EAE
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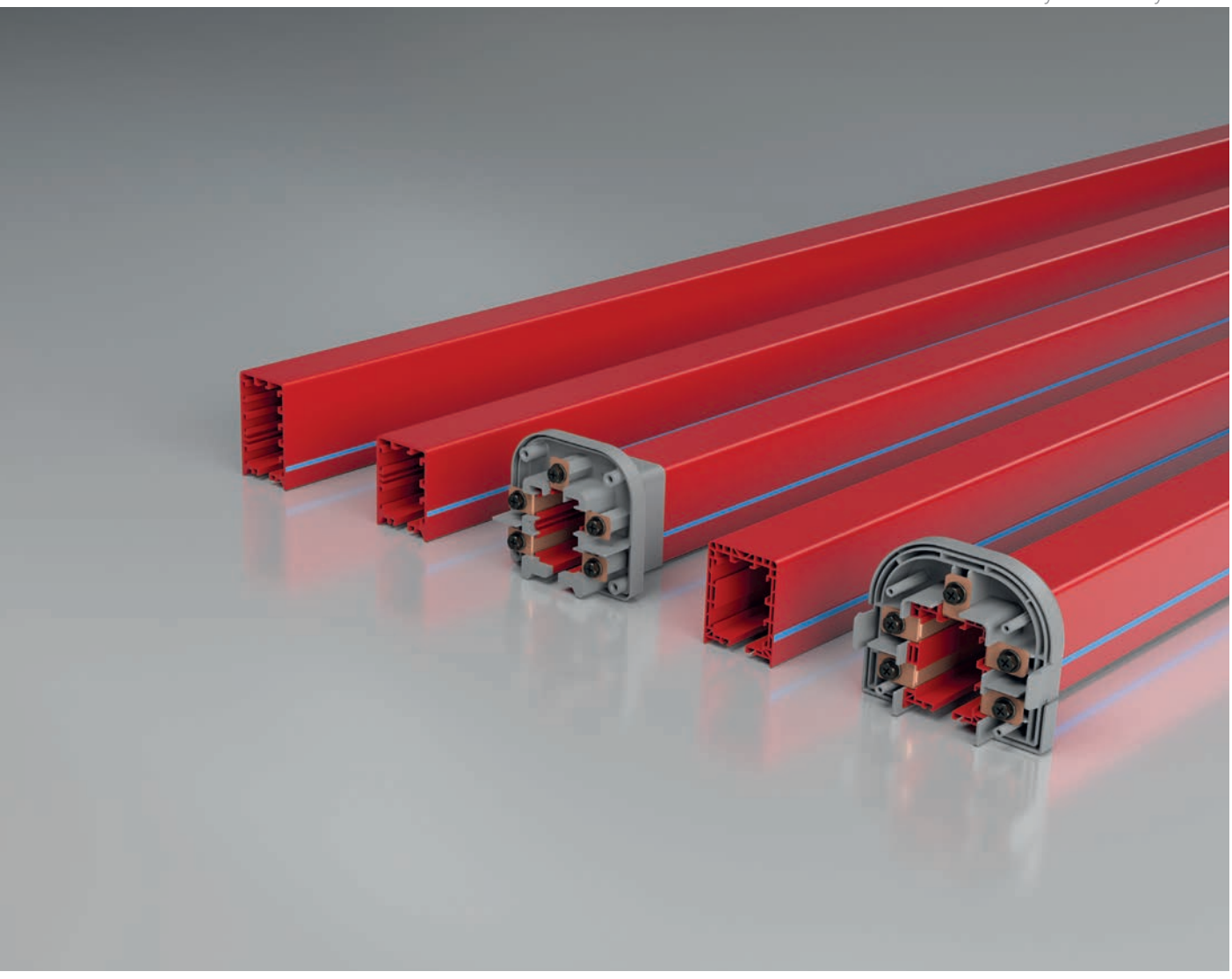
E-LINE
TROLLEY BUSBAR

Trolley Busbar Systems



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TROLLEY BUSBAR

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EAE Group
in numbers;

1973
year of foundatiton

280.000m²
closed manufacturing area

5
manufacturing plants

3
R&D Centers

100+
countries of export

Founded in 1973, EAE Elektrik A.S. being the parent company of EAE Group is a worldwide manufacturer of electrical products.

