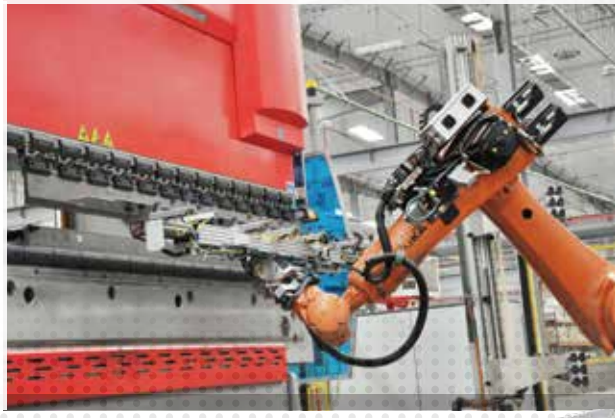
TRANSFORMERS & BUSWAYS SOLUTIONS



SUPER COMPACT BUSWAY - Al (SCB-AN)

BAHRA TBS

BAHRA TBS CAST RESIN TRANSFORMERS & BUSWAYS SOLUTIONS

The power solutions for commercial and industrial sector applications

SUPER COMPACT BUSWAY - Al FROM 630 A TO 6300 A

The busway is the most modern solution for the distribution of energy in an installation for machinery, equipment and lighting fittings, in all types of buildings.

The busway is also frequently used to power the (horizontal and vertical) backbones of buildings used for the commercial-service sectors, thus observing the time required for the installation and providing a final solution with remarkable technical advantages.

ASR American Systems REGISTRAR
ISO 9001:2015
ISO 14001:2015
ISO 45001:2018

علامة الجودة SASO QUALITY MARK

UL CERTIFIED

IPH BERLIN CESI IEC

INDEX: Busways

BAHRA TBS FACTORY OVERVIEW

INTEGRATED SOLUTIONS FOR GLOBAL PROJECTS

Bahra Electric began in 2008 and it is a leading manufacturer of an extensive range of electricity distribution products. In 2015, **Bahra Electric** expanded its manufacturing facilities & product range by creating a new factory **"Transformers and Busways Solutions Company"** specialized in producing high efficiency transformers and busways in partnership with **Legrand France** as an initiative to localize the important industries in the kingdom of Saudi Arabia and to become market leader in its industry.
In-line with Kingdom of Saudi vision 2030, **Bahra Electric** has acquired **Transformers and Busways Solutions Company (TBS)** in 2021 and has signed a license agreement with **Legrand France SA** permitting to use the existing designs and knowhow. **Bahra Electric** has crafted the new brand of TBS to be a **Bahra TBS.**

Bahra TBS is spread across 50,000 sq m area equipped with state-of-the-art latest European & Italian technology with complete backward process integration including epoxy casting and tinning. The manufacturing facility have implemented the Integrated Management Systems: ISO 9001, ISO 14001 & OHSAS 18001 as well as SASO mark.

Details matter. At TBS you can rest assured that your project is managed and executed in a pro fessional manner. Every single detail is important. A full-fledged team of experts overlook your projects from the very beginning of the design stage all the way to the testing and commissioning and even after the handing over of your project.

Design Support

We provide consultants a design support from the very beginning. Our design department is able to make solid electrical systems covering every detail of your requirements.

Technical Support

Our skilled technical expertise is at your disposal for consultation, training, orientation and support during the course of your project. We conduct regular training courses.

Product Availability

Our factory along with our wide network of partners and distributors in the Middle East region ensure a sustainable product availability to secure fast deliveries, efficient logistics alteration.

Testing & Commissioning

We cover all preliminary tests and inspections, functional performance tests and the supervision of commissioning of busways & transformers.

After Sales Service

A vast team of technical experts within Bahra TBS and our partners' teams are at your disposal for extending full After Sales Support meeting your expectations.

Technical Support at your service

Bahra TBS with its innovation and cutting-edge technology continue setting up latest trends in the market which enables us to meet the needs of our customers. You can be assured that your project is handled in the most efficient and professional manner meeting the industry standards and specifications.

We have all the necessary resources used to keep pace with market trends through our:

- Technical expertise - capable of providing the most practical and cost effective solutions for projects of any size.
- Bahra TBS Design office - supports customers throughout every step of their project providing a single contact, which is competent and easy to reach.
- Strong presence and experience of all our partners and distributors in the market.

*with our proprietary software PSB.

SUPER COMPACT BUSWAYS - Al

BAHRA TBS PRODUCT OFFER

BUSWAYS FROM 630 A TO 6300 A

Complete market coverage from standard specs to high specs rating **(low current density)**

EPOXY INSULATION

- High operating temperature
- Dielectric strength
- Requires thin coating which is better for heat dissipation
- Fusion bonded epoxy prevents moisture penetration
- Seamlessly Insulates holes in busbars

ALUMINUM CONDUCTOR

- Good electrical conductivity
- Resistance to oxidation
- Thermal resistance
- Reliable Strength & durability
- All the contact surfaces are tin plated in our in-house full automatized plant.

ALUMINUM CASING

- Light weight
- Corrosion resistance
- High thermal conductivity
- Easy to manufacture

APPLICATIONS

- High rise building
- Hotels
- Hospitals
- Banks
- Airports
- Data Center
- Industries
- Shopping Centers

Compact BUSWAYS (Main Features)

- Availability in the standard range from **630 A to 6300 A** with **Aluminum** conductors.
- Compact dimensions enhance its **resistance to short circuit stresses.**
- Low impedance of the circuit; by controlling the voltage drops and allow for the installation of high power electrical systems, even in extremely confined spaces.
- Excellent performances the installation and design of the paths is quick, easy, and flexible.
- Monoblock Junction with 12 mm adjustability.
- Availability with **a wide selection of tap-off boxes that range from 63 A up to 1250 A,** thus allowing you to locally protect and feed different types of loads by housing protective devices such as fuses, MCCBs and motorised switches
- Compliance with the IEC 61439-6 standard;
- **Referred to the average ambient temperature of 35 °C** against the required by the Standard.

  Available also for 50 °C average ambient temperature.
- Insulation Material Epoxy
- Casing: Aluminum
- IP Protection 55[1]
- Grounding / Earthing
- Insulation Class B[2]
- **Certification:**
  Complete range is fully type tested by UL, IPH-Berlin, SASO & ISO.

  Conductors: All the contact surfaces are tin plated.

[1] IP65/IP66 available upon request
[2] Class F insulation available upon request

SUPER COMPACT BUSWAYS - Al

BAHRA TBS PRODUCT OFFER

Straight elements:

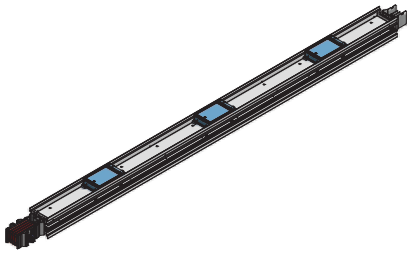
Supplied with its pre-installed monobloc.

Feeder elements:

- Standard length: 3 m
- Special length: from 1 m to 3 m

Distribution elements with tap-off outlets:

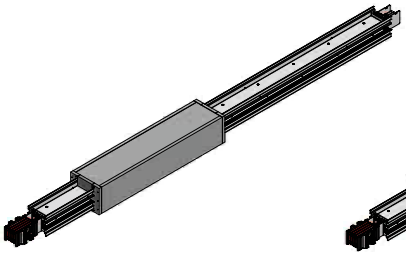
- Standard length: 3 m
- Tap-off outlets: Up to 5+5 spaced at 580 mm.

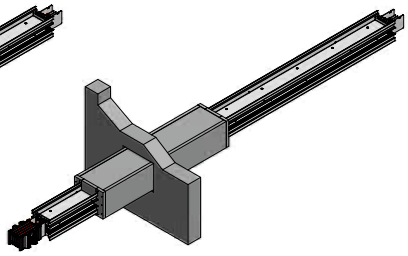


Additional elements:

Supplied with its pre-installed monobloc.
Elements able to meet any installation requirement.

Elements with S120 fire barrier
Elements with phase balancing
Elements with thermal expansion

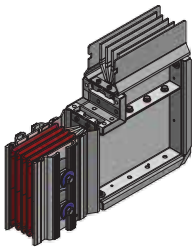


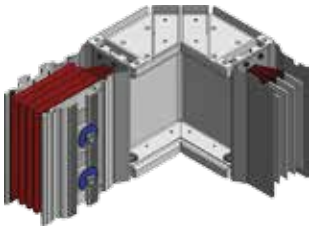


Angle components:

Supplied with its pre-installed monobloc.
Elements able to meet any change of direction with standard or special solutions.

Elbows
Double elbows
Special T, X elements





Tap-off boxes:

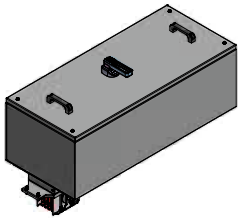
Elements used for connecting and energizing electric loads.

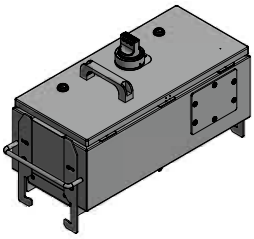
Plug-in tap-off boxes from 63 A up to 630 A:
(can be installed with busbar energized)

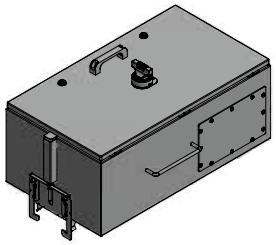
- with 3P fuse holders
- with switch disconnector and fuse holder
- Compatible with different brand of MCCB'S

Bolt-on tap-off boxes from 800 A to 1250 A:

- with switch disconnector and fuse holder
- for DPX³ circuit breakers

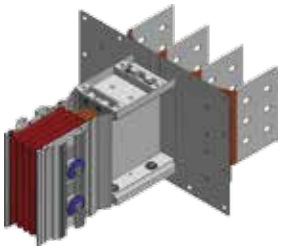






Connection interfaces:

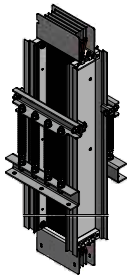
Elements used for connecting the busbar to the electric board or transformer.

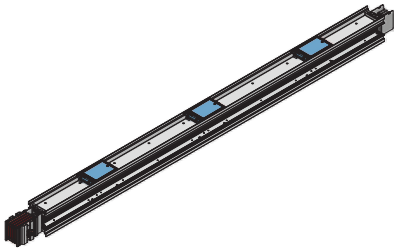


Fixing supports:

Elements used for fixing the busbar to the structure of the building.

Options for horizontal installations
Options for vertical installations
Options for special applications like Seismic areas.





BAHRA TBS BUSWAY
ADVANTAGES

Practicality

The electric design of the busbars is achieved in compliance with the product Standards. The rated current of our busbars is guaranteed at a room average temperature up to 50°C.

After choosing the busbar which is able to meet the operating current regulations, it will be very easy to verify the voltage drop as well as the protection against overcurrents by using the technical tables available for all our production lines.

In particular, these tables define a wide range of technical data which allow the planning engineer to carry out calculations with electric values, which are not estimated but the result of measurements made at Maximum Current during heating and short circuit tests (in certified UL laboratories), which have certified all product lines.

When using busbars, the load protection is located very close to the device (decentralized protection); Tap-off boxes can contain protection devices such as thermal magnetic circuit breakers, fuse carriers and motorized switches which allow you to easily and efficaciously manage the Power distribution.

Flexibility

By using the outlet windows located on the straight elements, the busbars provide high management flexibility, both when planning (electrical engineer) and when installing the system (installer); they are also used for the unavoidable changes required by the electric system to adapt to the varied needs of the end user during the life of plant.

The Tap-off boxes can be inserted and removed from their outlets when the busbar is electrically powered and inserted in another plug outlet, thus avoiding downtime.

No more point-point connections but only one power distribution system to which you will always be able to connect to wherever there is a free window.

Because of its flexibility and durability features Bahra TBS's busbar, installed inside a building, allows you to easily change the destination of its intended use of the rooms, thus giving also advantages to those who manage and locate the various parts of the building premises.

Quick installation

The busbar's junction and fixing systems have been designed and created to install busbars easily. In a cable and tray system, the time required to install only the tray is the same used to install a complete system in busbars.

Example of Bahra busbar system

Safety

A busbar does not use large amounts of insulating plastic material and potentially dangerous materials in case of fire.

Furthermore, the plastic materials used for the insulating parts of the busbars are always self-extinguishing (from V0 to V2) and the gas emission is generally very low (Halogen Free). Low electromagnetic emission is another advantage of the busbars as a result, the metal plate casing of the busbars serves as a shield for the electric field (shielded enclosure); the extreme vicinity between the phase conductors also reduces considerably the emission of the magnetic field.

Electromagnetic emission

The aluminum, a not magnetic metal, is used for the structure of the casing and the "sandwich" design for busbars together ensure the lowest values of emission of the magnetic field.
Magnetic induction measured at 1m from the full loaded busways are much lower than the 3 μT, that represents the "quality objective" in terms of human health in many countries.

These features make our busbars the unavoidable choice for hospital facilities, data processing centres and wherever it is necessary to supply a large amount of power in the proximity of workplaces and/or sensitive equipments.

Reduced dimensions

The overall dimensions of the busbars are generally smaller than an equivalent system made with cables, especially when the currents to be carried exceed 1000A and when several cables in parallel are necessary to ensure such capacity.

Other advantages can be achieved when there are changes of direction where the radius of curvature of the cables is minimal and enough to not damage the insulating material; busbars allow you to change directions with 90° angles, thus optimizing the small spaces used in service areas.

Super Compact BUSWAYS - Al

Straight Elements

Cat.Nos		Straight Elements for transport
Al	In (A)	L (mm)
72140102	630	
72140103	800	
72140104	1000	
72140105	1250	
72140106	1600	
72140107	2000	
72240102	2500	3000
72240103	2750	
72240104	3200	
72240105	3600	
72240106	4000	
72340101	5000	
72340102	6300	
72140112	630	
72140113	800	
72140114	1000	
72140115	1250	
72140116	1600	
72140117	2000	
72240112	2500	700-1000
72240113	2750	
72240114	3200	
72240115	3600	
72240116	4000	
72340111	5000	
72340112	6300	
72140172	630	
72140173	800	
72140174	1000	
72140175	1250	
72140176	1600	
72140177	2000	
72240172	2500	1001-1500
72240173	2750	
72240174	3200	
72240175	3600	
72240176	4000	
72340171	5000	
72340172	6300	
72140122	630	
72140123	800	
72140124	1000	
72140125	1250	
72140126	1600	
72140127	2000	
72240122	2500	1501-2000
72240123	2750	
72240124	3200	
72240125	3600	
72240126	4000	
72340121	5000	
72340122	6300	
72140182	630	
72140183	800	
72140184	1000	
72140185	1250	
72140186	1600	
72140187	2000	
72240182	2500	2001-2500
72240183	2750	
72240184	3200	
72240185	3600	
72240186	4000	
72340181	5000	
72340182	6300	
72140152	630	
72140153	800	
72140154	1000	
72140155	1250	
72140156	1600	
72140157	2000	
72240152	2500	2501-2999
72240153	2750	
72240154	3200	
72240155	3600	
72240156	4000	
72340151	5000	
72340152	6300	

* Item code will change for the special dimensions.

Super Compact BUSWAYS - Al

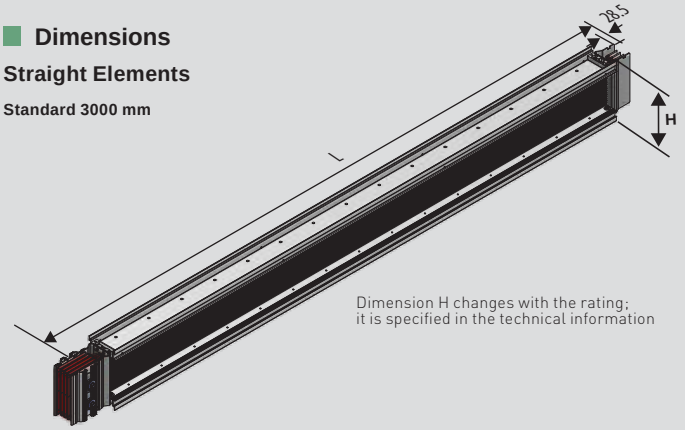
Straight Elements

Compact BUSWAYS – AE:
Reference standard: IEC 61439-6. Reference temperature: 35°C & 50°C Protection degree: IP55*. Thickness of top cover:2.5 mm and side casing 2.5mm & 3mm. No. of conductors: 4C, 4.5C or 5C. Painted: RAL 7035. Halogen Free. The insulation between bars is ensured by Epoxy class B (130°C)*. All plastic (Insulator) components have a V1 self-extinguishing degree (as per UL94); they are fire retardant and comply with the glow-wire test according to standards.
*IP65 / IP66 / Class F (155°C) Epoxy Insulation - available on request.

Dimensions

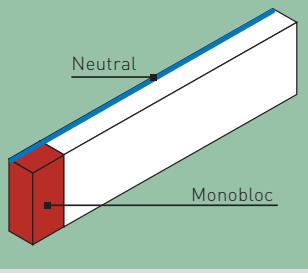
Straight Elements

Standard 3000 mm



MIN AND MAX DIMENSIONS OF SINGLE AND DOUBLE BAR	
Aluminum (Al)	630A – 6300A
(L) min/MAX [mm]	700/3000

NOTES
The product versions in the whole catalogue will be simplified as shown highlighting the part with the monobloc installed in red and the neutral side in blue. In the whole catalogue, the measurements shown refer to the element centre distance



The range is also available on request in different versions: (5 Conductors with dedicated PE conductor, double neutral and more others...)

Current Density

Bars	Rating (A)	Current density (A/mm²)
Single	630	2.91
	800	2.70
	1000	2.53
	1250	2.30
	1600	2.22
	2000	2.17
Double	2500	2.10
	2750	1.91
	3200	2.01
	3600	1.96
	4000	1.91
Triple	5000	1.75
	6300	1.68

Standard Rating

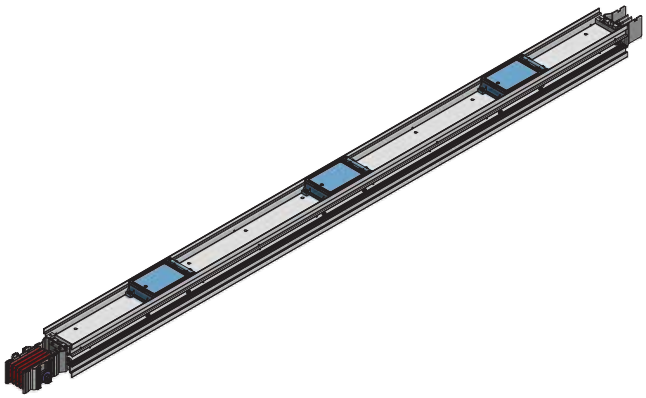
Single bar:
630A-2000A (Al)

Double bar:
2500A-4000A (Al)

Triple Bar:
5000A & 6300 (Al)

Super Compact BUSWAYS - Al

Straight Elements (continued)



Straight Elements for outlet

Cat.Nos Al	In (A)	N° outlets	L (mm)
72140132	630		
72140133	800		
72140134	1000		
72140135	1250		
72140136	1600		
72140137	2000		
72240132	2500	3+3	3000
72240133	2750		
72240134	3200		
72240135	3600		
72240136	4000		
72340131	5000		
72340132	6300		
72140972	630		
72140973	800		
72140974	1000		
72140975	1250		
72140976	1600		
72140977	2000		
72240972	2500	1+1	1000-1500
72240973	2750		
72240974	3200		
72240975	3600		
72240976	4000		
72340971	5000		
72340972	6300		
72140922	630		
72140923	800		
72140924	1000		
72140925	1250		
72140926	1600		
72140927	2000		
72240922	2500	2+2	1501-2000
72240923	2750		
72240924	3200		
72240925	3600		
72240926	4000		
72340921	5000		
72340922	6300		
72140982	630		
72140983	800		
72140984	1000		
72140985	1250		
72140986	1600		
72140987	2000		
72240982	2500	2+2	2001-2500
72240983	2750		
72240984	3200		
72240985	3600		
72240986	4000		
72340981	5000		
72340982	6300		
72140952	630		
72140953	800		
72140954	1000		
72140955	1250		
72140956	1600		
72140957	2000		
72240952	2500	3+3	2501-2999
72240953	2750		
72240954	3200		
72240955	3600		
72240956	4000		
72340951	5000		
72340952	6300		

Super Compact BUSWAYS - Al

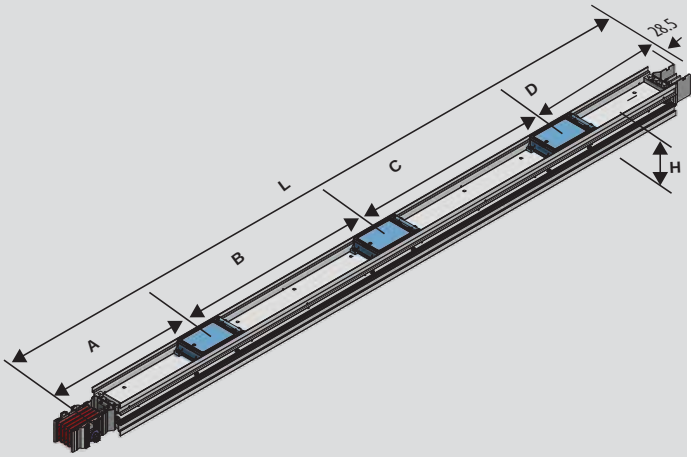
Straight Elements (continued)

Dimensions

Straight Elements for distribution

- Straight elements for plug-in type tap-off boxes
- Standard 3000 mm
- Tap-off outlets on both sides

Straight elements enable the application of plug-in boxes on appropriate outlets
Available in lengths from 1 to 3 meters, these elements have respectively 3+3(with 870 pitch and 5+5 (with 580 pitch).

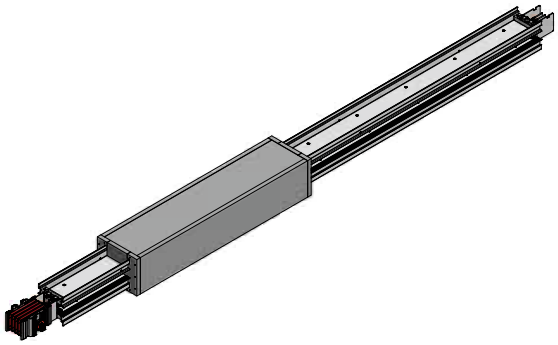


Dimension H changes with the ratings and it is specified in the Technical information

MIN AND MAX DIMENSIONS OF SINGLE AND DOUBLE BAR	
Aluminum (Al)	400A – 6300A
(L) min/MAX [mm]	1250 ***/3000

(***)For the length from 1000 mm to 1250 mm is possible to install only plug-in boxes Type 1 and 3
From 1250 mm to 3000 mm is possible to install all types of plug-in boxes
Compatible boxes are listed in dedicated chapter

(**) at request is possible to have others combinations of outlets:
lenght: 1000÷3000 - outlets: (1+1)
lenght: 1501÷3000 - outlets: (1+1) and (2+2)
lenght: 2501÷3000 - outlets: (1+1),(2+2) and (3+3)
lenght: 3000 - outlets: (1+1),(2+2),(3+3) and (5+5)
Possibility to have outlets in special position



T652EFB51

Cat.Nos

Fire Barrier Elements S120 (EN 1366-3, DIN 4102-09)

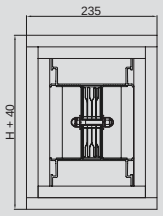
When the busbar trunking system crosses fire resistant walls or ceilings, it must be fitted with appropriate fire barriers
The fire barrier is 1000 mm (Cu) long and must always be positioned in the middle of the fire resistant wall or ceiling crossed by the busbar. After crossing fire resistant walls or ceilings, any cavity must be sealed with material meeting current regulations for the required building fire resistance class

Al	Fire barriers	Rating (A)	Type
7214FB02	630A Al - 4C	630	External
7214FB03	800A Al - 4C	800	External
7214FB04	1000A Al - 4C	1000	External
7214FB05	1250A Al - 4C	1250	External
7214FB06	1600A Al - 4C	1600	External
7214FB07	2000A Al - 4C	2000	External
7224FB01	2500A Al - 4C	2500	External
7224FB03	2750A Al - 4C	2750	External
7224FB03	3200A Al - 4C	3200	External
7224FB05	3600A Al - 4C	3600	External
7224FB05	4000A Al - 4C	4000	External
7234FB01	5000A Al - 4C	5000	External
7234FB02	6300A Al - 4C	6300	External

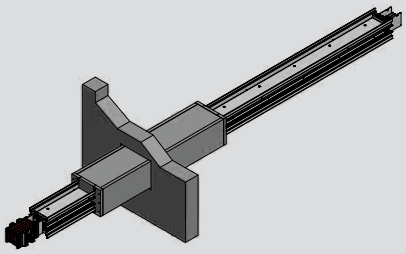
Super Compact BUSWAYS - Al
Straight Elements

Dimensions

Fire Barrier Elements



Fire barrier sizes
Dimension H changes with the rating; it is specified in the technical information



In order to ensure the maximum resistance class, for some ratings it is also necessary to fit at the factory an internal fire barrier following the indications on the table
It is therefore necessary to indicate at the order stage what elements will cross fire resistant walls or ceilings

Figure 1

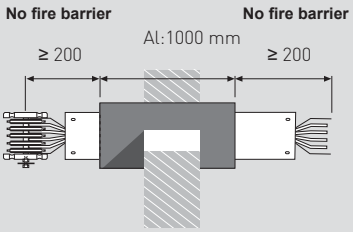
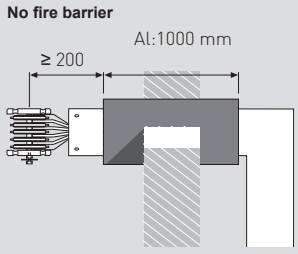


Figure 2

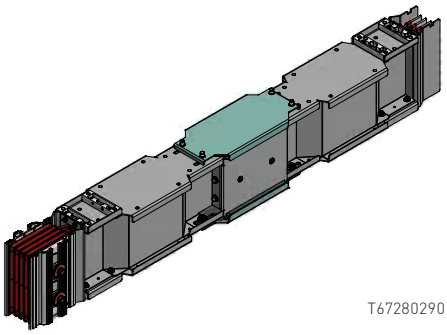


The external fire barrier can be used on any trunking component in compliance with the operating instructions specified in figures 1 and 2

Fire rated Busway available upon customer request.

Super Compact BUSWAYS - Al

Straight Elements (continued)



T67280290

Cat.Nos

Expansion Element

Due to being subjected to temperature changes, both the busbar and the building suffer thermal expansions
The expansion element can absorb expansion and contraction of both the busbar trunking system section and the building, up to the maximum permitted length (50 mm approx.)
The expansion element must be fitted near the expansion joints of the building and in straight sections of the line (horizontal and/or vertical) longer than 40 m
For straight line sections longer than 40 m, expansion elements must be fitted in a way that splits the path into equal sections not longer than 40 m
busbar trunking system elements are designed to compensate for thermal expansion if the straight sections of the installation are less than 40 m; in this case no expansion element is necessary

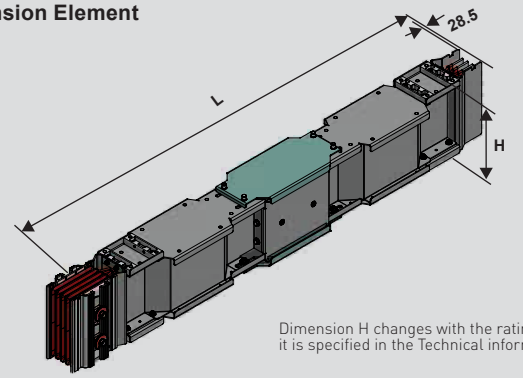
Al	In (A)	Type
72140202	630	
72140203	800	
72140204	1000	
72140205	1250	
72140206	1600	
72140207	2000	
72240202	2500	1500
72240203	2750	
72240204	3200	
72240205	3600	
72240206	4000	
72340201	5000	
72340202	6300	
72140292	630	
72140293	800	
72140294	1000	
72140295	1250	
72140296	1600	
72140297	2000	
72240292	2500	3000
72240293	2750	
72240294	3200	
72240295	3600	
72240296	4000	
72340291	5000	
72340292	6300	

Super Compact BUSWAYS - Al

Straight Elements (continued)

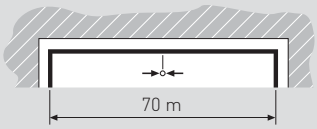
Dimensions

Expansion Element

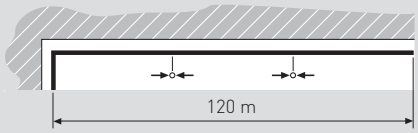


Dimension H changes with the ratings and it is specified in the Technical information

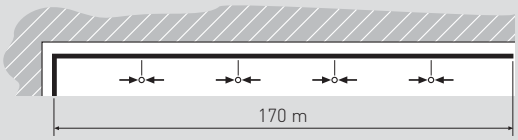
MIN AND MAX DIMENSIONS OF SINGLE AND DOUBLE BAR	
Aluminum (Al)	630A – 6300A
(L) min/MAX [mm]	1500 and 3000



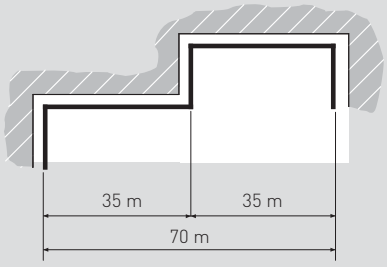
Example:
Straight section lenght 70 m = n°1 expansion element in the center of the line



Example:
Straight section lenght 120 m = n°2 expansion elements, one every 40 m



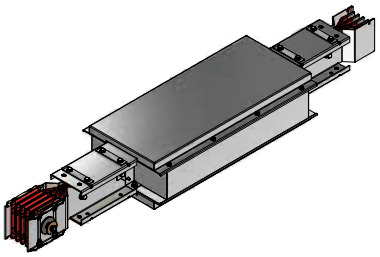
Example:
Straight section length 170 m = no. 4 expansion elements, one every 34 m



Example:
Section length 70 m. When the section is not straight, no expansion element is necessary

Super Compact BUSWAYS - Al

Straight Elements (continued)



Phase balancing

Cat.Nos Al	In (A)	L (mm)
72147102	630	
72147103	800	
72147104	1000	
72147105	1250	
72147106	1600	
72147107	2000	
72247102	2500	1500
72247103	2750	
72247104	3200	
72247105	3600	
72247106	4000	
72347101	5000	
72347102	6300	

Straight elements with phase balancing are used to reduce and balance mutual phase reactance and impedance in case of long lines.
In particularly long sections (→ 100 metres) it is recommended that two transposition elements are fitted (one at one third and one at two thirds of the path), to balance the system electric impedance: In this way, it will be possible to have along the installation path all the possible combination, of reciprocal positions among phases, minimising load losses

Phase inversion

Al	In (A)	L (mm)
72147122	630	
72147123	800	
72147124	1000	
72147125	1250	
72147126	1600	
72147127	2000	
72247122	2500	1500
72247123	2750	
72247124	3200	
72247125	3600	
72247126	4000	
72347121	5000	
72347122	6300	

The function of this element is to completely reverse the positions of the phases and the neutral. It is normally used in connections between transformer and electric board, or in the connections between electric boards, when the starting sequence is different from the arrival sequence

Element with Neutral rotation

Al	In (A)	L (mm)
72147142	630	
72147143	800	
72147144	1000	
72147145	1250	
72147146	1600	
72147147	2000	
72247142	2500	1500
72247143	2750	
72247144	3200	
72247145	3600	
72247146	4000	
72347141	5000	
72347142	6300	

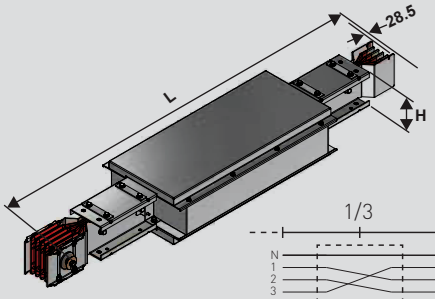
The straight element with Neutral rotation is used to adapt the sequence of the busbar phases to the sequence of the connections required at the ends of the connections, should these be different.
In the connection between electric boards, the neutral jump is normally used, as only the neutral position is normally identified

Super Compact BUSWAYS - Al

Straight Elements (continued)

Dimensions

Phase balancing 1500 mm



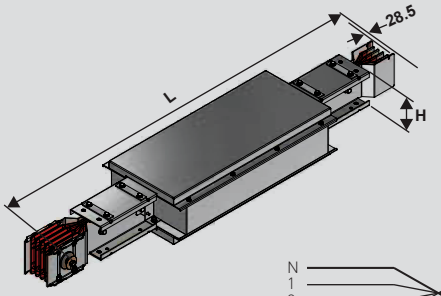
Dimension H changes with the rating; it is specified in the technical information.

