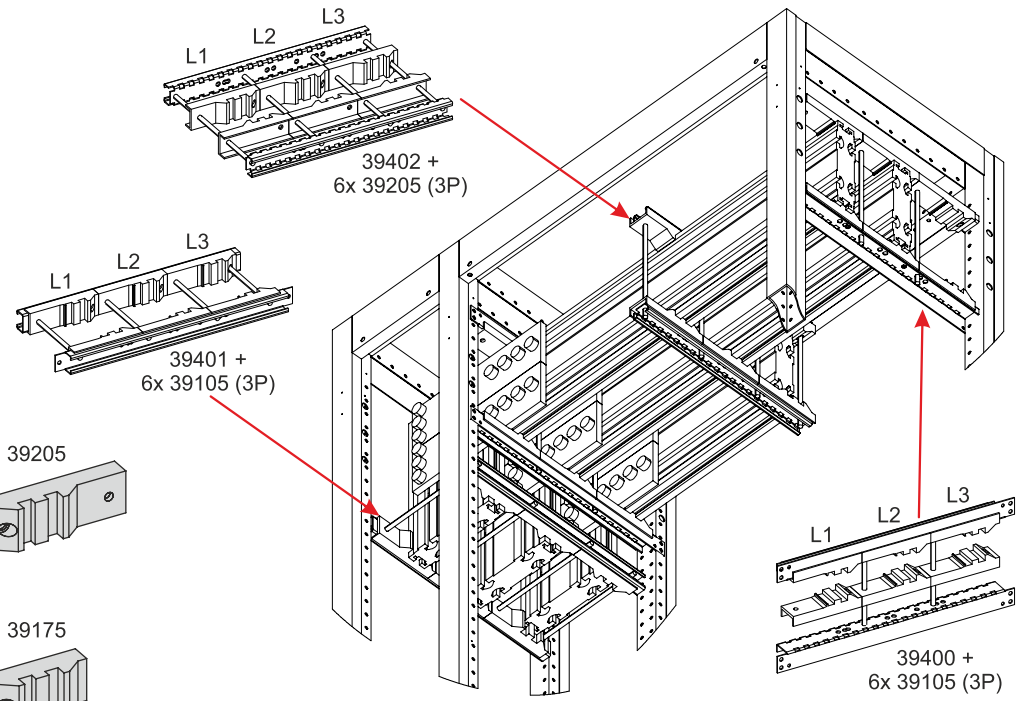
AlCubar busbars are delivered in any length according to customer specifications. Cutting interval each 5mm, accuracy +0/-3 mm, maximum length 1950mm.



Size type:	H27	H50	H50R	H75	H100	H100R	H150	H150R
Nominal current $\Delta t=55^{\circ}\text{C}$ IP-30	630 A	1000 A	1250 A	1600 A	2500 A	2500 A	3200 A	3400 A
Double busbar:		2000 A			4000 A	4000 A	4800 A	5000 A
Quadruple bus:					6300 A	6300 A		
Cooper coating:	1	1	2	2	2	2	4	3
Part number:	10027	10051	10050	10075	10102	10100	10154	10150

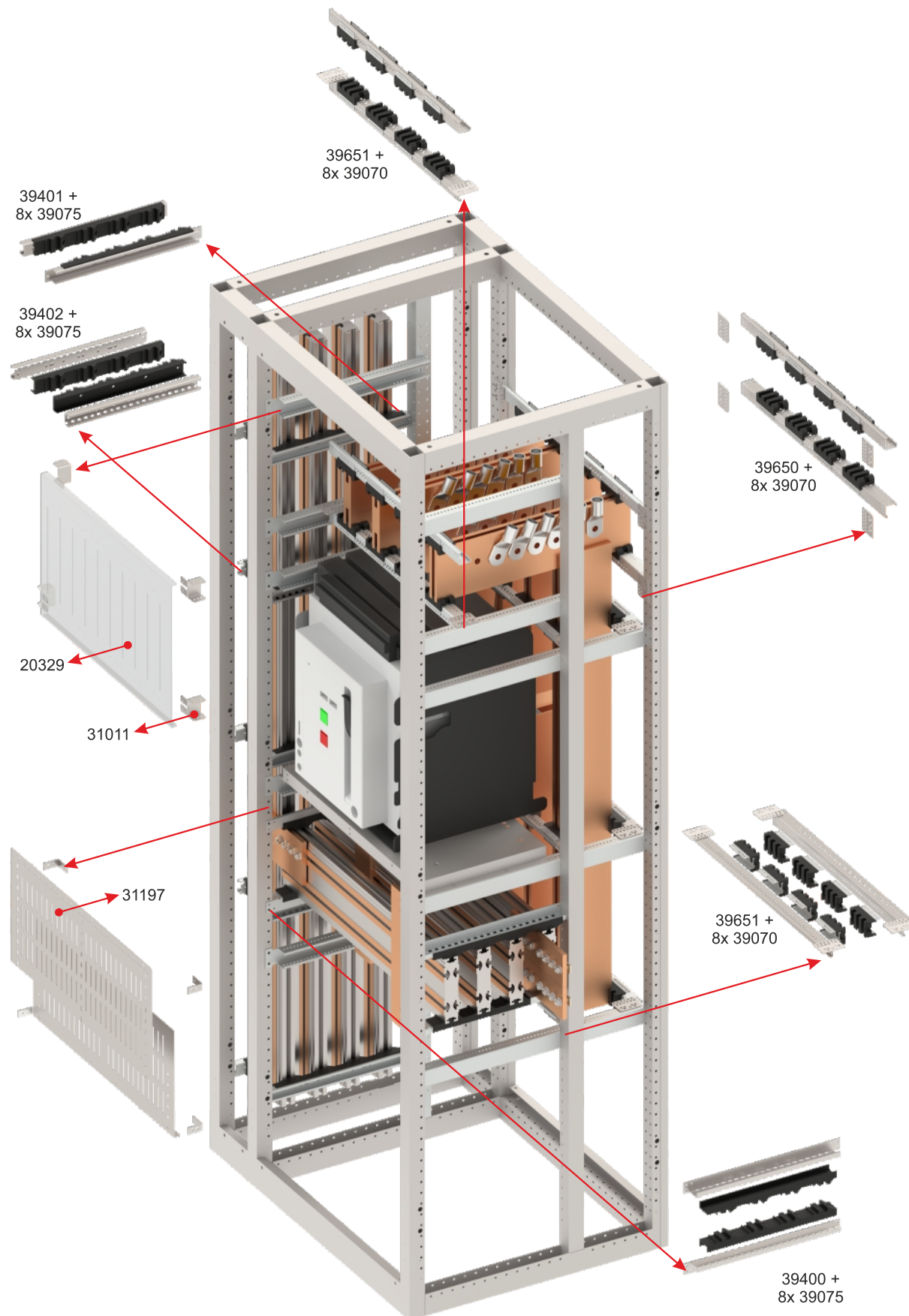
lcw rating:	Max (mm):	Horizontal insulators support quantity for W650 / W850:	
≤ 42 kA	850	2x 2016...	2x 39400
≤ 50 kA	650		2x 39400 / 2x 39400 + 39402
≤ 65 kA	450		2x 39400 + 39402
≤ 85 kA	350		2x 39400 + 39402 / 2x 39400 + 2x 39402
≤ 100 kA	250		2x 39400 + 2x 39402 / 2x 39400 + 3x 39402

