

Technical manual

GM-Z MV Busway

Medium-voltage busway with
solid epoxy-resin insulation.

3.6–40.5 kV

Medium voltage

800–6,300 A

Rated current

IP68 · IK10

Protection (12kV class)

Copper

Conductor



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1.1 About this manual

Scope

GM-Z MV medium-voltage busway.
12kV class: 800A to 6,300A.
35kV class: 1,600A to 4,000A.

Conventions

Period for decimals, comma for thousands.
Example: 17.5 or 6,300.
Copper conductors across the series.

Data may change due to technical or production improvements.
Confirm values with ElectriDistro when ordering.

1.2 · Manufacturer

Wetown Electric Group

WETOWN

The busway manufacturer with the largest production plant in Asia.
30+ years designing, testing and manufacturing busway in China.



Wetown Electric Group headquarters · China

136,000m²

industrial complex
84,000m² built

700,000m

of busway
per year

30+

years building
busway

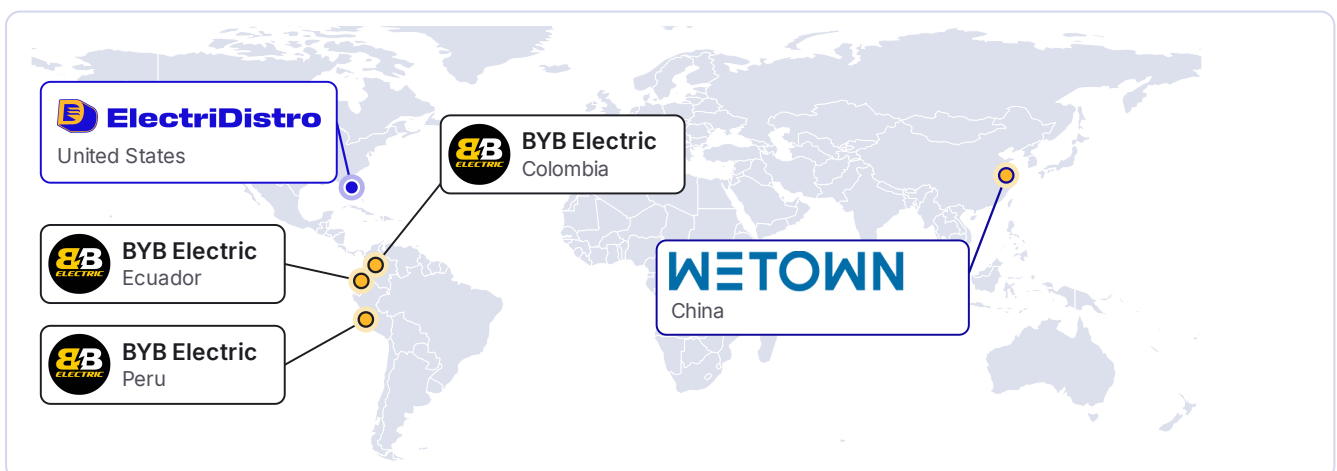
40+

countries with
installed projects

1.2.1 Manufacturing capacity

Plants	4 manufacturing bases and 10+ subsidiaries in China and abroad
Stated capacity	Busway 700,000m · copper bar 10,000t · aluminum profile 4,000t
Research	Three R&D centers in China
In-house laboratory	40+ tests · recognized by CNAS, DEKRA (formerly KEMA), ASTA and TÜV
Manufacturing	Automated assembly lines · high-speed saw cutting · silver-plated contacts
Technical alliances	GE (2007) · ABB (2016) · Westinghouse (2017)
Listed company	Shanghai Stock Exchange, STAR Market · code 688226

1.2.2 Global presence



1.3 · Manufacturer

Manufacturer backing

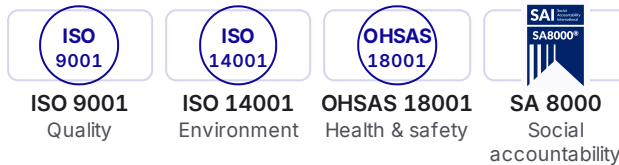
1.3.1 ABB's busway manufacturer


WETOWN × **ABB**

- Through a joint venture, **Jiangsu Wetown ABB Busway** is part of ABB.
- It is ABB's main busway factory worldwide.
- It operates within the Wetown complex in China.