Electric diagram: Two elements offer all the possible reciprocal positions among the phases along the line

In particularly long carrying sections (→ 100 meters) it is recommended to insert 2 elements always by 2: (one placed at 1/3 and one placed at 2/3 of the trunking path) to balance the electric impedance of the system

For example, in a line exceeding 300 m it is recommended that one phase transposition is fitted at 100 m, and another one at 200 m

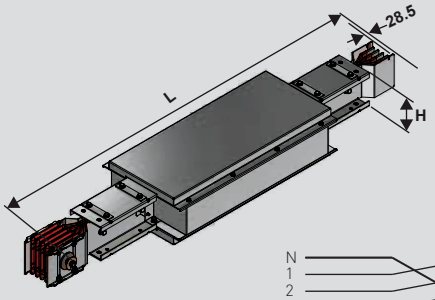
Phase inversion 1500 mm



Electrical diagram

Warning: Use ONLY these elements for transport, and not for derivations (not use it when the line includes straight elements with derivations, or when they are provided for tap-off boxes even if bolted on the junction)
The position of all the conductors, including the neutral, changes, and may cause serious problems on a connected load, if one is not fully aware that the phase sequence and the position of the neutral DO NOT comply with those indicated in the pre-printed labels

Element with neutral rotation 1500 mm

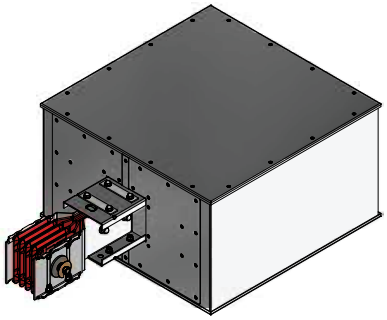


Electrical diagram

When the sequence of the distribution board phases is different from that of the transformer, it is possible to use an element that allows a neutral rotation

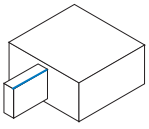
Super Compact BUSWAYS - Al

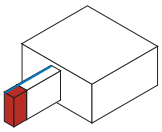
Feed Unit



The feed units are used at the end of the lines, when the busbar must be powered using cables. They are available in the right (without Monobloc) and left (with Monobloc fitted) version
On request they are available with non-standard execution
End feed units for single bar busbars are supplied with an Aluminum blind back closing plate
For double bar busbar trunking systems the plates are 2
Both versions are fitted with 2 extra side steel flanges and 2 inspection steel flanges (dark grey colour)
The cable is connected directly to the busbars using bolts. For more information on board/busbar connection see the tables below (Dimensions For The Box)
To feed the power supply cable through the back power supply flanges it will be necessary to drill a hole in case of single bar and two holes in case of double bar.

Cat.Nos	Feed Unit	
Al	In (A)	Type
72141102	630	Right type 2
72141103	800	
72141104	1000	
72141105	1250	
72141106	1600	
72141107	2000	
72241102	2500	
72241103	2750	
72241104	3200	
72241105	3600	
72241106	4000	
72341101	5000	
72341102	6300	
72141112	630	Left type 1
72141113	800	
72141114	1000	
72141115	1250	
72141116	1600	
72141117	2000	
72241112	2500	
72241113	2750	
72241114	3200	
72241115	3600	
72241116	4000	
72341111	5000	
72341112	6300	



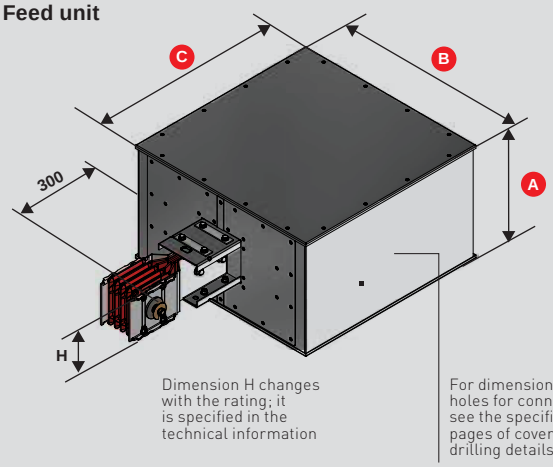


Super Compact BUSWAYS - Al

Feed Unit

Dimensions

Feed unit

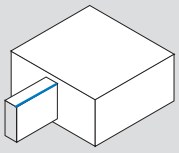
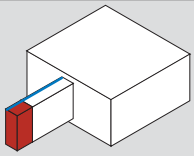


Rear cable input

Aluminum gland plate for cable entry 170 x 410 mm for Single Bar.
Aluminum gland plate for cable entry 400 x 400 mm(3x) for Double Bar.

Dimensions FOR THE BOX				
	Rating (A)	A	B	C
Single	630	350	610	610
	800	350	610	610
	1000	350	610	610
	1250	350	610	610
	1600	350	610	610
	2000	350	610	610
Double	2500	350	610	810
	2750	350	610	810
	3200	630	610	810
	3600	630	610	810
	4000	630	610	810
Triple	5000	800	610	810
	6300	800	610	810

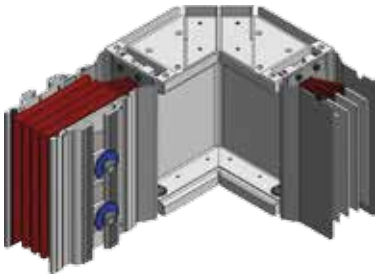
Special dimensions (not standard) are available on request, please contact Bahra TBS

Type 2 (without monobloc)	Type 1 (with monobloc)
	

CONNECTIONS				
Load (A)	The Aluminium (Al) phase section is rounded up (mm²)	No. of connection holes for each busbar conductor	No. of one-pole cables that can be connected to each phase	
630	220	2	2x150	1x300
800	300	2	2x150	1x300
1000	400	2	2x150	1x300
1250	550	4	2x150	2x300
1600	750	6	4x150	2x300
2000	1000	6	4x150	2x300
2500	1200	8	3x240	3x300
2750	1500	12	4x240	3x300
3200	1600	12	4x240	3x300
3600	1900	12	5x240	4x300
4000	2100	16	5x240	4x300
5000	2900	18	8x240	6x300
6300	3800	24	10x240	8x300

Super Compact BUSWAYS - Al

Elbows



Horizontal Elbow

Cat.Nos Al	In (A)	Type	Type
72140302	630		
72140303	800		
72140304	1000		
72140305	1250		
72140306	1600		
72140307	2000		Standard
72240302	2500		
72240303	2750		
72240304	3200		
72240305	3600		
72240306	4000		
72340301	5000		
72340302	6300		
72140322	630		
72140323	800	Right Type 1	
72140324	1000		
72140325	1250		
72140326	1600		
72140327	2000		Special
72240322	2500		
72240323	2750		
72240324	3200		
72240325	3600		
72240326	4000		
72340321	5000		
72340322	6300		
72140312	630		
72140313	800		
72140314	1000		
72140315	1250		
72140316	1600		
72140317	2000		Standard
72240312	2500		
72240313	2750		
72240314	3200		
72240315	3600		
72240316	4000		
72340311	5000		
72340312	6300		
72140332	630		
72140333	800		
72140334	1000	Left Type 2	
72140335	1250		
72140336	1600		
72140337	2000		Special
72240332	2500		
72240333	2750		
72240334	3200		
72240335	3600		
72240336	4000		
72340331	5000		
72340332	6300		

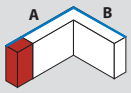
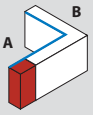
Super Compact BUSWAYS - Al

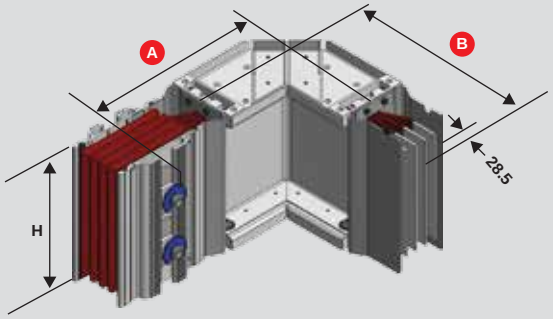
Elbows

Dimensions

Horizontal Elbow

In order to define the type of horizontal elbow required, consider to place the element "edgewise" (conductors perpendicular to the ground). In this configuration "horizontal" elbows enable a path variation parallel to the ground
When the neutral busbar conductor faces the outside of the elbow, there will be a Right horizontal elbow (type 1)
Contrariwise, with the neutral busbar conductor facing the inside of the elbow there will be a Left horizontal elbow (type 2)

Type 1	Type 2
	



The dimensions are referred to the standard elements.
Single/double/triple bar (A+B): 300+300 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE & TRIPLE BAR	
Single bar min/MAX	
A	300/1400*
B	300/1400*
Double bar min/MAX	
A	300/1400*
B	300/1400*
Triple bar min/MAX	
A	300/1400*
B	300/1400*

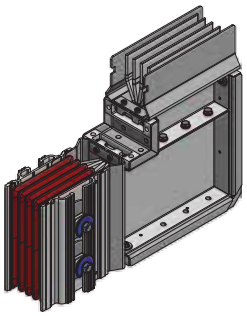
Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

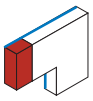
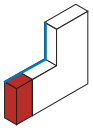
* For all the non standard horizontal elbows (special), it is possible to have only one of the two sides in size exceeding 600 mm.
For example, when ordering an horizontal elbow with size A=650 mm, the B size will have to be ≤ 600 mm

Super Compact BUSWAYS - Al

Elbows (continued)



Cat.Nos **Vertical Elbow**

Al	In (A)	Type	Type
72140402	630	 Right Type 2	Standard
72140403	800		
72140404	1000		
72140405	1250		
72140406	1600		
72140407	2000		
72240402	2500		
72240403	2750		
72240404	3200		
72240405	3600		
72240406	4000		
72340401	5000		
72340402	6300		
72140422	630		Special
72140423	800		
72140424	1000		
72140425	1250		
72140426	1600		
72140427	2000		
72240422	2500		
72240423	2750		
72240424	3200		
72240425	3600		
72240426	4000		
72340421	5000		
72340422	6300		
72140412	630	 Left Type 1	Standard
72140413	800		
72140414	1000		
72140415	1250		
72140416	1600		
72140417	2000		
72240412	2500		
72240413	2750		
72240414	3200		
72240415	3600		
72240416	4000		
72340411	5000		
72340412	6300		
72140432	630		Special
72140433	800		
72140434	1000		
72140435	1250		
72140436	1600		
72140437	2000		
72240432	2500		
72240433	2750		
72240434	3200		
72240435	3600		
72240436	4000		
72340431	5000		
72340432	6300		

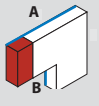
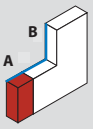
Super Compact BUSWAYS - Al

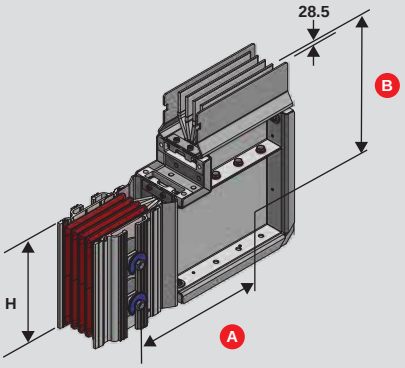
Elbows (continued)

Dimensions

Vertical Elbow

In order to define the type of vertical elbow, it is necessary to still place the element "edgewise" (conductors perpendicular to the ground), with the section with Monobloc facing the observer and the section without facing up. In this configuration, vertical "elbows" enable an up or down facing variation
If the neutral is on the left side, there will be a left vertical elbow (Type 1). If, on the other side, it is on the right side, there will be a right vertical elbow (Type 2)

Type 2	Type 1
	



The dimensions are referred to the standard elements
single bar (A+B) : 300+300 mm
double bar (A+B) : 450+450 mm
triple bar (A+B) : 550+550 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE & TRIPLE BAR	
Single bar min/MAX	
A	300/1400*
B	300/1400*
Double bar min/MAX	
A	450/1400*
B	450/1400*
Triple bar min/MAX	
A	550/1400*
B	550/1400*

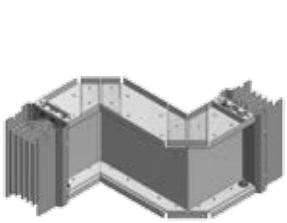
Dimension H changes with the rating; it is specified in the technical information

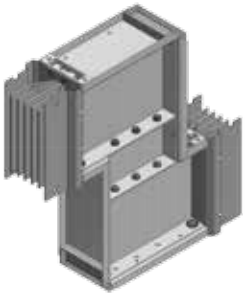
No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard vertical elbows (special), it is possible to have only one of the two sides in size exceeding 500 mm
For example, when ordering a vertical elbow with size A=650 mm, the B size will have to be ≤ 600 mm.

Super Compact BUSWAYS - Al

Elbows (continued)

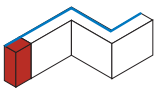




Cat.Nos

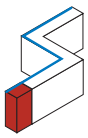
Double Horizontal Elbow

Al	In (A)	Type
72140342	630	
72140343	800	
72140344	1000	
72140345	1250	
72140346	1600	
72140347	2000	
72240342	2500	
72240343	2750	
72240344	3200	
72240345	3600	
72240346	4000	
72340341	5000	
72340342	6300	



Right Type 1

72140352	630	
72140353	800	
72140354	1000	
72140355	1250	
72140356	1600	
72140357	2000	
72240352	2500	
72240353	2750	
72240354	3200	
72240355	3600	
72240356	4000	
72340351	5000	
72340352	6300	

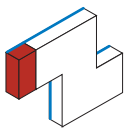


Left Type 2

Cat.Nos

Double Vertical Elbow

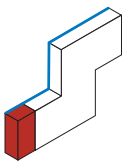
Al	In (A)	Type
72140442	630	
72140443	800	
72140444	1000	
72140445	1250	
72140446	1600	
72140447	2000	
72240442	2500	
72240443	2750	
72240444	3200	
72240445	3600	
72240446	4000	
72340441	5000	
72340442	6300	



Right Type 2

72140452	630	
72140453	800	
72140454	1000	
72140455	1250	
72140456	1600	
72140457	2000	
72240452	2500	
72240453	2750	
72240454	3200	
72240455	3600	
72240456	4000	
72340451	5000	
72340452	6300	

Left Type 1



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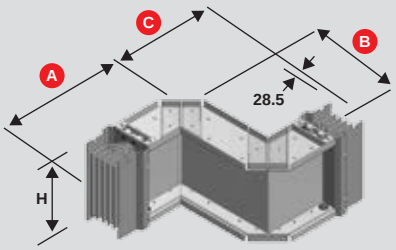
Elbows (continued)

Dimensions

Double Horizontal Elbow

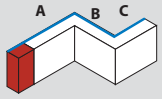
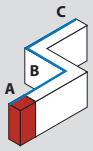
Double horizontal elbows are the union of two horizontal elbows; in order to define the type, it is enough to observe them starting from the Monobloc; if the first elbow met is left, we will have a double horizontal elbow left + right (Type 2). Contrariwise, if the first elbow met is right, we will have a double horizontal elbow right + left (Type 1)



The dimensions are referred to the standard elements.
Single/double/triple bar (A+B+C): 300+300+300 mm

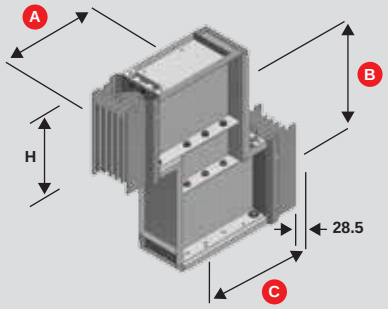
MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE & TRIPLE BAR	
Single bar min/MAX	
A	300/1000*
B	300/1000*
C	300/1000*
Double bar min/MAX	
A	300/1000*
B	300/1000*
C	300/1000*
Triple bar min/MAX	
A	300/1000*
B	300/1000*
C	300/1000*

Dimension H changes with the rating; it is specified in the technical info.

Type 1	Type 2
	

Double Vertical Elbow

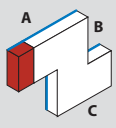
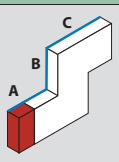
Double vertical elbows are the union of two vertical elbows; in order to define the type, it is enough to observe them starting from the Monobloc; if the first elbow met is left, we will have a double vertical elbow left + right (Type 1). Contrariwise, if the first elbow met is right, we will have a double vertical elbow right + left (Type 2)



The dimensions are referred to the standard elements.
Single bar (A+B+C): 300+300+300 mm
Double bar (A+B+C): 450+450+450 mm
Triple bar (A+B+C): 550+550+550 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE & TRIPLE BAR	
Single bar min/MAX	
A	300/1000*
B	300/1000*
C	300/1000*
Double bar min/MAX	
A	450/750*
B	450/750*
C	450/750*
Triple bar min/MAX	
A	550/1100*
B	550/750*
C	550/750*

Dimension H changes with the rating; it is specified in the technical info.

Type 2	Type 1
	

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard double Horizontal or double Vertical elbows (special), it is possible to have only one of the three sides in size exceeding 500 mm
For example, when ordering a double horizontal or double vertical elbow with size A=650 mm, the B and C size will have to be ≤ 600 mm.

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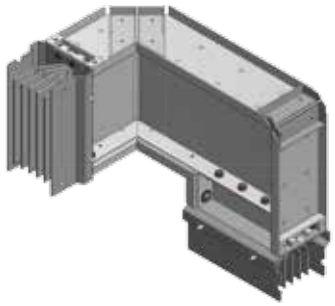
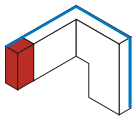
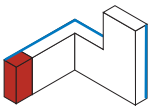
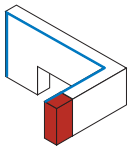
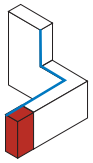
Elbows (continued)



Double Elbow Horizontal + Vertical

Cat.Nos Al	In (A)	Type
72140602	630	 Type 1
72140603	800	
72140604	1000	
72140605	1250	
72140606	1600	
72140607	2000	
72240602	2500	
72240603	2750	
72240604	3200	
72240605	3600	
72240606	4000	
72340601	5000	
72340602	6300	
72140612	630	 Type 2
72140613	800	
72140614	1000	
72140615	1250	
72140616	1600	
72140617	2000	
72240612	2500	
72240613	2750	
72240614	3200	
72240615	3600	
72240616	4000	
72340611	5000	
72340612	6300	
72140622	630	 Type 3
72140623	800	
72140624	1000	
72140625	1250	
72140626	1600	
72140627	2000	
72240622	2500	
72240623	2750	
72240624	3200	
72240625	3600	
72240626	4000	
72340621	5000	
72340622	6300	
72140632	630	 Type 4
72140633	800	
72140634	1000	
72140635	1250	
72140636	1600	
72140637	2000	
72240632	2500	
72240633	2750	
72240634	3200	
72240635	3600	
72240636	4000	
72340631	5000	
72340632	6300	

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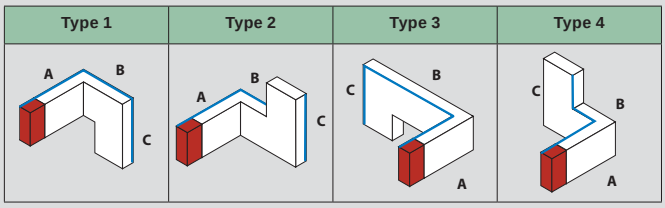
Elbows (continued)

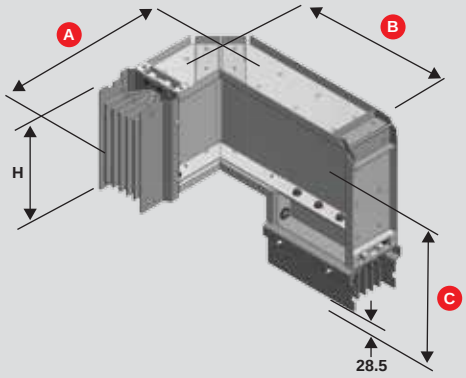
Dimensions

Double Elbow Horizontal + Vertical

Double elbows horizontal + vertical are the union of a horizontal and a vertical elbow, placed in succession starting from the side with Monobloc
Depending on the type of elbows, the double horizontal + vertical elbow may be of four different types:

- Double elbow Horizontal RH + Vertical RH (Type 1)
- Double elbow Horizontal RH + Vertical LH (Type 2)
- Double elbow Horizontal LH + Vertical RH (Type 3)
- Double elbow Horizontal LH + Vertical LH (Type 4)





The dimensions are referred to the standard elements
Single bar (A+B+C): 300+300+300 mm
double bar (A+B+C): 300+450+450 mm
triple bar (A+B+C): 300+550+550 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
A	300/800*
B	300/800*
C	300/800*
Double bar min/MAX	
A	300/800*
B	450/900*
C	450/750*
Triple bar min/MAX	
A	300/800*
B	550/750*
C	550/750*

Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard double H+V elbow (special), it is possible to have only one of the three sides in size exceeding 450 mm
For example, when ordering a horizontal + vertical elbow with size A=650 mm, the B and C size will have to be ≤ 600 mm.

Note:
RH - Right
LH - Left

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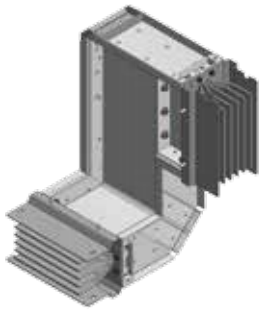
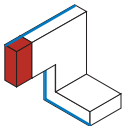
Elbows (continued)



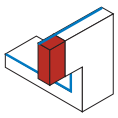
Cat.Nos **Double Elbow Vertical + Horizontal**

Al	In (A)	Type
72140502	630	
72140503	800	
72140504	1000	
72140505	1250	
72140506	1600	
72140507	2000	
72240502	2500	
72240503	2750	
72240504	3200	
72240505	3600	
72240506	4000	
72340501	5000	
72340502	6300	



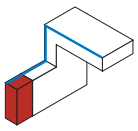
Type 1

72140512	630	
72140513	800	
72140514	1000	
72140515	1250	
72140516	1600	
72140517	2000	
72240512	2500	
72240513	2750	
72240514	3200	
72240515	3600	
72240516	4000	
72340511	5000	
72340512	6300	



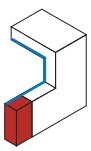
Type 2

72140522	630	
72140523	800	
72140524	1000	
72140525	1250	
72140526	1600	
72140527	2000	
72240522	2500	
72240523	2750	
72240524	3200	
72240525	3600	
72240526	4000	
72340521	5000	
72340522	6300	



Type 3

72140532	630	
72140533	800	
72140534	1000	
72140535	1250	
72140536	1600	
72140537	2000	
72240532	2500	
72240533	2750	
72240534	3200	
72240535	3600	
72240536	4000	
72340531	5000	
72340532	6300	



Type 4

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Elbows (continued)

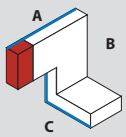
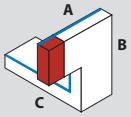
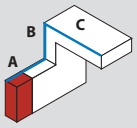
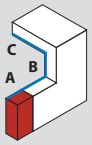
Dimensions

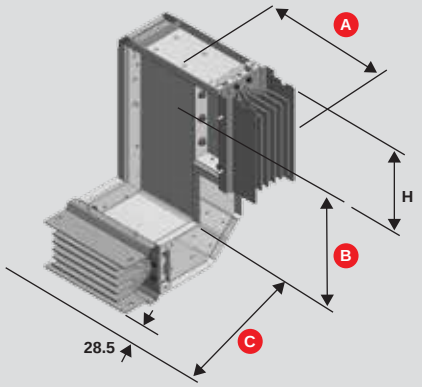
Double Elbow Vertical + Horizontal

Double elbows vertical + horizontal are the union of a vertical and a horizontal elbow, placed in succession starting from the side with Monobloc

Depending on the type of elbows, the double vertical + horizontal elbow may be of four different types:

- Double elbow vertical RH + horizontal RH (Type 1)
- Double elbow vertical RH + horizontal LH (Type 2)
- Double elbow vertical LH + horizontal RH (Type 3)
- Double elbow vertical LH + horizontal LH (Type 4)

Type 1	Type 2	Type 3	Type 4
			



The dimensions are referred to the standard elements.
Single bar (A+B+C): 300+300+300 mm
Double bar (A+B+C): 450+450+300 mm
Triple bar (A+B+C): 550+550+300 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
A	300/800*
B	300/800*
C	300/800*
Double bar min/MAX	
A	450/900*
B	450/750*
C	300/800*
Triple bar min/MAX	
A	550/1100*
B	550/750*
C	300/800*

Dimension H changes with the rating; it is specified in the technical information

Note:
No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard double V+H elbows (special), it is possible to have only one of the three sides in size exceeding 450 mm
For example, when ordering a double vertical + horizontal elbow with size A=650 mm, the B and C size will have to be ≤ 600 mm.

RH - Right
LH - Left

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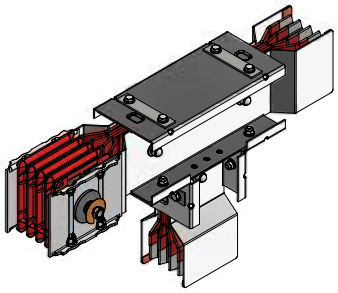
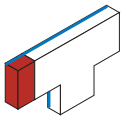
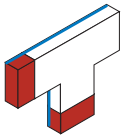
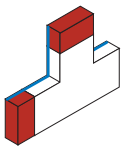
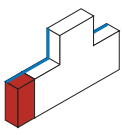
T Elements



Cat.Nos	Vertical T Element		
Al	In (A)	Type	
72140802	630	 Type 1	
72140803	800		
72140804	1000		
72140805	1250		
72140806	1600		
72140807	2000		
72240802	2500		
72240803	2750		
72240804	3200		
72240805	3600		
72240806	4000		
72340801	5000		
72340802	6300		
72140812	630	 Type 2	
72140813	800		
72140814	1000		
72140815	1250		
72140816	1600		
72140817	2000		
72240812	2500		
72240813	2750		
72240814	3200		
72240815	3600		
72240816	4000		
72340811	5000		
72340812	6300		
72140822	630	 Type 3	
72140823	800		
72140824	1000		
72140825	1250		
72140826	1600		
72140827	2000		
72240822	2500		
72240823	2750		
72240824	3200		
72240825	3600		
72240826	4000		
72340821	5000		
72340822	6300		
72140832	630	 Type 4	
72140833	800		
72140834	1000		
72140835	1250		
72140836	1600		
72140837	2000		
72240832	2500		
72240833	2750		
72240834	3200		
72240835	3600		
72240836	4000		
72340831	5000		
72340832	6300		

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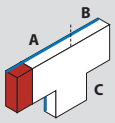
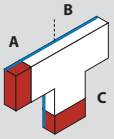
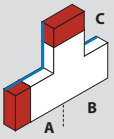
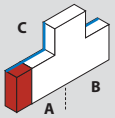
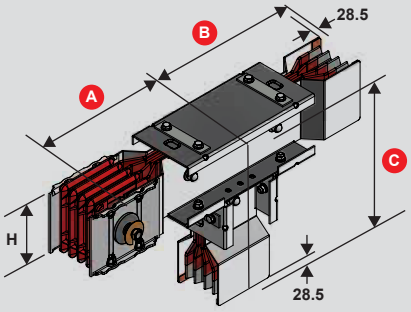
T Elements

Dimensions

Vertical T Element

T-elements can be used to split the line in two branches, adding together the effect of two diverging elbows
There are four types of verticals "T" elements, as shown below

Type 1	Type 2	Type 3	Type 4
			



The dimensions are referred to the standard elements
Single bar (A+B+C): 300+300+300 mm
Double bar (A+B+C): 600+600+600 mm
Triple bar (A+B+C): 600+600+600 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
A	300/1400*
B	300/1400*
C	300/700*
Double bar min/MAX	
A	300/1400*
B	300/1400*
C	450/600*
Triple bar min/MAX	
A	300/1400*
B	300/1400*
C	550/550*

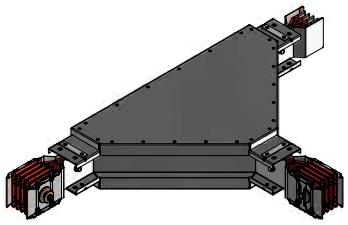
Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

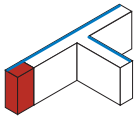
* For all the non standard Vertical T elements (special), it is possible to have only one of the three sides in size exceeding 600 mm.
For example, when ordering a T vertical element with size A=650 mm, the B and C size will have to be ≤600 mm

Super Compact BUSWAYS - Al

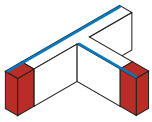
T Elements (continued)



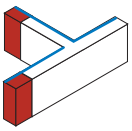
Cat.Nos	Horizontal T Element	
Al	In (A)	Type
72140702	630	
72140703	800	
72140704	1000	
72140705	1250	
72140706	1600	
72140707	2000	
72240702	2500	
72240703	2750	
72240704	3200	
72240705	3600	
72240706	4000	
72340701	5000	
72340702	6300	
72140712	630	
72140713	800	
72140714	1000	
72140715	1250	
72140716	1600	
72140717	2000	
72240712	2500	
72240713	2750	
72240714	3200	
72240715	3600	
72240716	4000	
72340711	5000	
72340712	6300	
72140722	630	
72140723	800	
72140724	1000	
72140725	1250	
72140726	1600	
72140727	2000	
72240722	2500	
72240723	2750	
72240724	3200	
72240725	3600	
72240726	4000	
72340721	5000	
72340722	6300	
72140732	630	
72140733	800	
72140734	1000	
72140735	1250	
72140736	1600	
72140737	2000	
72240732	2500	
72240733	2750	
72240734	3200	
72240735	3600	
72240736	4000	
72340731	5000	
72340732	6300	



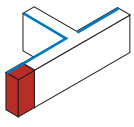
Type 1



Type 2



Type 3



Type 4

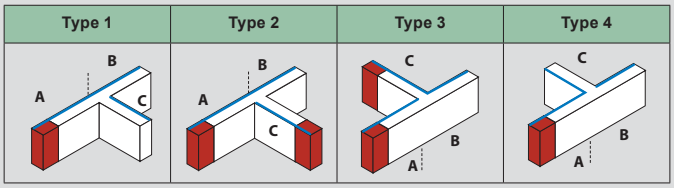
Super Compact BUSWAYS - Al

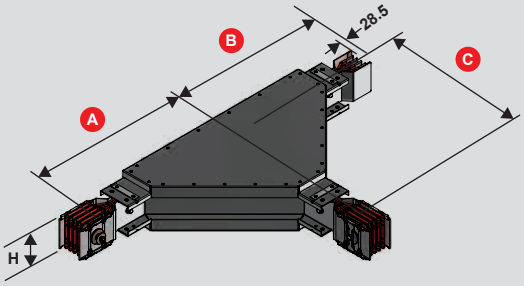
T Elements (continued)

Dimensions

Horizontal T Element

T-elements can be used to split the line in two branches, adding together the effect of two diverging elbows
There are four types of horizontal "T" elements, as shown below





The dimensions are referred to the standard elements.
Single/double/triple bar (A+B+C): 700+700+700 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
A	700/700*
B	700/700*
C	700/700*
Double bar min/MAX	
A	700/700*
B	700/700*
C	700/700*
Triple bar min/MAX	
A	700/700*
B	700/700*
C	700/700*

Dimension H changes with the rating; it is specified in the technical information

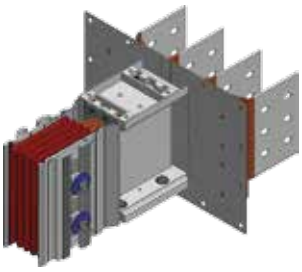
No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard Horizontal T elements (special), it is possible to have only one of the three sides in size exceeding 600 mm.
For example, when ordering a T horizontal element with size A=650 mm, the B and C size will have to be ≤ 600 mm

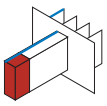
Note:
Only in special cases, where is not possible to use the standard element, is possible to have only one of three arms with minimum dimension of 300mm.
For more information please contact Bahra TBS

Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars



Cat.Nos **Connection Interfaces with Exit Bars**

Al	In (A)	Type	Type
72141002	630		
72141003	800		
72141004	1000		
72141005	1250		
72141006	1600		
72141007	2000		Standard
72241002	2500		
72241003	2750		
72241004	3200		
72241005	3600		
72241006	4000		
72341001	5000		
72341002	6300		
72141022	630	 Right Type 2	
72141023	800		
72141024	1000		
72141025	1250		
72141026	1600		
72141027	2000		Special
72241022	2500		
72241023	2750		
72241024	3200		
72241025	3600		
72241026	4000		
72341021	5000		
72341022	6300		
72141012	630		
72141013	800		
72141014	1000		
72141015	1250		
72141016	1600		
72141017	2000		Standard
72241012	2500		
72241013	2750		
72241014	3200		
72241015	3600		
72241016	4000		
72341011	5000		
72341012	6300		
72141032	630	 Left Type 1	
72141033	800		
72141034	1000		
72141035	1250		
72141036	1600		
72141037	2000		Special
72241032	2500		
72241033	2750		
72241034	3200		
72241035	3600		
72241036	4000		
72341031	5000		
72341032	6300		

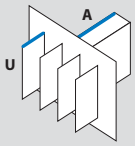
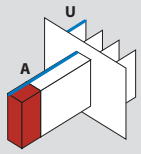
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars

Dimensions

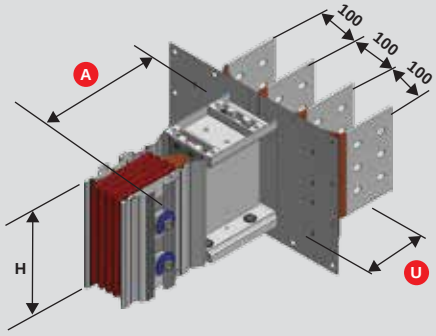
Connection Interfaces with Exit Bars

Standard connection interfaces are used at the end of the lines to connect the busbar to boards or transformers. They are available in the right (without Monobloc) and left (with Monobloc fitted) version. The drawings below refer to the standard versions. Different executions are available on request (e.g.: length, centre distance between bar conductors, drilling, etc.)

