

CATALOG

# WavePro-R Cast Resin Busway



- Unparalleled safety and protection measures
- Wide range of designs meeting customer's stringent requirements
- Lower installation and maintenance costs

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**ABB Busway provides a safe, reliable and cost-effective means of distributing electrical power in commercial and industrial applications.**

**As an alternative to cable, ABB's busway solutions offer a range of products to ensure safe, flexible, and reliable cost-effective distribution of electrical power.**

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## WavePro-R Busway Overview

ABB WavePro-R Cast Resin Busway is a high performance low-voltage busbar system. The cast resin forms an external surface which provides a water tight barrier around the current carrying conductors. It's up to 5000A rated current and IP68 protection level. Insulation material is halogen free, non-toxic and non-flammable.

Phase and earthing arrangement: L1, L2, L3, with N, PE & N and PEN. Neutrals are 100%, PE is available as 50%. PEN (isolated and ground) is rated at 100%. The PE/PEN bar material is the same as the phase bar.

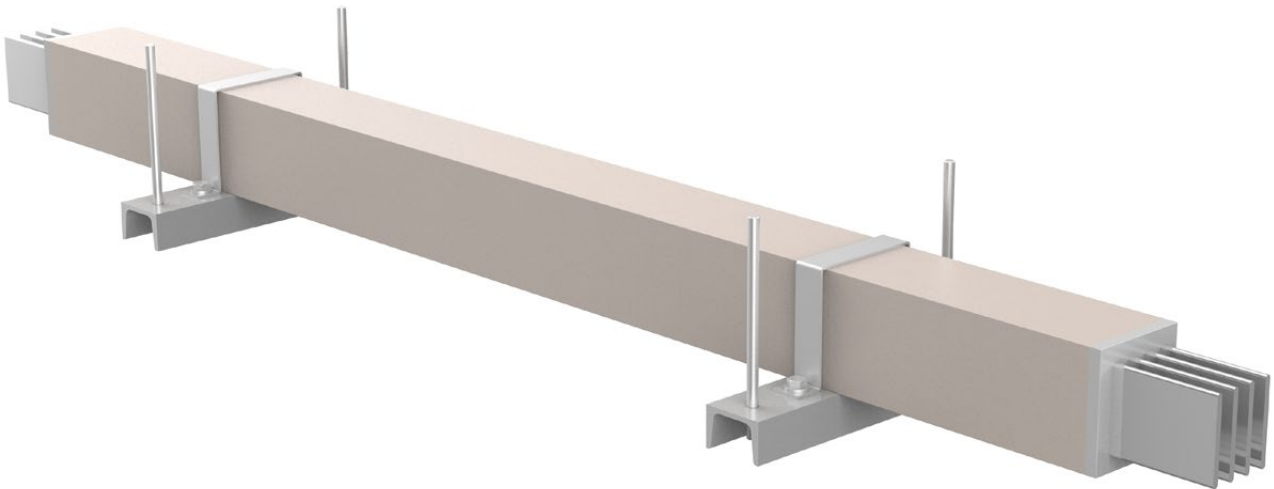
WavePro-R busway features excellent performance. It is especially suitable for subway, shipyards, chemical industry, and other demanding applications with high requirements on waterproofing and corrosion resistance.



# Technical Data

Standards	IEC 61439-1 2011: LV switchgear and control gear assemblies – Part 1: General rules IEC 61439-6 2012: LV switchgear and control gear assemblies – Part 6: Busbar trunking systems (busways)
Test certificates	KEMA KEUR*
Electrical data	
Rated frequency (fn)	50Hz
Rated current (InA)	400A - 5000A
Rated short-time withstand current (Icw)	30kA - 100kA
Rated peak withstand current (Ipk)	63kA - 220kA
Rated operational voltage (Ue)	690V
Rated insulation voltage (Ui)	1000V
Rated impulse withstand voltage (Uimp)	8kV
Construction	
Degree of protection	IP68
Material of enclosure	Epoxy resin mixture
Protection against electric shock (indirect contact)	Protective Earthing and Insulating Material
Busbars	Protective Earthing and Insulating Material, silver plating as an option
Insulation class	Class B (130°C)

\*: 400A - 1250A Rating CQC certificate available.



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## Product Features

- A unique formulation of epoxy resin that has been developed for WavePro-R busway. The resin is mixed in a sealed vacuum to ensure a consistent quality with even distribution of the mixture with no air voids
- Under controlled temperature and pressure conditions, the materials in the mold will set gradually. After curing, the result is an insulated busway that is compact, void-free, has low internal stress and a smooth outer surface
- The protection degree is up to IP68 for feeder busway which comply with the requirements of IEC 60529 degrees of protection provided by enclosures. The IP68 designed product can work under water over a certain period of time or be laid in cable conduit
- WavePro-R copper conductor is machined by polish-saw process, ensured a high quality bar end finish. This process is better than cutting and avoids secondary damage to insulation materials