1.3.2 Certifications

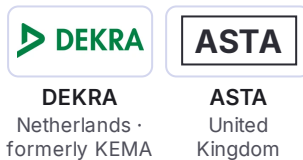
Management systems



Product certification



Testing laboratories



1.3.3 Manufacturer reference projects



Marina Bay Sands Hotel
Singapore · hotel



Casino Tower
Macau · casino and hotel



National Stadium
Beijing · stadium



Asian Games Stadium
Stadium



Shenzhen Baohe Hospital
Shenzhen · hospital



Wanda Plaza
Shopping center



Panzhuhua Steel (Group)
Steel industry



Gezhouba Group
Hydropower

1.3.4 Authorized distribution chain



2 · System

GM-Z MV busway system

Integrated three-phase medium-voltage busway with solid insulation.

Carries power from generators and transformers to switchgear and equipment.

3.6–40.5 kV

medium voltage
12kV and 35kV classes

800–6,300A

12kV class
35kV: 1,600–4,000A

IP68 · IK10

12kV class
35kV: IP67 · IK10

–50 to +65°C

ambient
temperature

Figure 2.1 Typical system

transformer, outdoor runs on supports and connection to MV switchgear



2.1 Applications

Power plants, petrochemical, shipyards, docks, offshore platforms, industry and mining.



Nuclear power plants



Power generation plants



Substations and industry



Ports and shipyards



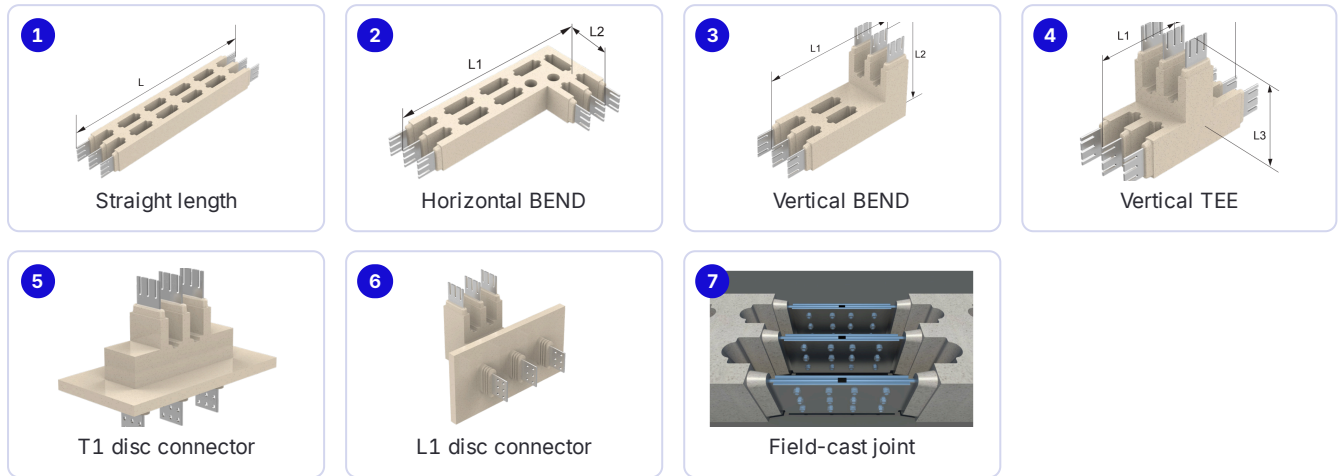
Petrochemical and salt-laden air

Illustrative images

2 · System

Components and names

The names in this manual match the ElectriDistro quote.



	ElectriDistro name	Also called
1	Straight length	Straight section, feeder run
2	Horizontal BEND	Flat bend, change of direction in plane
3	Vertical BEND	Edgewise bend, rise or drop
4	Vertical TEE	T-section, branch
5	T1 disc connector	T1 disc joint, equipment connection, flange end
6	L1 disc connector	L1 disc joint, L-shaped equipment connection
7	Field-cast joint	Joint, poured joint, cast-in-place joint

Tap-offs, expansion joints and special parts are also built to project requirements.

3 · Design features

Design and performance

What each design detail of the GM-Z MV busway delivers.