Standard connection interface RH (Type 2 without monoblock fitted)	Standard connection interface LH (Type 1 with monoblock fitted)
	

Note:
RH - Right
LH - Left

Standard Connection Interface



See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

The dimensions are referred to the standard elements.
Single/double/triple bar (U+A): 200+300 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/1400
Double bar min/MAX	
U	200
A	300/1400
Triple bar min/MAX	
U	200
A	300/1400

Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

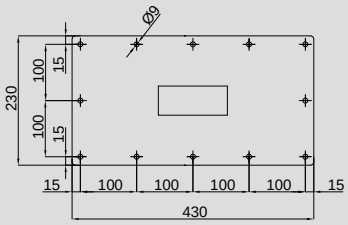
On request is available the busbar connection interface with exit bars for range:

Super Compact BUSWAYS - Al

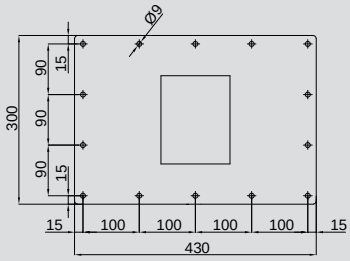
Dimensions

Cover Plate Drilling Details

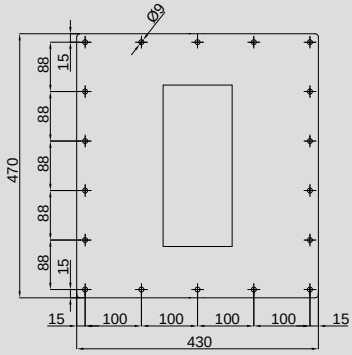
Al 630A -1250A



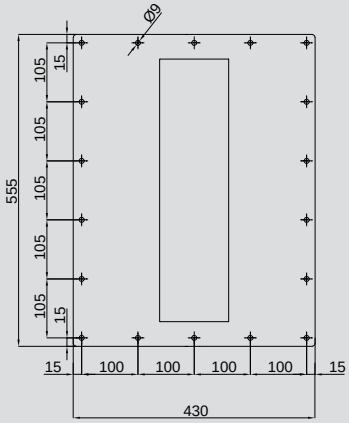
Al 1600A - 2000A



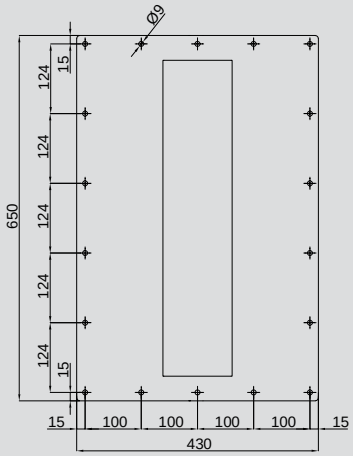
Al 2500A - 3200A



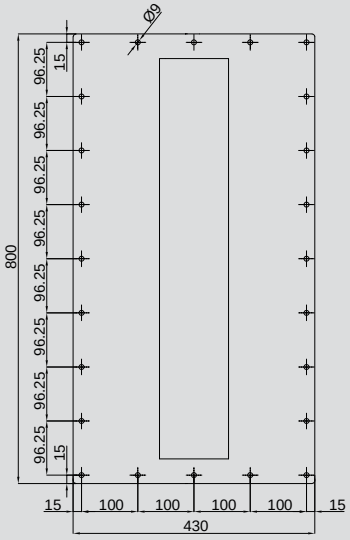
Al 3600A - 4000A



Al 5000A

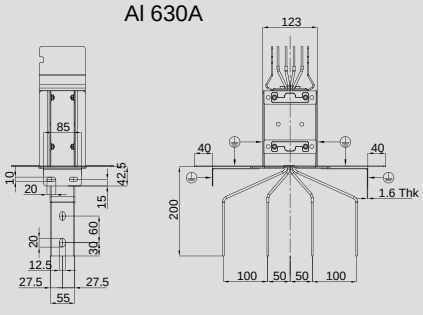


Al 6300A

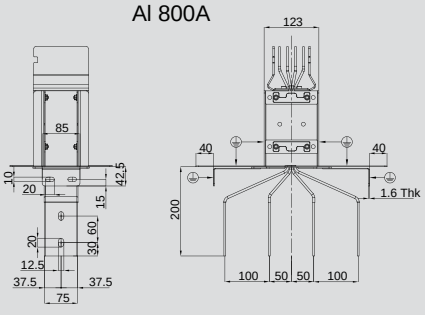


Busbar Drilling Details

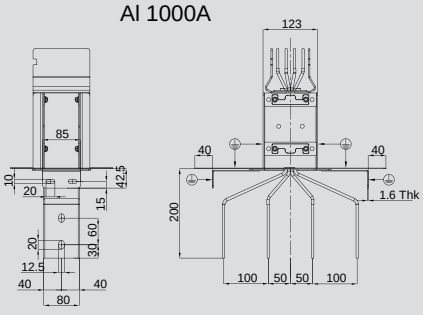
Al 630A



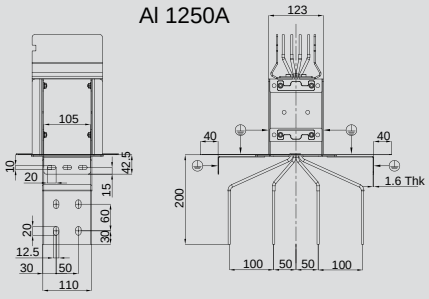
Al 800A



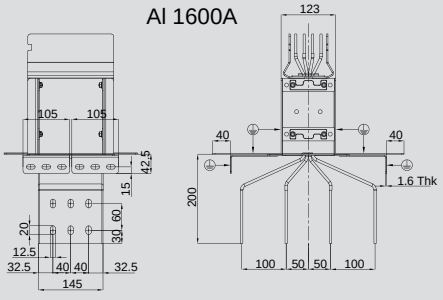
Al 1000A



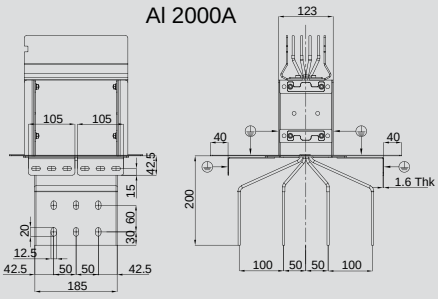
Al 1250A



Al 1600A

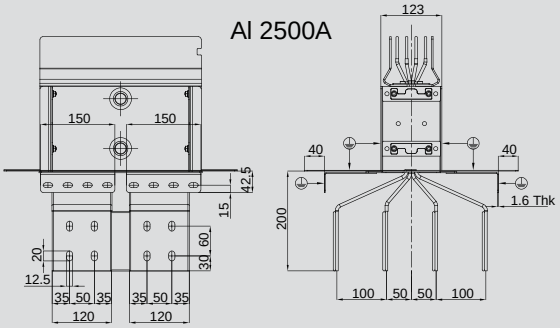


Al 2000A

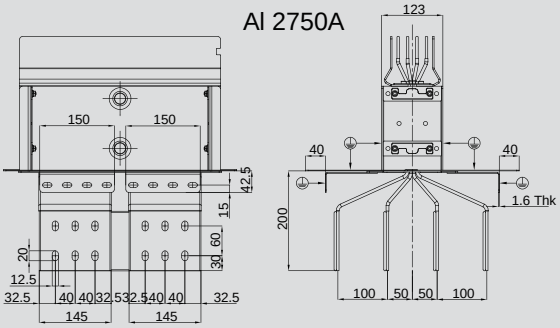


Busbar Drilling Details (cont...)

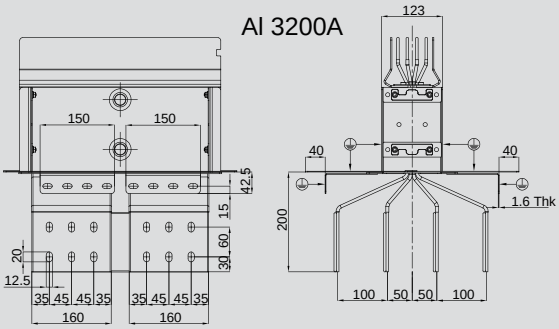
Al 2500A



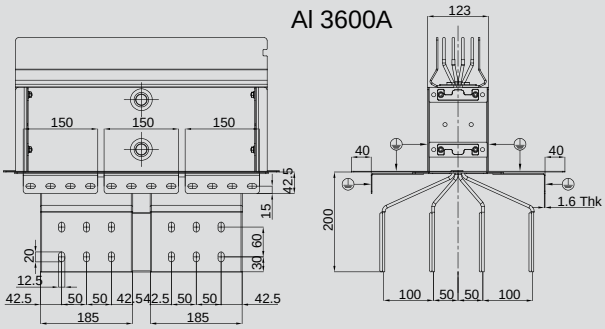
Al 2750A



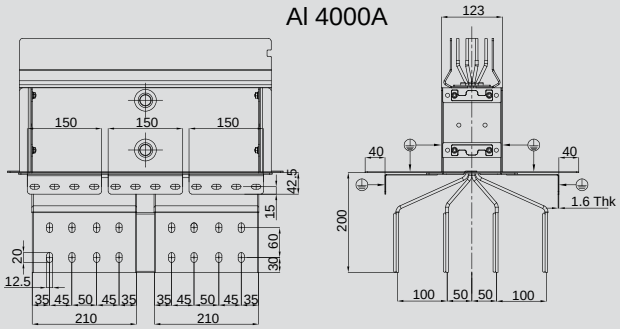
Al 3200A



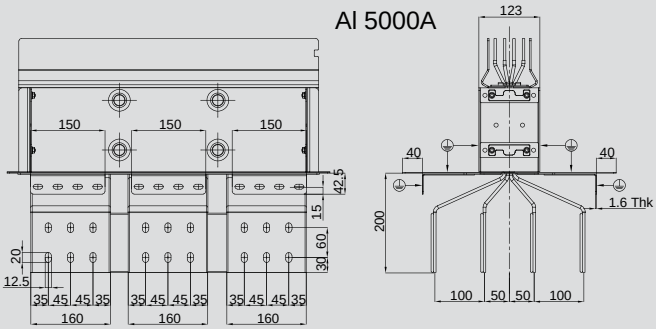
Al 3600A



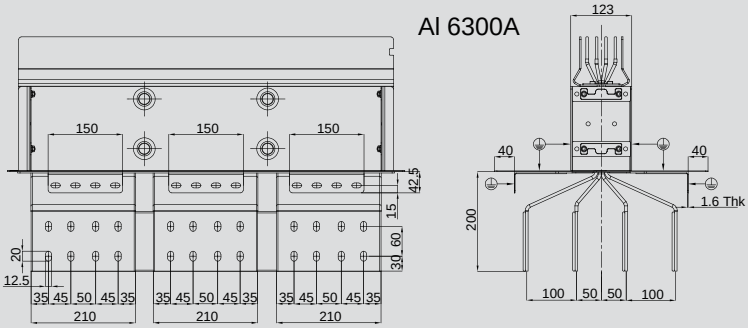
Al 4000A



Al 5000A

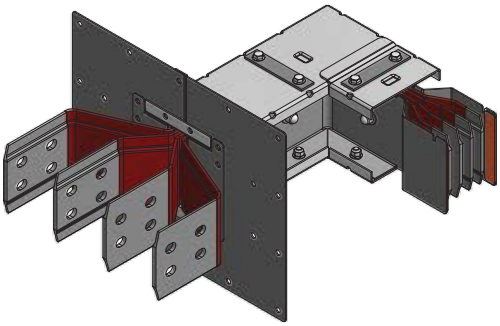


Al 6300A



Super Compact BUSWAYS - Al

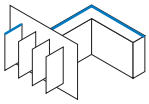
Connection Interfaces with Exit Bars + Horizontal Elbow



Cat.Nos

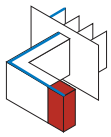
Connection interfaces with exit bars + horizontal elbow

Al	In (A)	Type
72141302	630	
72141303	800	
72141304	1000	
72141305	1250	
72141306	1600	
72141307	2000	
72241302	2500	
72241303	2750	
72241304	3200	
72241305	3600	
72241306	4000	
72341301	5000	
72341302	6300	
72141312	630	
72141313	800	
72141314	1000	
72141315	1250	
72141316	1600	
72141317	2000	
72241312	2500	
72241313	2750	
72241314	3200	
72241315	3600	
72241316	4000	
72341311	5000	
72341312	6300	
72141322	630	
72141323	800	
72141324	1000	
72141325	1250	
72141326	1600	
72141327	2000	
72241322	2500	
72241323	2750	
72241324	3200	
72241325	3600	
72241326	4000	
72341321	5000	
72341322	6300	
72141332	630	
72141333	800	
72141334	1000	
72141335	1250	
72141336	1600	
72141337	2000	
72241332	2500	
72241333	2750	
72241334	3200	
72241335	3600	
72241336	4000	
72341331	5000	
72341332	6300	

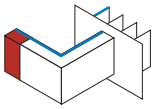


Type 1

Type 2



Type 3



Type 4

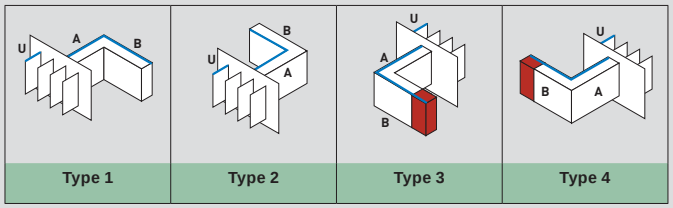
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Horizontal Elbow

Dimensions

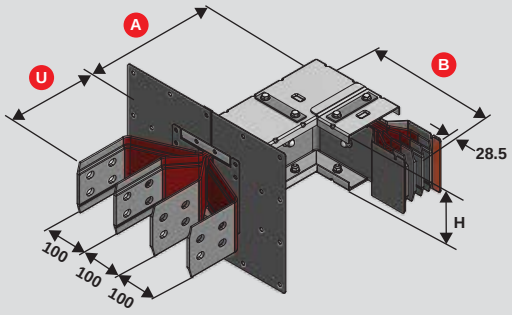
Connection Interfaces with Exit Bars + Horizontal Elbow

This element is the union of a connection interface with exit bars and a horizontal elbow



The dimensions are referred to the standard elements

Single/double/triple bar (U+A+B): 200+300+300 mm



MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/1000*
B	300/1000*
Double bar min/MAX	
U	200
A	300/1000*
B	300/1000*
Triple bar min/MAX	
U	200
A	300/1000*
B	300/1000*

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

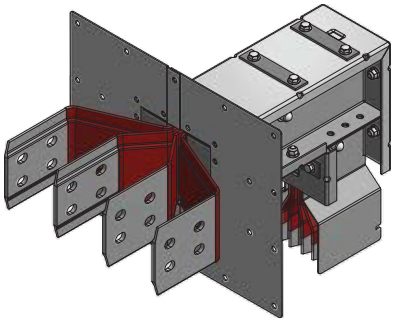
Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard connection interface with exit bars + horizontal elbows (special), it is possible to have only one of the two sides in size exceeding 600 mm
For example, when ordering an interface with exit bars + horizontal elbow with size A=650 mm, the B size will have to be ≤ 600 mm

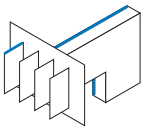
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Vertical Elbow



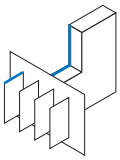
Cat.Nos — **Connection Interfaces with Exit Bars + Vertical Elbow**

Al	In (A)	Type
72141402	630	
72141403	800	
72141404	1000	
72141405	1250	
72141406	1600	
72141407	2000	
72241402	2500	
72241403	2750	
72241404	3200	
72241405	3600	
72241406	4000	
72341401	5000	
72341402	6300	



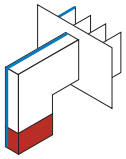
Type 1

72141412	630	
72141413	800	
72141414	1000	
72141415	1250	
72141416	1600	
72141417	2000	
72241412	2500	
72241413	2750	
72241414	3200	
72241415	3600	
72241416	4000	
72341411	5000	
72341412	6300	



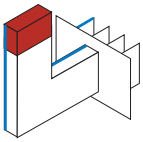
Type 2

72141422	630	
72141423	800	
72141424	1000	
72141425	1250	
72141426	1600	
72141427	2000	
72241422	2500	
72241423	2750	
72241424	3200	
72241425	3600	
72241426	4000	
72341421	5000	
72341422	6300	



Type 3

72141432	630	
72141433	800	
72141434	1000	
72141435	1250	
72141436	1600	
72141437	2000	
72241432	2500	
72241433	2750	
72241434	3200	
72241435	3600	
72241436	4000	
72341431	5000	
72341432	6300	



Type 4

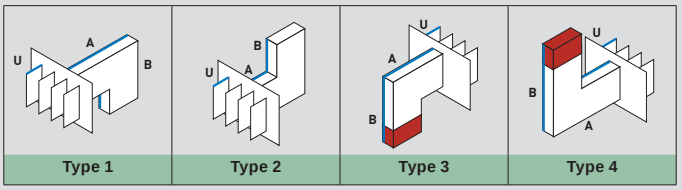
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Vertical Elbow

Dimensions

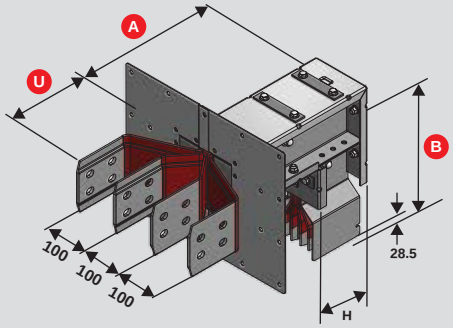
Connection Interfaces with Exit Bars + Vertical Elbow

This element is the union of a connection interface with exit bars and a vertical elbow



The dimensions are referred to the standard elements

Single bar (U+A+B): 200+300+300 mm
Double bar (U+A+B): 200+450+450 mm
Triple bar (U+A+B): 200+550+550 mm



MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/1200*
B	300/1200*
Double bar min/MAX	
U	200
A	450/750*
B	450/750*
Triple bar min/MAX	
U	200
A	550/850*
B	550/750*

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

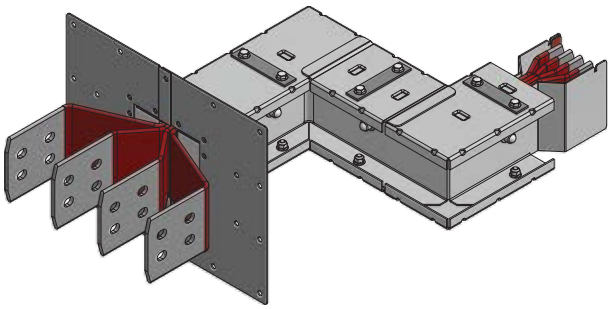
Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard connection interface with exit bars + vertical elbows (special), it is possible to have only one of the two sides in size exceeding 600 mm
For example, when ordering an interface with exit bars + vertical elbow with size A=650 mm, the B size will have to be ≤ 600 mm

Super Compact BUSWAYS - Al

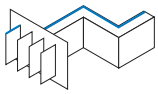
Connection Interfaces with Exit Bars + Double Horizontal Elbow



Cat.Nos

Connection Interfaces with Exit Bars + Double Horizontal Elbow

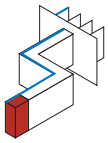
Al	In (A)	Type
72141342	630	
72141343	800	
72141344	1000	
72141345	1250	
72141346	1600	
72141347	2000	
72241342	2500	
72241343	2750	
72241344	3200	
72241345	3600	
72241346	4000	
72341341	5000	
72341342	6300	
72141352	630	
72141353	800	
72141354	1000	
72141355	1250	
72141356	1600	
72141357	2000	
72241352	2500	
72241353	2750	
72241354	3200	
72241355	3600	
72241356	4000	
72341351	5000	
72341352	6300	
72141362	630	
72141363	800	
72141364	1000	
72141365	1250	
72141366	1600	
72141367	2000	
72241362	2500	
72241363	2750	
72241364	3200	
72241365	3600	
72241366	4000	
72341361	5000	
72341362	6300	
72141372	630	
72141373	800	
72141374	1000	
72141375	1250	
72141376	1600	
72141377	2000	
72241372	2500	
72241373	2750	
72241374	3200	
72241375	3600	
72241376	4000	
72341371	5000	
72341372	6300	



Type 1

Type 2

Type 3



Type 4

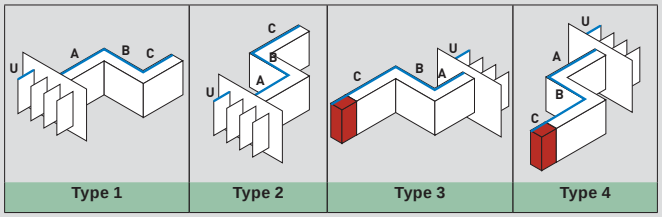
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Double Horizontal Elbow

Dimensions

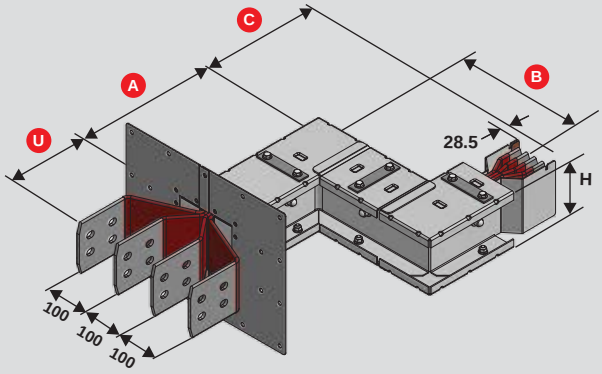
Connection Interfaces with Exit Bars + Double Horizontal Elbow

This element is the union of a connection interface with exit bars and a two horizontal elbows



The dimensions are referred to the standard elements

Single bar (U+A+B+C): 200+300+300+300 mm
Double bar (U+A+B+C): 200+300+300+300 mm
Triple bar (U+A+B+C): 200+300+300+300 mm



MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/1000
B	300/1000
C	300/700
Double bar min/MAX	
U	200
A	300/1000
B	300/1000
C	300/700
Triple bar min/MAX	
U	200
A	300/1000
B	300/1000
C	300/1000

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

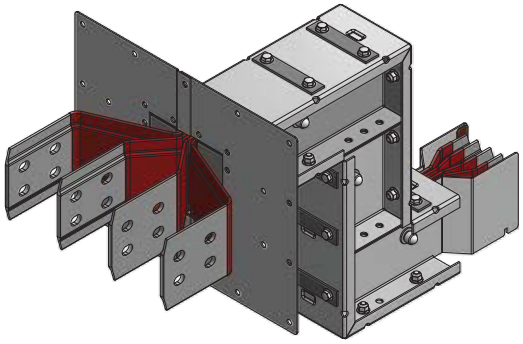
Dimension H changes with the rating; it is specified in the technical information

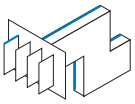
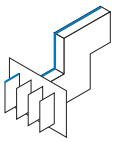
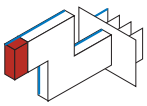
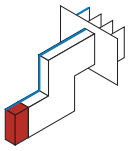
No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

*For all the non standard connection interface with exit bars + double horizontal elbows (special), it is possible to have only one of the three sides in size exceeding 600mm. For example when ordering a connection interface with exit bars + double horixontal elbow with size C=650mm, the A & B size will have to be ≤ 600 mm.

Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Double Vertical Elbow



Cat.Nos Al	In (A)	Connection Interfaces with Exit Bars + Double Vertical Elbow Type
72141442	630	 Type 1
72141443	800	
72141444	1000	
72141445	1250	
72141446	1600	
72141447	2000	
72241442	2500	
72241443	2750	
72241444	3200	
72241445	3600	
72241446	4000	
72341441	5000	
72341442	6300	
72141452	630	 Type 2
72141453	800	
72141454	1000	
72141455	1250	
72141456	1600	
72141457	2000	
72241452	2500	
72241453	2750	
72241454	3200	
72241455	3600	
72241456	4000	
72341451	5000	
72341452	6300	
72141462	630	 Type 3
72141463	800	
72141464	1000	
72141465	1250	
72141466	1600	
72141467	2000	
72241462	2500	
72241463	2750	
72241464	3200	
72241465	3600	
72241466	4000	
72341461	5000	
72341462	6300	
72141472	630	 Type 4
72141473	800	
72141474	1000	
72141475	1250	
72141476	1600	
72141477	2000	
72241472	2500	
72241473	2750	
72241474	3200	
72241475	3600	
72241476	4000	
72341471	5000	
72341472	6300	

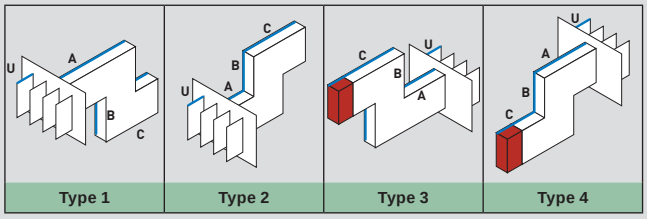
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Double Vertical Elbow

Dimensions

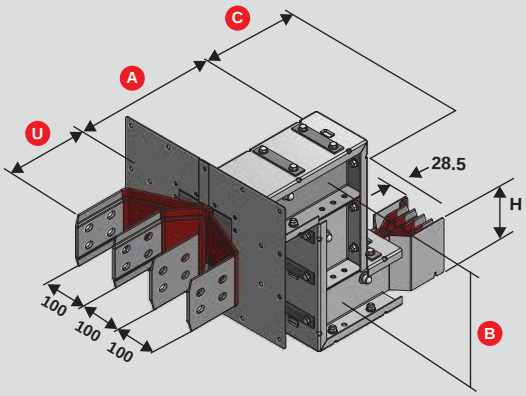
Connection Interfaces with Exit Bars + Double Vertical Elbow

This element is the union of a connection interface with exit bars and a two vertical elbows



The dimensions are referred to the standard elements

Single bar (U+A+B+C): 200+300+300+300 mm
Double bar (U+A+B+C): 200+450+450+450 mm
Triple bar (U+A+B+C): 200+550+550+550 mm



MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/1000
B	300/1000
C	300/1000
Double bar min/MAX	
U	200
A	300/1000*
B	450/750*
C	450/900*
Triple bar min/MAX	
U	200
A	550/850*
B	550/750*
C	550/1100*

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

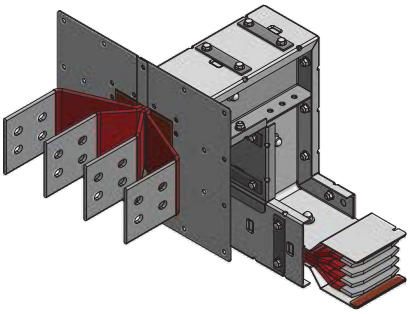
Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

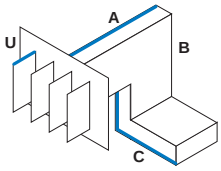
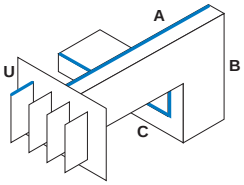
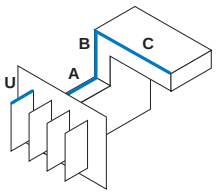
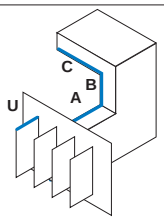
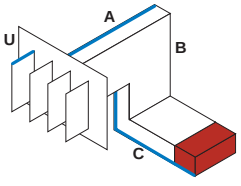
* For all the non standard connection interface with exit bars + double vertical elbows (special), it is possible to have only one of the three sides in size exceeding 600 mm
For example, when ordering a connection interface with exit bars + double vertical elbow with size C=650 mm, the A and B size will have to be ≤600 mm

Super Compact BUSWAYS - Al

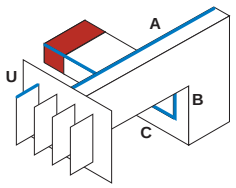
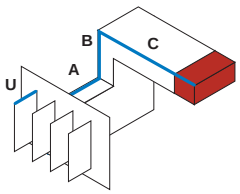
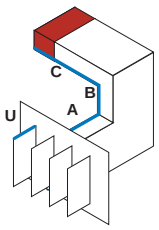
Connection Interfaces with Exit Bars + Vertical Elbow + Horizontal Elbow



Connection Interfaces with Exit Bars + Vertical Elbow + Horizontal Elbow

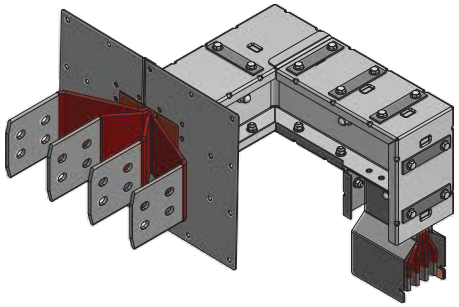
Cat.Nos Al	In (A)	Type
72141502	630	 Type 1
72141503	800	
72141504	1000	
72141505	1250	
72141506	1600	
72141507	2000	
72241502	2500	
72241503	2750	
72241504	3200	
72241505	3600	
72241506	4000	
72341501	5000	
72341502	6300	
72141512	630	 Type 2
72141513	800	
72141514	1000	
72141515	1250	
72141516	1600	
72141517	2000	
72241512	2500	
72241513	2750	
72241514	3200	
72241515	3600	
72241516	4000	
72341511	5000	
72341512	6300	
72141522	630	 Type 3
72141523	800	
72141524	1000	
72141525	1250	
72141526	1600	
72141527	2000	
72241522	2500	
72241523	2750	
72241524	3200	
72241525	3600	
72241526	4000	
72341521	5000	
72341522	6300	
72141532	630	 Type 4
72141533	800	
72141534	1000	
72141535	1250	
72141536	1600	
72141537	2000	
72241532	2500	
72241533	2750	
72241534	3200	
72241535	3600	
72241536	4000	
72341531	5000	
72341532	6300	
72141542	630	 Type 5
72141543	800	
72141544	1000	
72141545	1250	
72141546	1600	
72141547	2000	
72241542	2500	
72241543	2750	
72241544	3200	
72241545	3600	
72241546	4000	
72341541	5000	
72341542	6300	

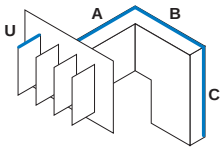
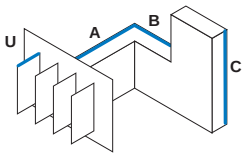
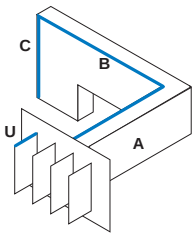
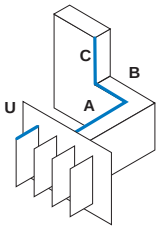
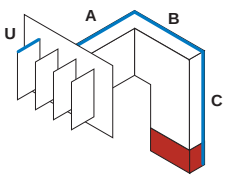
Connection Interfaces with Exit Bars + Vertical Elbow + Horizontal elbow

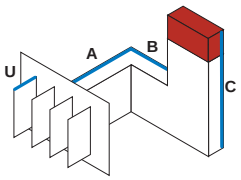
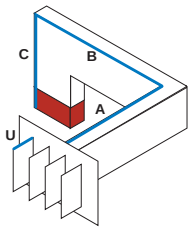
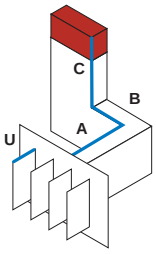
Cat.Nos Al	In (A)	Type
72141552	630	 Type 6
72141553	800	
72141554	1000	
72141555	1250	
72141556	1600	
72141557	2000	
72241552	2500	
72241553	2750	
72241554	3200	
72241555	3600	
72241556	4000	
72341551	5000	
72341552	6300	
72141562	630	 Type 7
72141563	800	
72141564	1000	
72141565	1250	
72141566	1600	
72141567	2000	
72241562	2500	
72241563	2750	
72241564	3200	
72241565	3600	
72241566	4000	
72341561	5000	
72341562	6300	
72141572	630	 Type 8
72141573	800	
72141574	1000	
72141575	1250	
72141576	1600	
72141577	2000	
72241572	2500	
72241573	2750	
72241574	3200	
72241575	3600	
72241576	4000	
72341571	5000	
72341572	6300	

Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Horizontal Elbow + Vertical Elbow



Cat.Nos Al	In (A)	Connection interfaces with exit bars + horizontal elbow + vertical elbow — Type
72141602	630	
72141603	800	
72141604	1000	
72141605	1250	
72141606	1600	
72141607	2000	
72241602	2500	
72241603	2750	
72241604	3200	
72241605	3600	
72241606	4000	
72341601	5000	
72341602	6300	
		Type 1
72141612	630	
72141613	800	
72141614	1000	
72141615	1250	
72141616	1600	
72141617	2000	
72241612	2500	
72241613	2750	
72241614	3200	
72241615	3600	
72241616	4000	
72341611	5000	
72341612	6300	
		Type 2
72141622	630	
72141623	800	
72141624	1000	
72141625	1250	
72141626	1600	
72141627	2000	
72241622	2500	
72241623	2750	
72241624	3200	
72241625	3600	
72241626	4000	
72341621	5000	
72341622	6300	
		Type 3
72141632	630	
72141633	800	
72141634	1000	
72141635	1250	
72141636	1600	
72141637	2000	
72241632	2500	
72241633	2750	
72241634	3200	
72241635	3600	
72241636	4000	
72341631	5000	
72341632	6300	
		Type 4
72141642	630	
72141643	800	
72141644	1000	
72141645	1250	
72141646	1600	
72141647	2000	
72241642	2500	
72241643	2750	
72241644	3200	
72241645	3600	
72241646	4000	
72341641	5000	
72341642	6300	
		Type 5

Cat.Nos Al	In (A)	Connection interfaces with exit bars + horizontal elbow + vertical elbow — Type
72141652	630	
72141653	800	
72141654	1000	
72141655	1250	
72141656	1600	
72141657	2000	
72241652	2500	
72241653	2750	
72241654	3200	
72241655	3600	
72241656	4000	
72341651	5000	
72341652	6300	
		Type 6
72141662	630	
72141663	800	
72141664	1000	
72141665	1250	
72141666	1600	
72141667	2000	
72241662	2500	
72241663	2750	
72241664	3200	
72241665	3600	
72241666	4000	
72341661	5000	
72341662	6300	
		Type 7
72141672	630	
72141673	800	
72141674	1000	
72141675	1250	
72141676	1600	
72141677	2000	
72241672	2500	
72241673	2750	
72241674	3200	
72241675	3600	
72241676	4000	
72341671	5000	
72341672	6300	
		Type 8

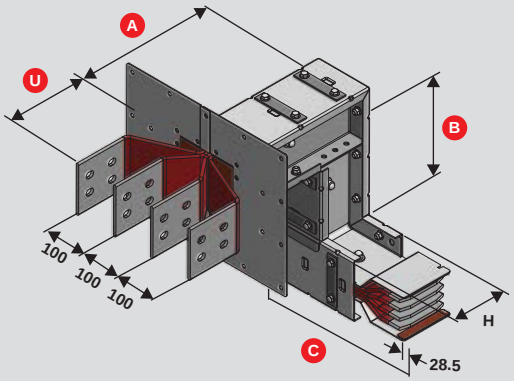
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Vertical Elbow + Horizontal Elbow

Dimensions

Connection interfaces with exit bars + vertical elbow + horizontal elbow

This element is the union of a connection interface with exit bars and a vertical and horizontal elbow



The dimensions are referred to the standard elements.
Single bar (U+A+B+C):
200+300+300+300 mm
Double bar (U+A+B+C):
200+450+450+300 mm
Triple bar (U+A+B+C):
200+550+550+300 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/600
B	300/800
C	300/800
Double bar min/MAX	
U	200
A	450/900*
B	450/750*
C	300/800*
Triple bar min/MAX	
U	200
A	550/850*
B	550/750*
C	300/800*

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

Dimension H changes with the rating; it is specified in the technical information

No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table

* For all the non standard connection interface with exit bars + vertical elbows + horizontal elbow (special), it is possible to have only one of the three sides in size exceeding 450 mm. For example, when ordering a connection interface with exit bars + vertical elbow + horizontal elbow with size C=650 mm, the A and B size will have to be ≤ 600 mm

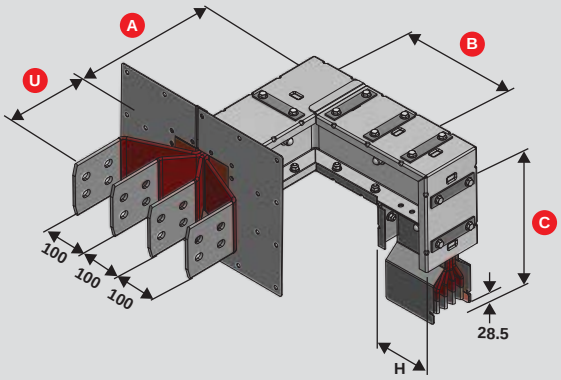
Super Compact BUSWAYS - Al

Connection Interfaces with Exit Bars + Vertical Elbow + Horizontal Elbow

Dimensions

Connection interfaces with exit bars + horizontal elbow + vertical elbow

This element is the union of a connection interface with exit bars and a horizontal and vertical elbow



The dimensions are referred to the standard elements.
Single bar (U+A+B+C):
200+300+300+300 mm
Double bar (U+A+B+C):
200+300+450+450 mm
Triple bar (U+A+B+C):
200+300+550+550 mm

MIN AND MAX DIMENSIONS OF SINGLE, DOUBLE AND TRIPLE BAR	
Single bar min/MAX	
U	200
A	300/800
B	300/800
C	300/800
Double bar min/MAX	
U	200
A	300/800*
B	450/750*
C	450/750*
Triple bar min/MAX	
U	200
A	300/800*
B	550/750*
C	550/750*

See on page 60 the drawings with all drilling details for dimensions of coverplate (1) and bars (2)

Dimension H changes with the rating; it is specified in the technical information

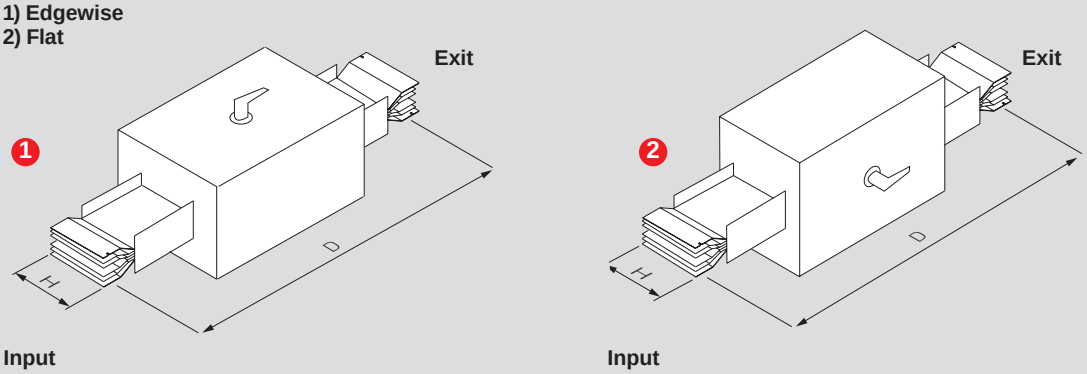
No standard elements "Special" (with measurements that are different from those show in the figure) are referred to the Min and Max dimensions specified in the table.

* For all the non standard connection interface with exit bars + horizontal elbow + vertical elbow (special), it is possible to have only one of the three sides in size exceeding 450 mm.
For example, when ordering a connection interface with exit bars + horizontal elbow + vertical elbow with size C=650 mm, the A and B size will have to be ≤ 600 mm

SELECTION ISOLATOR AND RATE REDUCER WITH ISOLATOR SWITCH

The type of route:

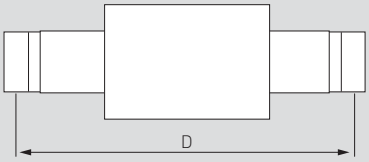
1) Edgewise
2) Flat



Dimension H changes with the rating; it is specified in the technical information

Rate Reducer

Input
From 630 A to 6300 A
(Al)



Exit
From 630 A to 2500 A
(Al)

EXIT	D
From 630 A to 2500 A	2000

Fuses not included. See general Bahra TBS catalogue

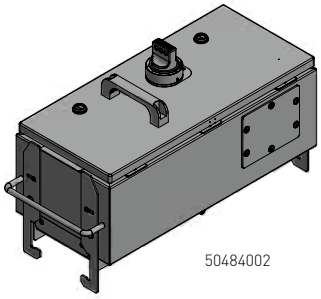
Note:- Reducer available with / without(1) overcurrent Protection.

(1) As per NEC 364-10, Omission of overcurrent protection shall be permitted at points where busways are reduced in ampacity, provided that the length of the busway having the smaller ampacity does not exceed 15 m (50 ft) and has an ampacity at least equal to one-third the rating or setting of the overcurrent device next back on the line.

Please contact Bahra TBS for more details on the dimensions

Super Compact BUSWAYS - Al

METAL tap-off box Type 1 - 63 A to 160 A : plug-in type



IP55.
Equipped with a sectioning cover. It can be installed and removed when the busbar is energized.
To be applied on elements with any rating, with tap-off outlets.
These are the smallest metal tap-off boxes available and its rating goes from 63 A to 160 A.

Al Busway

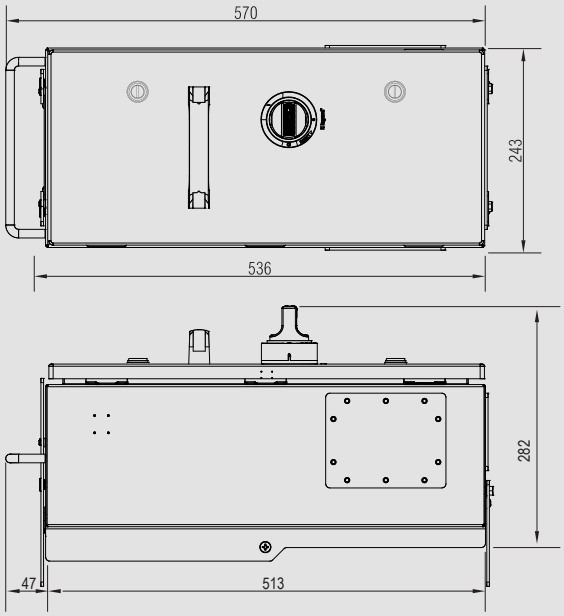
Plug-in Box codes	In (A)	
100123100000	160A	Plug-in Tap-off Box 4C - 160A / 3P, 36kA, MCCB

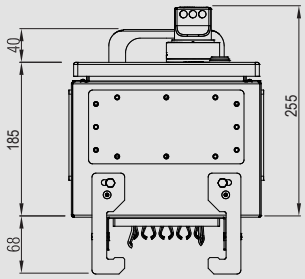
Dimensions

Type 1 - 160 A

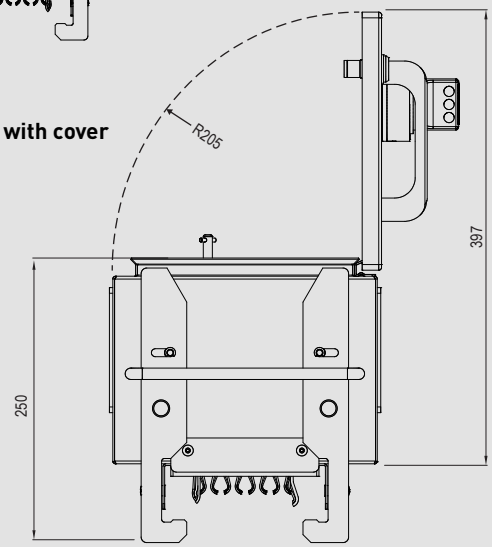
Box dimensions (mm)

DPX³ ready



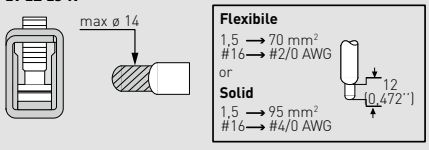


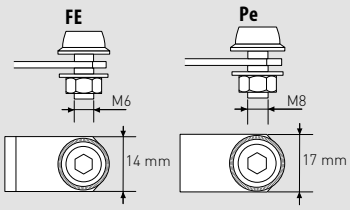
Total dimensions with cover open



Terminal dimensions type 1 - DPX ³ ready (mm)

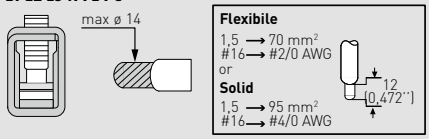
L1 L2 L3 N





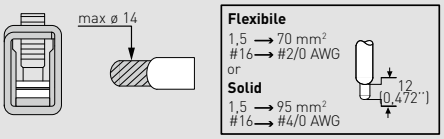
Terminal dimensions type 1 - empty (mm)

L1 L2 L3 N FE Pe

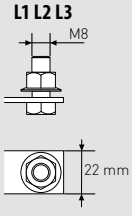


Terminal dimensions type 1 - fuse carriers (mm)

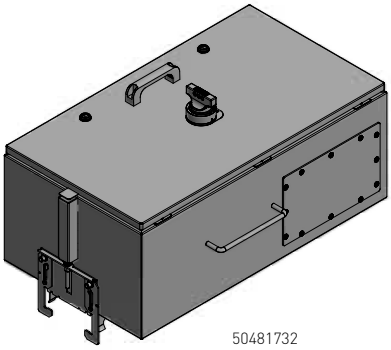
N FE Pe



L1 L2 L3



METAL tap-off box Type 2 - 250 A: plug-in type



50481732

IP55.
Equipped with a sectioning cover. It can be installed and removed when the busbar is energized.
To be applied on elements with any rating, with tap-off outlets.
These are the medium size metal tap-off boxes available and its rating is 250 A.

Al Busway

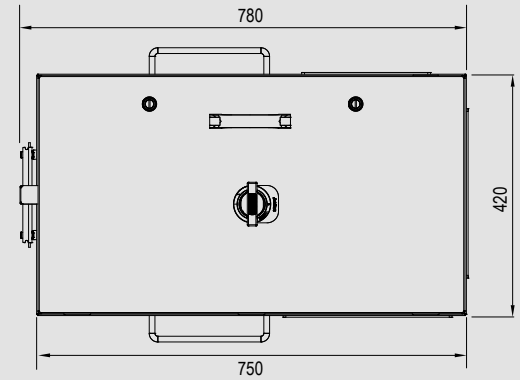
Plug-in Box codes	In (A)	
100123121100	250A	Plug-in Tap-off Box 4C - 250A / 3P, 36kA, MCCB

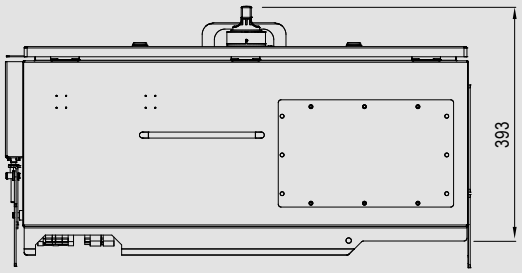
Dimensions

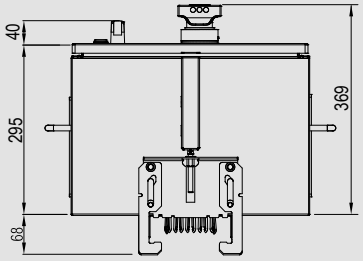
Type 2 - 250A & 630A

Box dimensions (mm)

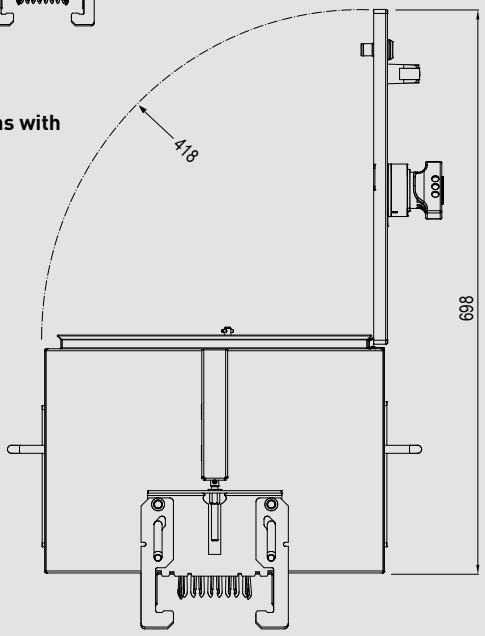
DPX³ ready





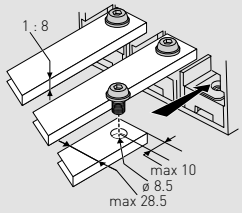


Total dimensions with cover open



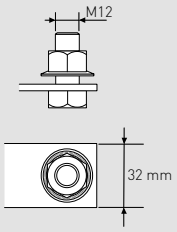
Terminal dimensions type 2 DPX³ ready and empty (mm)

L1 L2 L3 N FE Pe



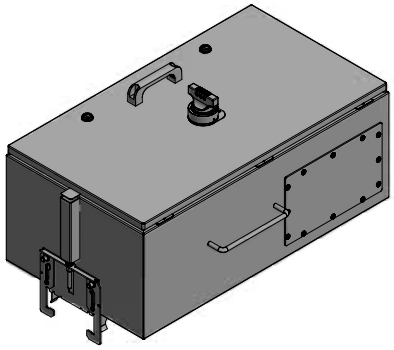
Terminal dimensions type 2 fuse carriers (mm)

L1 L2 L3 N FE Pe



Super Compact BUSWAYS - Al

METAL tap-off box Type 3 - 400 A to 630 A : plug-in type



50481733

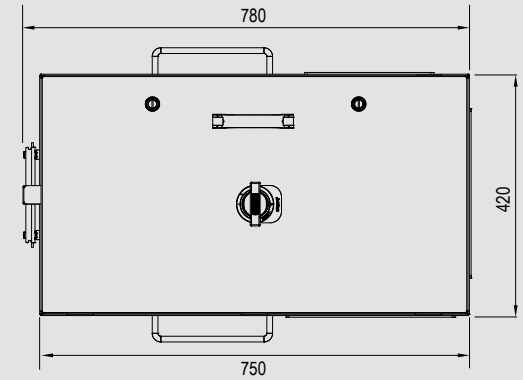
IP55.
Equipped with a sectioning cover. It can be installed and removed when the busbar is energized.
To be applied on elements with any rating, with tap-off outlets.
These are the largest size metal tap-off boxes available and its rating is 400 A or 630 A.

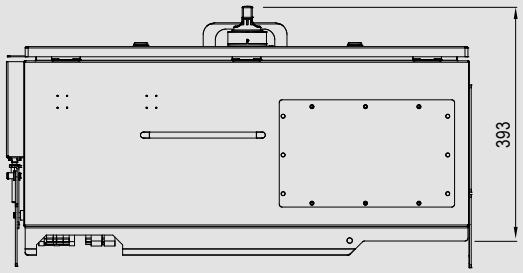
Al Busway

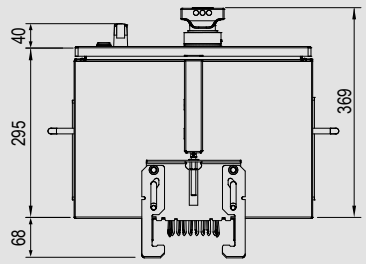
Plug-in Box codes	In (A)	
100123142200	400A	Plug-in Tap-off Box 4C - 400A / 3P, 36kA, MCCB
100123162300	630A	Plug-in Tap-off Box 4C - 600A / 3P, 36kA, MCCB

Dimensions

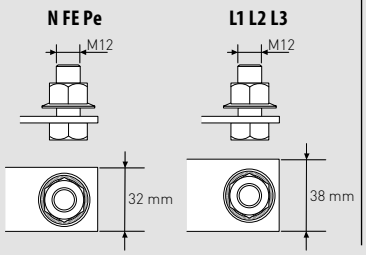
Type 3 (400 - 630 A)
Box dimensions (mm)
DPX³ ready



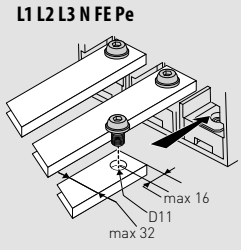




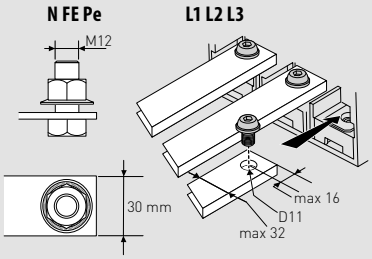
Terminal dimensions type 3 - fuse carriers (mm)



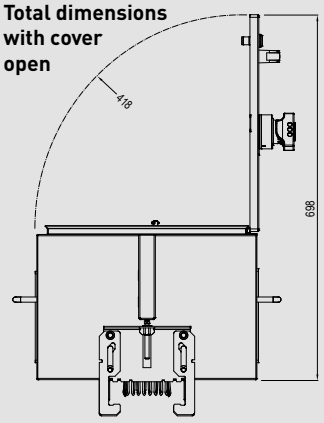
Terminal dimensions type 3 - empty (mm)



Terminal dimensions type 3 - DPX³ ready (mm)

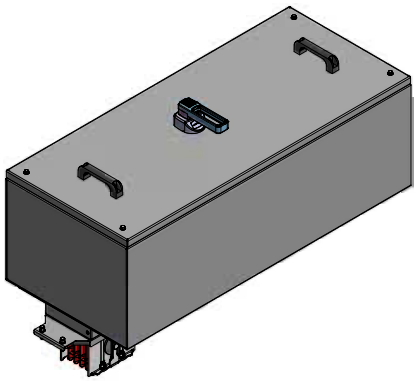


Total dimensions with cover open



Super Compact BUSWAYS - Al

tap-off box on the junction - 800 A to 1250 A: bolt-on type



67281931P

Al Busway

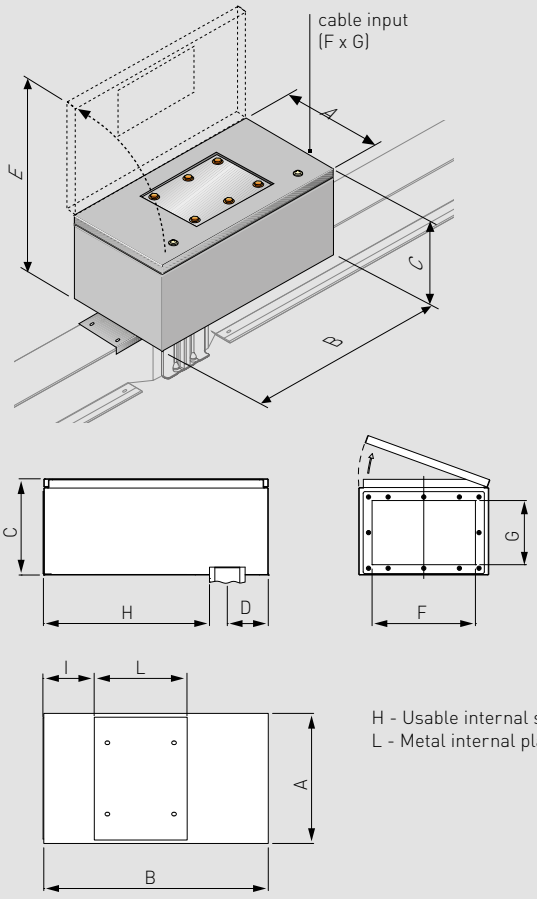
Bolt on Box codes	Busway Height	In (A)
202123173400	153	630
203123173400	173	800
204123173400	178	1000
206123173400	208	1250
207123173400	243	1600
209123173400	283	2000
211123173400	375	2500
213123173400	455	2750/3200
214123173400	557	3600/4000
215123173400	653.5	5000
216123173400	805.5	6300

Bolt-on Tap-off Box
4C - 800A / 3P, 36kA,
MCCB

Please contact Bahra TBS for more details on the dimensions

Dimensions

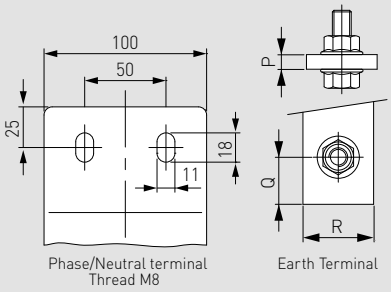
From 125 A to 1250 A



H - Usable internal space
L - Metal internal plate

In (A)	A	B	C	D	E	F	G	H	I	L
125										
250	365	630	270	115	630	290	180	465	142	260
400										
630	400	750	280	115	675	290	180	585	227	295
800										
1000	450	1050	300	115	745	380	210	885	254	545
1250										

Terminal dimensions (mm)



Type	In (A)	Earth Terminal			
		P	Q	R	Thread
5A	125	3.3	20	30	M8
	250	3.3	20	30	M8
	400	3.3	20	30	M8
5B	630	5.3	20	30	M8
5C	800	6.2	20	30	M8
	1000	6.2	20	30	M8
	1250	6.2	20	30	M8

WARNING

The bolted boxes are to be installed when the busbar is disconnected and not energized

In order to finalize the Bolt on box, it is necessary to specify the Busway rating in which the box will installed on.