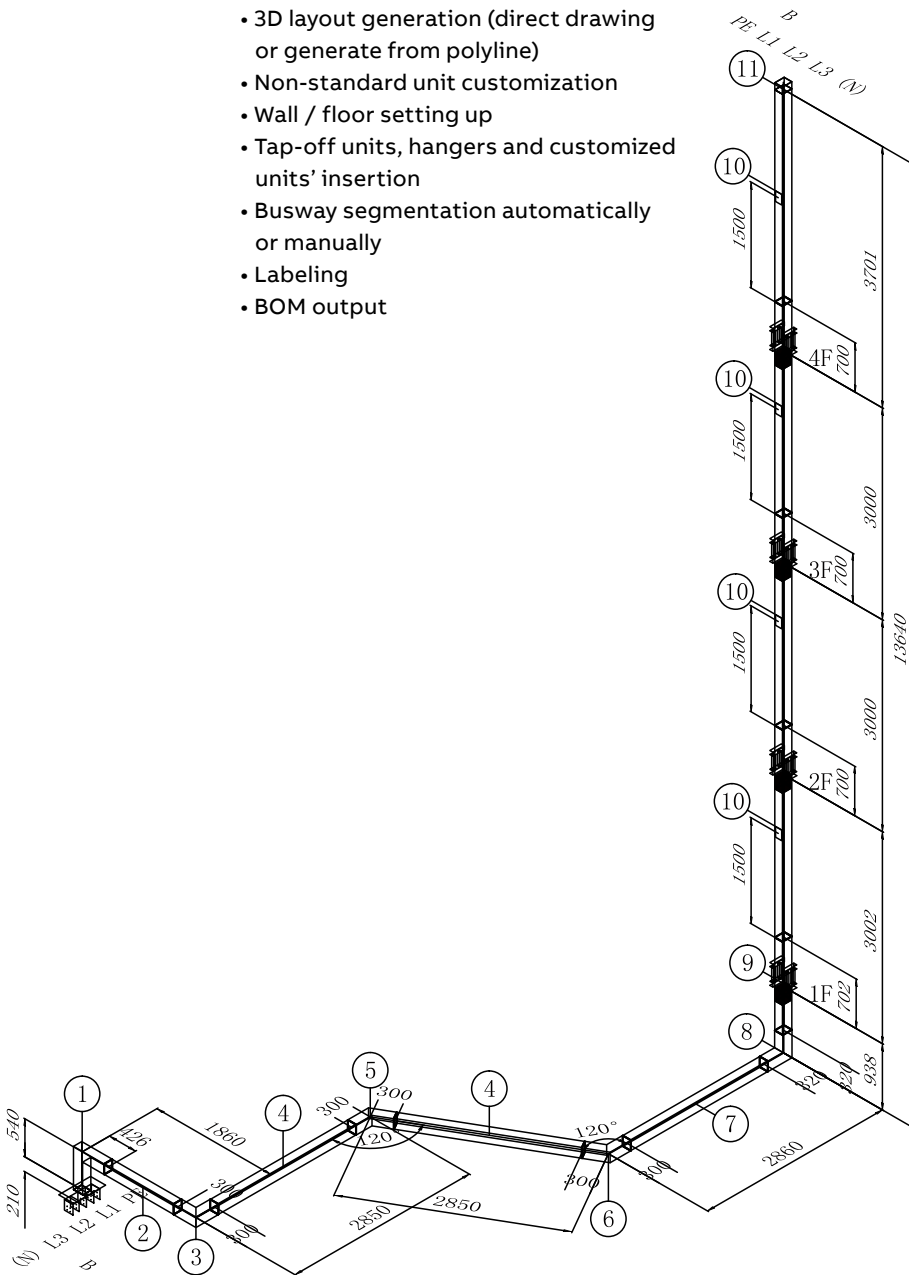
1 Casting machine for cast resin mixture

# BDM Software

BDM is a software dedicated for WavePro busway routing design, segmentation and BOM generation.

BDM built in detailed busway product parameters and related design standards, seamless integration with ERP system:

- 3D layout generation (direct drawing or generate from polyline)
- Non-standard unit customization
- Wall / floor setting up
- Tap-off units, hangers and customized units' insertion
- Busway segmentation automatically or manually
- Labeling
- BOM output



Bill of Material				
Description	ERP Code	Specification	Qty	Unit Section No.
Flanged end with elbow	WP2C125154-FELH-X0.75 (0.21) /Y0.42	L1=750 (210) L2=420	1	Pcs 1
Straight length	WP2C125154-1.13	L=1130	1	Pcs 2
Elbow - flatwise	WP2C125154-LL-X0.3/Y0.3	L1=300 L2=300	1	Pcs 3
Straight length	WP2C125154-2.25	L=2250	2	Pcs 4
Elbow - flatwise	WP2C125154-LR-X0.3/Y0.3/A120	L1=300 L2=300	1	Pcs 5
Elbow - flatwise	WP2C125154-LL-X0.3/Y0.3/A120	L1=300 L2=300	1	Pcs 6
Straight length	WP2C125154-2.24	L=2240	1	Pcs 7
Elbow - edgewise	WP2C125154-LV-X0.32/Y0.32	L1=300 L2=300	1	Pcs 8
Straight length	WP2C125154-1.32	L=1320	1	Pcs 9
Riser	WP2C125154-3-1CKF (F: L1=15)	L=3000 F: L1=1500	4	Pcs 10
Terminal cover	WP2C125154-ZD		1	Pcs 11
Joint	WP2C125154-LJQ		13	Pcs 12
Spring Hanger	THZJ		4	Pcs 13

# Electrical Data

## Ground resistance (DC)

3L+N+50%PE, 20°Cambient)

[Data source: calculation]

No.	Rated Current (A)	Resistance (10 <sup>-6</sup> Ω/m)
1	400	197.4
2	630	148.1
3	800	118.5
4	1000	98.7
5	1250	74.0
6	1600	56.4
7	2000	42.3
8	2500	32.0
9	3200	24.7
10	4000	19.1
11	5000	14.8

## Voltage drop

[Data source: calculation]

Rated Current <sup>1</sup>	Rated short-time withstand (I <sub>cw</sub> )	Rated peak current (I <sub>pk</sub> )	20°C DC Resistance	Rated Load/steady state (50Hz)							
				Resistance	Reactance	Impedance	Line-to-line voltage drop (V/m) - Concentrated load <sup>②</sup>				
A	kA/s	kA	(10 <sup>-6</sup> Ω/m, phase-to-neutral)				cosφ=0.6	cosφ=0.7	cosφ=0.8	cosφ=0.9	cosφ=1.0
400A	30	63	98.7	120.7	76.5	142.9	0.093	0.096	0.099	0.099	0.084
630A			74.0	94.6	64.6	114.6	0.118	0.122	0.125	0.124	0.103
800A			59.2	78.2	59.2	98.1	0.131	0.134	0.136	0.134	0.108
1000A	50	105	49.4	66.5	49.3	82.8	0.137	0.141	0.143	0.141	0.115
1250A			37.0	51.0	45.9	68.6	0.146	0.148	0.148	0.143	0.111
1600A	80	176	26.9	39.9	41.1	57.3	0.157	0.158	0.157	0.150	0.111
2000A			18.5	27.7	30.8	41.4	0.143	0.143	0.141	0.133	0.096
2500A			14.8	23.4	24.9	34.2	0.147	0.148	0.146	0.139	0.102
3200A	100	220	11.8	17.8	19.7	26.6	0.147	0.147	0.145	0.137	0.099
4000A			9.3	14.5	15.3	21.1	0.145	0.146	0.144	0.137	0.100
5000A			7.4	11.6	11.5	16.3	0.140	0.141	0.140	0.134	0.100

Note:

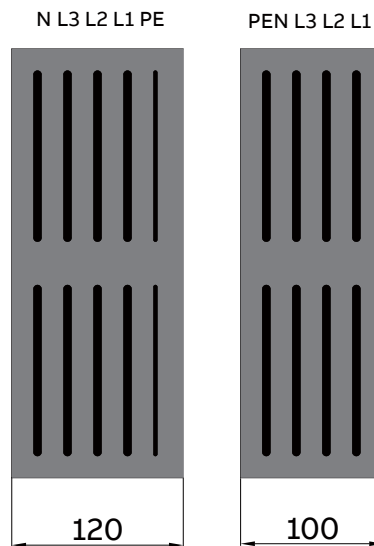
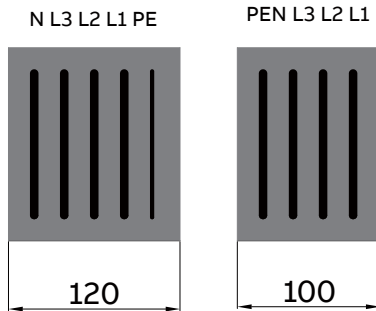
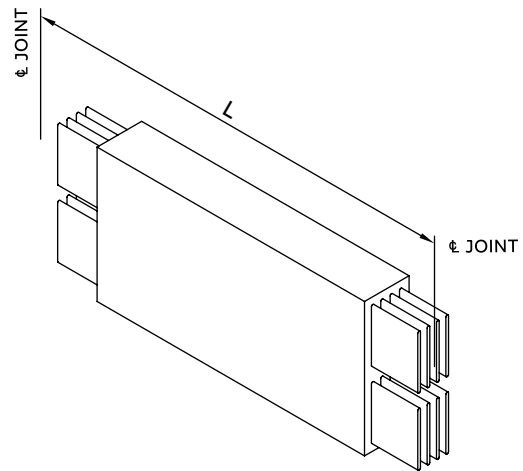
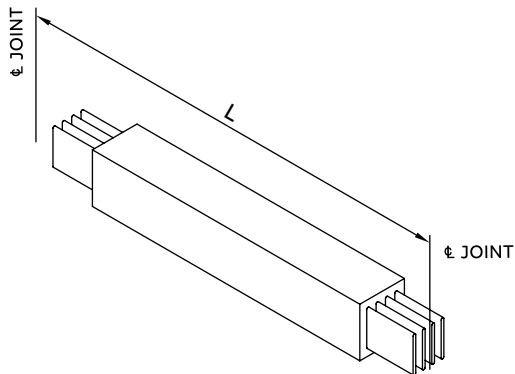
① Concentrated load: Voltage drop= $\sqrt{3} I (R \cos \Phi + X \sin \Phi)$  Distributed load: voltage drop= $[\sqrt{3} I (R \cos \Phi + X \sin \Phi)] / 2$



# Physical Data

## Straight lengths

For feeder busway, the minimum length is 400mm, and the maximum length is 3000mm. Other lengths can be customized.

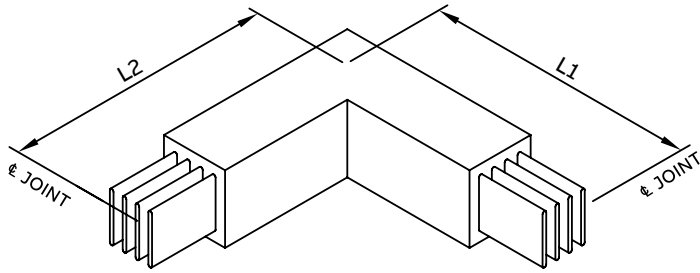


### Busway weight

Rated Current (A)	H (mm)	Weight (kg/m)		Fig. No.
		3L+PEN	3L+N+50% PE	
400	60	19.1	22.4	Fig. 10-1
630	70	23.1	26.4	
800	80	27.3	31.2	
1000	90	31.4	35.9	
1250	110	39.7	45.3	
1600	140	53.1	60.7	
2000	190	77.3	88.1	Fig. 10-2
2500	230	92.7	105.7	
3200	310	118.9	135.6	
4000	380	147.7	168.7	
5000	460	178.5	203.9	

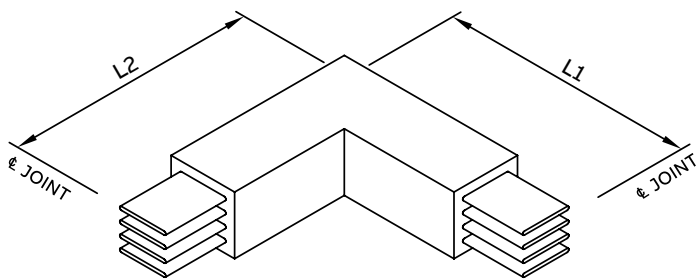
# Physical Data

## Elbows



### Edgewise Elbow

Rated current (A)	mm			
	Minimum Size		Standard Size	
	L1	L2	L1	L2
250	300	300	400	400
400	300	300	400	400
630	300	300	400	400
800	300	300	400	400
1000	300	300	400	400
1250	300	300	400	400
1600	300	300	400	400
2000	300	300	400	400
2500	300	300	400	400
3200	300	300	400	400
4000	300	300	400	400
5000	300	300	400	400

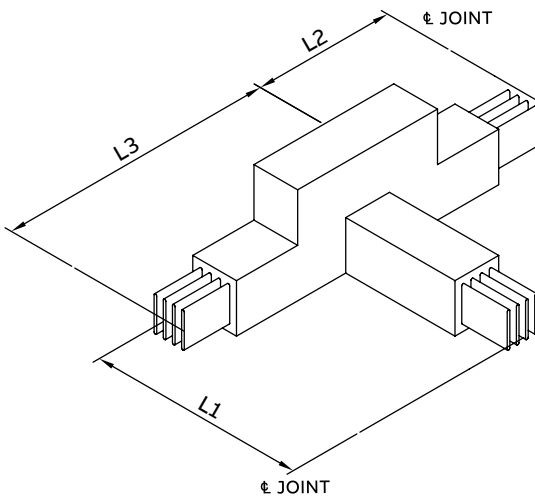


### Flatwise Elbow

Rated current (A)	mm			
	Minimum Size		Standard Size	
	L1	L2	L1	L2
400	270	270	400	400
630	275	275	400	400
800	280	280	400	400
1000	285	285	400	400
1250	295	295	400	400
1600	310	310	400	400
2000	335	335	400	400
2500	355	355	400	400
3200	395	395	500	500
4000	430	430	500	500
5000	470	470	500	500

# Physical Data

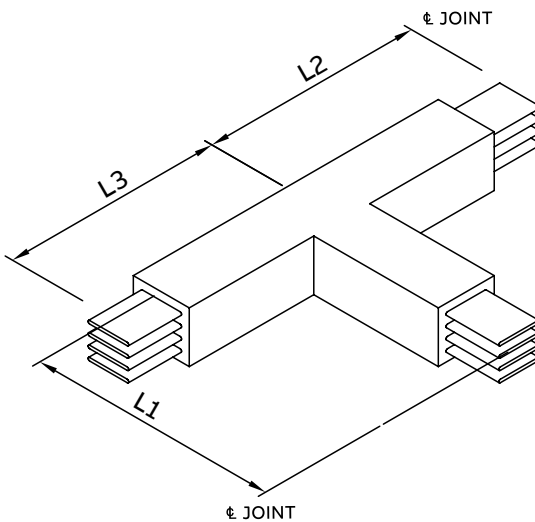
## Tees



Edgewise Tee

mm

Rated current (A)	Minimum Size			Standard Size		
	L1	L2	L3	L1	L2	L3
400	300	355	355	400	400	400
630	300	365	365	400	400	400
800	300	375	375	500	500	500
1000	300	385	385	500	500	500
1250	300	405	405	500	500	500
1600	300	435	435	500	500	500
2000	300	485	485	500	600	600
2500	300	525	525	500	600	600
3200	300	450	450	500	600	600
4000	300	485	485	600	600	600
5000	300	525	525	600	600	600