Figure 3.1 Section 12kV

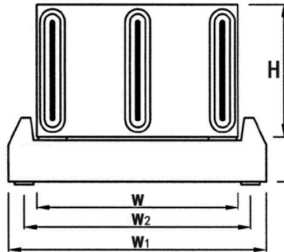


Figure 3.2 Joint assembly

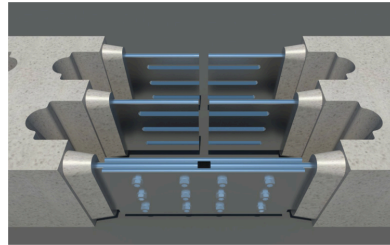
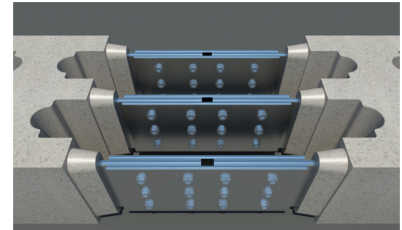


Figure 3.3 Joint bolted



3.1 Solid resin insulation

- Conductor sealed in fluidized powder.
- Vacuum-cast in epoxy resin and mineral filler.
- No stress between conductor and resin.
- Low capacitive current to ground.

3.2 High-purity copper conductor

- Electrolytic copper, purity $\geq 99.9935\%$.
- Conductivity above 98% IACS.
- Low voltage drop.

3.3 IP68 and IK10

- IP68 per IEC 60529 in the 12kV class.
- Operates under water jets and immersion.
- IK10 even after aging.

3.4 Nuclear-grade seismic design

- Meets nuclear seismic category I.
- Equivalent to seismic intensity 8.
- Wetown took part in NB/T 25076-2017.
- The only manufacturer that helped draft it.

3.5 Material safety

- Class B insulation.
- Flame retardant F-V0, self-extinguishing.
- Explosion-proof, corrosion-free.
- Resists UV, fungus and rodents.

3.6 Cooling and maintenance

- Patented ventilation windows.
- Stiffer body, better heat dissipation.
- Compact and easy to install.
- Maintenance-free once installed.

3.7 · Design features

Service conditions, standards and model code

Where the GM-Z MV can operate and how each model is identified.

3.7.1 Service conditions

Altitude	$\leq 1,000\text{m}$; above that, derate per GB/T 11022: $K_a = e^{m(H-1000)/8150}$
Ambient temperature	-50°C to $+65^{\circ}\text{C}$
Relative humidity	0% to 100%
Atmospheric pressure	86kPa to 106kPa
Air	Salt-laden atmosphere
Water	Powerful water jets and prolonged immersion
Dust	Dust present is acceptable
Seismic	0 to 2,000Hz frequency, 0.2g peak ground acceleration (intensity 8)

For special environments, contact ElectriDistro.

3.7.2 Standards

IEC / industry standard	GB equivalent	Scope
IEC 62271-1	GB/T 11022	Common specifications for high-voltage switchgear
IEC 62271-200	GB 3906	Metal-enclosed switchgear, 1 to 52kV
GB/T 8349	—	Metal-enclosed busway
NB/T 25076-2017	—	Nuclear industry standard, more demanding
IEC 60529	GB 4208	Degrees of protection (IP code)

3.7.3 Model code

G Cast-resin insulation	M Busway system	Z Medium voltage 3.6–40.5kV	–	3200 Rated current (A)	/	12 Operating voltage (kV)
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Example · GMZ-3200/12

GM-Z MV busway, 3,200A, 12kV, copper conductor.

4.1 · Technical data

12kV class: electrical data

Rated voltage 3.6–12kV. Copper conductor, conductivity above 98% IACS.

Table 4.1 12kV class · 800A to 2,500A **12kV**

Rated current (A)	800	1,000	1,250	1,600	2,000	2,500
Rated voltage	3.6–12kV					
Frequency	50/60Hz					
Resistance at 25°C (μΩ/m)	39.0	27.6	25.6	20.8	18.2	17.5
Resistance at 90°C (μΩ/m)	47.6	35.5	30.1	24.9	22.1	21.7
Power-frequency withstand, 1 min	45kV					
Lightning impulse withstand voltage	105kV					
I _{cw} , short-time withstand current (kA · s)	50 · 4s	50 · 4s	50 · 4s	50 · 4s	50 · 4s	50 · 4s
I _{pk} , peak withstand current (kA)	125	125	125	125	125	135
Power losses (W/m)	≤150	≤150	≤150	≤150	≤150	≤120
Degree of protection IP / IK	IP68 / IK10					