Founded	: in 1973
Closed Manufacturing Area	: 280.000m2
Range of Products	: Busbar Power Distribution Systems Lighting Busbar Systems Cable Tray Systems Underfloor Trunking Trolley Busbar Systems
Companies	: EAE Elektrik EAE Aydınlatma EAE Elektroteknik EAE Teknoloji EAE Makina
Number of Plants	: 5

"Lean Production" and "Innovative and Customer Driven Product Development" approaches are the key values utilized in designing and manufacturing the product families in compliance with ISO 9001, ISO 14001, OHSAS 18001 and ISO 27001.

EAE Elektrik A.S. busbar products are certified by KEMA/DEKRA (Holland), KEMA - KEUR, UL classified laboratories as per IEC 61439-1/6 standards.

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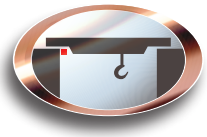
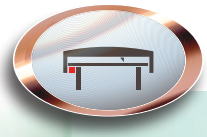


• Bridge Cranes

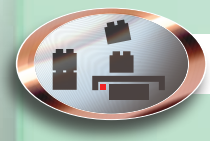
• Monorail Systems



• Textile Cutting and Spreading Tables

• AS/RS Storage Systems

• Moving Ceiling and Door Systems



• Assembly and Test Lines

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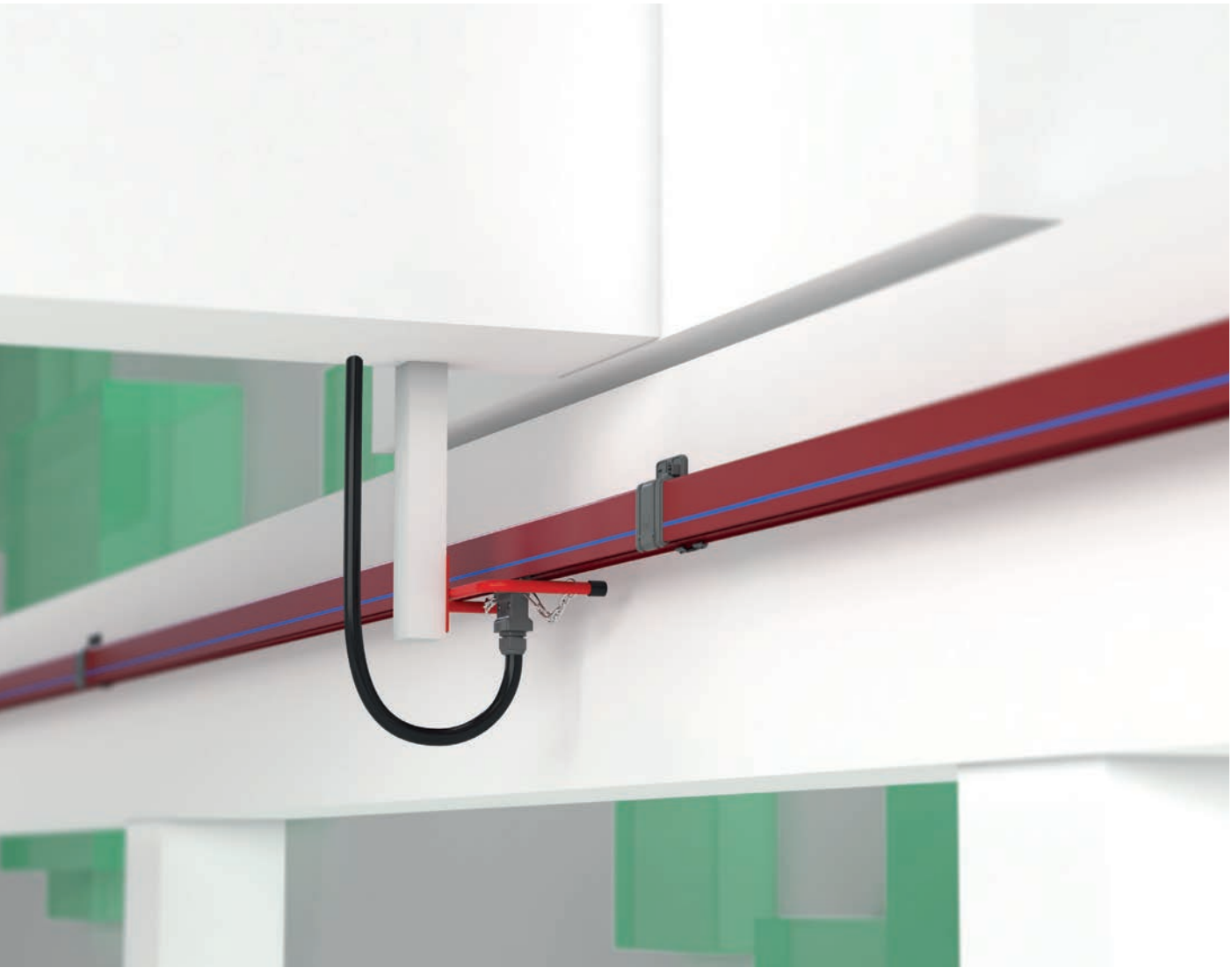
E-LINE TBX-S