lcw rating:	Max (mm):	Vertical insulators support quantity for busbar height 1750mm / 1950mm:	
≤ 42 kA	850	3x 2015...	3x 39401
≤ 50 kA	650		4x 39401
≤ 65 kA	450		3x 39401 + 2x 39402
≤ 85 kA	350		3x 39401 + 4x 39402
≤ 100 kA	250		3x 39401 + 6x 39402



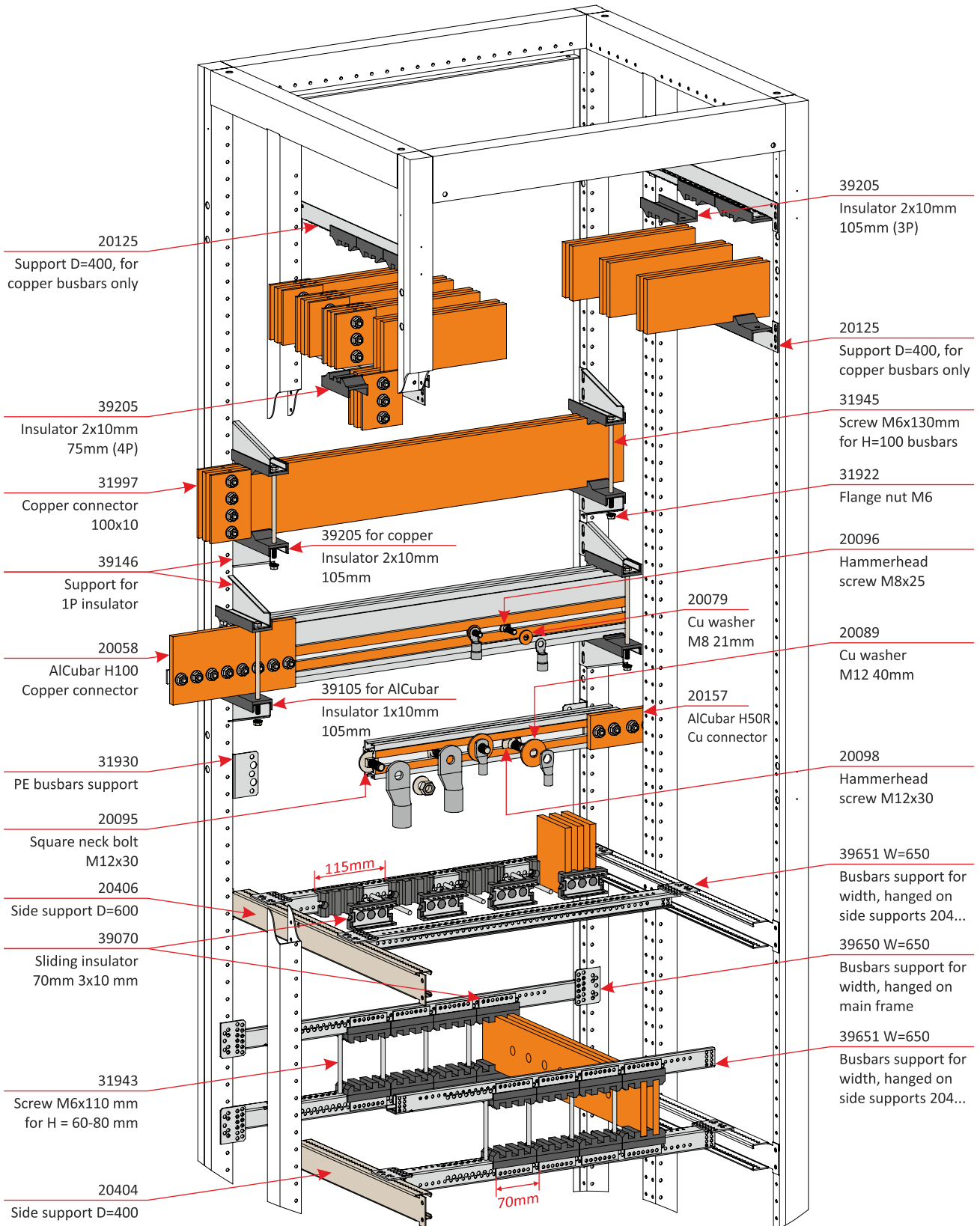
Layout example

AlCubar busbars and installation supports



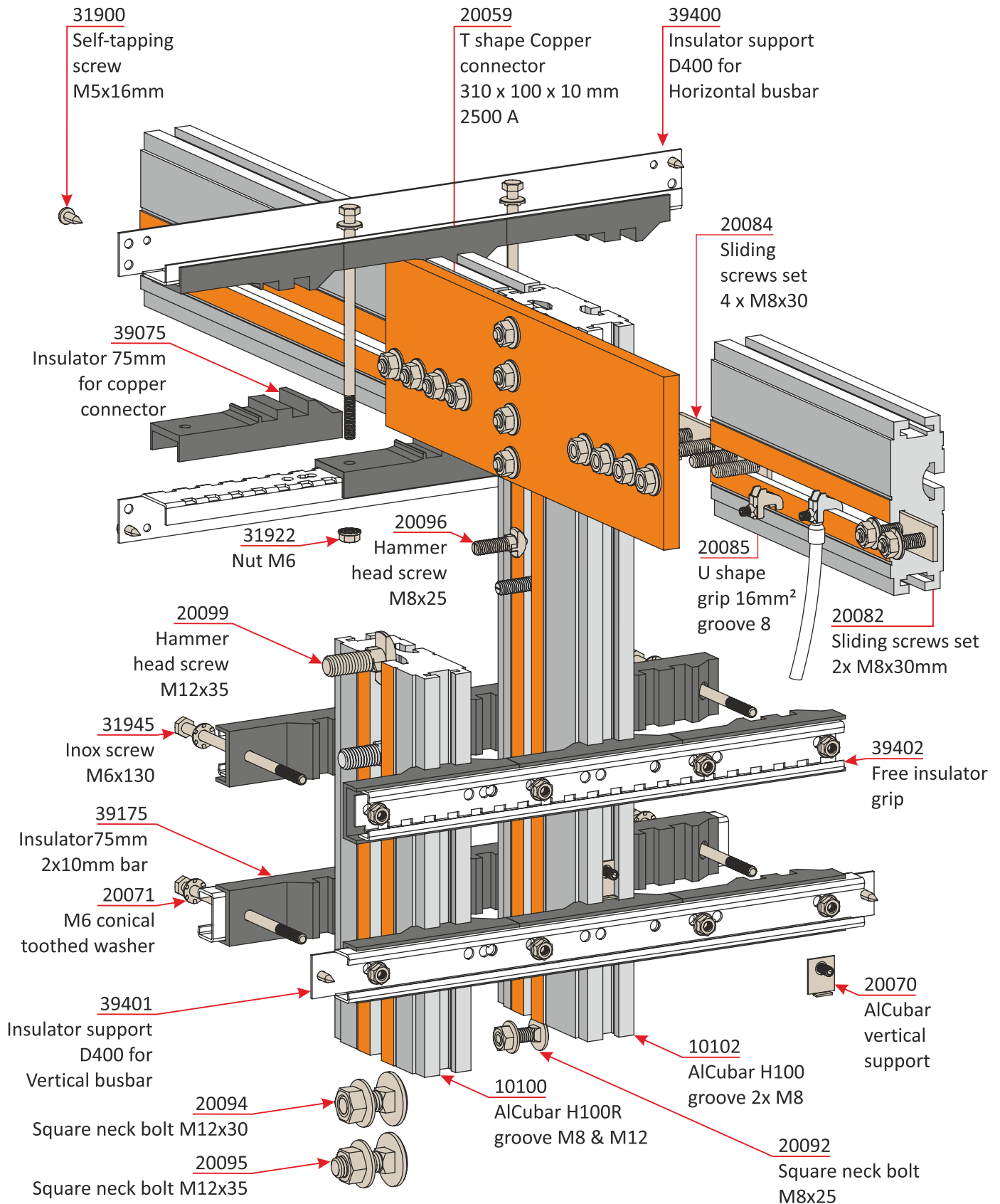
# Brackets, insulators, bolts

- Horizontal and vertical busbars in the D400 / W650 mm size



Example Drawing

Alcubar H50, H75, H100, H150 system presentation

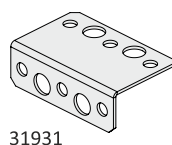
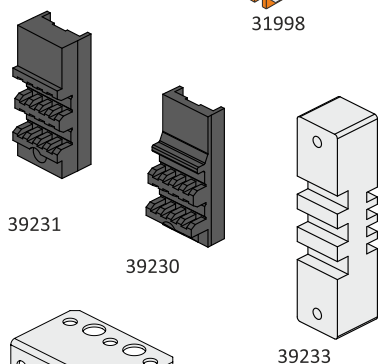
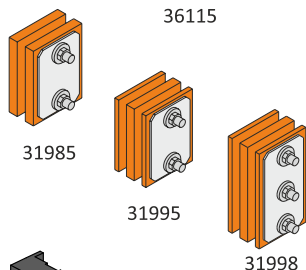
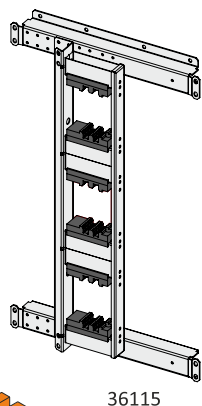
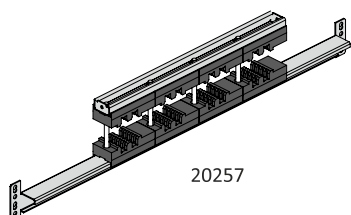
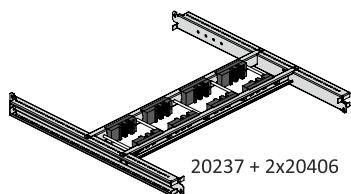
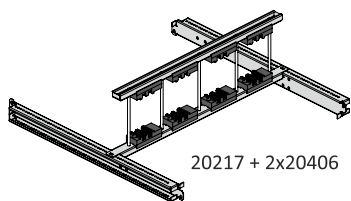




Equipment selection

# Isolators, Zenergy System references

## Insulator and busbar supports



	Width (mm)								
	400	450	600	650	800	850	1000	1200	1300
<b>Adjustable depth / rails horizontally</b>									
3P	20204	20205	20206	20207	20208	20209	20200	20201	20202
4P	20214	20215	20216	20217	20218	20219	20210	20211	20212
<b>Vertically adjustable depth / rails</b>									
3P	20224	20225	20226	20227	20228	20229	20220	20221	20222
4P	20234	20235	20236	20237	20238	20239	20230	20231	20232
<b>Back support, height-adjustable</b>									
3P	20224	20245	20246	20247	20248	20249	20240	20241	20242
4P	20254	20255	20256	20257	20258	20259	20250	20251	20252

## AlCubar H50R/H100R rail insulators for strip disconnectors 250-630A - references

Isolator	References
Mounting for AlCubar H50R rail, spacing 185mm	36110
Mounting for AlCubar H50R rail, 185mm spacing, for connector	36111
Mounting for AlCubar H100R rail, spacing 185mm	36115
Mounting for AlCubar H100R rail, spacing 185mm, for connector	36116
Mounting for AlCubar H100R rail, spacing 185mm, for cabinet middle	36117
Mounting for AlCubar H150R rail, spacing 185mm, for connector	36118