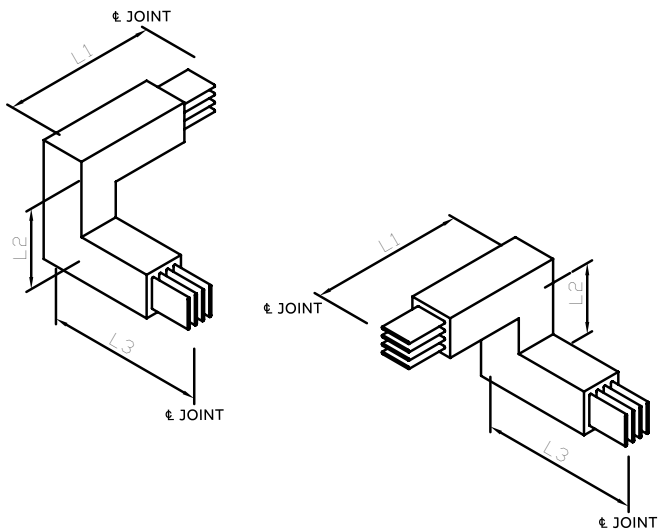
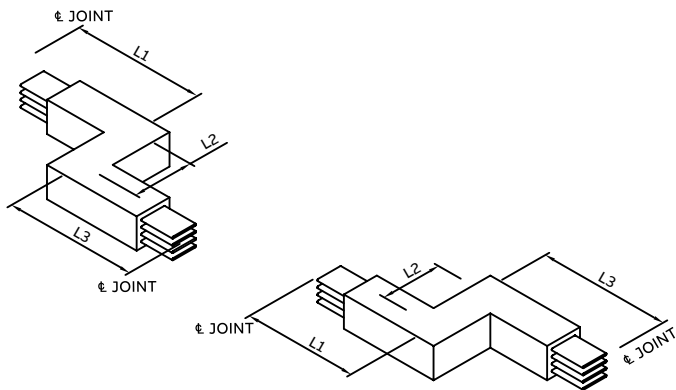
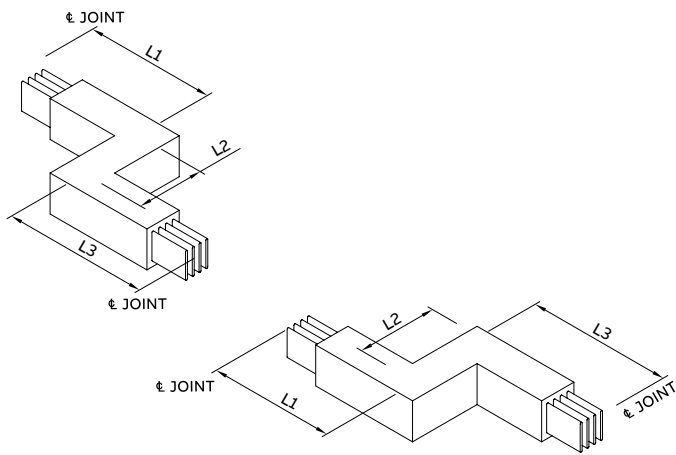
Flatwise Tee

mm

Rated current (A)	Minimum Size			Standard Size		
	L1	L2	L3	L1	L2	L3
400	270	270	270	400	400	400
630	275	275	275	400	400	400
800	280	280	280	400	400	400
1000	285	285	285	400	400	400
1250	295	295	295	400	400	400
1600	310	310	310	400	400	400
2000	335	335	335	400	400	400
2500	355	355	355	400	400	400
3200	395	395	395	500	500	500
4000	430	430	430	500	500	500
5000	470	470	470	550	550	550

# Physical Data

## Offsets



### Edgewise offsets

mm

Rated current (A)	Minimum Size			Standard Size		
	L1	L2	L3	L1	L2	L3
400	300	240	300	400	300	400
630	300	240	300	400	300	400
800	300	240	300	400	300	400
1000	300	240	300	400	300	400
1250	300	240	300	400	300	400
1600	300	240	300	400	300	400
2000	300	240	300	400	300	400
2500	300	240	300	400	300	400
3200	300	240	300	400	300	400
4000	300	240	300	400	300	400
5000	300	240	300	400	300	400

### Flatwise offsets

mm

Rated current (A)	Minimum Size			Standard Size		
	L1	L2	L3	L1	L2	L3
400	270	180	270	400	300	400
630	275	190	275	400	300	400
800	280	200	280	400	300	400
1000	285	210	285	400	300	400
1250	295	230	295	400	300	400
1600	310	260	310	400	300	400
2000	335	310	335	400	400	400
2500	355	350	355	400	400	400
3200	395	430	395	500	500	500
4000	430	500	430	500	500	500
5000	470	580	470	600	600	600

### Combination offsets

mm

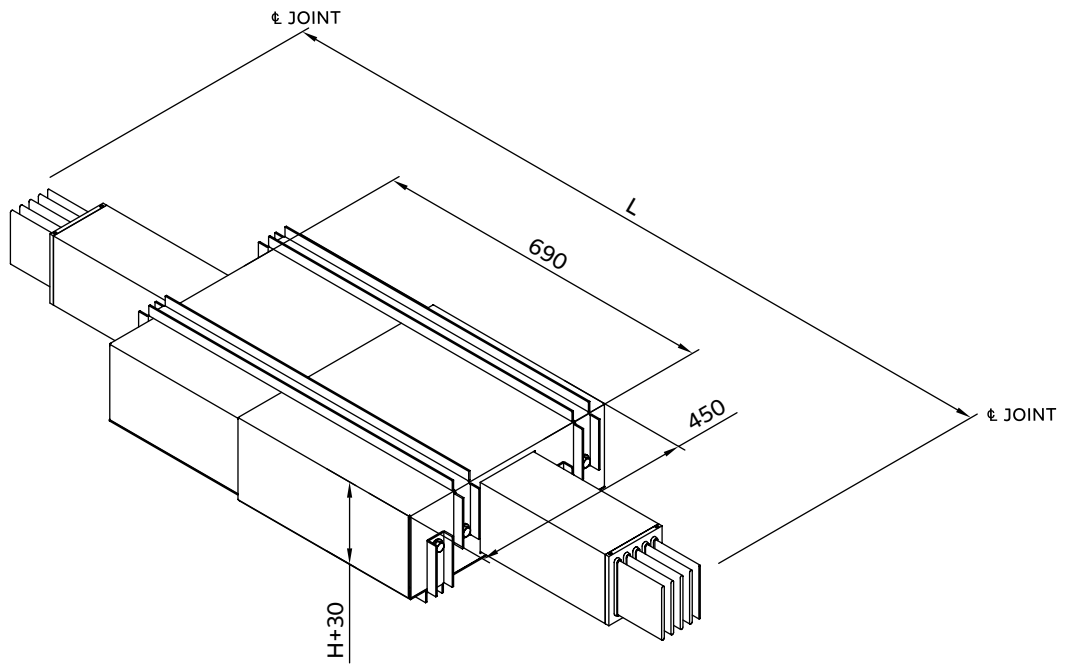
Rated current (A)	Minimum Size			Standard Size		
	L1	L2	L3	L1	L2	L3
400	300	210	270	400	300	400
630	300	215	275	400	300	400
800	300	220	280	400	300	400
1000	300	225	285	400	300	400
1250	300	235	295	400	300	400
1600	300	250	310	400	300	400
2000	300	275	335	400	300	400
2500	300	295	355	400	400	400
3200	300	335	395	400	400	400
4000	300	370	430	400	400	500
5000	300	410	470	400	500	500