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- Moving Ceiling and Door Systems
- Assembly and Test Lines

It consists of copper conductors and current collectors in the C-PVC body. The uninterrupted energy supply and movement of the system is provided by current collectors connected to the system mechanically.

The eliminates the possibilities such as accident, malfunction in energy distribution with suspended and reel cable in conventional systems. Conductors are enclosed in C-PVC housing and personnel safety is maximized.

There is no fixed connection between the conductor housings and the conductors and between the C-PVC housing and the sliding hangers, the necessary expansion opportunity is provided, therefore the expansion element is unrequired.

Cautions:
If it is used in external environments exposed to rain, it is recommended to protect it with a cover such as a canopy.

ELINETBX-S

▶▶ ORDER CODE SYSTEMS

TBX | S | 06 | 5

Trolley Busbar Model

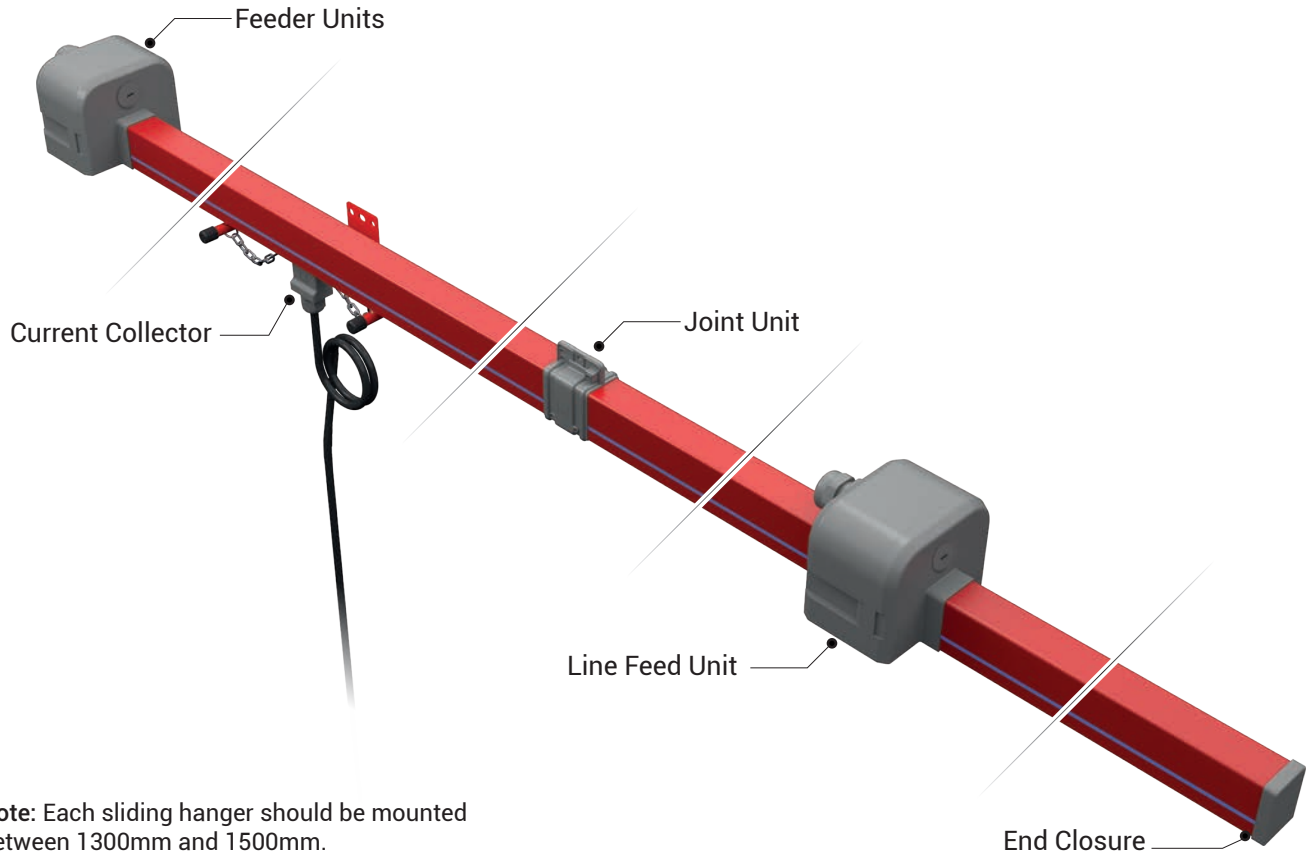
Current Ratings	
40A	04
63A	06
75A	07
105A	10
130A	13