Table 4.2 12kV class · 3,200A to 6,300A **12kV**

Rated current (A)	3,200	3,500	4,000	4,500	5,000	6,300
Rated voltage	3.6–12kV					
Frequency	50/60Hz					
Resistance at 25°C (μΩ/m)	17.1	14.2	8.8	7.3	5.8	4.6
Resistance at 90°C (μΩ/m)	21.4	17.8	13.3	11.5	9.9	8.5
Power-frequency withstand, 1 min	45kV					
Lightning impulse withstand voltage	105kV					
I _{cw} , short-time withstand current (kA · s)	50 · 4s	100 · 2s	100 · 2s	100 · 2s	100 · 2s	100 · 2s
I _{pk} , peak withstand current (kA)	135	250	250	250	250	250
Power losses (W/m)	≤120	≤90	≤90	≤90	≤90	≤90
Degree of protection IP / IK	IP68 / IK10					

I_{cw} (rated short-time withstand current): current withstood for the stated time without damage.

I_{pk} (rated peak withstand current): maximum peak value withstood.

For special specifications, contact ElectriDistro.

4.2 · Technical data

12kV class: dimensions and weight

Constant 330mm outside width. Height increases with current.

Figure 4.1 Cross-section 800A to 2,500A

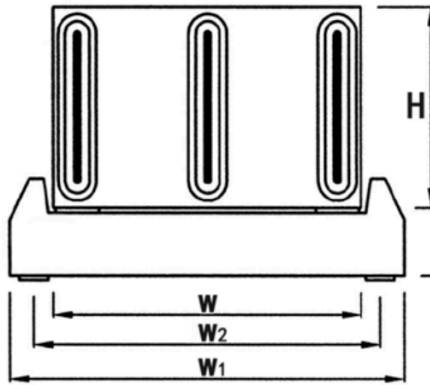


Figure 4.2 Cross-section 3,200A to 6,300A

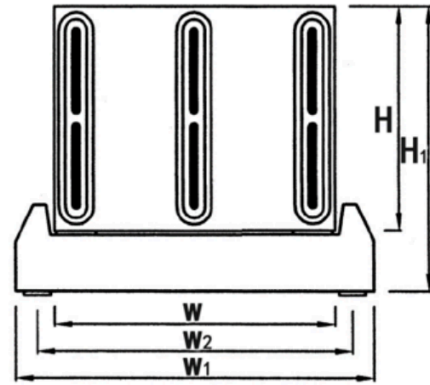


Table 4.3 Dimensions · 800A to 2,500A **12kV**

Rated current (A)	800	1,000	1,250	1,600	2,000	2,500
Width × height W × H (mm)	330×100	330×105	330×125	330×150	330×150	330×170
Width W2 (mm)	350	350	350	350	350	350
Width × height with base W1 × H1 (mm)	425×175	425×180	425×200	425×225	425×225	425×245
Weight (kg/m)	57	60	73	88	93	109

Table 4.4 Dimensions · 3,200A to 6,300A **12kV**

Rated current (A)	3,200	3,500	4,000	4,500	5,000	6,300
Width × height W × H (mm)	330×200	330×200	330×200	330×300	330×300	330×300
Width W2 (mm)	350	350	350	350	350	350
Width × height with base W1 × H1 (mm)	425×275	425×275	425×275	425×375	425×375	425×375
Weight (kg/m)	133	140	153	188	201	280

W: body width. W2: width at the base. W1 × H1: overall width and height with the base.

4.3 · Technical data

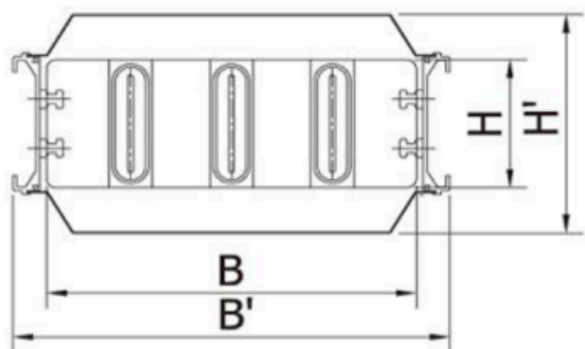
35kV class: data and dimensions

For 35kV systems. Copper conductor, conductivity above 98% IACS.