Tap-off boxes can be pre-equipped with DPX moulded case circuit breakers (MCCB) upon request

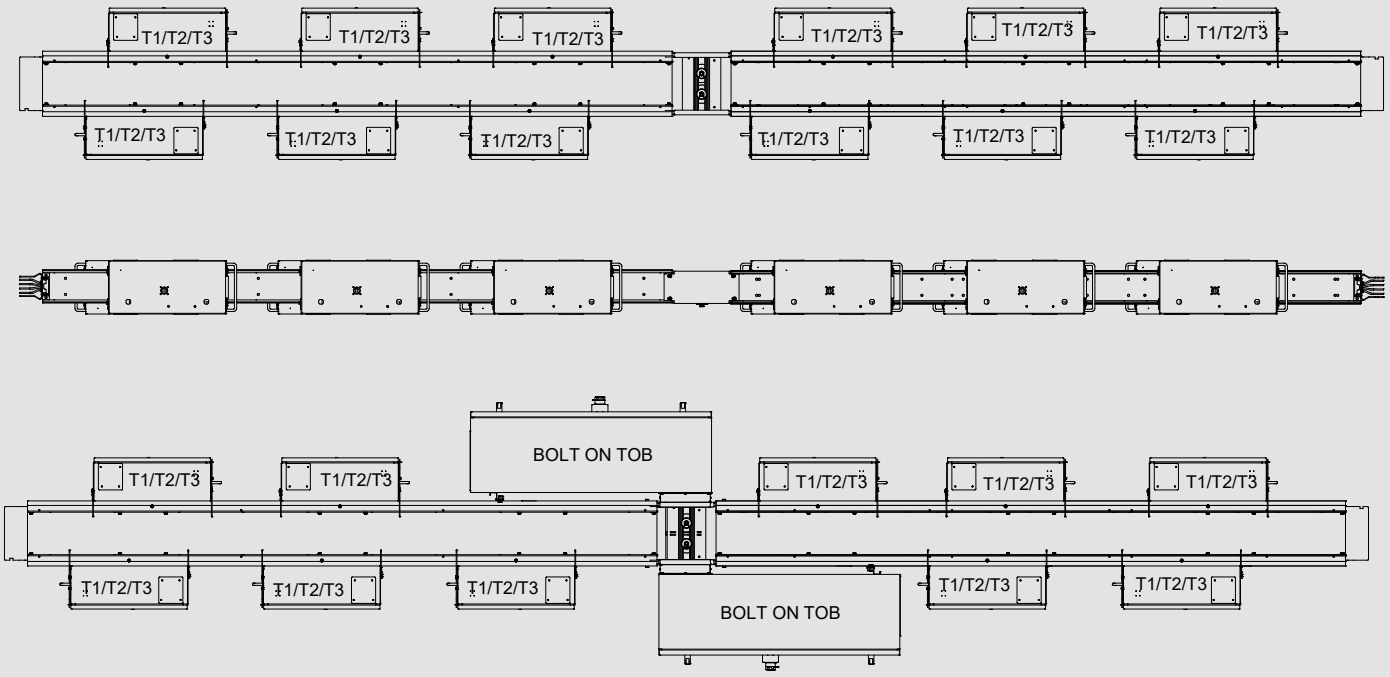
Tap-off box installation

Example Diagram

Technical informations

Not all boxes can be installed in any position

The following figures show where the various Plug-in/Bolt-on boxes may be installed on elements with standard setup



T1 - 63A to160A Plug in type
T2 -160A to 250A Plug in type
T3 - 320A to 630A Plug in type
800A to 1250A - BOLT ON TOB

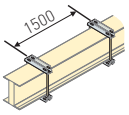
Super Compact BUSWAYS - Al

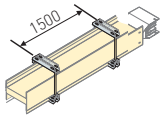
Brackets

The brackets enable sturdy installation of the busbar to the system support structures
The recommended installation distance between brackets is 1.5 metres
Bahra TBS offers suitable bracket solutions certified for any type of installation, even in the most difficult environments:
- installations subjected to strong vibrations;
- installation in seismic environments

Cat.Nos **Suspension Brackets**

Al	In (A)	Type
62202002	630	
62202003	800	
62202004	1000	
62202006	1250	Edge wise
62202007	1600	
62202009	2000	
62212001	2500	
62212003	2750	
62212003	3200	
62212004	3600	
62212004	4000	
62222001	5000	
62222002	6300	
62202022	630	
62202023	800	
62202024	1000	
62202026	1250	Flat wise
62202027	1600	
62202029	2000	
62212021	2500	
62212023	2750	
62212023	3200	
62212024	3600	
62212024	4000	
62222021	5000	
62222022	6300	





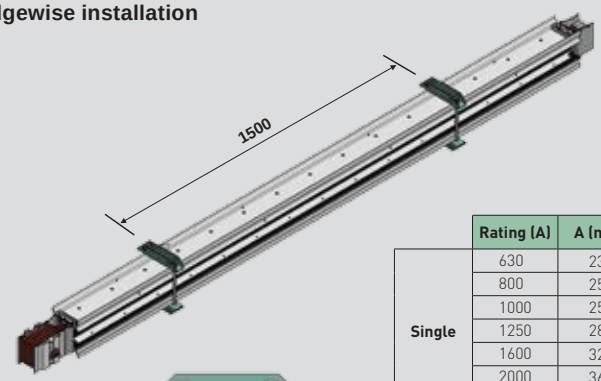
Super Compact BUSWAYS - Al

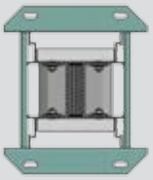
Brackets

Dimensions

Suspension Bracket

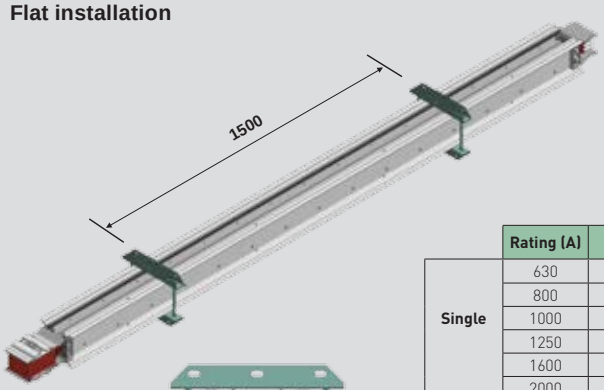
Edgewise installation

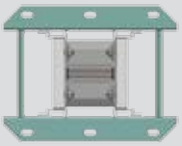




	Rating (A)	A (mm)
Single	630	233
	800	253
	1000	258
	1250	288
	1600	323
	2000	363
Double	2500	455
	2750	535
	3200	535
	3600	637
	4000	637
Triple	5000	733.5
	6300	885.5

Flat installation

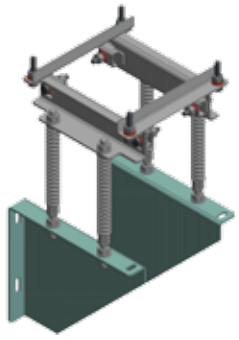




	Rating (A)	A (mm)
Single	630	220
	800	240
	1000	240
	1250	270
	1600	310
	2000	350
Double	2500	450
	2750	520
	3200	520
	3600	620
	4000	620
Triple	5000	720
	6300	870

Super Compact BUSWAYS - Al

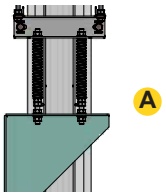
Brackets

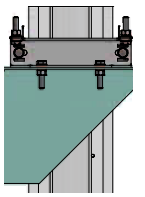


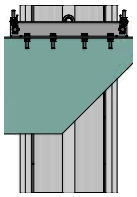
T65213711

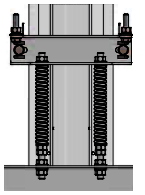
Brackets for vertical elements

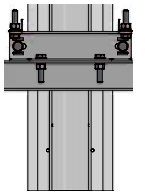
Cat.Nos Al	In (A)	Type
62143711	630	Wall bracket and springs
62143712	800	
62143713	1000	
62143715	1250	
62143716	1600	
62143718	2000	
62143810	2500	
62143812	2750	
62143812	3200	
62143813	3600	
62143813	4000	
62143910	5000	
62143911	6300	
62143721	630	Wall bracket / * Anti-seismic bracket
62143722	800	
62143723	1000	
62143725	1250	
62143726	1600	
62143728	2000	
62143820	2500	
62143822	2750	
62143822	3200	
62143823	3600	
62143823	4000	
62143920	5000	
62143921	6300	
62143731	630	Floor Bracket with springs
62143732	800	
62143733	1000	
62143735	1250	
62143736	1600	
62143738	2000	
62143830	2500	
62143832	2750	
62143832	3200	
62143833	3600	
62143833	4000	
62143930	5000	
62143931	6300	
62143741	630	Floor Bracket
62143742	800	
62143743	1000	
62143745	1250	
62143746	1600	
62143748	2000	
62143840	2500	
62143842	2750	
62143842	3200	
62143843	3600	
62143843	4000	
62143940	5000	
62143941	6300	











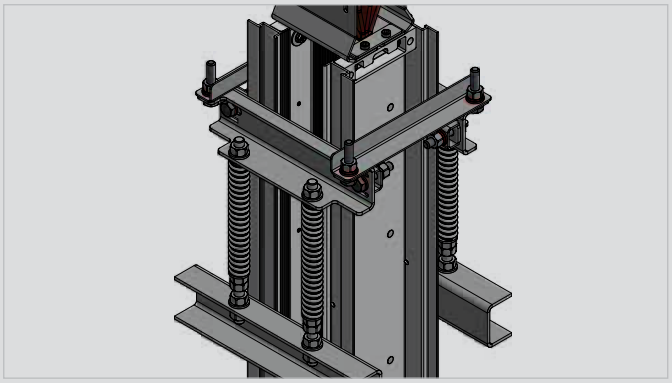
*For more technical details, please contact Bahra TBS

BRACKETS & SPRING					
	Type 1 4 SPRINGS	Type 2 6 SPRINGS	Type 3 8 SPRINGS	Type 4 12 SPRINGS	Type 5 18 SPRINGS
SCB-AN	630A - 800A	1000A-1600A	2000A-2500A	2750A-5000A	6300A

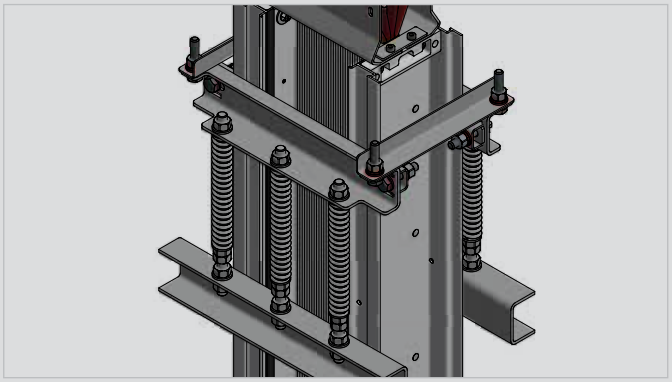
Super Compact BUSWAYS - Al

Brackets

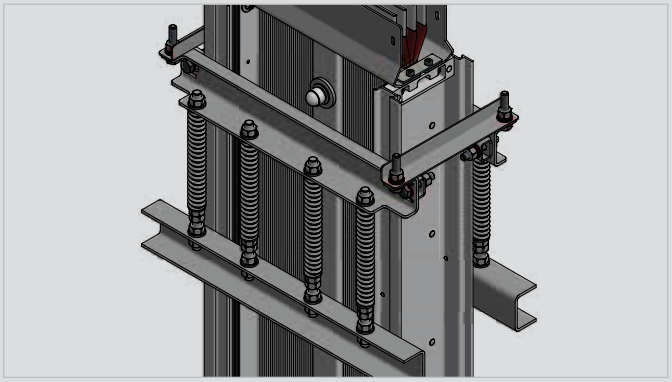
TYPE 1



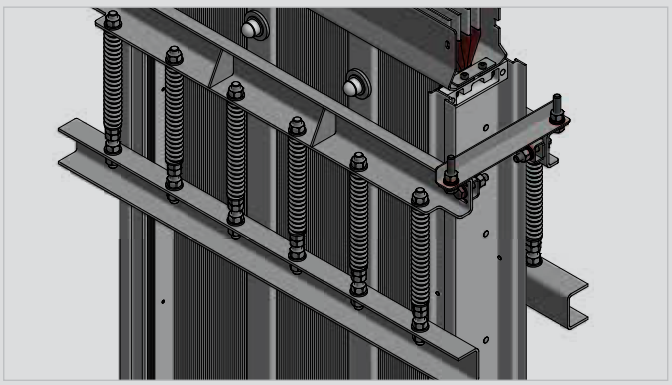
TYPE 2



TYPE 3



TYPE 4



Fixing indication

Brackets

Technical information

For vertical path **sections of less than 2 m** the use of standard suspension brackets is sufficient

1- Horizontal installation fixing

Fixing recommended: 1 bracket every 1.5 metres

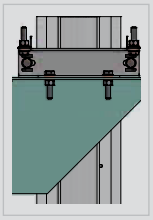
2- Fixing for vertical installation (rising mains)

In case of rising mains, in addition to the standard brackets it will also be necessary to use other screw fixed brackets to prevent sliding of the busbar. Thanks to pre-loaded springs, these brackets absorb the forces pressing on the busbar and direct any expansion in a precise direction They therefore operate as a limitation, and support the traction and compression forces of the busbar trunking system

- **Section line between 2 and 4 m**
  In the lowest point **Type B** vertical bracket if secured **to the wall**, or **Type D** if secured **to the floor** + one edgewise installation **standard bracket**
- **Section line of over 4 m**
  In the lowest point **Type A** vertical bracket if secured **to the wall**, or **Type C** if secured **to the floor** + one edgewise installation **standard bracket** every metre and a half of the path + **one Type A or C** bracket based on the following table

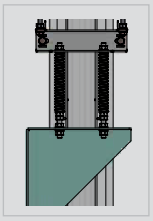
3- Fixing for installation in seismic environments in horizontal

Fit 1 bracket every metre and a half of the busbar
Every 2 anti-seismic brackets with bracket (Type B), use one standard bracket

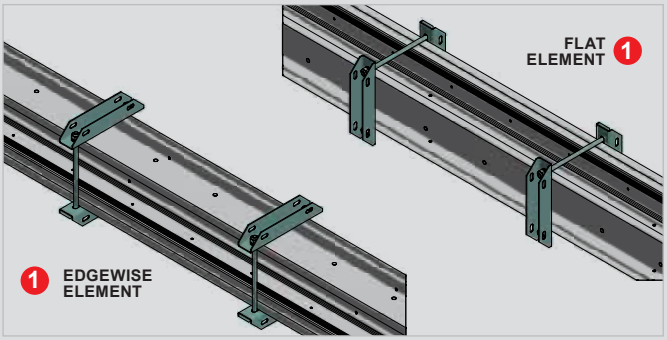


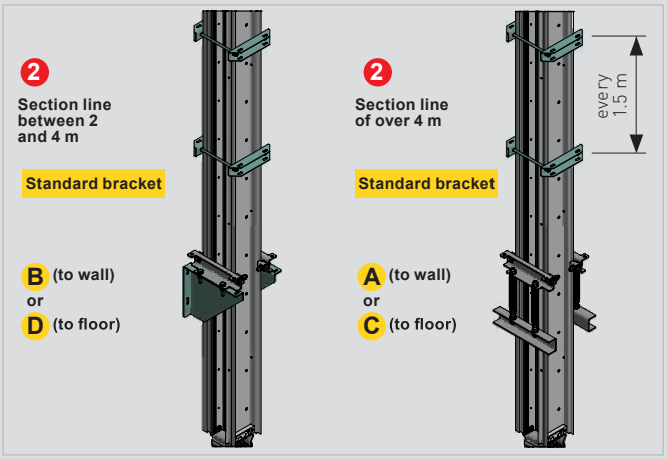
4- Fixing for installation in seismic environments in vertical (section lengths > 2 m)

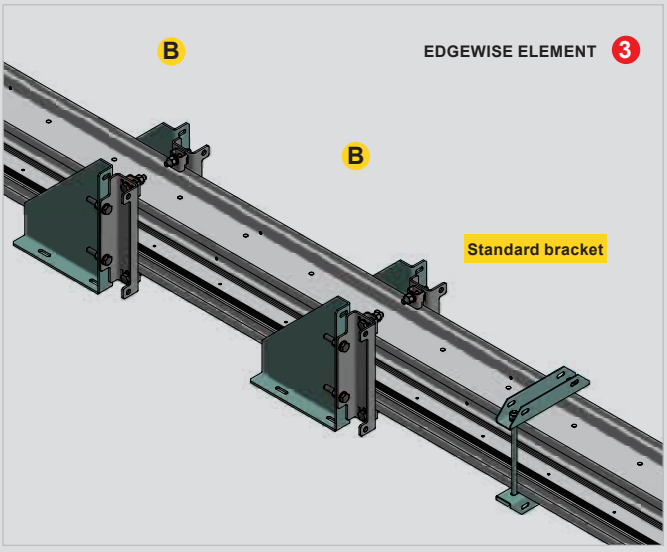
Fit 1 bracket every metre and a half of the busbar
Every 2 anti-seismic brackets with bracket (Type B) use one bracket with bracket and spring (Type A)

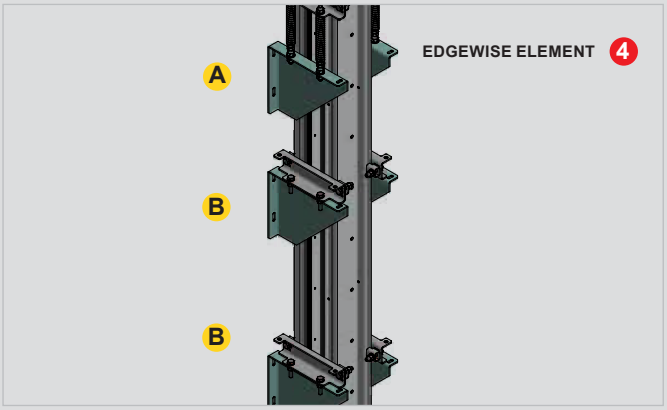


For more installation details, please refer to the installation instructions.









Super Compact BUSWAYS - Al

Operating instructions on how to design Riser Mains

1) The RH misaligned feed units (without monobloc) are used at the departure of the riser mains lines, allow the busbar to be installed 40 mm away from the wall.
In order to position the tap-off boxes correctly as shown in the figure, the neutral conductor of the riser main must be on the left side of the element

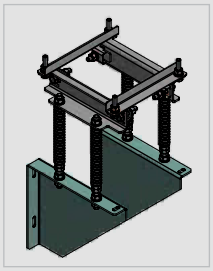
2) The tap-off boxes can be installed in the tap-off outlets (Plug-in type) and on the junction of elements (Bolt-on type)

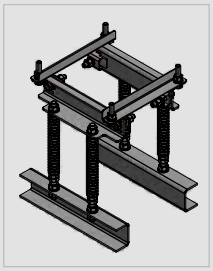
3) Use elements with tap-off outlets where necessary, distribute the power using plug-in boxes

4) Use EI120 fire bar rier kit for each compartment floor, where specifically requested

5) At the end of the riser mains, position the IP55 end cover

Spring preload calculation (H):





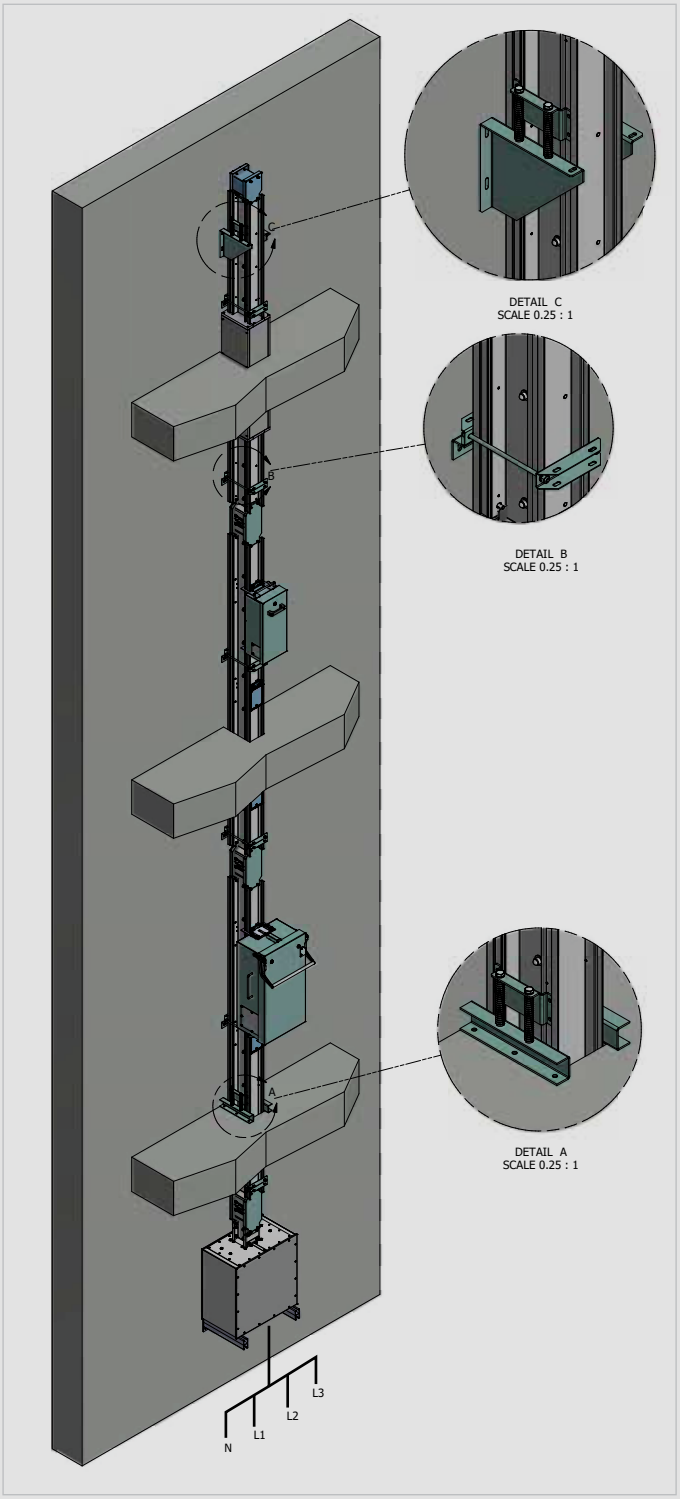
$$W = \frac{\text{Busway } \frac{(Kg)}{m} \times \text{Floor Height (m)} + \text{total weight of devices (kg)}}{\text{Number of springs}}$$

$$H = 145 - \frac{W}{2.5}$$

Preload calculation example H

Busbar Rating	2500A
Floor Height	3.5m
Busway weight	29.4 Kg/m
Weight of TOB 1	13 Kg (160A TOB)
Weight of TOB 2	37 Kg (250A TOB)

$$H = 145 - \frac{(29.4 \times 3.5) + (13 + 37)}{(8 \times 2.5)} = 137 \text{ mm}$$



A) Floor hanger: use one or more of this suspension brackets, according to the weight of the whole riser mains (including the boxes).
For risers that are shorter than 4 meters, fix to the base with type D brackets (see pag. 39), when longer, use a type C suspension brackets (see pag. 39) respecting the maximum distances (Dmax) indicated in the tables.

B) Standard hanger: use this type of suspension bracket to hang the busbar every 1,5 metres of riser mains.

C) Wall hanger: use one or more of this suspension brackets, according to the weight of the whole riser mains (including the boxes).
For risers that are shorter than 4 meters, fix to the base with type B brackets (see pag. 39), when longer, use a type A suspension brackets (see pag. 39) respecting the maximum distances (Dmax) indicated in the tables.

Super Compact BUSWAYS - Al

Operating recommendations on how to design Riser Mains

1) Use an RH end feed unit (without monobloc)
In order to position the tap-off boxes correctly as shown in the figure, the neutral conductor of the riser main must be on the left side of the element

2) Use one or more suspension brackets for the vertical elements, according to the weight of the whole riser mains.

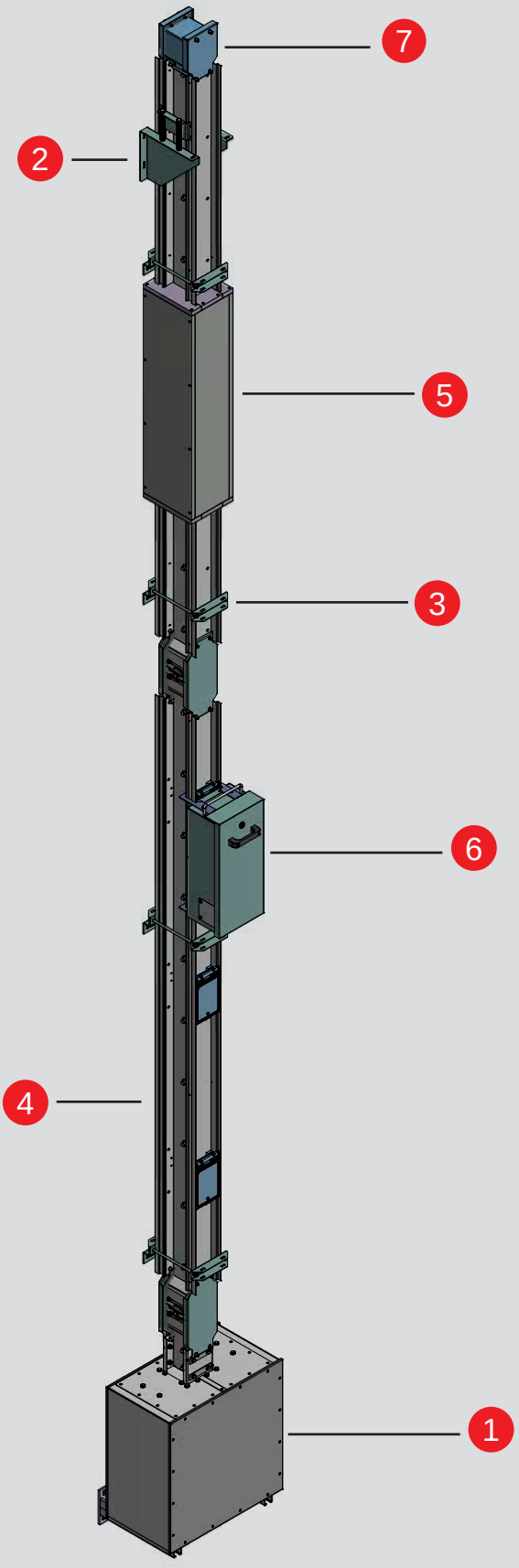
3) Use a standard suspension bracket to hang the busbar every 1.5 metres of riser mains

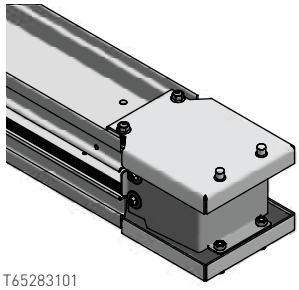
4) Use elements with tap-off outlets where necessary, distribute the power using plug-in boxes

5) Use S120 fire barrier kit for each compartment floor, where specifically requested

6) The tap-off boxes can be installed in the tap-off outlets and near the connection between the elements

7) At the end of the riser mains, position the IP55 end cover





T65283101

TSF766040

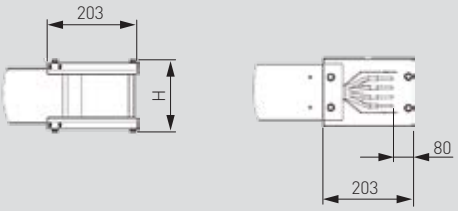
Cat.Nos	End cover IP55
Al	The end cover is the component that ensures an IP55 protection degree at the end of the line
	In (A)
62143711	630
62143712	800
62143713	1000
62143715	1250
62143716	1600
62143718	2000
62143810	2500
62143812	2750
62143812	3200
62143813	3600
62143813	4000
62143910	5000
62143911	6300

Al	Protective bellow Recommended for protection of the interface connection on electric boards, dry-type transformer with enclosure and oil-type transformers
	In (A)
TSF766040	Single bellow 760x600 mm. H 400
TSF927140	Double bellow 920x710 mm. H 400

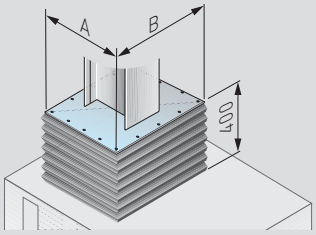
Super Compact BUSWAYS - Al
Accessories

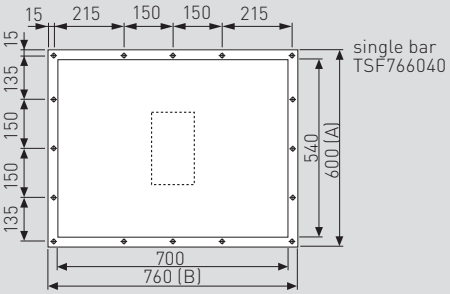
Dimensions

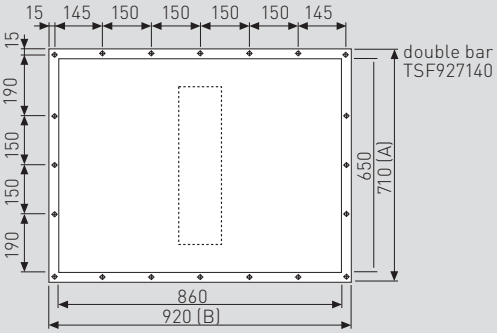
End cover IP55



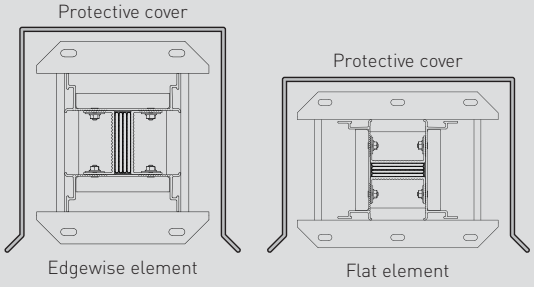
Protective bellow







Protective cover for outdoor applications



Covering accessory to be used for outdoor installations and wherever the standard IP55 Degree of protection is not adequate

The protective cover for outdoor applications does not change the degree of protection IP of the busbar duct

Flexible

Flexible braided connections are used to connect the transformer to the connection interface of the busbar when mechanically uncoupling the two elements is required, to prevent the transmission of vibrations

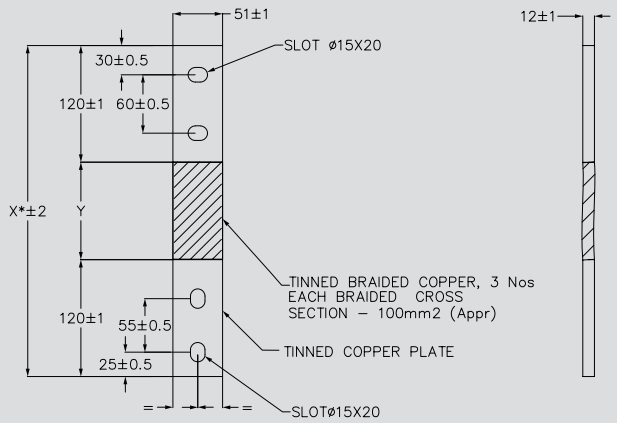
Flexible Braided Connections

In (A)	No. of Flexibles / Phase rated @1250A
630	1
800	1
1000	1
1250	1
1600	2
2000	2
2500	2
2750	3
3200	3
3600	3
4000	4
5000	4
6300	6

Super Compact BUSWAYS - Al
Flexible Braided Connections

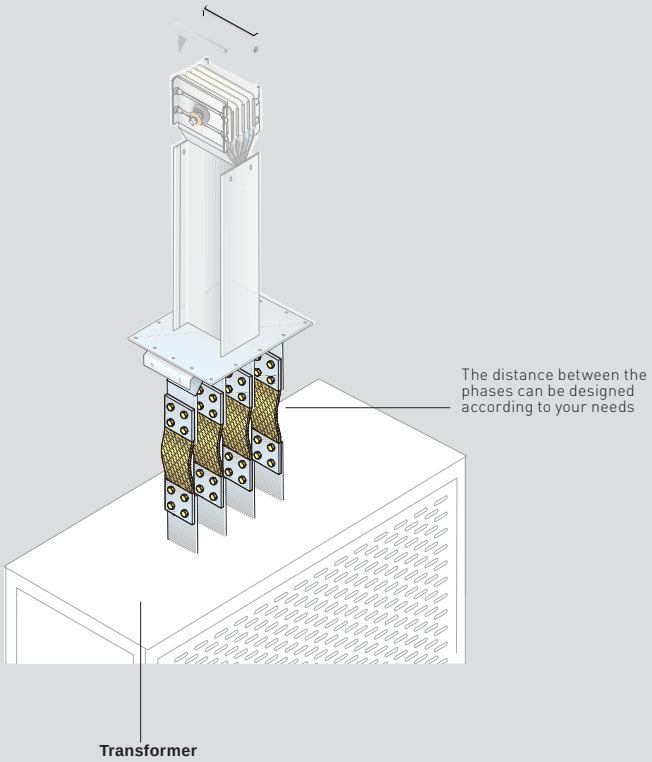
Dimensions

Flexible



X*– Variable length as per requirement
Y= X–120–120
Current capacity – 1250A

Maximum Legth (X) – 600 mm
Minimum Length (X) – 350mm

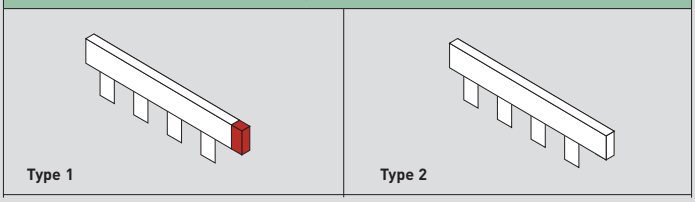


Note: for insulated flexible braid, please contact Bahra TBS.