Conductor Quantities	
4 Conductors	4
5 Conductors	5

Type	
Jointed	E
Continuous	S

▶▶ TECHNICAL FEATURES

		40	63	75	105	130
Rated Current	(A)					
Conductor Quantities	(pcs)	4-5	4-5	4-5	4-5	4-5
Rated Voltage	(AC) (V)	690	690	690	690	690
Dielectric Properties	(kV/mm)	30	30	30	30	30
Frequency	(Hz)	50/60	50/60	50/60	50/60	50/60
Resistance (20°C)	R_{20} (mΩ/m)	1,300	1,018	1,280	0,800	0,570
Resistance (35°C)	R_{35} (mΩ/m)	1,420	1,176	1,460	0,920	0,660
Reactance	X (mΩ/m)	0,160	0,447	0,140	0,060	0,250
Impedance	Z (mΩ/m)	1,429	1,258	1,467	0,922	0,706
Standard Length	(m)	4	4	4	4	4



Note: Each sliding hanger should be mounted between 1300mm and 1500mm.

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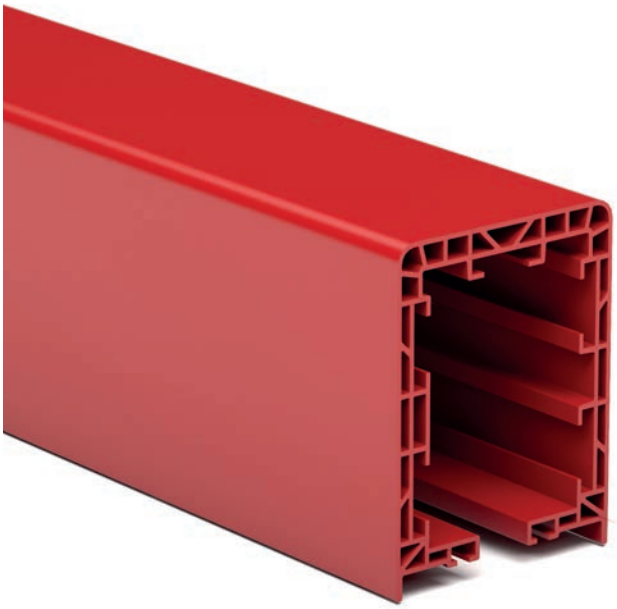
▶▶ TBX-S TROLLEY BUSBAR