Table 4.5 35kV class · 1,600A to 4,000A **35kV**

Rated current (A)	1,600	2,000	2,500	3,200	3,500	4,000
Rated voltage	35kV					
Frequency	50/60Hz					
Resistance at 25°C (μΩ/m)	29.2	21.9	15.0	11.2	9.3	7.4
Resistance at 90°C (μΩ/m)	55.5	40.6	26.5	21.3	19.5	14.8
Power-frequency withstand, 1 min	100kV					
Lightning impulse withstand voltage	185kV					
I _{cw} , short-time withstand current (kA · s)	100 · 4s	100 · 4s	100 · 4s	100 · 4s	100 · 4s	100 · 4s
I _{pk} , peak withstand current (kA)	135	250	250	250	250	250
Power losses (W/m)	≤220	≤220	≤220	≤200	≤200	≤200
Degree of protection IP / IK	IP67 / IK10					
Width × height B × H (mm)	550×150	550×150	550×170	550×200	550×200	550×200
Overall width × height B' × H' (mm)	650×360	650×360	650×380	650×410	650×410	650×410

Figure 4.3 Section 35kV · B width · H height



The 35kV class is rated IP67 / IK10.

B × H: body. B' × H': overall dimensions.

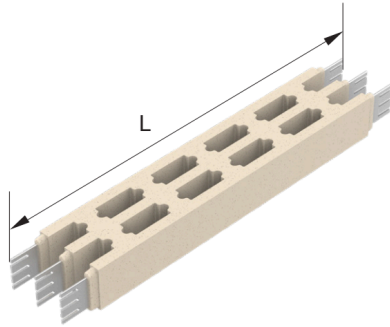
For weights and special specifications, contact ElectriDistro.

5.1 · Components

Straight length, BENDs and TEE

Standard run components. All lengths can be customized.

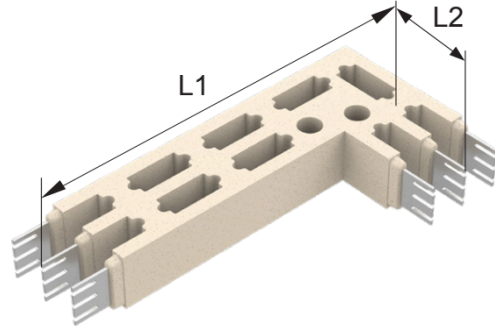
Figure 5.1 Straight length



Code: GM Z-□/□-01

Length: L = 1,000, 2,000, 3,000 or 4,000mm.

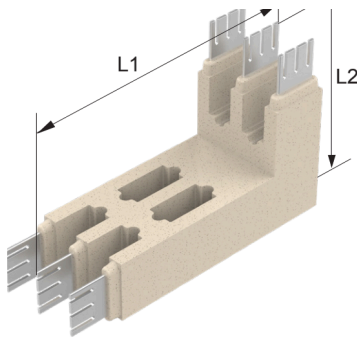
Figure 5.2 Horizontal BEND



Code: GM Z-□/□-02

Length: L1 + L2 = 1,000 or 2,000mm.

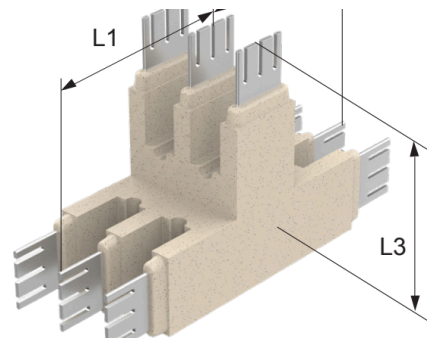
Figure 5.3 Vertical BEND



Code: GM Z-□/□-03

Length: L1 + L2 = 1,000 or 2,000mm.

Figure 5.4 Vertical TEE



Code: GM Z-□/□-04

Length: L1 + L2 + L3 = 1,500 or 3,000mm.

In the code, □/□ is rated current / operating voltage. Example: GM Z-3200/12-01.