## Copper rail connectors

1x10 connector dimensions	Reference	1x10 connector dimensions	Reference
1x10x50	31984	2x10x50	31994
1x10x60	31985	2x10x60	31995
1x10x80	31986	2x10x80	31996
1x10x100	31987	2x10x100	31997
1x10x120	31988	2x10x120	31998

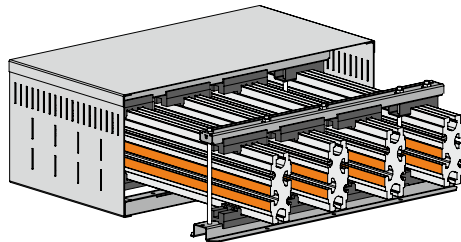
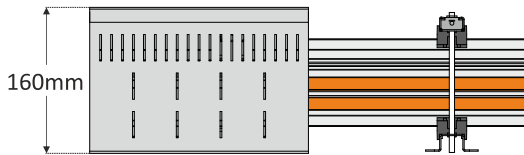
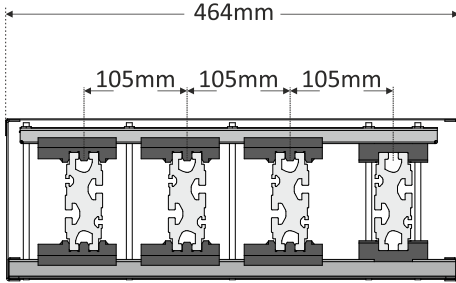
## Insulator brackets, mounting plates

Complementary elements	Reference
Insulator bracket 3P, D600, reinforced	20303
Insulator bracket 4P, D600, reinforced	20304
Insulator bracket D200	20402
Insulator bracket D400, reinforced, rear	20404
Insulator bracket D400, reinforced, Form 4b	20405
Insulator bracket D600, reinforced	20406
Insulator bracket D800, reinforced	20408

## Accessories

Complementary elements	Referencje
PE bracket	31931
Polamide Support Insulator Classes V0, 1R, AlCubar / Cu	39230
Polamide Support Insulation class V0, 2R AlCubar /Cu	39231
Polamide Support Insulator class V0, 3x10mm, 124x35x40mm	39233
Ectro insulation tube/hose (braided sleeving) - 1 meter	31902

## Technical specification of Zenergy bus ducts



Selection of Cu / AlCubar bus ducts supports

Size		Dimensions (mm)		Bracket spacing (mm) for short-circuit current I <sub>cw</sub> (kA rms / 1s)			
Cu rails	AlCubar	Cu rails	AlCubar	≤42kA	≤65kA	≤85kA	≤105kA
1x 50x10	1x H50	388 x 110	464 x 110	400	300	250	---
1x 60x10	-	388 x 120	-	400	300	250	---
1x 80x10	1x H80	388 x 140	464 x 140	400	300	250	---
2x 60x10	-	464 x 120	-	400	300	250	200
2x 80x10	1x H100	464 x 140	464 x 160	400	300	250	200
2x 100x10	2x H80	464 x 160	464 x 220	400	300	250	200
2x 120x10	2x H100	464 x 180	464 x 260	400	300	250	200

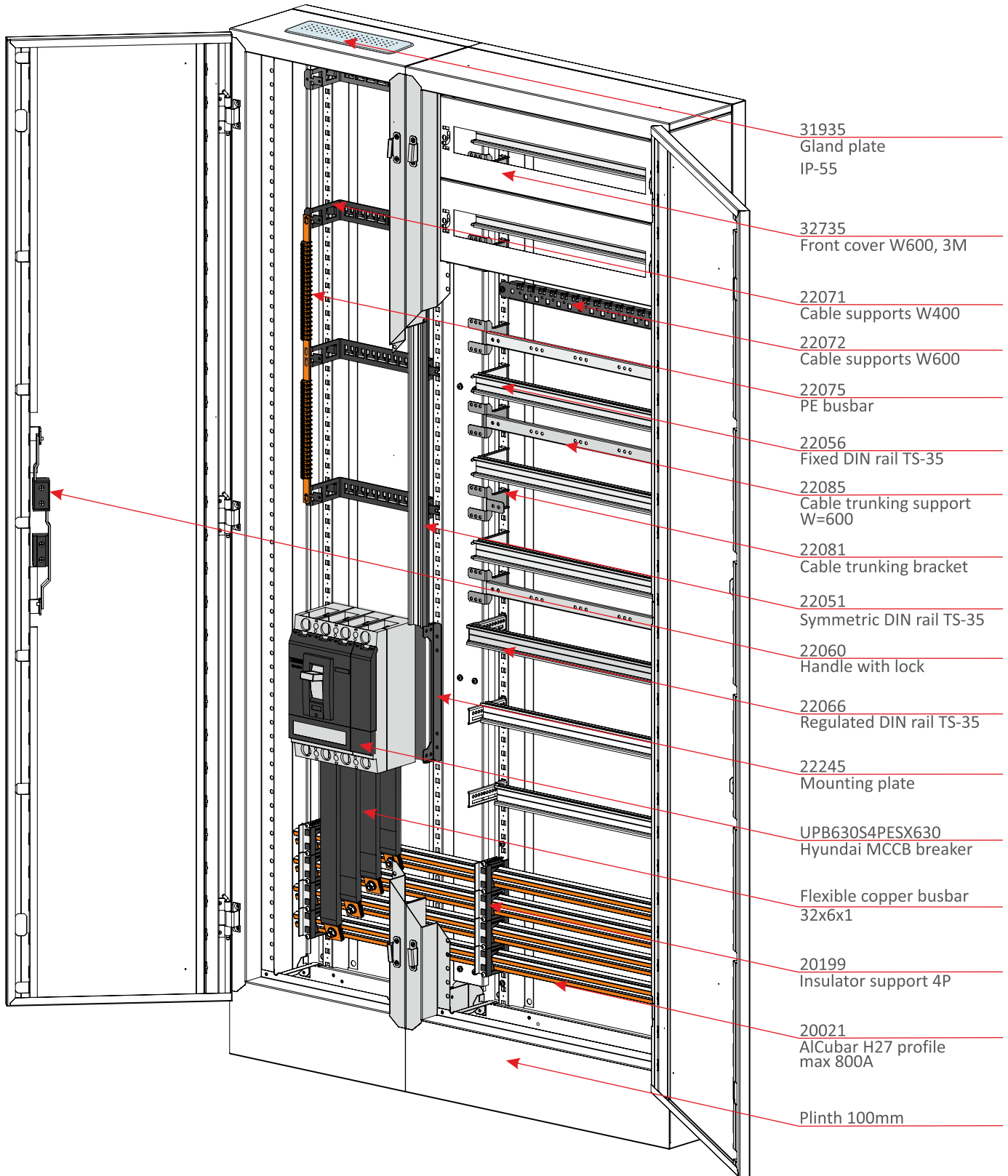
Permissible current (A) for a given conductor temperature rise