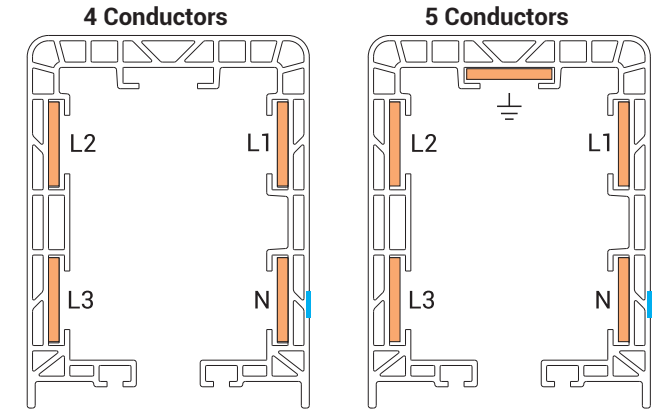
The housing has a structure that can use maximum 5 conductors. There is safety system that prevents the current collector to be fixed inversely.

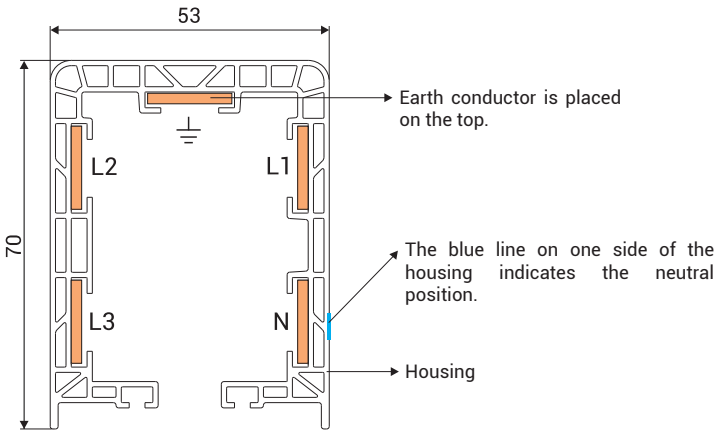
Continuous Copper Conductors

Electrolytic copper conductors can be applied without interruption at a maximum length of 150 m.

- **Number of Conductors:** 4 or 5 conductors
- **Colour:** Red.
- **Temperature range:** -40°C ve +55°C.
- **Standard housing length:** 4 meters.
- **Protection:** Standard IP24, Gasket, IP44.
- **Non-Flammable Characteristics:** UL 94 V0
- Housing is made of C-PVC and plastic accessories are made of PA6 raw material.
- There is a neutral line on the housing the neutral conductor.
- There is a neutral line on the housing the neutral conductor.
- Light and durable with double layer structure, TBX provides ease of installation.

Description	Weight (gr/m)	Order Code
TBX-S Trolley Busbar Housing	820	**2067393**





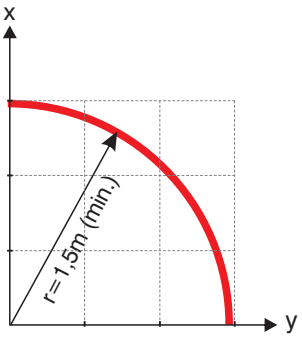
Standard 4 Meters

Model	Conductors Quantity-Current (A)	Weight (gr/m)	Conductor Cross Section (mm²)	Order Code
TBX-S 044	4P - 40A	1250	4x11,20	**3233922**
TBX-S 064	4P - 63A	1300	4x12,80	**3135807**
TBX-S 074	4P - 75A	1400	4x16,00	**3135809**
TBX-S 104	4P - 105A	1650	4x24,00	**3135811**
TBX-S 134	4P - 130A	1950	4x32,00	**3135813**
TBX-S 045	5P - 40A	1350	5x11,20	**3233923**
TBX-S 065	5P - 63A	1400	5x12,80	**3135808**
TBX-S 075	5P - 75A	1500	5x16,00	**3135810**
TBX-S 105	5P - 105A	1900	5x24,00	**3135812**
TBX-S 135	5P - 130A	2250	5x32,00	**3135814**

Joint plastics are not included in the weight values.
Total weight of the joint plastics and bolts is 100 kg.

Radius Trolley Busbar

It has minimum 1.5m radius Trolley Busbar available in vertical axes. Radius Trolley Lines can be applied with maximum 4 conductors.