5.2 · Components

T1 disc connector

Connects the busway to switchgear, transformers and generators.

Code GM Z-□/□-05. Dimensions in mm.

Figure 5.5 Type T1

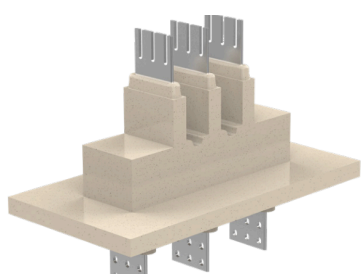


Figure 5.6 Single bar

front and side views

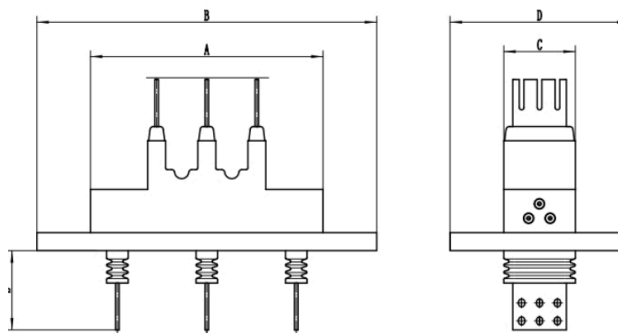


Table 5.1 Single bar

Bar width (mm)	AI	A	B	C	D	E
150	250	650	950	200	500	220
120	250	650	950	170	470	220
100	250	650	950	150	450	220
80	250	650	950	130	430	200
60	250	650	950	110	410	180
50	250	650	950	100	400	170

Figure 5.7 Double bar

front and side views

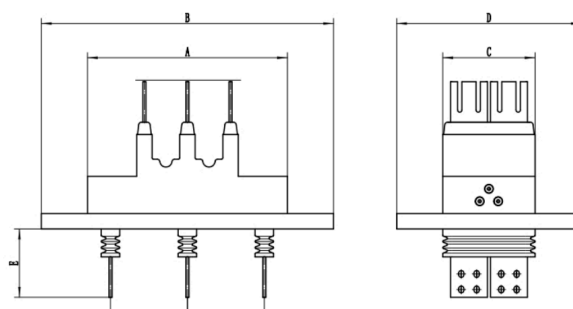


Table 5.2 Double bar

Bar width (mm)	AI	A	B	C	D	E
120 × 2	250	650	950	300	600	220
100 × 2	250	650	950	260	560	220

Dimensions of each part are detailed in the order drawings. For special sizes, contact ElectriDistro.

5.3 · Components

L1 disc connector

Connects the busway to switchgear, transformers and generators.

Code GM Z-□/□-06. Dimensions in mm.

Figure 5.8 Type L1

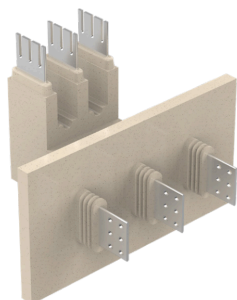


Figure 5.9 Single bar

front and side views

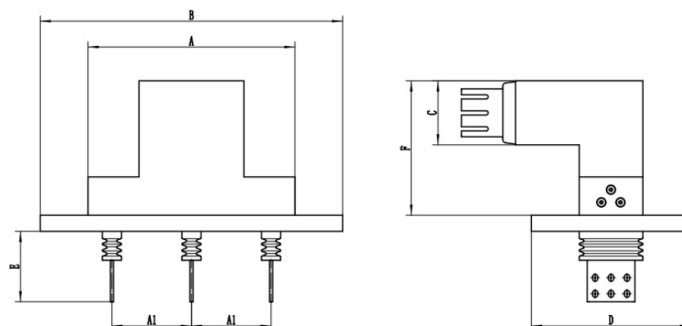


Table 5.3 Single bar

Bar width (mm)	AI	A	B	C	D	E	F
150	250	650	950	200	500	220	>350
120	250	650	950	170	470	220	>320
100	250	650	950	150	450	220	>300
80	250	650	950	130	430	200	>280
60	250	650	950	110	410	180	>260
50	250	650	950	100	400	170	>250