AlCubar Profile	Degree of protection	Δt 20°K	Δt 25°K	Δt 30°K	Δt 35°K	Δt 40°K	Δt 45°K	Δt 50°K	Δt 55°K	Δt 60°K	Δt 65°K	Δt 70°K
H27	IP≤31	455	510	560	610	655	700	740	785	<b>840</b>	870	900
	IP≥43	370	440	500	550	590	<b>630</b>	665	700	735	765	800
H50/50R	IP≤31	730	800	870	950	<b>1020</b>	1080	1150	1200	<b>1280</b>	1350	1400
	IP≥43	630	700	760	830	900	950	<b>1000</b>	1050	1100	1150	1200
H80	IP≤31	1030	1145	1260	1365	1470	1575	<b>1680</b>	1785	1870	1950	2020
	IP≥43	950	1060	1150	1235	<b>1325</b>	1410	1500	1580	1635	1690	1740
2xH80	IP≤31	1650	1840	2040	2230	2420	2600	2790	<b>2950</b>	3120	<b>3240</b>	3360
	IP≥31	1300	1500	1680	1830	1980	2120	2270	2400	<b>2520</b>	2640	2750
H100	IP≤31	1550	1700	1850	2000	2130	2250	2400	<b>2500</b>	2650	2800	2900
	IP≥43	1350	1500	1650	1800	1900	2000	2100	<b>2200</b>	2300	2400	2500
H100R	IP≤31	1130	1290	1450	1620	1780	1910	<b>2050</b>	<b>2210</b>	2350	2460	<b>2580</b>
	IP≥43	984	1138	1293	1458	1588	1698	1794	1945	<b>2040</b>	2109	2224
2xH100	IP≤31	2700	2900	3100	3300	3500	3750	<b>4000</b>	4200			
	IP≥43	2300	2450	2600	2750	2900	3050	<b>3200</b>	3400	3600	3800	4000

Selection of Cu/AlCubar solid rails in Zenergy system

Size Cu rails	Permitted current ratings (A)									
	25°C		30°C		35°C		40°C		45°C	
	IP≤31	IP≥40	IP≤31	IP≥40	IP≤31	IP≥40	IP≤31	IP≥40	IP≤31	IP≥40
1x 50x10	1330	1220	1260	1160	1200	1080	1130	1010	1060	940
1x 60x10	1550	1400	1470	1320	1400	1250	1320	1160	1240	1070
1x 80x10	1990	1800	1890	1700	1800	1600	1700	1500	1600	1390
2x 60x10	2550	2270	2420	2140	2300	2000	2170	1870	2030	1720
2x 80x10	3110	2820	2970	2660	2820	2500	2660	2330	2500	2160
2x 100x10	3650	3280	3490	3100	3300	2900	3130	2720	2950	2510
2x120x10	5100	4540	4840	4280	4600	4000	4340	3740	4060	3440

**Presentation**



## Technical Performance

### Zenergy OM surface mounted switchboard up to 800A

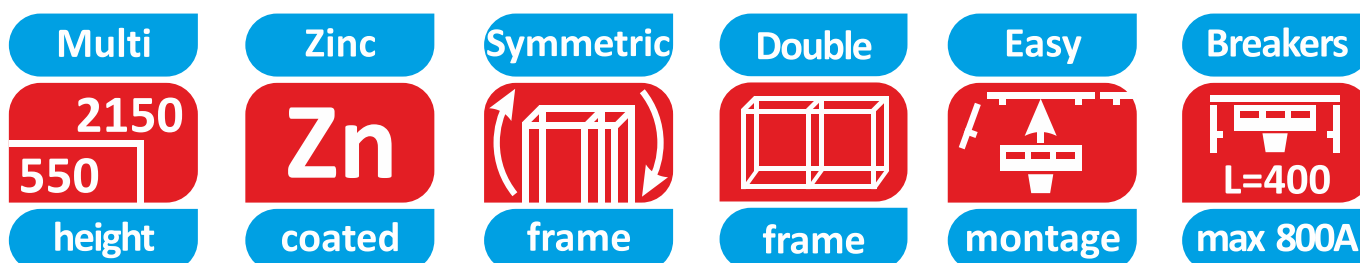
Zenergy OM 800A switchboard is a system of metal enclosures with class I insulation. For power distribution installations, metering and control automation, designed for currents up to 800A. Enclosures are mainly used in residential, public buildings and industrial facilities.

Zenergy OM system bring many new possibilities, such as removable side panels. This allows configuration changes in switchboard without punching side panels and additional cable glands. Such extension can be also made during switchboard operation. The offer includes switchboards with protection degrees starting from IP30 up to IP55. Installation of electrical equipment and wires is possible directly on the rear panel of switchboard, so till the end of cabling, or maintenance service, installation of upper, or side panels and doors is not necessary. All electrical equipment in the switchboard is installed on DIN rails and dedicated mounting plates, so that the extension of the switchboard is very easy and comfortable, moreover front covers are mounted directly on the side panels of the enclosure.

Besides of DIN rails and universal mounting plates, the offer include special mounting kits, dedicated for circuit breakers and switch disconnectors produced by Hyundai and other manufacturers depending of customer needs. The kit include plate with mounting holes and front cover with hole cut out for device.