# Physical Data

## Other Fittings

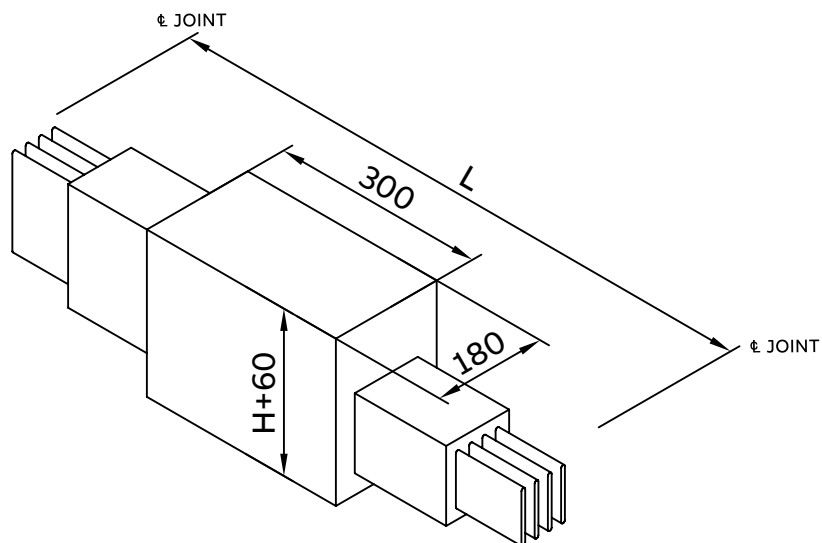
### Expansion unit

The standard length  $L=1500\text{mm}$



### Reducer

The standard length  $L=1000\text{mm}$

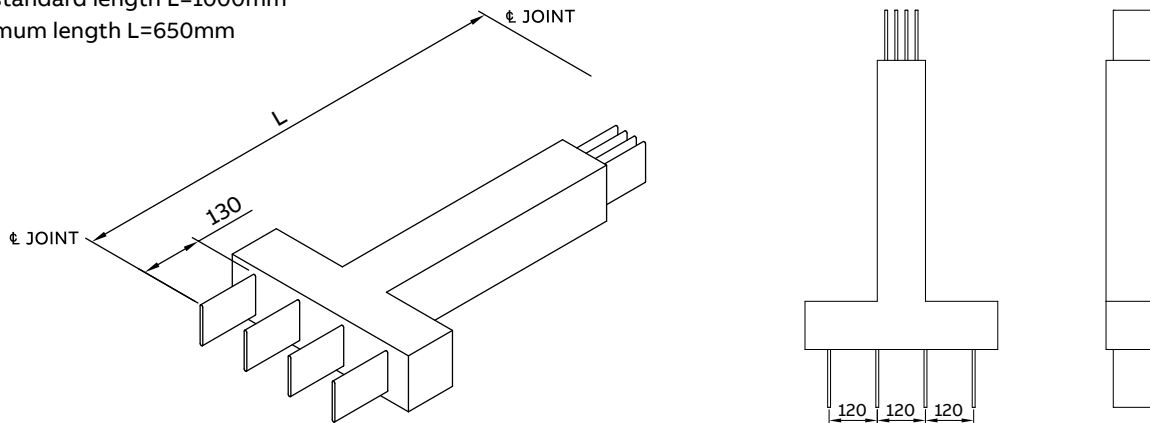


# Physical Data

## Flanged End

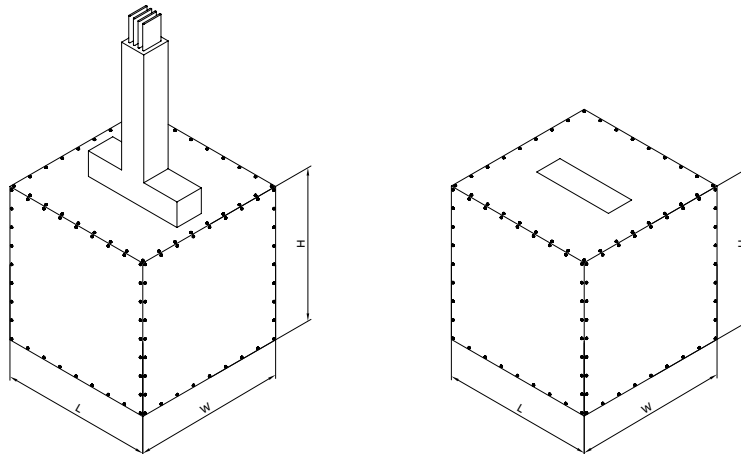
### Flanged end

The standard length  $L=1000\text{mm}$   
 minimum length  $L=650\text{mm}$



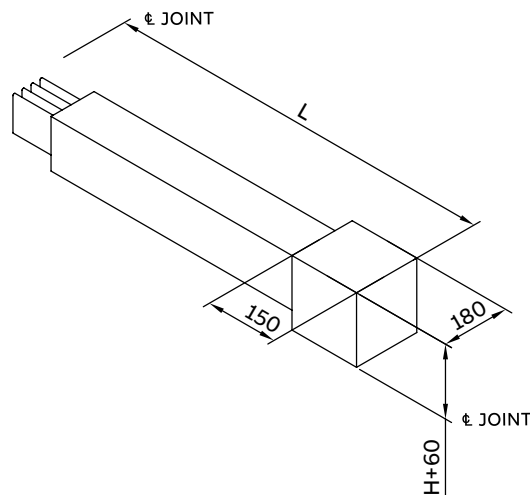
### End tap box

End tap boxes are used where a run of busway is fed by cable. The standard size is  $1000\text{mm} \times 1000\text{mm} \times 1000\text{mm}$ , while we are also able to supply with nonstandard boxes according to customer requirements.