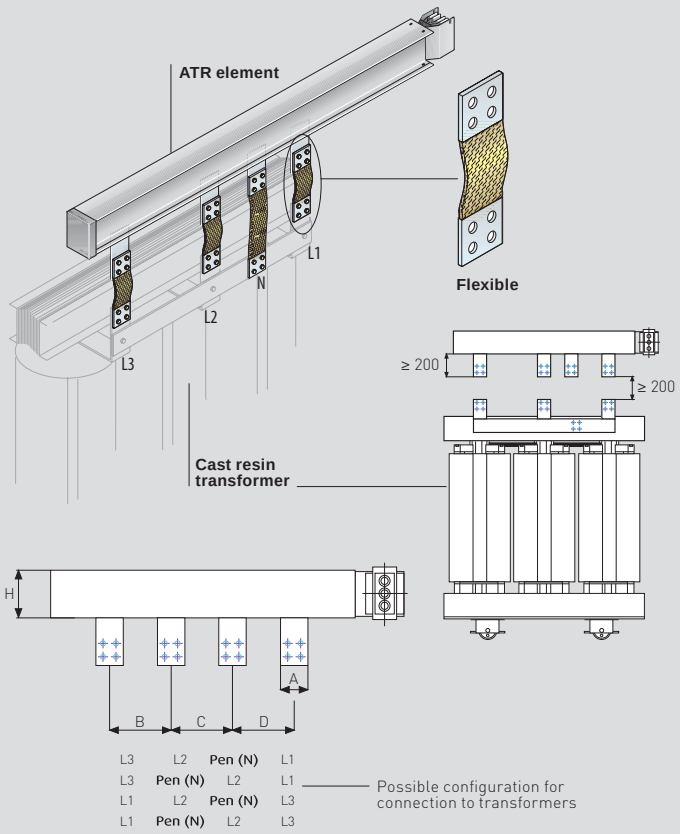
ATR elements

ATR are elements used for connection to electric boards or transformers, similar in everything to straight elements
These elements may be used for connection to both cast resin and oil transformers, and offer the advantage that the connection interfaces may be installed directly on the vertical section of the transformer terminals, minimising the time required for the connection of the busbar trunking system to the transformer. Each element is designed based on precise connection specifications supplied by the customer

SIMPLE ATR



Dimensions



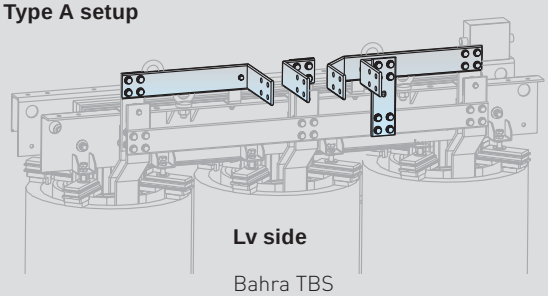
ATR dimensions

Although designed ad-hoc, ATR elements are still subjected to construction limits. Below are the summarizing tables indicating these values

	Interaxes (mm)					
	Rating (A)	A	B	C	D	H
Single	630	55	155	155	155	153
	800	75	175	175	175	173
	1000	80	180	180	180	178
	1250	110	210	210	210	208
	1600	145	245	245	245	243
	2000	185	285	285	285	283
Double	2500	120	220	220	220	375
	2750	145	245	245	245	455
	3200	160	260	260	260	455
	3600	185	285	285	285	557
	4000	210	310	310	310	557
Triple	5000	160	360	360	360	653.5
	6300	210	410	410	410	805.5

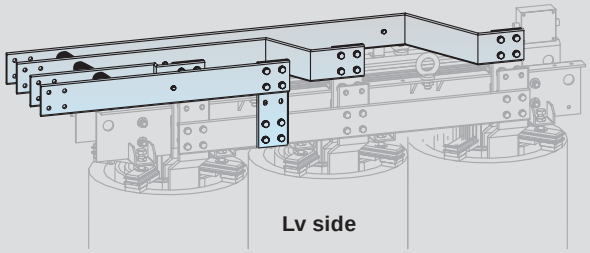
The system: the Bahra TBS transformer advantage

Type A setup



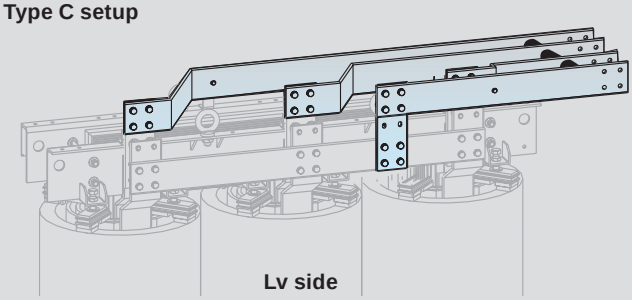
Bahra TBS
Cast Resin Transformers

Type B setup



Bahra TBS
Cast Resin Transformers

Type C setup



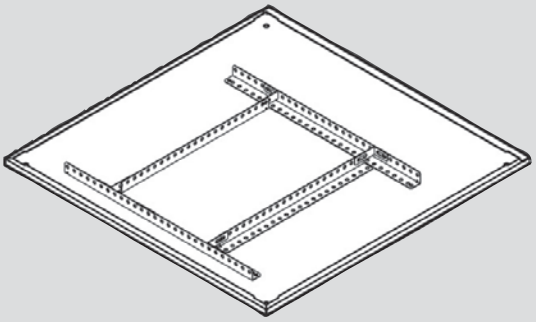
Bahra TBS
Cast Resin Transformers

The Bahra TBS group product synergy answers to the global installation need
The Bahra TBS cast resin transformers have specifically designed connections for the Bahra TBS busbars

The versions shown represent some of the standardized solutions

Please contact Bahra TBS for more details on the dimensions

The system:the Bahra TBS XL³ advantage



Installation kit for XL³ cabinets

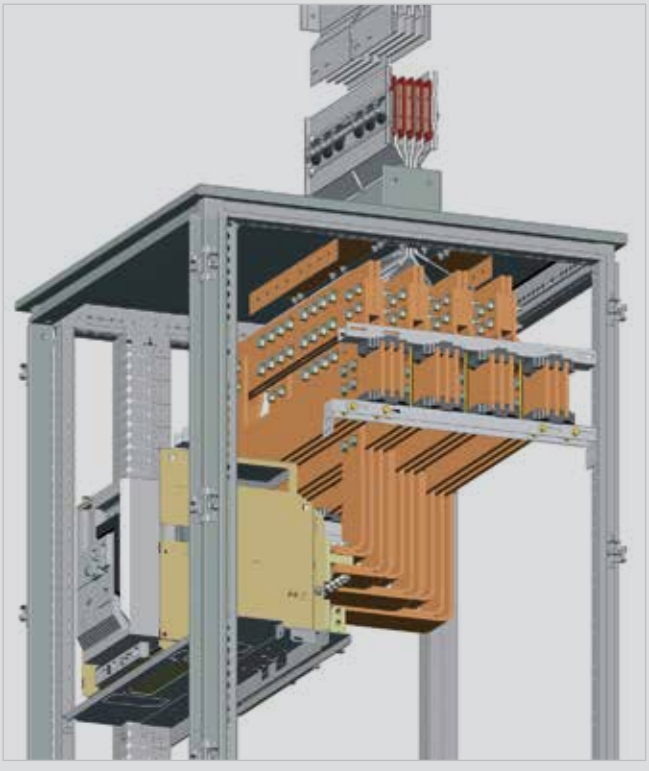
Kit Cat.No 0 205 29 for reinforcing the roof of the XL³ cabinets for the installation of the Bahra TBS interface to connect the busbar systems

The Compact BUSWAYS range can be easily and immediately combined with the Bahra TBS XL³ 4000 cabinets
The reinforcement kit enables you to install any type of unit to the board onto the roof of the XL³ structure in a quick and easy way

Upon request, and with the specific measurements, custom made connections between our BUSWAY interface and the DMX air-circuit breaker can be supplied for installation in the XL³ cabinets

The safety and the operational efficiency of the Bahra TBS system are guaranteed by the system certification, achieved after rigorous tests carried out in the most important international laboratories.

For more details about the XL³, please refer to the general Bahra TBS catalogue



Super Compact BUSWAYS - Al

Technical Information

General features

The Super Compact BUSWAY line is available in the standard range: From **630A to 6300A with Aliminum conductors**
The dimensions of our BUSWAY enhance **its resistance to short circuit stresses**; in addition, they can reduce the impedance of the circuit by controlling the voltage drops and allow for the installation of high power electrical systems, even in extremely confined spaces.
Our BUSWAY is available with **a wide selection of tap-off boxes that range from 63A up to 1250A**, thus allowing you to locally protect and feed different types of loads by housing protective devices such as fuses, MCCBs and motorised switches
Our BUSWAY is not only in **compliance with** the harmonised **Standards IEC 61439-6** but also answers specifically to many clients needs for more severe conditions of use
Thus **the rated current** of Bahra TBS's busbar trunking systems is **always referred to the average ambient temperature of 35°C** thus providing the markets with suitably **upgraded** products
The nominal range of all our BUSWAYS is guaranteed both for horizontal installations (flat and edgewise) and for vertical installations without downgrading
Our busbar trunking systems are designed so that they can **be maintenance-free**, except for the periodic and compulsory inspections required by the Standard IEC 60364
The tightening torque inspection of the junction can be carried out by qualified personnel, even when the busbar is energized

Structural features

The outer casing of our compact BUSWAYS line consists of four C section aluminum casing & cover riveted, with excellent mechanical, electric and heat loss efficiency. The aluminum casing & cover are treated and painted with RAL7035 with a high resistance to chemical agents. The standard degree of protection is IP55, on request IP65/IP66; also with certain accessories, it can also be installed outdoors. The busbar Aluminum conductors have a rectangular cross section with rounded corners, tin-plated and insulated with epoxy.

The insulation between bars is ensured by epoxy class B (130°C) (Class F (155°C) thermal resistance available on request.

All plastic components have a **V1 self-extinguishing degree** (as per UL94); they are fire retardant and comply with the glow-wire test according to standards.

Our compact BUSWAYS line is **Halogen Free.** In order to facilitate storage operations especially to reduce the installation time, the straight elements, trunking **components** as well as all the components of the BUSWAY line are **supplied with a monobloc pre-installed at the factory.**

The junction contact is ensured by **tin plated copper for each phase**, insulated with red **class F thermosetting plastic material**
The **monobloc** has **shearhead nuts**: after tightening the nuts with a standard wrench, the outer head will break at the correct torque value, hence giving you the certainty that the connection has been made properly so as to guarantee safety and maximum performance over time.

Finally, in order to completely verify the insulation level, every element with a monobloc undergoes an **insulation test** (phase-phase, phase-PE) at the factory with a test voltage of 2400 V AC for 60 seconds.

SCB-AN					
Temperature	15	20	25	30	35
Kt Factor	1.12	1.09	1.06	1.03	1.00

According to temperature rise results at 60 Hz, here below the tabe of rating to be used in case of different ambient.

Rated current [A] @ 60 Hz	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Rating @ 35°C	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Rating @ 40°C	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Rating @ 45°C	630	800	1000	1250	1600	2000	2750	2750	3600	4000	4000	5000	NA
Rating @ 50°C	630	800	1000	1250	1600	2000	2750	2750	3600	4000	4000	5000	NA
Rating @ 55°C	800	1000	1250	1600	2000	2500	3200	3200	4000	5000	5000	6300	NA
Rating @ 60°C	800	1000	1250	1600	2000	2500	3200	3600	4000	5000	5000	6300	NA

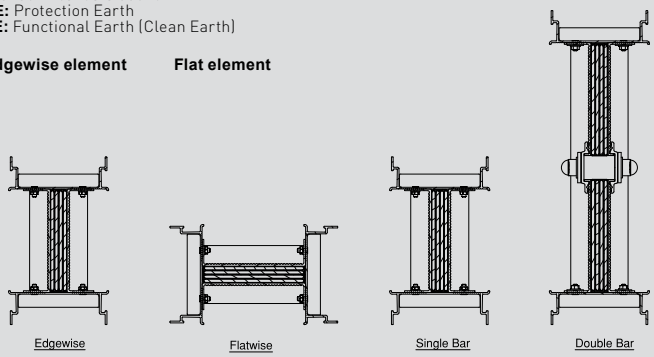
Rated Current of SCB Busway(A)													
Al	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
	Single bar						Double bar					Triple bar	

Standard versions:

Bahra TBS BUSWAY Standard rating line with 4 conductors 3P+N+PE, 3P+PEN, 3P+FE+PE

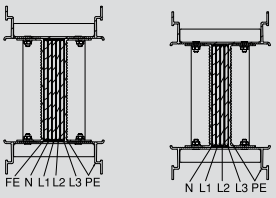
Note: For dimension H, see technical data section
PE: Protection Earth
FE: Functional Earth (Clean Earth)

Edgewise element **Flat element**



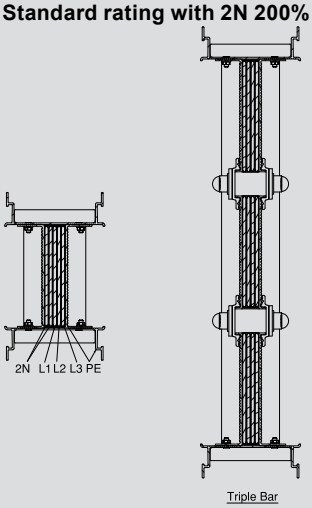
Bahra TBS BUSWAY Standard rating line with 5 conductors 3P+N+FE+PE

Note: For dimension H, see technical data section
PE: Protection Earth
FE: Functional Earth (Clean Earth)



Bahra TBS BUSWAY Standard rating with 2N 200% Neutral line 3P+2N+PE

Note: For dimension H, see technical data section
PE: Protection Earth
2N: 200% Neutral

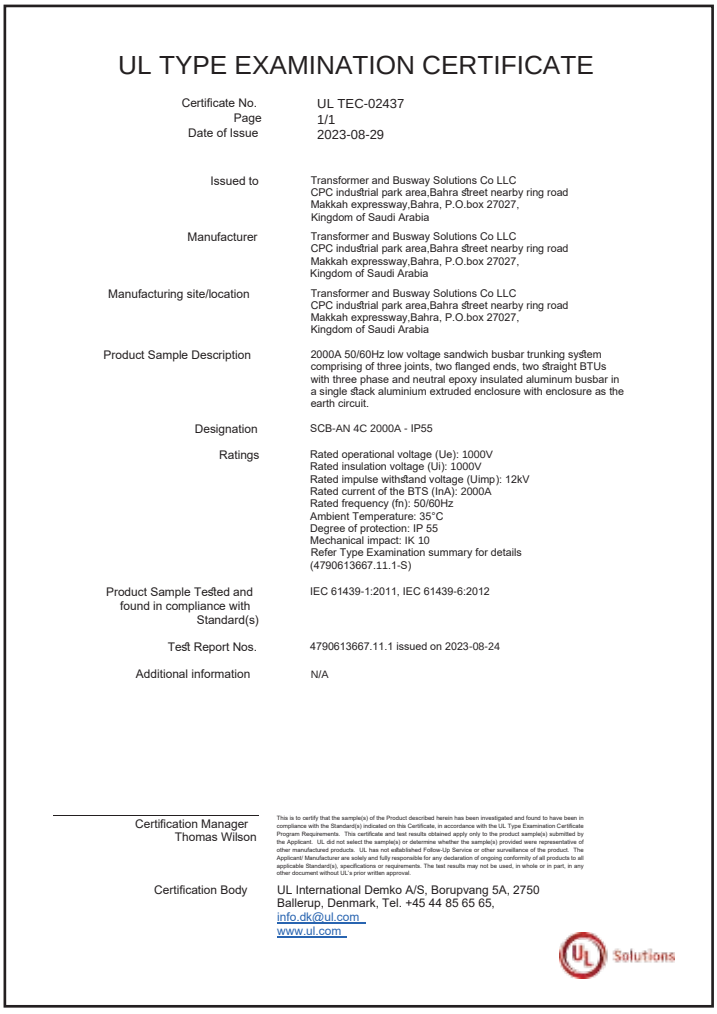


Special versions on request

BAHRA TBS BUSWAY
CERTIFICATES

Bahra TBS Busway is certified by UL as per IEC 61439 - 1 & 6.

Verification of Strength of material and parts	Clause 10.2
- Resistance of Insulating materials – Severity test A	Clause 10.2.2
- Properties of Insulating materials	Clause 10.2.3
- Resistance to abnormal heat and fire due to internal electric effects	Clause 10.2.3.2
- Lifting	Clause 10.2.5
- Mechanical Impact	Clause 10.2.6
- Marking	Clause 10.2.7
- Ability to withstand Mechanical loads	Clause 10.2.101
Verification of Degree of protection of enclosure	Clause 10.3
Verification of Clearance and creepage distance	Clause 10.4
Verification of Protection against electric shock & integrity of protective circuits	Clause 10.5
Verification of Dielectric properties	Clause 10.9
Verification of Temperature-rise limits	Clause 10.10
Verification of Short-circuit withstand strength	Clause 10.11 at CESI–IPH Berlin Lab
Verification of Electromagnetic compatibility (EMC)	Clause 10.12
Verification of Mechanical operation	Clause 10.13
Verification of Resistance to Flame propagation	Clause 10.101
Verification of Fire resistance in building penetration	Clause 10.102
Verification of Phase conductor characteristics	Annex BB
Verification of Fault loop zero-sequence impedances	Annex CC
Verification of Fault loop resistance and reactances	Annex DD



UL TYPE EXAMINATION CERTIFICATE

Certificate No.	UL TEC-02437
Page	1/1
Date of Issue	2023-08-29
Issued to	Transformer and Busway Solutions Co LLC CPC industrial park area,Bahra street nearby ring road Makkah expressway,Bahra, P.O.box 27027, Kingdom of Saudi Arabia
Manufacturer	Transformer and Busway Solutions Co LLC CPC industrial park area,Bahra street nearby ring road Makkah expressway,Bahra, P.O.box 27027, Kingdom of Saudi Arabia
Manufacturing site/location	Transformer and Busway Solutions Co LLC CPC industrial park area,Bahra street nearby ring road Makkah expressway,Bahra, P.O.box 27027, Kingdom of Saudi Arabia
Product Sample Description	2000A 50/60Hz low voltage sandwich busbar trunking system comprising of three joints, two flanged ends, two straight BTUs with three phase and neutral epoxy insulated aluminum busbar in a single stack aluminium extruded enclosure with enclosure as the earth circuit.
Designation	SCB-AN 4C 2000A - IP55
Ratings	Rated operational voltage (Ue): 1000V Rated insulation voltage (Ui): 1000V Rated impulse withstand voltage (Uimp): 12kV Rated current of the BTS (InA): 2000A Rated frequency (fn): 50/60Hz Ambient Temperature: 35°C Degree of protection: IP 55 Mechanical impact: IK 10 Refer Type Examination summary for details (4790613667.11.1-S)
Product Sample Tested and found in compliance with Standard(s)	IEC 61439-1:2011, IEC 61439-6:2012
Test Report Nos.	4790613667.11.1 issued on 2023-08-24
Additional information	N/A

Certification Manager
Thomas Wilson

This is to certify that the sample(s) of the Product described herein has been investigated and found to have been in compliance with the Standard(s) indicated on this Certificate, in accordance with the UL Type Examination Certificate Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Applicant. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured products. UL has not established Follow-Up Service or other surveillance of the product. The Applicant/ Manufacturer are solely and fully responsible for any declaration of ongoing conformity of all products to all applicable Standard(s), specifications or requirements. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Certification Body
UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark, Tel. +45 44 85 65 65,
info.dk@ul.com
www.ul.com

UL Solutions

SCB AN - 4C - 50Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.029	0.023	0.026	0.020	0.014	0.015	0.011	0.008	0.006	0.007	0.007	0.006	0.004
Average phase impedance	Z [mΩ/m]		0.116	0.105	0.081	0.059	0.045	0.033	0.029	0.023	0.016	0.017	0.015	0.012	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.144	0.137	0.108	0.077	0.060	0.042	0.039	0.029	0.022	0.020	0.019	0.016	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average Resistance of the protective bar	R_{PE} [mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE} [mΩ/m]		0.052	0.048	0.046	0.044	0.038	0.034	0.022	0.022	0.019	0.019	0.017	0.015	0.013
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.081	0.071	0.072	0.064	0.052	0.049	0.033	0.030	0.025	0.026	0.024	0.021	0.017
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.152	0.137	0.116	0.094	0.076	0.063	0.048	0.041	0.033	0.034	0.030	0.026	0.022
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.150	0.137	0.103	0.075	0.057	0.039	0.036	0.028	0.020	0.021	0.017	0.015	0.012
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.039	0.031	0.034	0.027	0.019	0.020	0.014	0.011	0.008	0.009	0.009	0.008	0.006
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.155	0.140	0.108	0.079	0.060	0.044	0.039	0.030	0.021	0.023	0.019	0.017	0.013
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.062	0.056	0.055	0.051	0.043	0.039	0.026	0.025	0.021	0.021	0.019	0.017	0.014
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.177	0.161	0.129	0.101	0.081	0.064	0.051	0.043	0.034	0.035	0.030	0.026	0.022
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	103.515	96.270	79.630	57.229	43.922	32.919	29.130	22.128	16.338	15.641	15.035	12.701	9.852
	cosφ =	0.75	108.289	101.051	82.997	59.521	45.787	33.924	30.238	22.960	16.981	16.160	15.510	13.084	10.181
	cosφ =	0.80	112.843	105.655	86.170	61.661	47.545	34.814	31.264	23.729	17.580	16.628	15.935	13.423	10.479
	cosφ =	0.85	117.099	110.021	89.078	63.597	49.158	35.552	32.179	24.413	18.120	17.028	16.292	13.703	10.734
	cosφ =	0.90	120.909	114.030	91.591	65.227	50.554	36.060	32.928	24.970	18.570	17.326	16.546	13.893	10.926
	cosφ =	0.95	123.891	117.377	93.372	66.290	51.549	36.142	33.370	25.290	18.855	17.435	16.612	13.918	10.999
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		9.5	11.1	12.3	15.0	18.1	22.2	29.4	35.4	37.1	43.4	46.3	59.5	74.6
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 4C - 60Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.035	0.028	0.031	0.024	0.017	0.018	0.013	0.010	0.007	0.008	0.008	0.007	0.005
Average phase impedance	Z [mΩ/m]		0.118	0.106	0.083	0.061	0.046	0.035	0.030	0.023	0.017	0.018	0.015	0.013	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.145	0.138	0.109	0.078	0.060	0.043	0.039	0.030	0.022	0.021	0.020	0.017	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average Resistance of the protective bar	R_{PE} [mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE} [mΩ/m]		0.062	0.058	0.055	0.053	0.046	0.041	0.026	0.026	0.023	0.023	0.020	0.018	0.016
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.097	0.086	0.086	0.077	0.063	0.059	0.039	0.036	0.030	0.031	0.028	0.025	0.021
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.161	0.145	0.126	0.103	0.083	0.071	0.053	0.046	0.037	0.038	0.034	0.030	0.024
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.150	0.137	0.103	0.075	0.057	0.039	0.036	0.028	0.020	0.021	0.017	0.015	0.012
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.047	0.037	0.041	0.032	0.023	0.024	0.017	0.013	0.009	0.011	0.011	0.009	0.007
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.157	0.142	0.111	0.081	0.062	0.046	0.040	0.031	0.022	0.024	0.020	0.017	0.013
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.074	0.067	0.066	0.061	0.051	0.047	0.031	0.030	0.025	0.025	0.023	0.020	0.017
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.182	0.166	0.134	0.107	0.086	0.069	0.054	0.046	0.037	0.038	0.033	0.028	0.024
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	107.123	99.156	82.825	59.703	45.675	34.775	30.470	23.159	17.060	16.466	15.860	13.423	10.367
	cosφ =	0.75	111.631	103.724	85.957	61.812	47.410	35.642	31.479	23.915	17.650	16.923	16.274	13.753	10.658
	cosφ =	0.80	115.874	108.080	88.854	63.739	49.017	36.373	32.389	24.595	18.187	17.321	16.628	14.030	10.912
	cosφ =	0.85	119.760	112.150	91.435	65.422	50.451	36.920	33.167	25.173	18.652	17.636	16.900	14.235	11.114
	cosφ =	0.90	123.111	115.792	93.542	66.737	51.624	37.192	33.746	25.599	19.010	17.829	17.050	14.334	11.241
	cosφ =	0.95	125.469	118.639	94.769	67.372	52.315	36.954	33.956	25.740	19.170	17.795	16.972	14.234	11.225
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		9.5	11.1	12.3	15.0	18.1	22.2	29.4	35.4	37.1	43.4	46.3	59.5	74.6
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 5C - 50Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.029	0.023	0.026	0.020	0.014	0.015	0.011	0.008	0.006	0.007	0.007	0.006	0.004
Average phase impedance	Z [mΩ/m]		0.116	0.105	0.081	0.059	0.045	0.033	0.029	0.023	0.016	0.017	0.015	0.012	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.144	0.137	0.108	0.077	0.060	0.042	0.039	0.029	0.022	0.020	0.019	0.016	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.056	0.051	0.039	0.028	0.021	0.015	0.014	0.011	0.008	0.008	0.006	0.006	0.004
Average Resistance of the protective bar	R_{PE} [mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE} [mΩ/m]		0.052	0.048	0.046	0.044	0.038	0.034	0.022	0.022	0.019	0.019	0.017	0.015	0.013
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.081	0.071	0.072	0.064	0.052	0.049	0.033	0.030	0.025	0.026	0.024	0.021	0.017
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.152	0.137	0.116	0.094	0.076	0.063	0.048	0.041	0.033	0.034	0.030	0.026	0.022
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.094	0.086	0.064	0.047	0.036	0.025	0.023	0.018	0.013	0.013	0.011	0.009	0.007
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.039	0.031	0.034	0.027	0.019	0.020	0.014	0.011	0.008	0.009	0.009	0.008	0.006
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.102	0.091	0.073	0.054	0.040	0.032	0.027	0.021	0.015	0.016	0.014	0.012	0.009
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.062	0.056	0.055	0.051	0.043	0.039	0.026	0.025	0.021	0.021	0.019	0.017	0.014
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.177	0.161	0.129	0.101	0.081	0.064	0.051	0.043	0.034	0.035	0.030	0.026	0.022
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	103.515	96.270	79.630	57.229	43.922	32.919	29.130	22.128	16.338	15.641	15.035	12.701	9.852
	cosφ =	0.75	108.289	101.051	82.997	59.521	45.787	33.924	30.238	22.960	16.981	16.160	15.510	13.084	10.181
	cosφ =	0.80	112.843	105.655	86.170	61.661	47.545	34.814	31.264	23.729	17.580	16.628	15.935	13.423	10.479
	cosφ =	0.85	117.099	110.021	89.078	63.597	49.158	35.552	32.179	24.413	18.120	17.028	16.292	13.703	10.734
	cosφ =	0.90	120.909	114.030	91.591	65.227	50.554	36.060	32.928	24.970	18.570	17.326	16.546	13.893	10.926
	cosφ =	0.95	123.891	117.377	93.372	66.290	51.549	36.142	33.370	25.290	18.855	17.435	16.612	13.918	10.999
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		10.5	12.3	13.9	17.1	20.8	25.7	32.6	41.1	43.3	50.6	54.2	68.9	86.5
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 5C - 60Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{ms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{ms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{ms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.035	0.028	0.031	0.024	0.017	0.018	0.013	0.010	0.007	0.008	0.008	0.007	0.005
Average phase impedance	Z [mΩ/m]		0.118	0.106	0.083	0.061	0.046	0.035	0.030	0.023	0.017	0.018	0.015	0.013	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.145	0.138	0.109	0.078	0.060	0.043	0.039	0.030	0.022	0.021	0.020	0.017	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.056	0.051	0.039	0.028	0.021	0.015	0.014	0.011	0.008	0.008	0.006	0.006	0.004
Average Resistance of the protective bar	R_{PE}[mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE}[mΩ/m]		0.062	0.058	0.055	0.053	0.046	0.041	0.026	0.026	0.023	0.023	0.020	0.018	0.016
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.097	0.086	0.086	0.077	0.063	0.059	0.039	0.036	0.030	0.031	0.028	0.025	0.021
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.161	0.145	0.126	0.103	0.083	0.071	0.053	0.046	0.037	0.038	0.034	0.030	0.024
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.094	0.086	0.064	0.047	0.036	0.025	0.023	0.018	0.013	0.013	0.011	0.009	0.007
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.047	0.037	0.041	0.032	0.023	0.024	0.017	0.013	0.009	0.011	0.011	0.009	0.007
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.105	0.093	0.076	0.057	0.042	0.034	0.028	0.022	0.016	0.017	0.015	0.013	0.010
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.074	0.067	0.066	0.061	0.051	0.047	0.031	0.030	0.025	0.025	0.023	0.020	0.017
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.182	0.166	0.134	0.107	0.086	0.069	0.054	0.046	0.037	0.038	0.033	0.028	0.024
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	107.123	99.156	82.825	59.703	45.675	34.775	30.470	23.159	17.060	16.466	15.860	13.423	10.367
	cosφ =	0.75	111.631	103.724	85.957	61.812	47.410	35.642	31.479	23.915	17.650	16.923	16.274	13.753	10.658
	cosφ =	0.80	115.874	108.080	88.854	63.739	49.017	36.373	32.389	24.595	18.187	17.321	16.628	14.030	10.912
	cosφ =	0.85	119.760	112.150	91.435	65.422	50.451	36.920	33.167	25.173	18.652	17.636	16.900	14.235	11.114
	cosφ =	0.90	123.111	115.792	93.542	66.737	51.624	37.192	33.746	25.599	19.010	17.829	17.050	14.334	11.241
	cosφ =	0.95	125.469	118.639	94.769	67.372	52.315	36.954	33.956	25.740	19.170	17.795	16.972	14.234	11.225
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		10.5	12.3	13.9	17.1	20.8	25.7	32.6	41.1	43.3	50.6	54.2	68.9	86.5
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 4.5C - 50Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.029	0.023	0.026	0.020	0.014	0.015	0.011	0.008	0.006	0.007	0.007	0.006	0.004
Average phase impedance	Z [mΩ/m]		0.116	0.105	0.081	0.059	0.045	0.033	0.029	0.023	0.016	0.017	0.015	0.012	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.144	0.137	0.108	0.077	0.060	0.042	0.039	0.029	0.022	0.020	0.019	0.016	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average functional Earth resistance (FE)	R_{20} [mΩ/m]		0.225	0.205	0.154	0.112	0.086	0.059	0.054	0.042	0.030	0.032	0.026	0.022	0.017
Average functional Earth reactance (FE)	X_{FE} [mΩ/m]		0.020	0.017	0.019	0.014	0.012	0.011	0.009	0.009	0.007	0.007	0.006	0.005	0.004
Average Resistance of the protective bar	R_{PE} [mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.152	0.137	0.116	0.094	0.076	0.063	0.048	0.041	0.033	0.034	0.030	0.026	0.022
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.150	0.137	0.103	0.075	0.057	0.039	0.036	0.028	0.020	0.021	0.017	0.015	0.012
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.039	0.031	0.034	0.027	0.019	0.020	0.014	0.011	0.008	0.009	0.009	0.008	0.006
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.155	0.140	0.108	0.079	0.060	0.044	0.039	0.030	0.021	0.023	0.019	0.017	0.013
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.062	0.056	0.055	0.051	0.043	0.039	0.026	0.025	0.021	0.021	0.019	0.017	0.014
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.177	0.161	0.129	0.101	0.081	0.064	0.051	0.043	0.034	0.035	0.030	0.026	0.022
Voltage drop with distribuited load ΔV [V/(m*A)]10⁻⁶	cosφ =	0.70	103.515	96.270	79.630	57.229	43.922	32.919	29.130	22.128	16.338	15.641	15.035	12.701	9.852
	cosφ =	0.75	108.289	101.051	82.997	59.521	45.787	33.924	30.238	22.960	16.981	16.160	15.510	13.084	10.181
	cosφ =	0.80	112.843	105.655	86.170	61.661	47.545	34.814	31.264	23.729	17.580	16.628	15.935	13.423	10.479
	cosφ =	0.85	117.099	110.021	89.078	63.597	49.158	35.552	32.179	24.413	18.120	17.028	16.292	13.703	10.734
	cosφ =	0.90	120.909	114.030	91.591	65.227	50.554	36.060	32.928	24.970	18.570	17.326	16.546	13.893	10.926
	cosφ =	0.95	123.891	117.377	93.372	66.290	51.549	36.142	33.370	25.290	18.855	17.435	16.612	13.918	10.999
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Total conductors' sizes	[mm²]		217	297	395	545	720	920	1189	1439	1589	1839	2089	2384	3134
Weight	p [kg/m]		10.2	12.0	13.4	16.4	19.9	24.5	31.0	39.1	41.2	48.2	51.4	65.8	82.4
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 4.5C - 60Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.035	0.028	0.031	0.024	0.017	0.018	0.013	0.010	0.007	0.008	0.008	0.007	0.005
Average phase impedance	Z [mΩ/m]		0.118	0.106	0.083	0.061	0.046	0.035	0.030	0.023	0.017	0.018	0.015	0.013	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.145	0.138	0.109	0.078	0.060	0.043	0.039	0.030	0.022	0.021	0.020	0.017	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average functional Earth resistance (FE)	R_{20} [mΩ/m]		0.225	0.205	0.154	0.112	0.086	0.059	0.054	0.042	0.030	0.032	0.026	0.022	0.017
Average functional Earth reactance (FE)	X_{FE} [mΩ/m]		0.053	0.048	0.041	0.035	0.031	0.030	0.022	0.021	0.019	0.017	0.015	0.011	0.006
Average Resistance of the protective bar	R_{PE} [mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.155	0.140	0.120	0.097	0.078	0.066	0.050	0.043	0.034	0.035	0.032	0.027	0.022
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.150	0.137	0.103	0.075	0.057	0.039	0.036	0.028	0.020	0.021	0.017	0.015	0.012
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.047	0.037	0.041	0.032	0.023	0.024	0.017	0.013	0.009	0.011	0.011	0.009	0.007
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.157	0.142	0.111	0.081	0.062	0.046	0.040	0.031	0.022	0.024	0.020	0.017	0.013
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.064	0.057	0.056	0.052	0.044	0.040	0.026	0.025	0.021	0.022	0.020	0.017	0.015
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.178	0.162	0.130	0.102	0.082	0.064	0.051	0.043	0.035	0.035	0.031	0.026	0.022
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	107.123	99.156	82.825	59.703	45.675	34.775	30.470	23.159	17.060	16.466	15.860	13.423	10.367
	cosφ =	0.75	111.631	103.724	85.957	61.812	47.410	35.642	31.479	23.915	17.650	16.923	16.274	13.753	10.658
	cosφ =	0.80	115.874	108.080	88.854	63.739	49.017	36.373	32.389	24.595	18.187	17.321	16.628	14.030	10.912
	cosφ =	0.85	119.760	112.150	91.435	65.422	50.451	36.920	33.167	25.173	18.652	17.636	16.900	14.235	11.114
	cosφ =	0.90	123.111	115.792	93.542	66.737	51.624	37.192	33.746	25.599	19.010	17.829	17.050	14.334	11.241
	cosφ =	0.95	125.469	118.639	94.769	67.372	52.315	36.954	33.956	25.740	19.170	17.795	16.972	14.234	11.225
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		10.2	12.0	13.4	16.4	19.9	24.5	31.0	39.1	41.2	48.2	51.4	65.8	82.4
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