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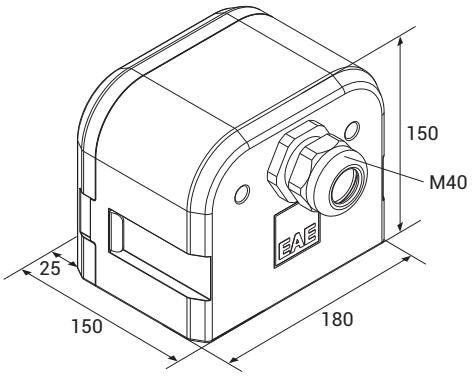
▶▶ TBX FEEDER BOX

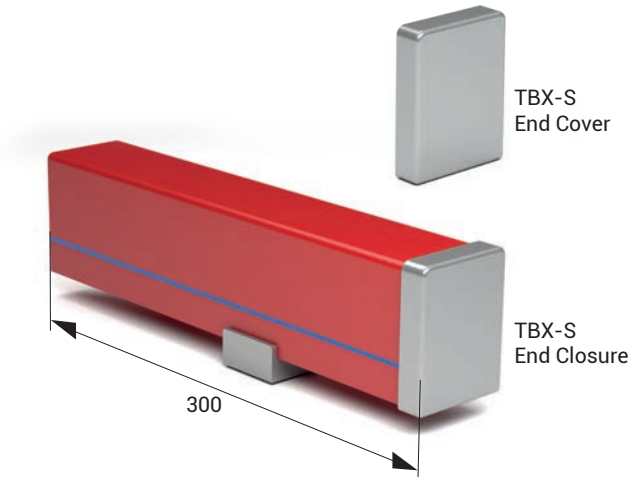


- May be used with busbars with 4 or 5 conductors
- Produced with standard M40 cable glands
- Halogen-free plastic raw material
- High impact resistance
- Design resistant against ambient conditions
- Ease of installation with snap-on design with a single screw.

Type of the feeding element is selected by calculating the voltage drop and the location of the power supply that shall provide power to the system.

Description	Weight (gr)	Order Code
TBX Feeder Units	750	**3135798**

▶▶ TBX-S END CLOSURE

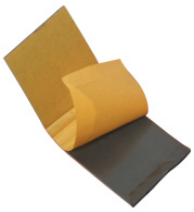


The end closure placed on the end of the busbar line prevents the exposure of the conductors, protects the system, and prevents the current collector from moving out of the housing.

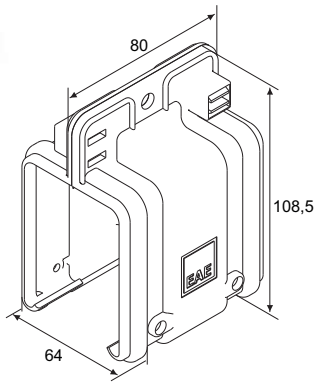
- Halogen-free plastic raw material
- High impact resistance.
- Design resistant against ambient conditions.

Description	Weight (gr)	Order Code
TBX-S End Closure	450	**3135816**
TBX-S End Cover	25	**1022212**