### Terminal unit

length(L) is customized



# Physical Data

## Other Fittings

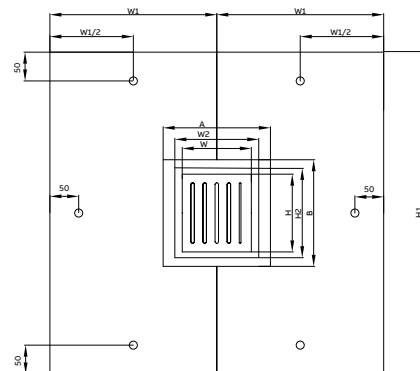
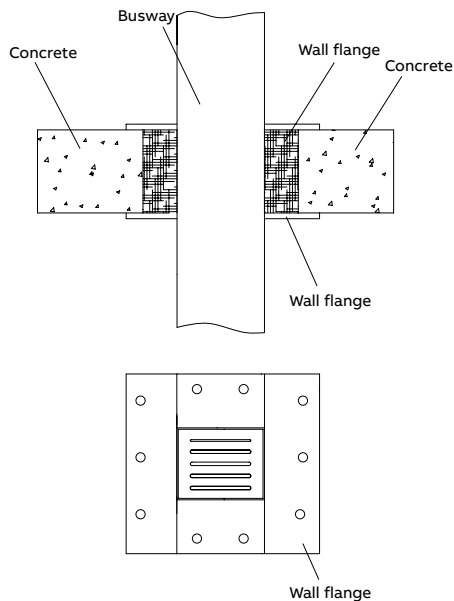
### Wall Flange

#### Wall flange cutout dimensions

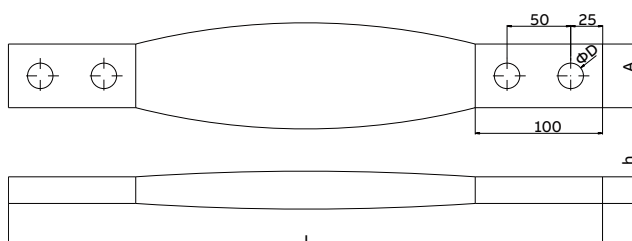
Rated current (A)	External dimension of busway W×H	Dimension of cutout A×B (≥)	External dimension of wall flange W1×H1 (≥)	Internal dimension of wall flange W2×H2 (≥)
400	120×60	220×160	210×360	135×75
630	120×70	220×170	210×370	135×85
800	120×80	220×180	210×380	135×95
1000	120×90	220×190	210×390	135×105
1250	120×110	220×210	210×410	135×125
1600	120×135	220×235	210×435	135×150
2000	120×170	220×270	210×470	135×185
2500	120×215	220×315	210×515	135×230
3200	120×300	220×400	210×600	135×315
4000	120×370	220×470	210×670	135×385
5000	120×460	220×560	210×760	135×475

#### Notes:

1. One SKU includes two wall flanges (one per side)
2. Wall flange is fixed against the wall with internal expansion bolt



### Flexible connection (Copper)



#### Notes:

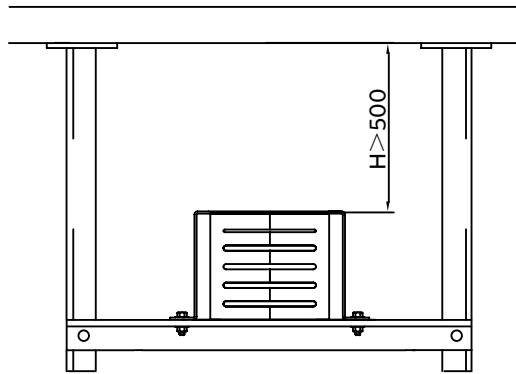
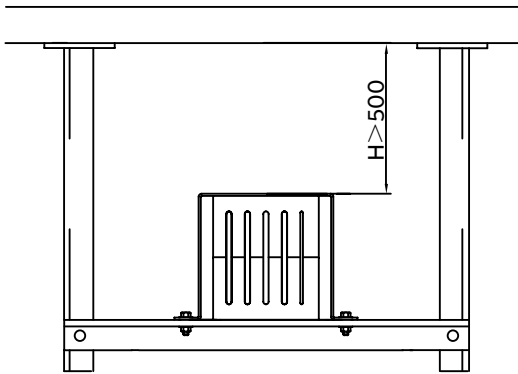
1. Standard length is 400mm, other lengths can be customized.
2.  $\phi D$ :  $\phi 14$  or  $\phi 16$

# Busway Installation

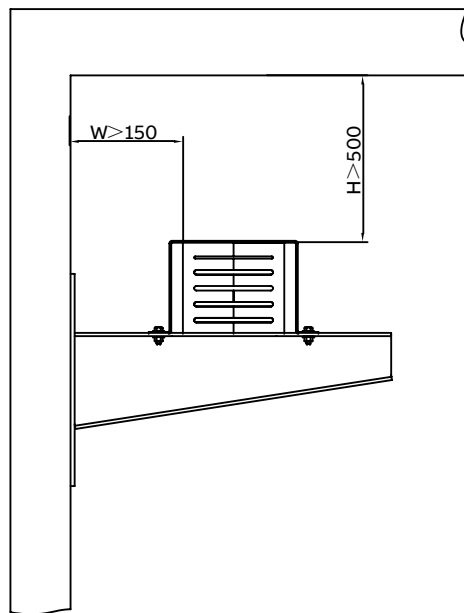
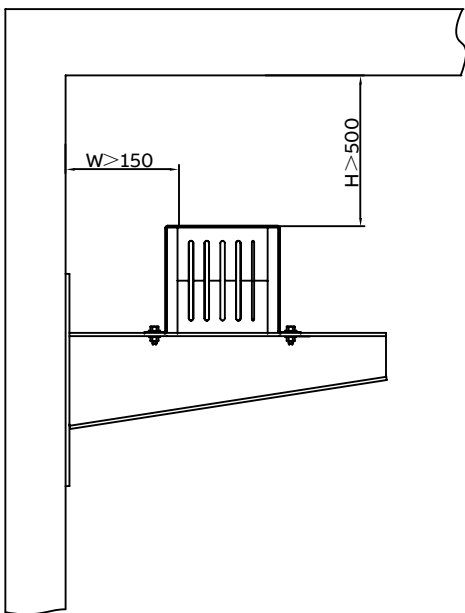
## Horizontal Mounting

The horizontal mounting includes wall support and suspending. The distance between two hangers shall not exceed 1.5m. Two pieces of hangers is recommended for one piece of standard 3m feeder. There should be hangers at two sides of joint, but the hangers can't be installed on the joint. The min. spaces of installing see Figures below.