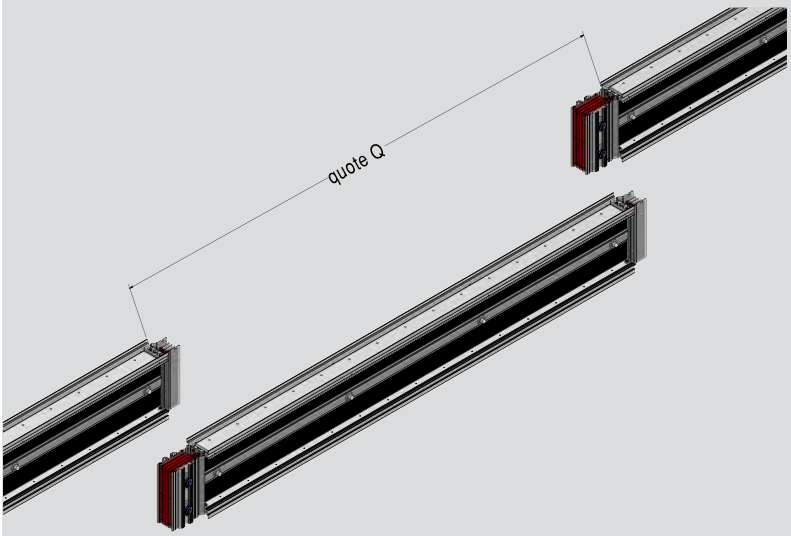
SCB AN - 2N - 50Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.029	0.023	0.026	0.020	0.014	0.015	0.011	0.008	0.006	0.007	0.007	0.006	0.004
Average phase impedance	Z [mΩ/m]		0.116	0.105	0.081	0.059	0.045	0.033	0.029	0.023	0.016	0.017	0.015	0.012	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.144	0.137	0.108	0.077	0.060	0.042	0.039	0.029	0.022	0.020	0.019	0.016	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.056	0.051	0.039	0.028	0.021	0.015	0.014	0.011	0.008	0.008	0.006	0.006	0.004
Average Resistance of the protective bar	R_{PE}[mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE}[mΩ/m]		0.052	0.048	0.046	0.044	0.038	0.034	0.022	0.022	0.019	0.019	0.017	0.015	0.013
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.081	0.071	0.072	0.064	0.052	0.049	0.033	0.030	0.025	0.026	0.024	0.021	0.017
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.152	0.137	0.116	0.094	0.076	0.063	0.048	0.041	0.033	0.034	0.030	0.026	0.022
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.094	0.086	0.064	0.047	0.036	0.025	0.023	0.018	0.013	0.013	0.011	0.009	0.007
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.039	0.031	0.034	0.027	0.019	0.020	0.014	0.011	0.008	0.009	0.009	0.008	0.006
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.102	0.091	0.073	0.054	0.040	0.032	0.027	0.021	0.015	0.016	0.014	0.012	0.009
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.062	0.056	0.055	0.051	0.043	0.039	0.026	0.025	0.021	0.021	0.019	0.017	0.014
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.177	0.161	0.129	0.101	0.081	0.064	0.051	0.043	0.034	0.035	0.030	0.026	0.022
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	103.515	96.270	79.630	57.229	43.922	32.919	29.130	22.128	16.338	15.641	15.035	12.701	9.852
	cosφ =	0.75	108.289	101.051	82.997	59.521	45.787	33.924	30.238	22.960	16.981	16.160	15.510	13.084	10.181
	cosφ =	0.80	112.843	105.655	86.170	61.661	47.545	34.814	31.264	23.729	17.580	16.628	15.935	13.423	10.479
	cosφ =	0.85	117.099	110.021	89.078	63.597	49.158	35.552	32.179	24.413	18.120	17.028	16.292	13.703	10.734
	cosφ =	0.90	120.909	114.030	91.591	65.227	50.554	36.060	32.928	24.970	18.570	17.326	16.546	13.893	10.926
	cosφ =	0.95	123.891	117.377	93.372	66.290	51.549	36.142	33.370	25.290	18.855	17.435	16.612	13.918	10.999
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		10.5	12.3	13.9	17.1	20.8	25.7	32.6	41.1	43.3	50.6	54.2	68.9	86.5
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

SCB AN - 2N - 60Hz

			SINGLE BAR						DOUBLE BAR					TRIPLE BAR	
Rated current	In [A]		630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Overall dimension of the busbars	L x H [mm]		145x153	145x173	145x178	145x208	145x248	145x283	145x375	145x455	145x455	145x557	145x557	145x654	145x806
Rated operational voltage	Ue [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]		50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (1 s)	I_{CW} [kA]$_{rms}$		25	36	50	50	65	80	100	100	120	120	120	120	120
Peak current	I_{pk} [kA]		52.5	75.6	105	105	143	176	220	220	264	264	264	264	264
Rated short-time current of the neutral bar (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the neutral bar	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Rated short-time current of the protective circuit (1 s)	I_{CW} [kA]$_{rms}$		15	22	30	30	39	48	60	60	72	72	72	72	72
Peak current of the protective circuit	I_{pk} [kA]		30	45	63	63	82	101	132	132	158	158	158	158	158
Average phase resistance at 20°C	R_{20} [mΩ/m]		0.113	0.103	0.077	0.056	0.043	0.029	0.027	0.021	0.015	0.016	0.013	0.011	0.009
Average phase reactance	X [mΩ/m]		0.035	0.028	0.031	0.024	0.017	0.018	0.013	0.010	0.007	0.008	0.008	0.007	0.005
Average phase impedance	Z [mΩ/m]		0.118	0.106	0.083	0.061	0.046	0.035	0.030	0.023	0.017	0.018	0.015	0.013	0.010
Average phase resistance at thermal conditions	R [mΩ/m]		0.141	0.135	0.105	0.074	0.058	0.039	0.037	0.028	0.021	0.019	0.018	0.015	0.012
Average phase impedance at thermal conditions	Z [mΩ/m]		0.145	0.138	0.109	0.078	0.060	0.043	0.039	0.030	0.022	0.021	0.020	0.017	0.013
Average Neutral resistance	R_{20} [mΩ/m]		0.056	0.051	0.039	0.028	0.021	0.015	0.014	0.011	0.008	0.008	0.006	0.006	0.004
Average Resistance of the protective bar	R_{PE}[mΩ/m]		0.016	0.015	0.015	0.013	0.012	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.004
Average reactance of the protective bar	X_{PE}[mΩ/m]		0.062	0.058	0.055	0.053	0.046	0.041	0.026	0.026	0.023	0.023	0.020	0.018	0.016
Average resistance of the Ph to PE fault loop	R_o [mΩ/m]		0.128	0.117	0.092	0.069	0.055	0.040	0.035	0.028	0.022	0.022	0.019	0.016	0.013
Average reactance of the Ph to PE fault loop	X_o [mΩ/m]		0.097	0.086	0.086	0.077	0.063	0.059	0.039	0.036	0.030	0.031	0.028	0.025	0.021
Average impedance of the Ph to PE fault loop	Z_o [mΩ/m]		0.161	0.145	0.126	0.103	0.083	0.071	0.053	0.046	0.037	0.038	0.034	0.030	0.024
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]		0.094	0.086	0.064	0.047	0.036	0.025	0.023	0.018	0.013	0.013	0.011	0.009	0.007
Zero-sequence short-circuit average reactance phase - N	X_o [mΩ/m]		0.047	0.037	0.041	0.032	0.023	0.024	0.017	0.013	0.009	0.011	0.011	0.009	0.007
Zero-sequence short-circuit average impedance phase - N	Z_o [mΩ/m]		0.105	0.093	0.076	0.057	0.042	0.034	0.028	0.022	0.016	0.017	0.015	0.013	0.010
Zero-sequence short-circuit average resistance phase - PE	R_o [mΩ/m]		0.166	0.152	0.117	0.088	0.069	0.050	0.044	0.035	0.027	0.028	0.023	0.020	0.016
Zero-sequence short-circuit average reactance phase - PE	X_o [mΩ/m]		0.074	0.067	0.066	0.061	0.051	0.047	0.031	0.030	0.025	0.025	0.023	0.020	0.017
Zero-sequence short-circuit average impedance phase - PE	Z_o [mΩ/m]		0.182	0.166	0.134	0.107	0.086	0.069	0.054	0.046	0.037	0.038	0.033	0.028	0.024
Voltage drop with distribuited load ΔV [V/(m*A)]10^{-6}	cosφ =	0.70	107.123	99.156	82.825	59.703	45.675	34.775	30.470	23.159	17.060	16.466	15.860	13.423	10.367
	cosφ =	0.75	111.631	103.724	85.957	61.812	47.410	35.642	31.479	23.915	17.650	16.923	16.274	13.753	10.658
	cosφ =	0.80	115.874	108.080	88.854	63.739	49.017	36.373	32.389	24.595	18.187	17.321	16.628	14.030	10.912
	cosφ =	0.85	119.760	112.150	91.435	65.422	50.451	36.920	33.167	25.173	18.652	17.636	16.900	14.235	11.114
	cosφ =	0.90	123.111	115.792	93.542	66.737	51.624	37.192	33.746	25.599	19.010	17.829	17.050	14.334	11.241
	cosφ =	0.95	125.469	118.639	94.769	67.372	52.315	36.954	33.956	25.740	19.170	17.795	16.972	14.234	11.225
	cosφ =	1.00	122.110	116.913	90.933	64.086	50.229	33.775	32.043	24.249	18.187	16.454	15.588	12.990	10.392
Weight	p [kg/m]		10.5	12.3	13.9	17.1	20.8	25.7	32.6	41.1	43.3	50.6	54.2	68.9	86.5
Degree of protection	IP		55	55	55	55	55	55	55	55	55	55	55	55	55
Insulation material thermal resistance class			B	B	B	B	B	B	B	B	B	B	B	B	B
Losses for the Joule effect at nominal current	P [W/m]		168	259	315	347	445	468	694	635	645	739	864	1125	1429
Ambient temperature min/MAX	[°C]		-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50	-5/50

Measurement of straight elements

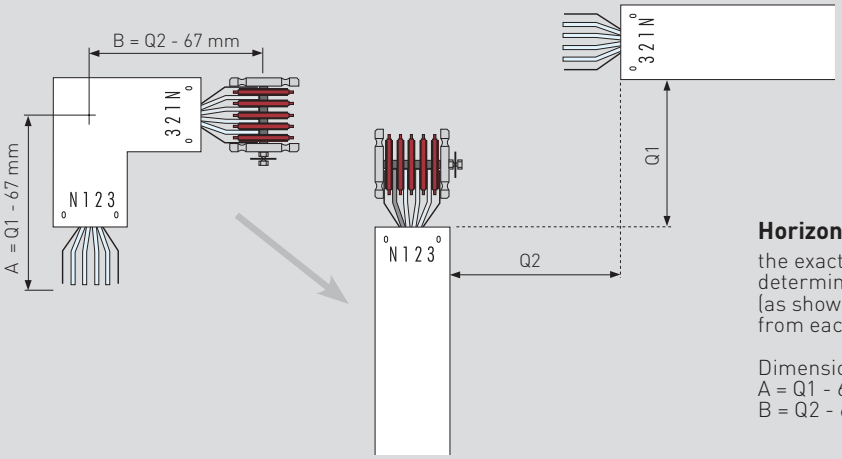


The exact length of the piece to be ordered can be determined by measuring the distance between the elements (as shown in the picture) and then subtracting 257 mm from the dimension that has been taken

Length of element = Q - 257 mm

Example: Dimension measured Q = 2500 mm
Order a element (2500 - 257) = 2243 mm

Measurement of the size for the ordering of a special path element



Horizontal elbow

the exact length of the piece to be ordered can be determined by measuring the dimensions Q1 and Q2 (as shown in the picture) and then subtracting 67 mm from each dimension that has been taken

Dimension of the element to order:
A = Q1 - 67 mm
B = Q2 - 67 mm

Super Compact BUSWAYS - Al

Suggestions for the project development

1. Rating

2500A

2. Application:

Transport ☐

Distribution ☐ No. of outlets .....

3. Icc at the beginning of the line .....kA

4. Material:

Copper ☑

5. Degree of protection:

IP55 (standard) ☑

IP65/IP66 ☐

6. Painting :

RAL7035 (standard) ☑

Different RAL

colour on request ..... ☐

7. Neutral section:

100% (standard) ☑

200% 2N ☐

8. Nominal ambient

temperature:

50°C (standard) ☑

Other on request..... ☐

9. Attach Busbar layout*

Drawing ☑

Dwg file ☐

10. PE cross section

→= 50% ☑

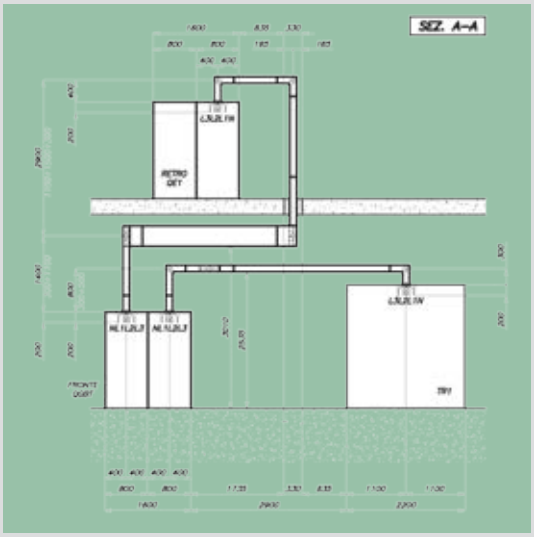
→= 100% ☐

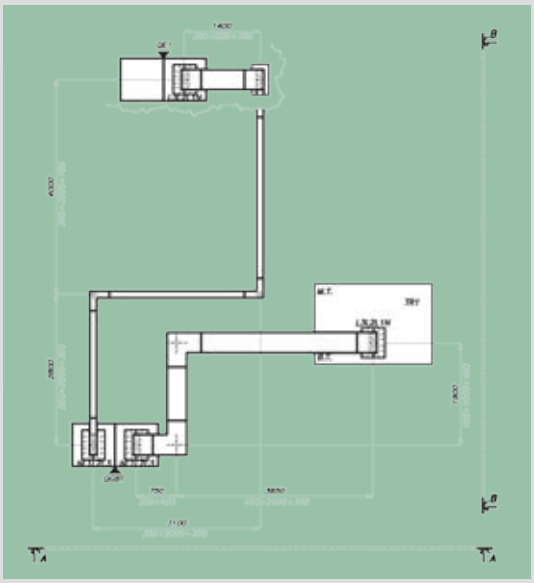
Example for quotation check list:

Checklist to be done during the project

1. Verify the measurements of the drawings, the correct position of the equipment (HV/LV transformer and LV electric board enclosures)
2. Check the availability of drawings required (transformer, electric board, etc.)
3. Check for the existence of unforeseen obstacles in the installation which could impede the run of the Busbar (for example pipelines, ventilation and air-conditioning ducts)
4. Agree upon who is responsible for providing the connection from the Busbar to the other devices (HV/LV transformer and LV electric boards)

Example of detail of the project





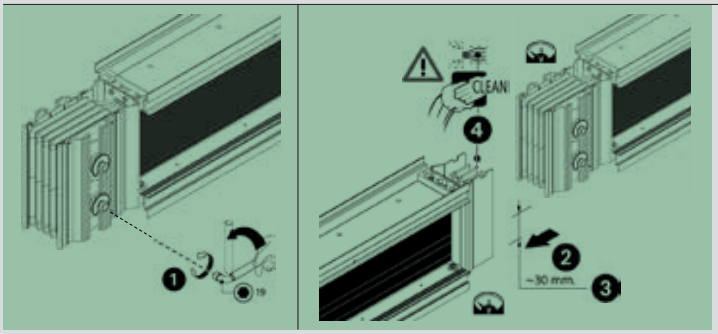
Bahra TBS provides without charge, if required:

- The mechanical layout of the project
- Study of the connections between the Busbar and the transformer or between electric board enclosures
- Suggestions for the type of fixing (floor, wall, ceiling...)
- Possibility of site measurement by qualified persons
- Telephone assistance during the entire installation stage by the Engineering Design Office

Super Compact BUSWAYS - Al

Installation Guidelines

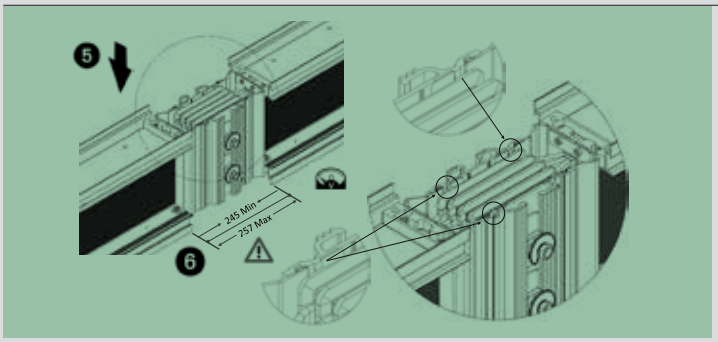
Installation sequence of the junction



The installation instructions are placed on every element near the junction

Make sure that the contacts are clean

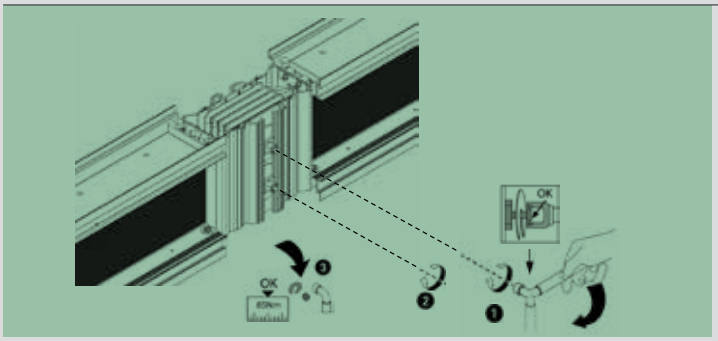
Join the two elements together (Fig.1)



Make sure that the earth plate of the straight element is inserted behind the front plate of the junction monobloc (Fig.2)

The positioning pin on the monobloc should be fitted into the corresponding slot on the earth plate

Verify the distance between elements, 257mm, before tightening the monobloc completely (Fig.3)

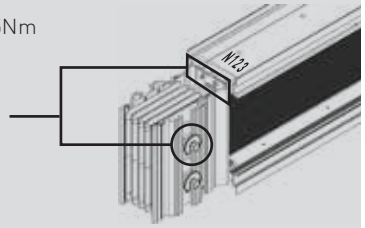


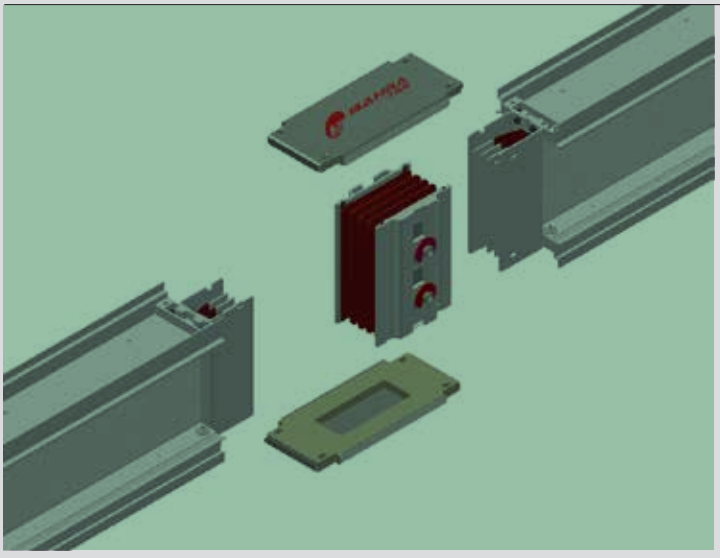
Tighten the bolt of the monobloc until the 1st head breaks off (Fig. 4).

The bolt that tightens the monobloc has a second head which is used when carrying out operations or inspections on the line

The nominal tightening torque is 85Nm

In standard execution the self-shearing nut is fitted on the opposite side of the Neutral.





Install the covers of the junction (fig. 5)

Connection completed correctly with Protection degree IP55 (fig.6)

Super Compact BUSWAYS - Al

Mechanical Design Precautions

Below are some precautions that may be useful to avoid problems during the assembly, which we recommend should be taken into account during the design

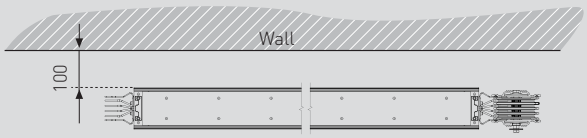
Minimum distances from the structure

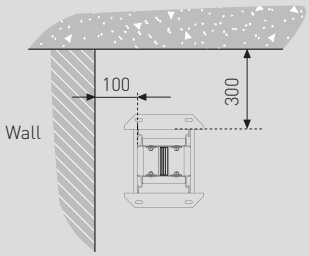
The minimum distance from the walls, to avoid problems during edgewise installation of the busbar, is 300 mm
The variables that must be taken into account for correct assembly are:

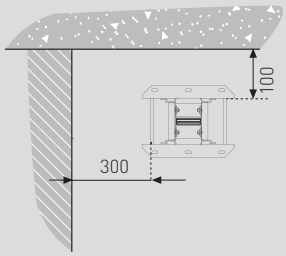
- position of the bolt for tightening the Monobloc; the minimum required distance is 100 mm;
- sizes of the distribution element (box) selected for the collection of power (at least 300 mm);
- any brackets and their assembly;
- accessibility to the screws for the installation of the brackets and the closing of the junctions;
- any material required for the actual installation in order to compensate for wall imperfections

In case of rising mains installation, if the system does not require fire barriers, the bracket supporting the bracket can be directly secured to the wall. Otherwise, allow for a spacing support between the bracket and the wall, to ensure that the back of the busbar remains at a distance of 100 mm from the wall, therefore ensuring enough space for the positioning of the partitions

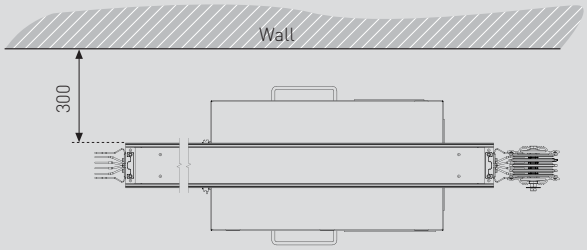
Minimum distance of the wall / ceiling elements

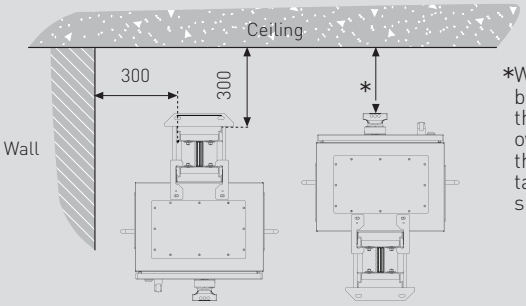




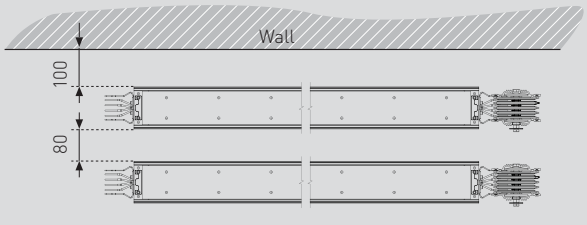


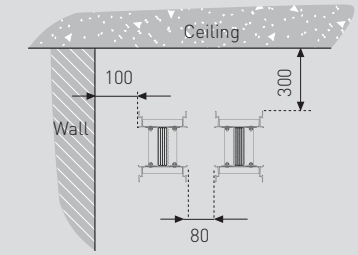
When there are tap-off units along the busbars, the minimum distances depend on the dimensions of the tap-offs selected



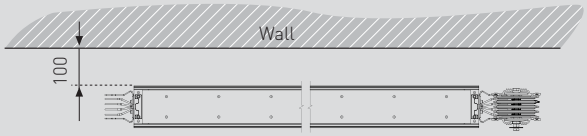


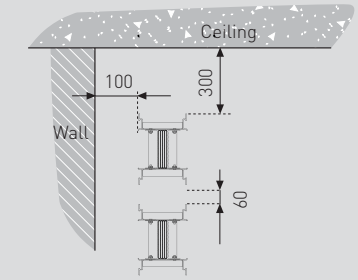
*When there is a tap-off box installed above the busbar, check the overall dimension of the open cover of the tap-off unit used in the specific section





Minimum installation distance when there are several adjacent lines



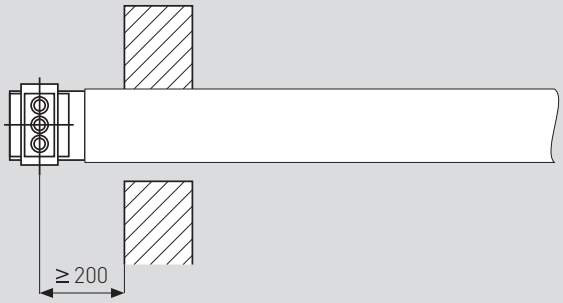


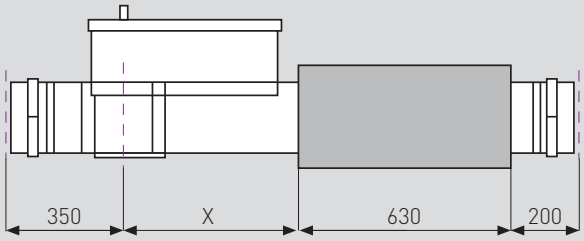
Minimum installation distance when there are several overlapped lines