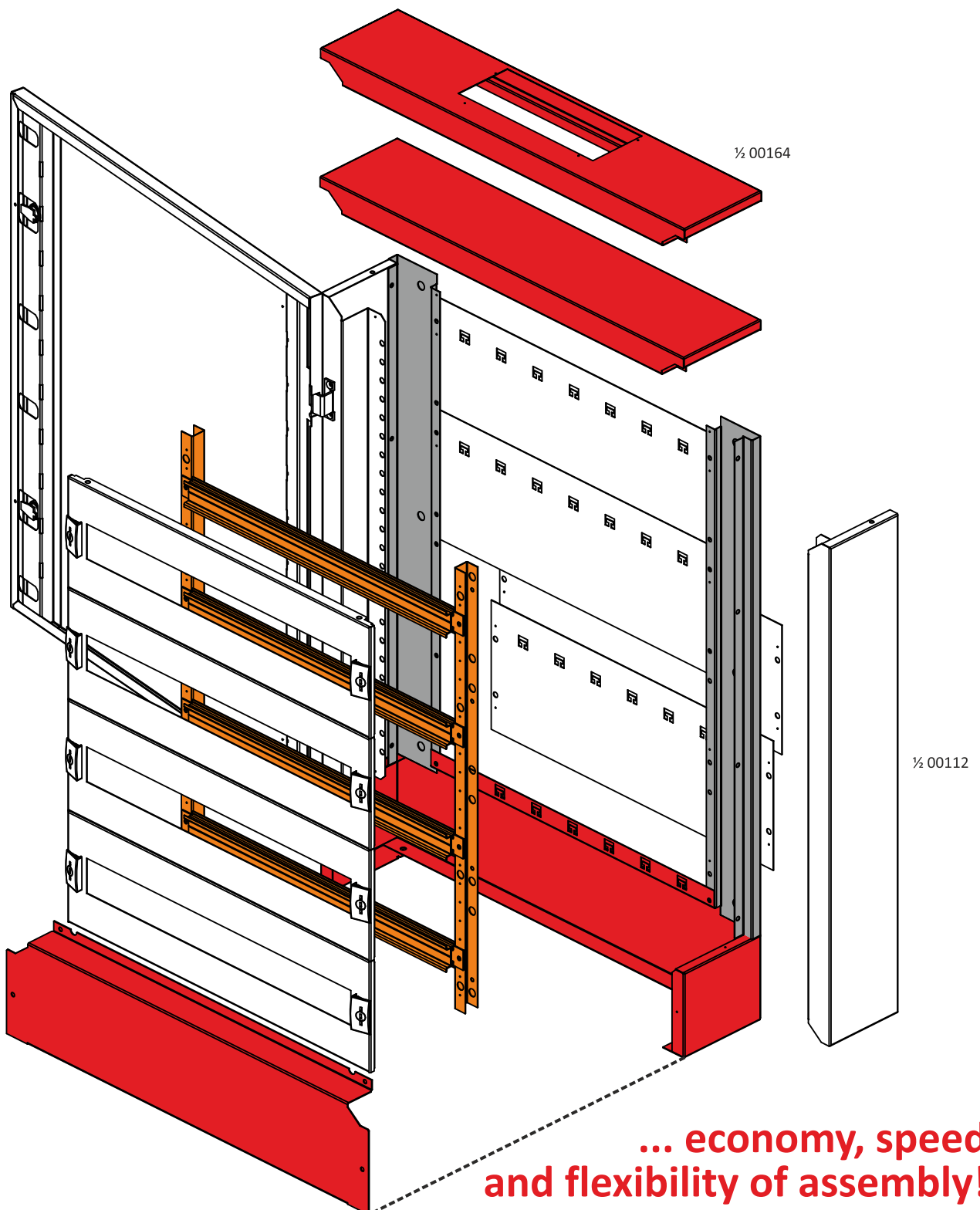
#### Advantages of the switchboard

- 13 different heights: H = 550 to 2150mm for P=230mm and 1800 to 2150mm for P=300mm
- 6 different widths: D = 300, 400, 600, 800, 1000, 1200mm.
- The maximum number of DIN 18mm rail modules: 624.
- Combination of sets through expansion modules or middle upright, reduce the cost of the entire switchboard
- Depth of the cabinet 230mm with door (300mm on some models)
- Degrees of protections IP-30, 40, 41, 43, 44, 55.
- Fully integrated system for compact breakers using mounting plates.
- Zinc coated enclosure, powder paint coated RAL 7035, other colors available on request.
- Reversible door (opening to the left or right),  
to be equipped with handle with key, or two independent rotary locks
- Possibility of extension without punching holes in side panels.
- Maximum breaker in housing body W=400 up to 800A, 3P.
- Removable plinth with IP-55 cable sealing plate
- Different top covers with covered holes for optional gland plates