### Trapeze hangers



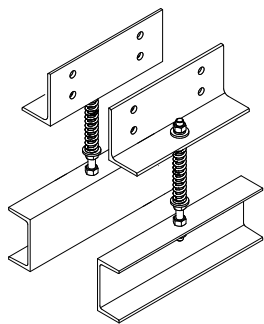
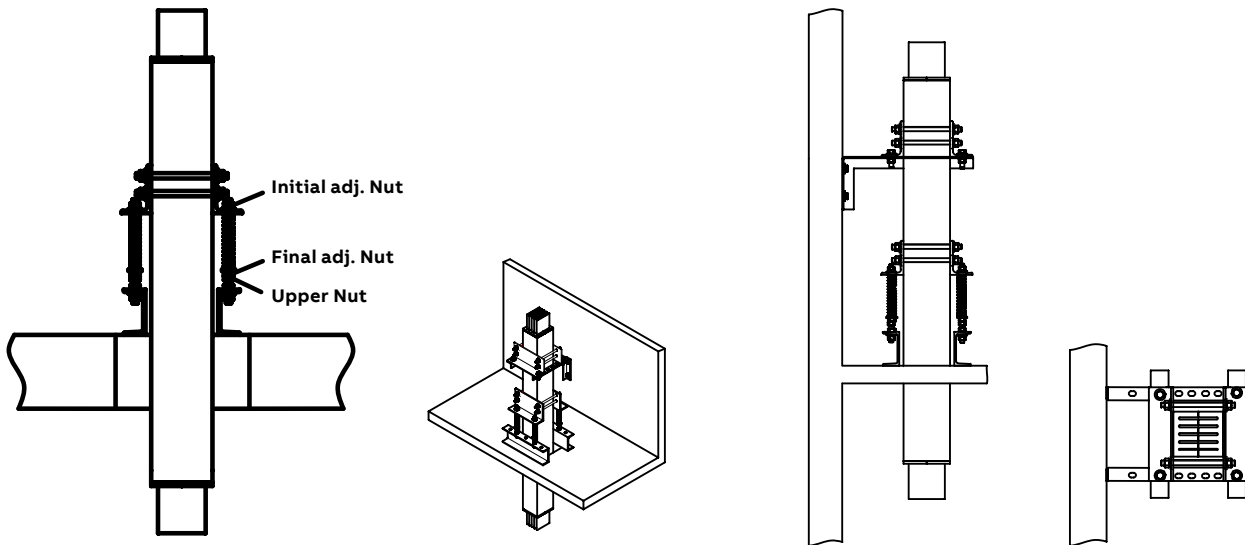
### Wall support



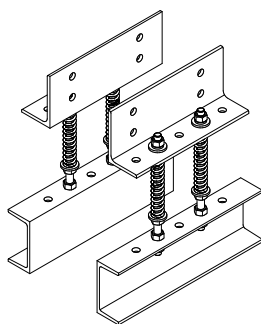


**Vertical Mounting**

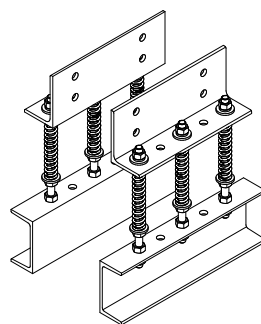
Space between 2 vertical hangers shall not exceed 4 meters.



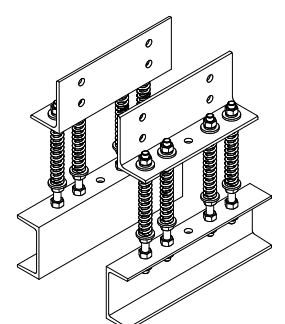
**Fig. A**



**Fig. B**



**Fig. C**



**Fig. D**

**Busway current and Spring hangers**

Rated current (A)	Rated current (A) Number of springs
400	Fig. A
630	
800	
1000	
1250	Fig. B
1600	
2000	
2500	Fig. C
3200	
4000	Fig. D
5000	

# Numbering System

Code	Current rating
04	400A
06	630A
08	800A
10	1000A
12	1250A
16	1600A
20	2000A
25	2500A
32	3200A
40	4000A
50	5000A

Code	Phase configuration
40	3L+100% PEN
41	3L+100%N+50% internal ground

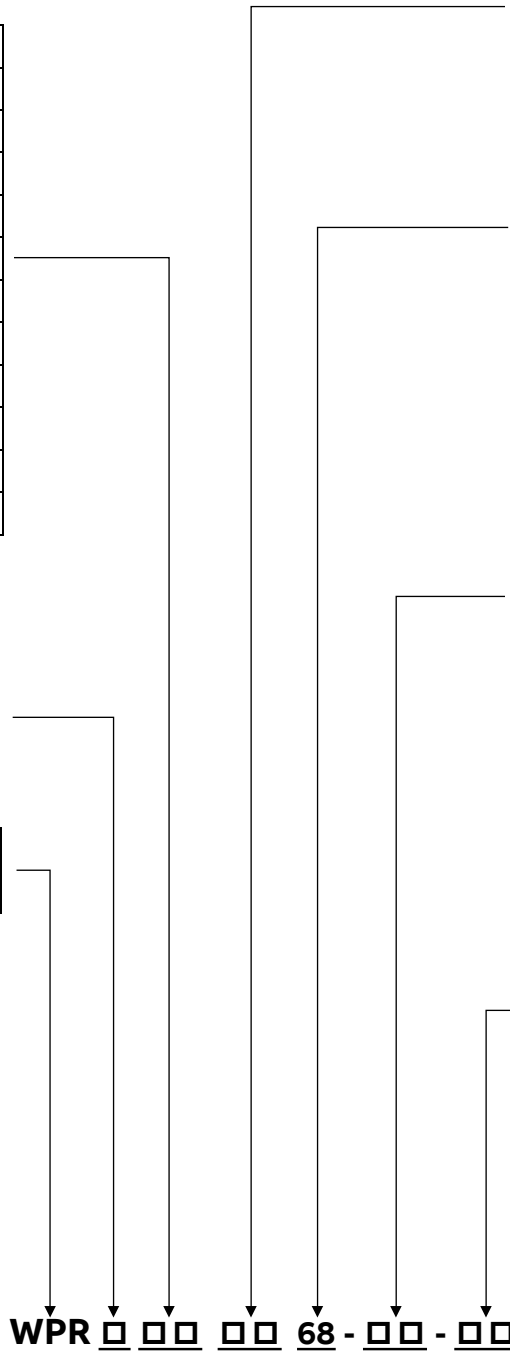
Code	IP Rating
68	IP68

Code	Fitting type
/	Straight length
EL	Elbow
FE	Flanged End
TE	TEE
JT	Joint
ETB	End tap box
WF	Wall flange
TC	Terminal unit
R	Reducer
EU	Expansion unit