Figure 5.10 Double bar

front and side views

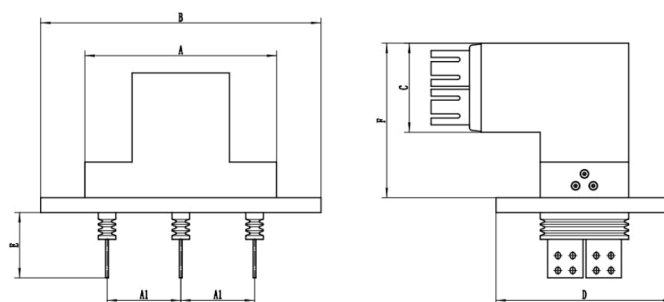


Table 5.4 Double bar

Bar width (mm)	AI	A	B	C	D	E	F
120 × 2	250	650	950	300	600	220	>450
100 × 2	250	650	950	260	560	220	>410

Dimensions of each part are detailed in the order drawings. For special sizes, contact ElectriDistro.

6.1 · Installation

Supports and clearances

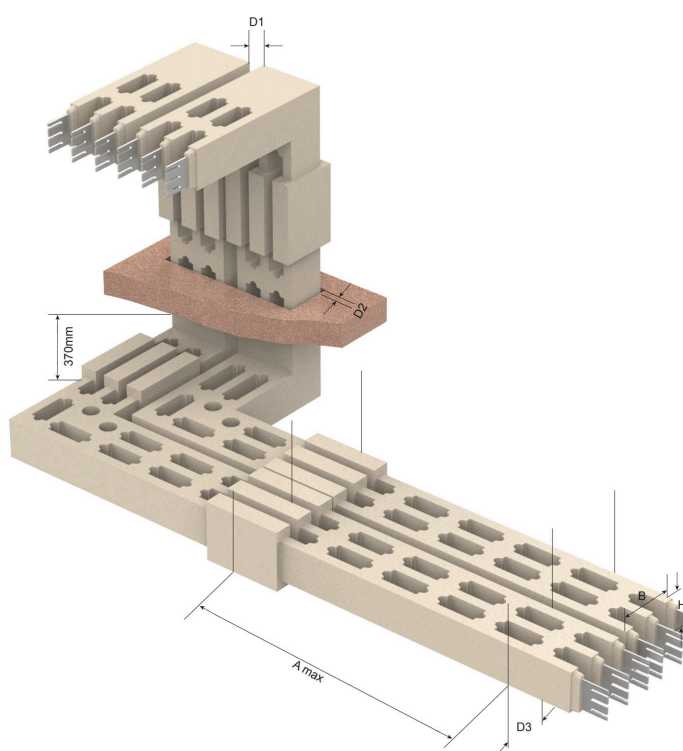
Mounting clearances for all models.

Table 6.1 Installation clearances

Maximum support spacing, horizontal run (Amax)	3,000mm
Maximum support spacing, vertical run (Amax)	2,000mm
Minimum spacing between busway runs (D1)	150mm
Minimum clearance to walls (D2)	100mm
Clearance between support and busway (D3)	75mm
Minimum distance from support to joint	250mm

Figure 6.1 Clearances

D1, D2, D3 and Amax



Same values for all of the manufacturer's models.

12kV: from 330×100 to 330×300mm.
40.5kV: 330×100mm.

The manufacturer designs the supports for site conditions and may adjust the clearances.

If the busway has a protective cover or other protection, these clearances do not apply.

6.2 · Installation

Field-cast joint

Parts are bolted together and the joint is sealed with resin cast on site.