## Wall-mounted enclosure *ON up to 250A*

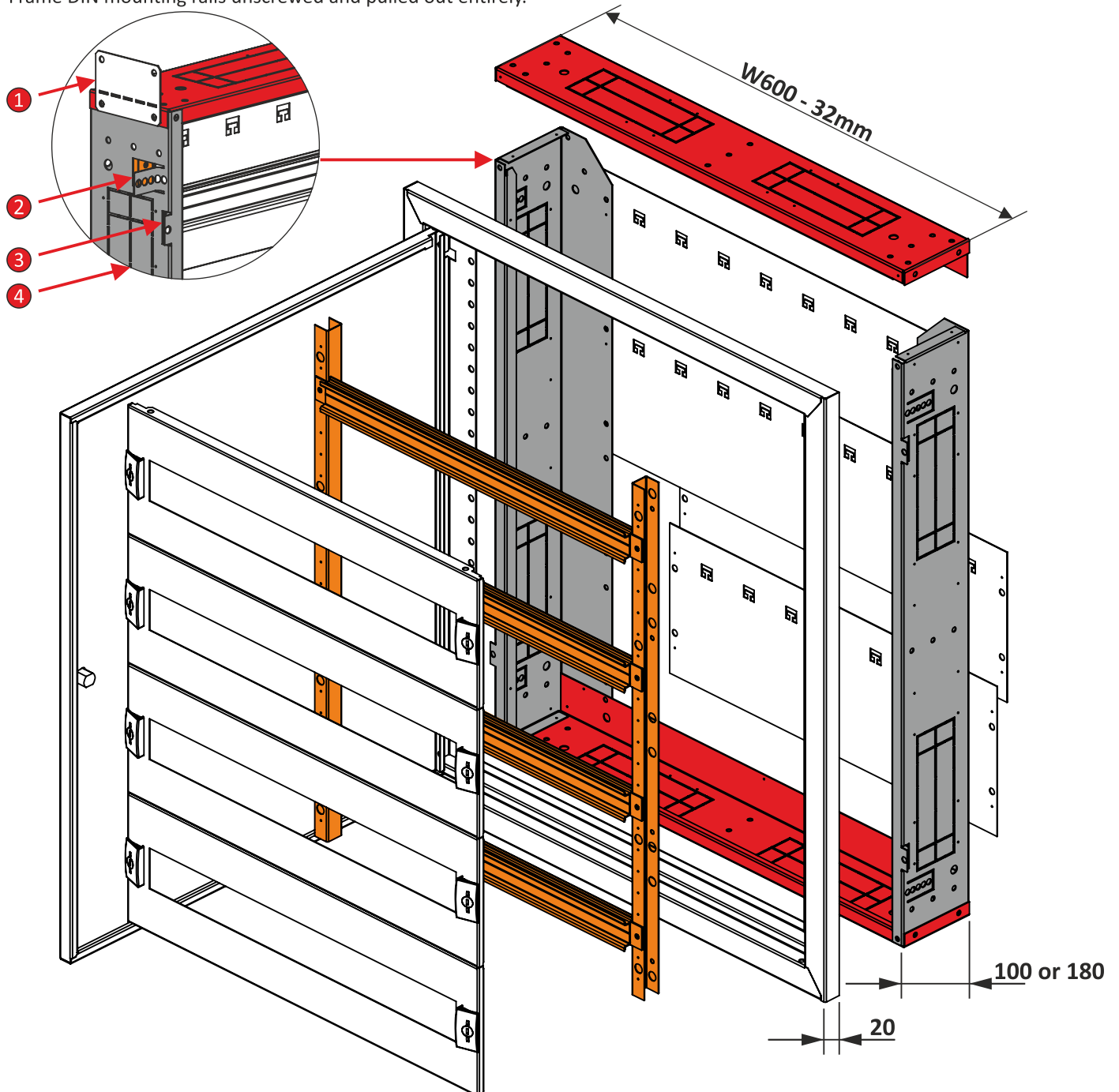
- Housing with special assembly possibilities, consisting of only eight different elements.
- Size range from 2x24 Modules, up to 10 x 24 Modules of installation equipment.
- Housing depth from 127 mm to 205 mm, the possibility of joining the sides into sets.
- Degree of protection IP30 without door, IP-40 with door, width 600mm or 800mm with frame, height 400mm to 1600mm with frame.
- Modular cover plates on the back, with the possibility of attaching cables, can also be mounted without the cover plates.
- 20 millimeters of space behind the DIN rail, increased to 30 mm, if no back plate is used.
- Frame DIN mounting rails unscrewed and pulled out entirely.



**... economy, speed  
and flexibility of assembly!**

## Folding Flush mounted PT housing up to 250A

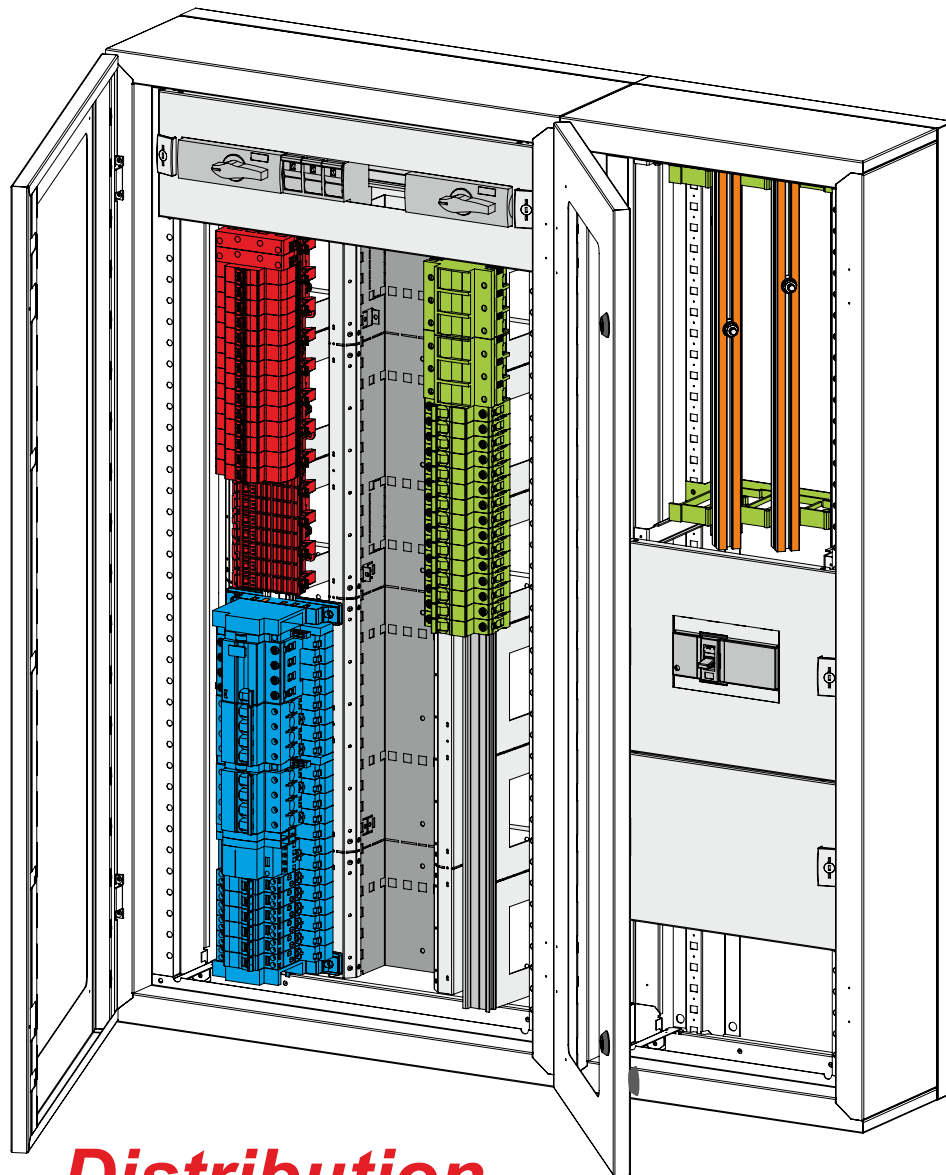
- Housing with special assembly possibilities, consisting of only seven different elements.
- Size range from 2x24 Modules, up to 10 x 24 Modules of installation equipment.
- The depth of the casing in the wall space of 100mm and 180mm, protruding depth of the door frame from the wall of 20mm
- Possibility of joining with sets of sides.
- Degree of protection IP30 without door, IP-40 with door, width 600mm or 800mm with frame, height 400mm to 1600mm with frame.
- Modular cover plates on the back, with the possibility of attaching cables, can also be mounted without the cover plates.
- 17 millimeters of space behind the DIN rail
- Frame DIN mounting rails unscrewed and pulled out entirely.