Code	Phase
C	Cu

Code	Busway type
WPR	WavePro-R

Code	Length
XX	In meter



WPR □□ □□ □□ 68 - □□ - □□

# Check list

Technical standards	IEC 61439-1 2011 & IEC 61439-6 2012			
Relative humidity (%) at + 20°C	≤100			
Altitude (m)	<2000			
Max. temperature (°C)	40			
Min. temperature (°C)	-25			
Average temperature (°C)	35			
Conductor	Copper			
Conductor plating	<input type="checkbox"/> Full length tin-plating <input type="checkbox"/> Other			
Rated operating voltage (V)	690			
Rated insulation voltage (V)	1000			
Rated frequency (Hz)	50			
Rated current (A)	<input type="checkbox"/> 400 <input type="checkbox"/> 630 <input type="checkbox"/> 800 <input type="checkbox"/> 1000 <input type="checkbox"/> 1250 <input type="checkbox"/> 1600 <input type="checkbox"/> 2000 <input type="checkbox"/> 2500 <input type="checkbox"/> 3200 <input type="checkbox"/> 4000 <input type="checkbox"/> 5000			
Number of phases	3P			
Phase Configuration	<input type="checkbox"/> 3L+100%N+50% internal ground <input type="checkbox"/> 3L+100%PEN <input type="checkbox"/> Other:			
Degree of protection	<input type="checkbox"/> IP68			
Housing color	<input type="checkbox"/> Standard:Light gray <input type="checkbox"/> Other:			
Phase sequence	<input type="checkbox"/> PE, L1, L2, L3, N <input type="checkbox"/> L1, L2, L3, PEN <input type="checkbox"/> Other			
System grounding	<input type="checkbox"/> TN-S <input type="checkbox"/> TN-C			
Installation	Horizontal installation	Hanger type	<input type="checkbox"/> Trapeze hangers	<input type="checkbox"/> Bracket arm
		Hanger accessories	<input type="checkbox"/> Horizontal hanger clamps	
	Vertical installation	Hanger type	<input type="checkbox"/> Spring hanger	<input type="checkbox"/> Vertical fixed hanger
		Hanger accessories	<input type="checkbox"/> U-steel base	<input type="checkbox"/> Vertical hanger clamps
Copper busbar connection, flexible connection	<input type="checkbox"/> ABB provides plain copper bar, and the user bending and fabricates on site <input type="checkbox"/> Other:			
Other special requirements				

List of attachments



# MEMO

A series of horizontal dotted lines spanning the width of the page, providing a template for writing a memo.



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# ABB Connect

The digital assistant for all your electrification needs

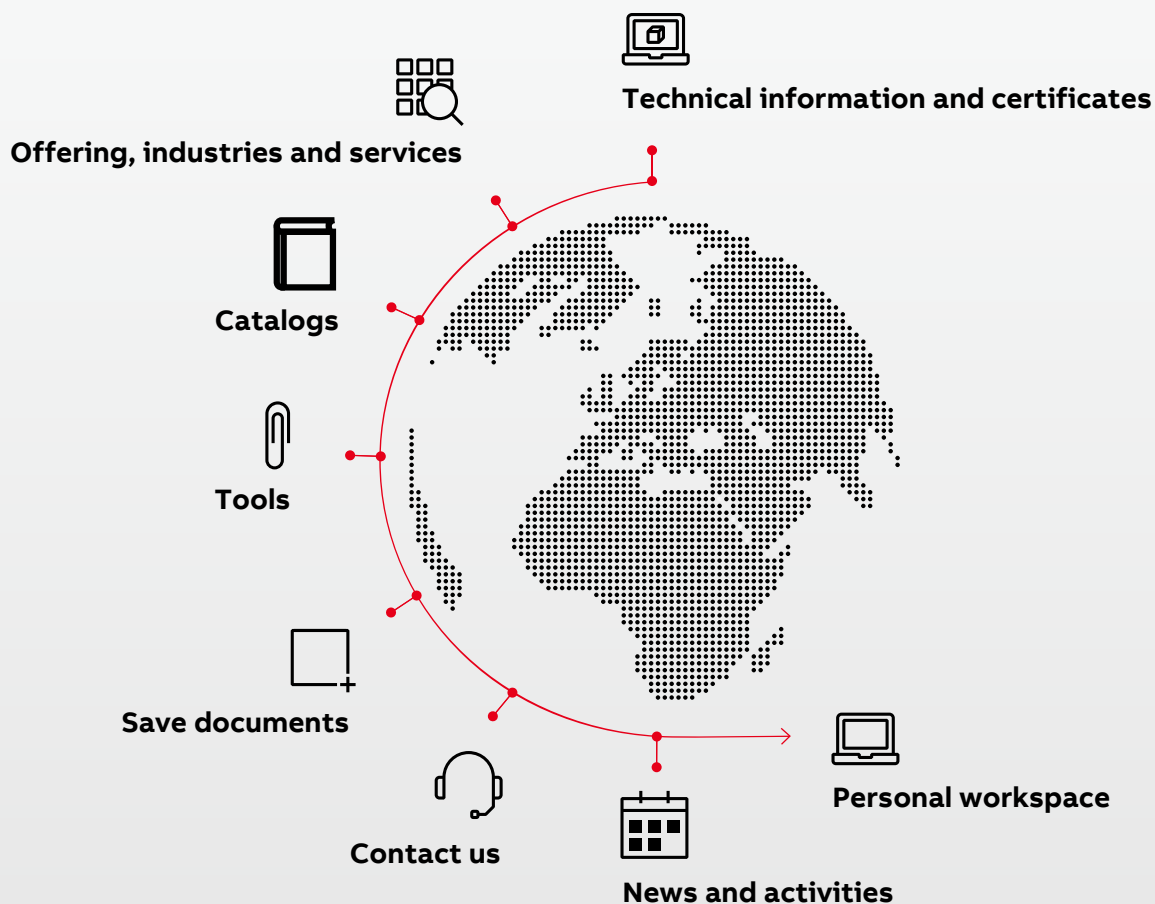
ABB Connect helps you to find product information and stay connected to the latest news and tools. It's a digital assistant that enables customers to connect to the broadest range of electrification solutions in one place.

- Easy to find what you need by search
- Get all information about our products, applications, selection guides, installation manuals, service, certificates, and engineering tools, etc.
- Saving documents locally, updating automatically.
- Receive your expected messages
- Online customer service

You can use ABB Connect on iOS, Android and Windows 10 device



Scanning QR code  
to enter ABB Connect







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