Figure 6.2 Gap $\leq 20\text{mm}$

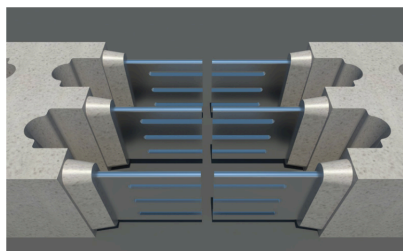


Figure 6.3 Connect bars

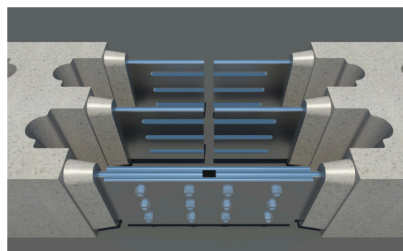


Figure 6.4 Tighten torque

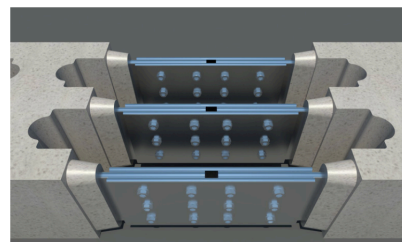
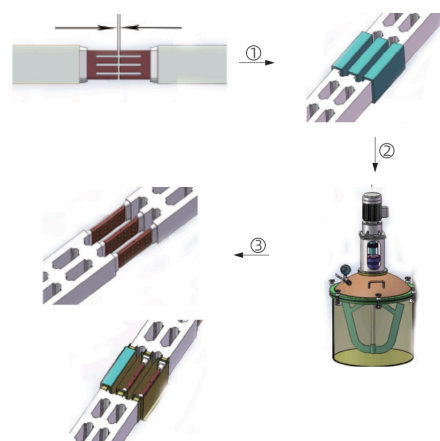


Figure 6.5 Casting steps 1 to 3



6.2.1 Sequence

- Leave up to 20mm between parts and connect the bars.
- Tighten the bolts with a torque wrench.
- Measure contact and insulation resistance.
- Fit the mold and pour the resin.
- Resin is prepared in a vacuum mixing tank.

Table 6.2 Bolt torque (N·m)

Bolt	M10	M12
Copper conductor	43	74

6.2.2 Testing and casting conditions

After tightening, measure contact and insulation resistance. The manufacturer provides the reference values.

Pour the mold only if the measurements meet those values.

Work above 5°C and below 85% relative humidity.

Otherwise, fix site conditions first and get the manufacturer's guidance and approval.

The complete procedure is in the manufacturer's installation manual.

7 · Tests

Tests and quote data

Factory tests on every GM-Z MV busway and the data we need for your quote.

7.1 Factory routine tests

No.	Test	Parameter	Standard and clause
1	Power-frequency withstand voltage	Phase-to-phase and to ground (dry / wet): 45 / 30kV, 1 min	GB/T 8349-2000, 8.2.3
2	Lightning impulse withstand voltage	Phase-to-phase and to ground: 105kV	GB/T 8349-2000, 8.2.3
3	Partial discharge	$1.1 \times 12\text{kV}$, $\leq 20\text{pC}$	GB/T 8349-2000, 8
4	Main circuit resistance	—	GB/T 11022-2011, 6.4
5	Insulation resistance	$\geq 10\text{G}\Omega$	GB/T 8349-2000, 8.2.3

Parameters in the table apply to the 12kV class.

For the 35kV class and additional tests, contact ElectriDistro.

7.2 Data needed for a quote

With this data, ElectriDistro prepares an accurate medium-voltage quote.

System voltage	3.6–12kV or up to 40.5kV
Rated current	Based on the load, from 800A to 6,300A
Run length	Meters of straight length, with drawings or isometrics
BENDs and TEEs	Quantity, type and dimensions L1, L2, L3
Connected equipment	Transformer, generator or switchgear, with model
Mounting	Horizontal, vertical, indoor or outdoor
Environment	Salt air, water, immersion, dust, altitude and seismic zone
Short circuit	System short-circuit current (kA)

Send your drawings and bill of materials as shown in section 8.

8 · Quote your project

From drawings to estimate in minutes

Our AI system reads your bill of materials and sends you a reference estimate. An engineer reviews it.

Upload your project at electridistro.com
Excel, PDF or image of your bill of materials

Get a quote →



How it works



Upload your document

Bill of materials, drawings or specification.



AI reads it

Identifies straight lengths, BENDs, boxes and ratings.



Get your estimate

A reference PDF arrives in your inbox right away.



Engineering review

Our team reviews it within 48 h max.; if anything is off, we send the correction.

COMMERCIAL PARTNERS

Do you install or specify busway?

Join as a Commercial Partner. Registration required, no exclusivity.



Unit pricing
for your own quotes



Customer referrals
in your region



Project pricing
quoted per project



Technical support
live

Register →

electridistro.com/integrator



electridistro.com

Product catalog and contact



Accepted formats

Excel, CSV, PDF, PNG or JPG



Engineering review

48 h max.; fixes if needed

WETOWN
Manufacturer



ElectriDistro
Exclusive distributor



Ecuador
Colombia
Peru

Authorized distribution channels