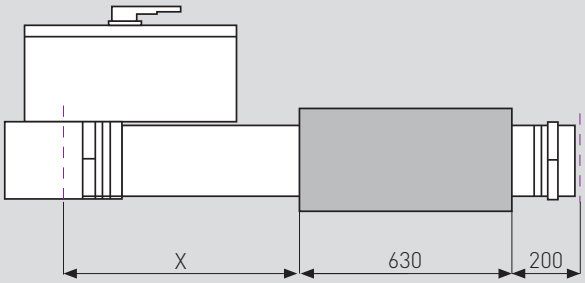
Super Compact BUSWAYS - Al

Technical Information

The minimum distance from the junction to the point the busbar crosses the wall or other structure must be at least 200 mm, to ensure the junction of the junctions
In case plug-in boxes and fire barriers are required on the same element the minimum distance between the box and the partition must be taken into account, at the same time allowing for the necessary free space in the junction area and the minimum distance between the distribution outlet and the start of the element
By taking all these variables into account, it is possible to obtain the minimum size of the element in order be able to fit the partition and the plug-in box. The tables that follow summarise the minimum sizes







PLUG-IN TAP OF BOXES (X MINIMUM SIZE)		
Type	**Rating (A)**	**X (mm)**
1	63 – 160	500
2	250 – 630	720

PLUG-IN BOXES ON THE JUNCTION		
Type	**Rating (A)**	**X (mm)**
3/4	125 – 400	700
3/4	630	820
3/4	800 – 1250	1120

Connection to the board

As a rule, the manufacturer of the board is responsible for connecting the connection element and the distribution busbars inside the board
On request Bahra TBS may develop and supply the connections, subject to all necessary details being available
All types of connections must be agreed and checked with the board manufacturer

Short circuit withstand

The short circuit withstand of the connection elements depends on the connection of the busbars inside the distribution board
The declaration of short circuit withstand for the system busbars may only be supplied by the board manufacturer. When using Bahra TBS boards and Bahra TBS busbar trunking system it will be possible to obtain a short circuit certification

Super Compact BUSWAYS - AL

Technical Information

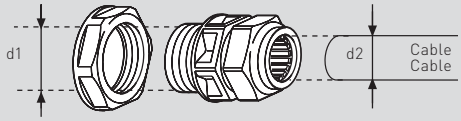
Table of comparison between boxes and cable glands (Bahra TBS)

The following table shows the maximum number of Bahra TBS cable glands that can be installed on Plug-in boxes using the appropriate flanges

COMPARISON TABLE BETWEEN Plug-in boxes AND CABLE GLANDS (Bahra TBS)						
	Useful dimension for the passage of the cables and flange size	M16-PG9 (63 A cable) 10 mm2 section PVC insulated one-pole cable	M20-PG13.5 (63 A cable) 10 mm2 section PVC insulated one-pole cable	M25-PG21 (250 A cable) 70 mm2 section PVC insulated one-pole cable	M32-PG29 (400 A cable) 150 mm2 section PVC insulated one-pole cable	M40-PG36 (630 A cable) 300 mm2 section PVC insulated one-pole cable
63/160 A Plug-in box with section cover (Type 1)	80 x 70 FL 110 x 100	No. 10	No. 5	—	—	—
250/630 A Plug-in box with section cover (Type 2)	150 x 220 FL 235x 180	No. 66	No. 36	No. 20	No. 13	No. 8
125/400 A Plug-in box on the junction (Type 3/4)	130 x 180 FL 180 x 230	—	No. 30	No. 16	No. 9	—
630 A Plug-in box on the junction (Type 3/4)	270 x 160 FL 340 x 230	—	—	No. 28	No. 15	No. 10
800/1250 A Plug-in box on the junction (Type 3/4)	380 x 210 FL 430 x 260	—	—	No. 57	No. 32	No. 18

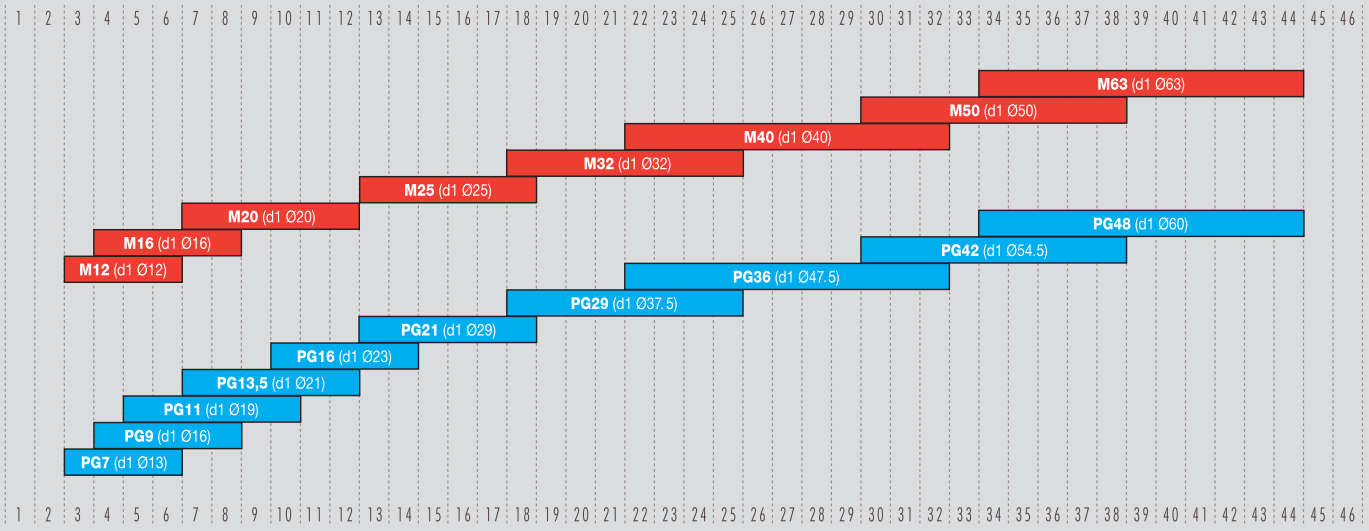
Note: The value shown on the table is the max no. of PG that may be installed in the cable flange
For boxes with section cover the most demanding condition is considered, which means that only one of the two cable flanges is used

Cable glands table



When choosing the cable glands, please refer to the Bahra TBS catalogue

Dimension d2 Ø cable [mm]



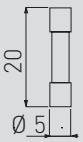
Dimension d2 Ø cable [mm]

Ceramic fuse 5 x 20

Operating features

In = 6.3	1.5 In	2.1 In	2.75 In	4 In	10 In
Operating time	**> 1 h**	**< 30 min**	**10 ms - 3 s**	**3 ms - 30 ms**	**< 20 ms**

When choosing all fuses, please refer to the general Bahra TBS catalogue



Quick fuse

- I_n = 6.3A
- U_e 250V ceramic fuse IEC 127
- Breaking capacity H 1500A
- Voltage drop ΔV = 150 mV
- I^2t = 48A ^{2}s

Joule effect losses in busbars

Technical information

Losses due to the Joule effect are essentially caused by the electrical resistance of the busbar
Lost energy is transformed into heat and contributes to the heating of the conduit of the environment
The calculation of power loss is a useful data for correct sizing of the building air conditioning system

Three-phase regime losses are:

$$Pj = \frac{3 \cdot Rt \cdot Ib^2 \cdot L}{1000}$$

In one-phase regime:

$$Pj = \frac{2 \cdot Rt \cdot Ib^2 \cdot L}{1000}$$

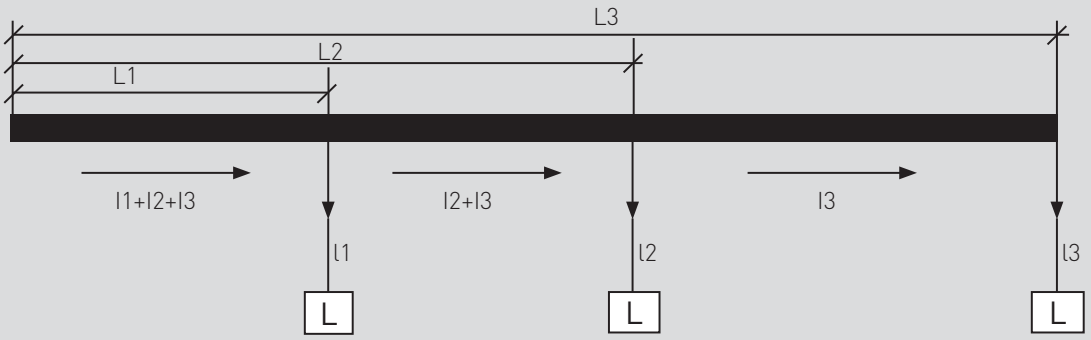
Where:

I_b = Actual current (A)
R_t = Phase resistance for unit of length of the busbar trunking system, measured at thermal regime (mΩ/m)
L = Busbar length (m)

For accurate calculation, losses must be assessed trunk by trunk taking into account the transiting currents; for example, in the case of the distribution of the loads represented in the figure one has:

	Length	Transiting current	Losses
1st trunk	L1	I1+I2+I3	$P1 = 3R_t L1 (I1+I2+I3)^2$
2nd trunk	L2-L1	I2+I3	$P2 = 3R_t (L2-L1) (I2+I3)^2$
3rd trunk	L3-L2	I3	$P3 = 3R_t (L3-L2) (I3)^2$

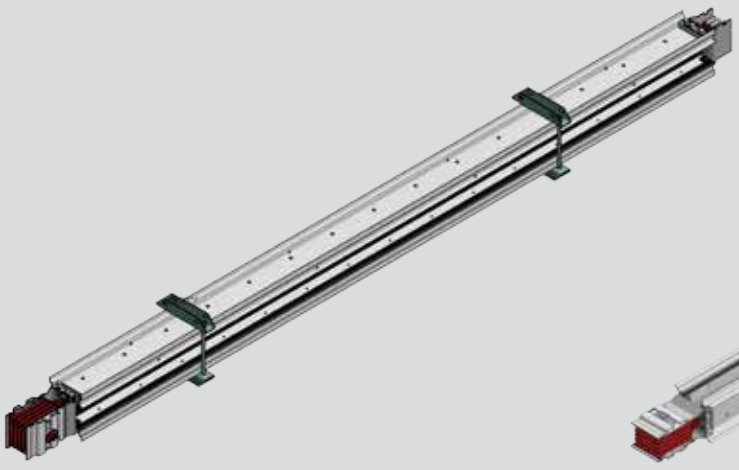
Total losses in the busbar trunking system Pt = P1+P2+P3



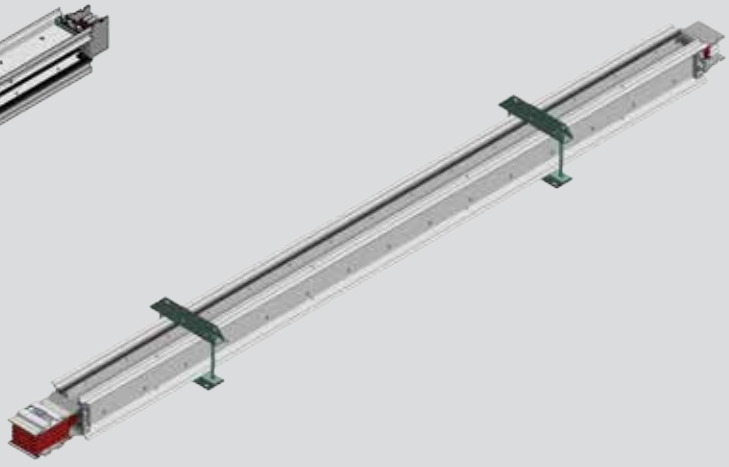
Losses based on the installation method

Thermal dispersion, rating and IP protection degree are independent from the type of installation (edgewise, flat, vertical)

This means that it is possible to install the Bahra TBS busbar trunking system as preferred, without having to consider a possible system downgrading



Edgewise element



Flat element

Overload Protection

Technical information

Busbar overload protection is ensured following the same criteria used for cables. It will be necessary to check the relationship:

$I_b \leq I_n \leq I_z$

Where:

I_b = Circuit utilisation current
I_n = Switch rated current
I_z = Rating at permanent cable regime

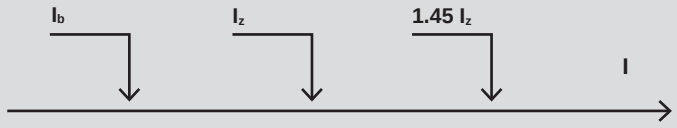
The lb utilisation current in a tree-phase system is calculated baseon td he following formula:

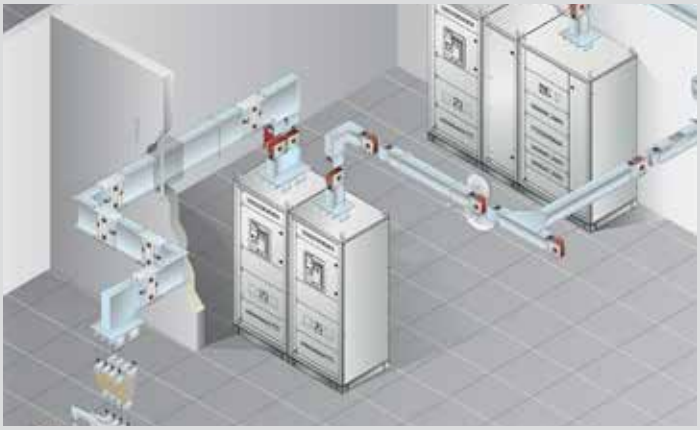
$$I_b = \frac{P_t \bullet \alpha \bullet \beta \bullet d}{\sqrt{3} \bullet Ue \bullet \cos_{medium}} [A]$$

Where:

P_t = Sum of the active powers of the loads installed [W]
d = Power supply factor equal to:
1 if the trunking is only powered from one side;
if the trunking is powered from the centre or
from both ends at the same time
Ue = Operating voltage in [V]
cos m = Average power factor of the loads
I_b = Operating current [A]
α = Diversity coefficient of the loads [.]
β = Coefficient of utilisation of the loads [.]

OVERLOAD PROTECTION CONDITIONS





The ambient temperature where the busbar trunking system is installed impacts on its rating
During the design stages, it will be necessary to multiply the rating value at the reference temperature by a correction coefficient referred to the final operating temperature

All Bahra TBS products have been sized and tested for an average ambient temperature of 35 °C. For installation in environments with average daily temperatures lower than 35 °C, the rated current of the busbar must be multiplied by a k1 factor, which is higher than the unit for temperatures lower than 35 °C, and lower than the unit if the ambient temperature is higher than 35 °C:

$I_z = I_z0 \cdot Kt$

Where:

- I_z0 is the current that the busbar trunking system can carry for an indefinite time at its reference temperature (35 °C)
- **Kt** is the correction coefficient for ambient temperature values other than the reference temperature, as shown in the following table

Selection of the busbar trunking system based on voltage drop

Technical information

If the line is particularly long (→ 100 m), it will be necessary to check the value of the voltage drop. For systems with power factor (cos m) not lower than 0.7 the voltage loss can be calculated using the following formulas:

THREE PHASE SYSTEM

$$\Delta v = \frac{b \cdot \sqrt{3} \cdot I_b \cdot L \cdot (R_t \cdot \cos \varphi + x \cdot \sin \varphi)}{1000}$$

ONE-PHASE SYSTEMS

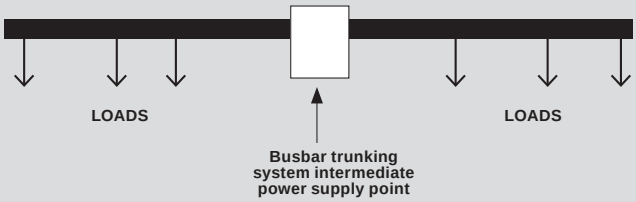
$$\Delta v = \frac{b \cdot 2 \cdot I_b \cdot L \cdot (R_t \cdot \cos \varphi + x \cdot \sin \varphi)}{1000}$$

The percentage voltage drop can be obtained from:

$$\Delta v\% = \frac{\Delta v}{Vr} \cdot 100$$

Where Vr is the system rated voltage

In order to limit the voltage drop in case of very long busbar trunking systems, it is possible to allow for a power supply at an intermediate position, rather than at the terminal point



Calculation of the voltage drop with loads not evenly distributed

In case the load cannot be considered evenly distributed, the voltage drop may be determined more accurately using the relationships shown below
For the distribution of three-phase loads, the voltage drop can be calculated using the following formula, on the assumption (generally verified) that the section of the busbar trunking system is consistent:

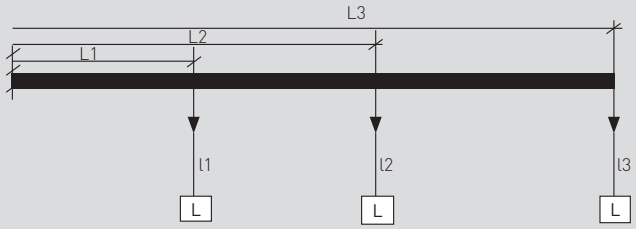
Δv = √3 [Rt (I1L1cos 1 + I2L1 cos 1 + I3L3 cos 3)
+ x (I1L1sin 1 + I2L2 sin 2 + I3L3 sin 3)]

In general terms this becomes:

$$\Delta v = \frac{\sqrt{3}(R_t \cdot \sum Ii \cdot Li \cdot \cos \varphi i + x \cdot \sum Ii \cdot Li \cdot \sin \varphi i)}{1.000}$$

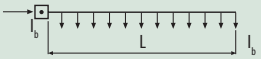
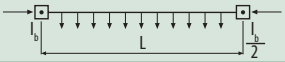
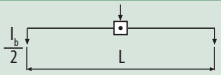
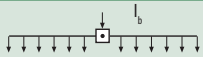
If the three-phase system and the power factor are not lower than cos = 0.7, the voltage loss may be calculated using the voltage drop coefficient shown in Table 1

$$\Delta v\% = b \cdot \frac{k \cdot Ib \cdot L}{Vn} \cdot 100$$



The current distribution factor "b" depends on how the circuit is fed and on the distribution of the electric loads along the busbar:

Table 1 - The distribution factor of the current "b"

b = 1	Supplies at one end and load at the end of the line	
b = 1/2	Supplies at one end and with load evenly distributed	
b = 1/4	Supplies at both ends and with load evenly distributed	
b = 1/4	Central supply with loads at both ends	
b = 1/8	Central supply with load distributed evenly	

Short circuit withstand

Technical information

The CEI 64-8 standard indicates that, for the protection of the circuits of the system, it is necessary to allow for devices aimed at interrupting short circuit currents before these become dangerous due to the thermal and mechanical effects generated in the conductors and the connections
In order to size the electric system and the protection devices correctly, it is necessary to know the value of the estimated short circuit current at the point where this is to be created
This value enables in fact to correctly select protection devices based on their own tripping and closing powers, and to check the resistance to electro-dynamic stress of the busbar supports installed in control panels, or/and of the busbar trunking systems

Characterisation of short circuit current

The estimated short circuit current at a point of the user system is the current that would occur if in the considered point a connection of negligible resistance was created between conductors under voltage
The magnitude of this current is an estimated value that represents the worst possible condition (null fault impedance, tripping time long enough to enable the current to reach the maximum theoretical values)
In reality, the short circuit always occurs with significantly lower effective current values

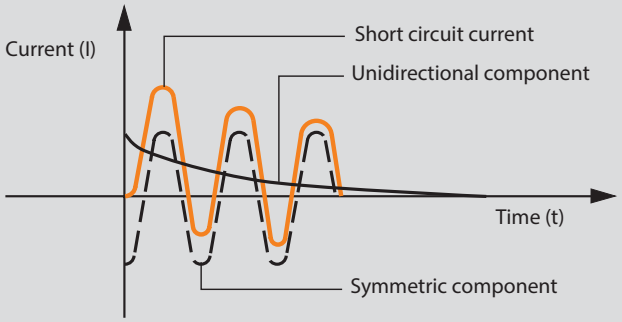
The intensity of the estimated short circuit current essentially depends on the following factors:
• Power of the cabin Transformer, meaning that the higher is the power, the higher is the current;
• length of the line upstream

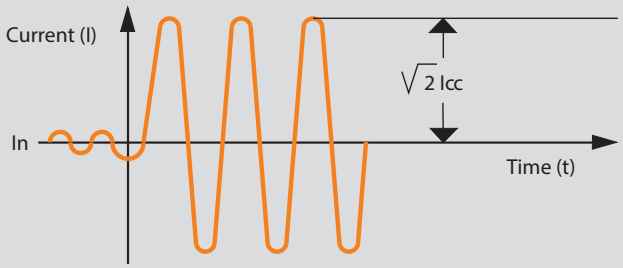
In three-phase circuits with Neutral it is possible to have three different types of short circuit:
- phase-phase;
- phase-Neutral;
- balanced three-phase (most demanding condition)

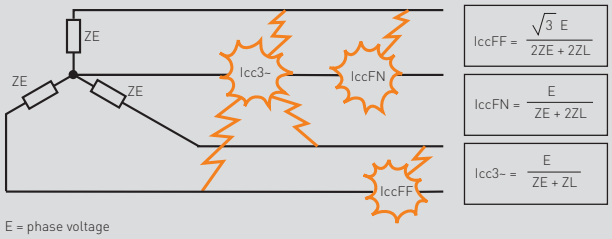
The formula for the calculation of the symmetric component is:

$$\overline{Icc} = \frac{\bar{E}}{\overline{ZE}+\overline{ZL}}$$

Where:
- **E** is the phase voltage;
- **ZE** is the secondary equivalent impedance of the TRANSFORMER measured between the phase and the Neutral;
- **ZL** is the impedance of the phase conductor only





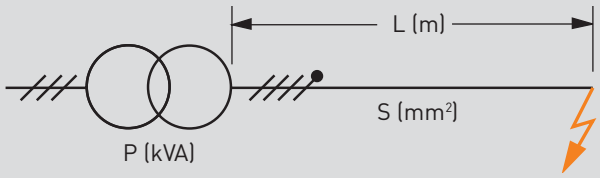


E = phase voltage

Short circuit withstand (continued)

Analytical determination of short circuit currents

In order to calculate the value of the estimated short circuit current at any point of the circuit, it is sufficient to apply the formulas shown below, knowing the impedance calculated at the origin of the system up to the point being assessed
In the formulas shown below, the value of the short circuit power is considered infinite and the short circuit impedance is equal to 0.
This makes it possible to define short circuit current values higher than the actual ones, but generally acceptable



Line resistance $RL = r \cdot L$	**RL** = resistance of the line upstream (m) **r** = specific line resistance (m/m) **L** = upstream line length (m)
Line reactance $XL = x \cdot L$	**XL** = upstream line reactance (m) **x** = specific line reactance (m/m)
TRANSFORMER resistance $RE = \frac{1000\ Pcu}{3In^2}$	**RE** = transformer secondary equivalent resistance (m) **Pcu** = transformer COPPER losses (W) **In** = transformer Rated current (A)
TRANSFORMER impedance $ZE = \frac{Vcc\%\ V^2c}{100\ P}$	**ZE** = transformer secondary equivalent impedance (m) **Vc** = phase voltage (V) **Vcc%** = percentage short circuit voltage **P** = transformer power (kVA)
TRANSFORMER reactance $XE = \sqrt{ZE^2 - RE^2}$	**XE** = transformer secondary equivalent reactance (m)
Short circuit impedance $Zcc = \sqrt{(RL + RE)^2 + (XL + XE)^2}$	**Zcc** = total short circuit impedance (m)
Estimated short circuit current $Icc = \frac{Vc}{\sqrt{3}} \cdot Zcc$	**Icc** = symmetric component of the short circuit current (kA)

	Rating (A)	"kA three-phase Icw"	"kA three-phase Ipk"	"kA one-phase Icw"	"kA one-phase Ipk"
Single	630	25	52.5	15	30
	800	36	75.6	22	45
	1000	50	105	30	63
	1250	50	105	30	63
	1600	65	143	39	82
	2000	80	176	48	101
Double	2500	100	220	60	132
	2750	100	220	60	132
	3200	120	264	72	158
	3600	120	264	72	158
	4000	120	264	72	158
Triple	5000	120	264	72	158
	6300	120	264	72	158

Technical information

In a distribution system, currents and voltages should have a perfectly sinusoidal shape. However, in practice the equipment contains electric devices such as changeover devices or dimmers that make the load not linear

The currents absorbed, although at regular intervals and with frequencies equal to that of the rated voltage, sometime have a non-sinusoidal wave form, which has the following negative effects:

- worsening of the power factor;
- heating of the Neutral;
- additional losses in electric machinery (transformers and motors);
- instable operation of the protection elements (thermal magnetic and earth leakage circuit breakers)

In industrial plants these conditions have been occurring for a long time, However, they are now occurring more and more in service sector distribution systems, where, from backbone distribution (which uses three-phase lines), one-phase loads are often distributed, which contributes to increasing the unbalance of the electric system

Each type of non-sinusoidal periodical wave may be split into a more or less large number of sinusoids (called harmonic components), which frequency a whole multiple of the frequency of the wave shape observed

A deformed current at a frequency of 50 Hz, like for example that represented by the red line on the figure, consists of many sinusoidal currents with frequency of 50 Hz (fundamental), 100 Hz (second harmonic components), 150 Hz (third harmonics), and so on

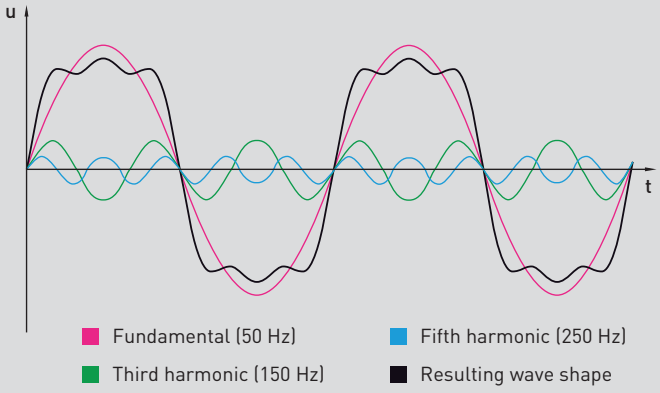
The presence of current harmonics represents an important problem, causing overload conditions both on phase conductors, and on any Neutral conductor, and results in the reduction of the conductor permitted load

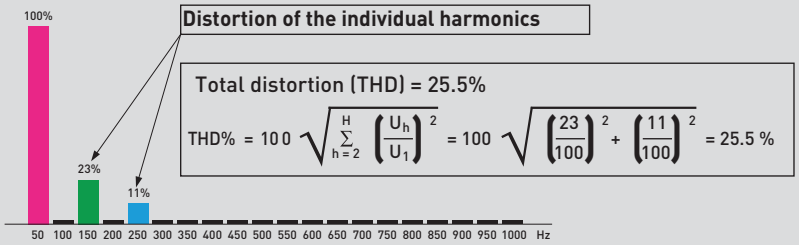
Choice of the rating when in the presence of harmonics

When in the presence of harmonics, and when using the chosen rated current, the busbar to be used shall have the rating specified in the below table

Rated current [A]	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
Bahra TBS Busway to be used:													
THD ≤ 15%	630	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300
15% < THD ≤ 33%	800	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300	-
THD > 33%	1000	1250	1600	2000	2500	2750	3200	3600	4000	5000	6300	-	-

Measurement of harmonic distortion carried out with a network analyser





Distortion of the individual harmonics

Total distortion (THD) = 25.5%

$$THD\% = 100\sqrt{\sum_{h=2}^{H}\left(\frac{U_h}{U_1}\right)^2} = 100\sqrt{\left(\frac{23}{100}\right)^2 + \left(\frac{11}{100}\right)^2} = 25.5\ \%$$

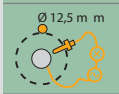
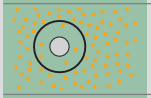
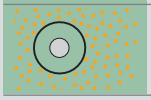
Degrees of protection

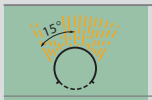
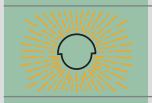
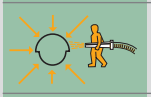
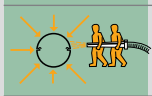
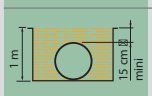
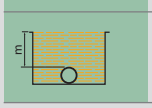
IP: degree of protection provided against intrusion

IP

The protection enclosures are classified (IEC 60529) in according to their degree of protection against weather conditions and external agents. The degree of protection is indicated by two digits (protection against solid bodies and liquids) following the symbol IP

To increase the ease of choice of the most suitable busbar, in according to installation requirements, below there is a summary of their performance, based on the IP degree of protection according to the IEC 60529 standard

1st digit IP		
Protection against penetration of solid bodies		
	0	No protection
	1	Protection against solid bodies larger than 50mm (e.g: accidental contact) (50N of force)
	2	Protection against solid bodies larger than 12mm (e.g.: finger) (30N of force)
	3	Protection against solid bodies larger than 2.5mm (3N of force)
	4	Protection against solid bodies than 1mm (1N of force)
	5	Protection against dust
	6	Complete protection against dust

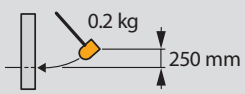
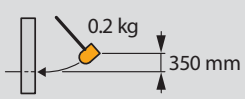
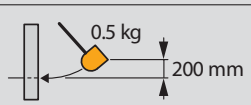
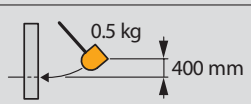
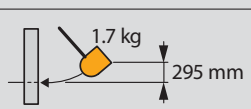
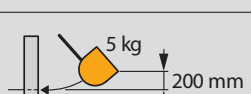
2nd digit IP		
Protection against penetration of liquids		
	2	Protection against drops of water falling up to 15° from the vertical (for 2.5 min at rate of 3mm/min)
	3	Protection against drops of water up to 60° from the vertical (for 5min. at 10LPM at 80-100 kPa)
	4	Protection against sprays of water from all directions (for 5min. at 10LPM at 80-100 kPa)
	5	Protection against jets of water from all directions (for 3min. at 12.5LPM at 30 kPa at a distance of 3 meter)
	6	Protection against jets of water (similar force to heavy seas) (for 3min. at 100LPM at 100 kPa at a distance of 3 meter)
	7	Protection against the effects of immersion (for 30min. at a depth of 1 meter)
	8	Protection against effects of immersion under pressure (for long period at a depth of 3 meter)

Degrees of protection

IK: degree of protection of equipment to mechanical impact

IK

Standard IEC 62262 defines an IK code that characterises the aptitude of equipment to resist mechanical impacts on all sides

IK	Test	Impact energy (In joules)
IK 00		0
IK 01		0.15
IK 02		0.2
IK 03		0.35
IK 04		0.5
IK 05		0.7
IK 06		1
IK 07		2
IK 08		5
IK 09		10
IK 10		20

NOTES

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