- ① Vertical / horizontal connector
- ② Folding clamp to the plasterboard
- ③ Depth stop
- ④ Cable gland

## Advantages

- Possibility to connect cables from top and bottom.
- Saving time thanks to direct connections with most devices.
- Less assembling points means less time and less risk of error.
- Safe modular enclosure for standard distribution and plug-in systems:  
Hager Tertio, Legrand HX3, ABB Smissline TP.
- Spacious cable compartment with various options of mounting of cables.
- Protection against direct touch IP-2X without front plates, and IP-3XC with front plates.



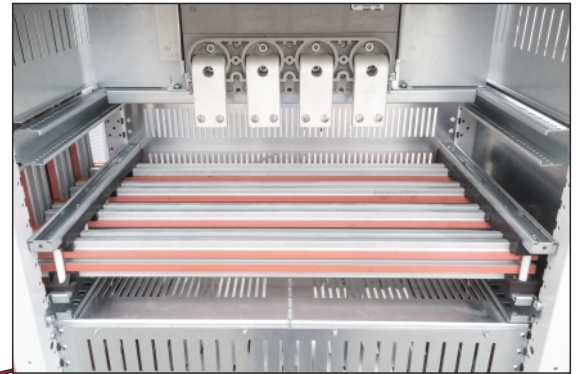
**Zenergy**  
**System OM-VSD**

**Distribution**  
**Secondaire**  
**Verticale**

**... avantgarde solution**

Internal separation **Zenergy**

Internal separation form 4b



Cover for connection transfer 3-5M



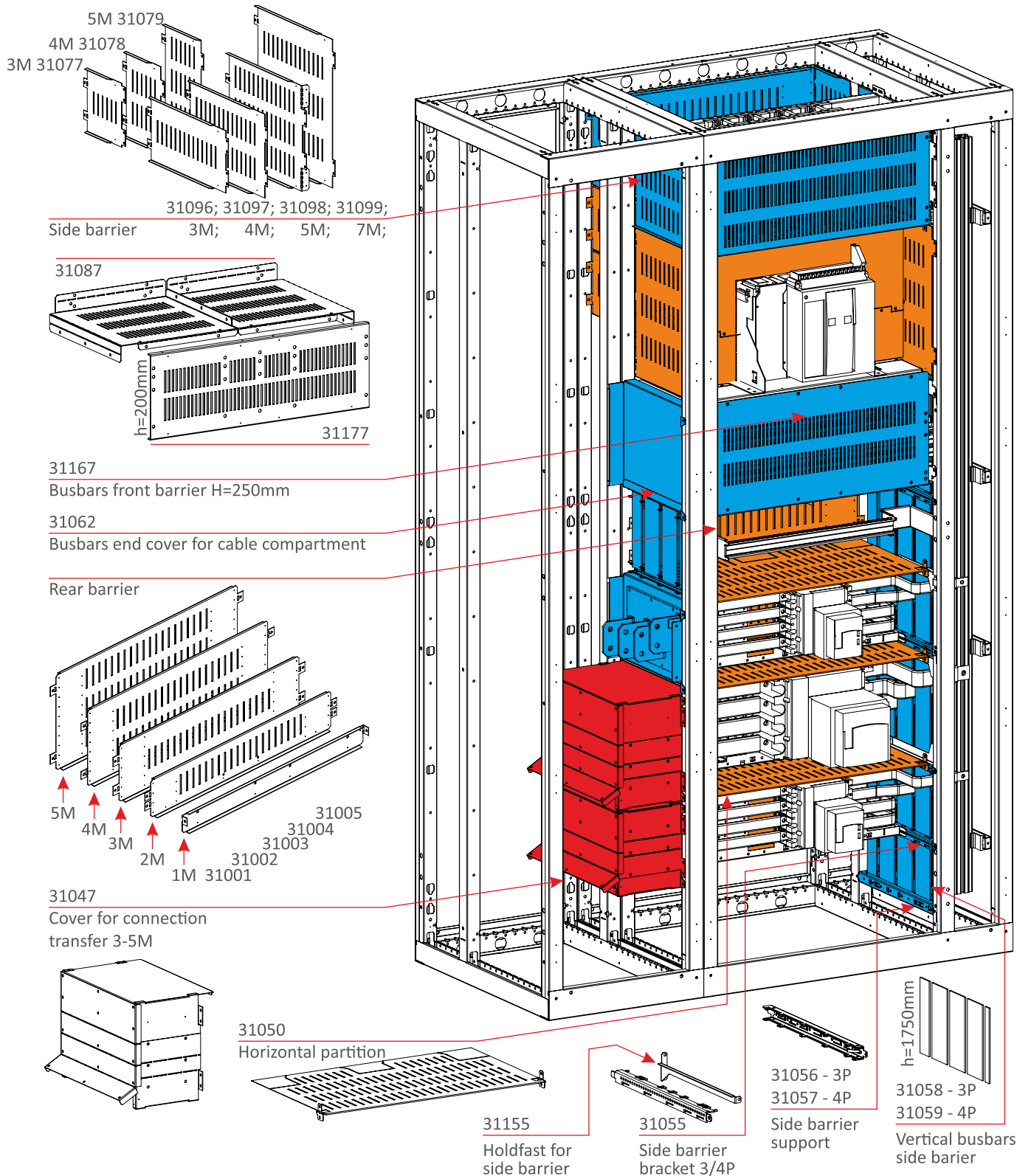


# Safety separation forms in Zenergy System

## Presentation

Several forms of separation can be implemented in the Zenergy system:

- Forma 2b - after applying main busbars barriers
- Forma 3b - after applying additional separations between functional units
- Forma 4b - after applying additional terminals covers, or transfer covers in the cable compartment



# Zenergy



V210226

Due to evolution of standards and equipment, the characteristics indicated in texts and images of this document do not constitute a commitment on our part without confirmation

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**Zenex**  
-SP. Z O.O.-

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