▶▶ TBS JOINT UNIT



EPDM Gasket



Description	Weight (gr)	Order Code
TBS Joint Unit	90	**1003663**

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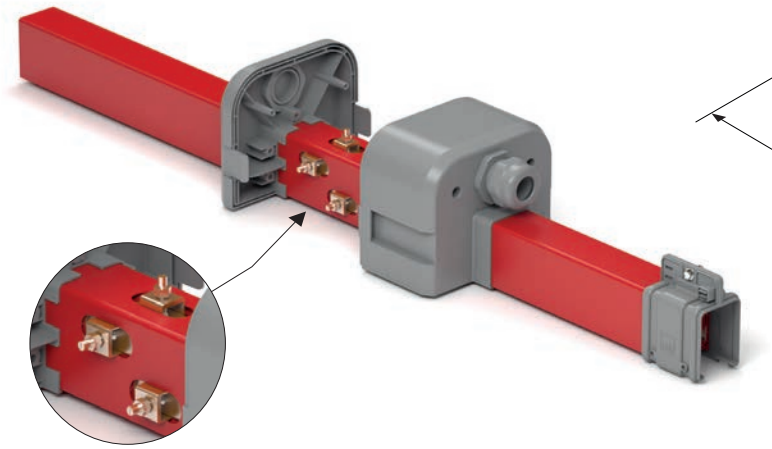
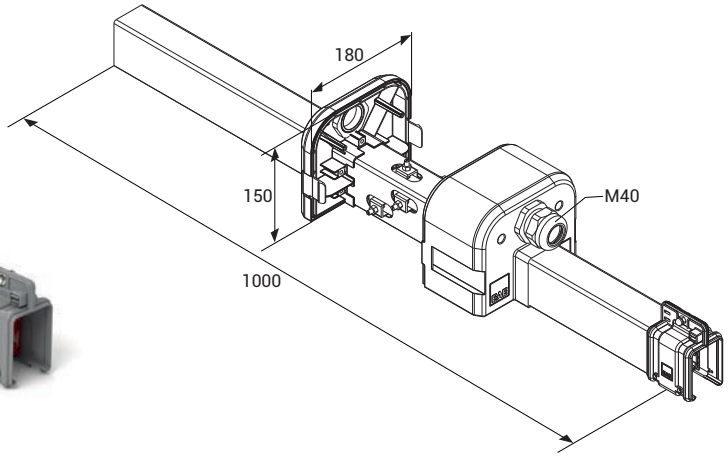
▶▶ TBX-S LINE FEED UNIT - CONTINUOUS TYPE



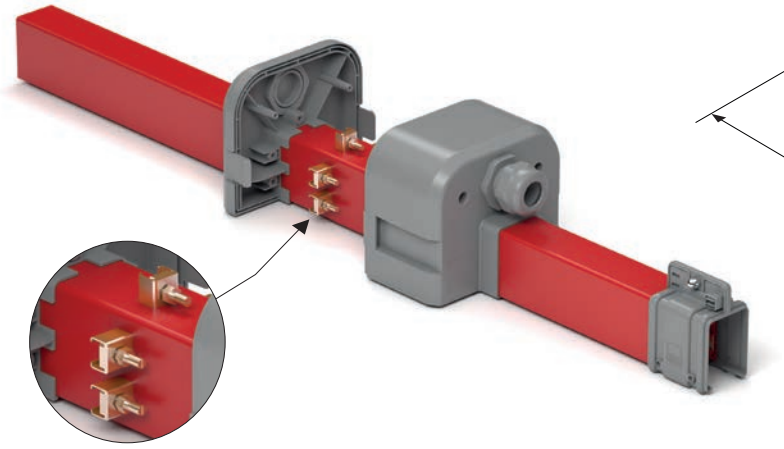


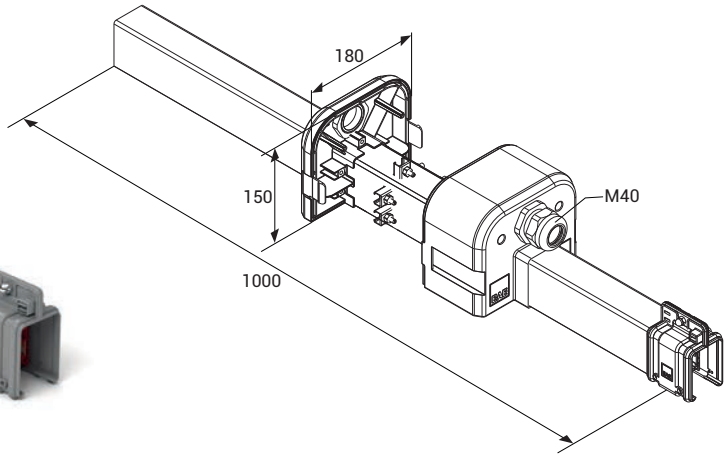
Type of the feeding element is selected by calculating the voltage drop and the location of the power supply that shall provide power to the system.

Description	Weight (gr)	Order Code
TBX-S Line Feed Unit - Continuous Type	1650	**3136706**

- May be used with busbars with 4 or 5 conductors
- Produced with standard M40 cable glands
- Halogen-free plastic raw material
- High impact resistance
- Design resistant against ambient conditions
- Ease of installation with snap-on design with a single screw.

▶▶ TBX-S LINE FEED UNIT - JOINTED TYPE



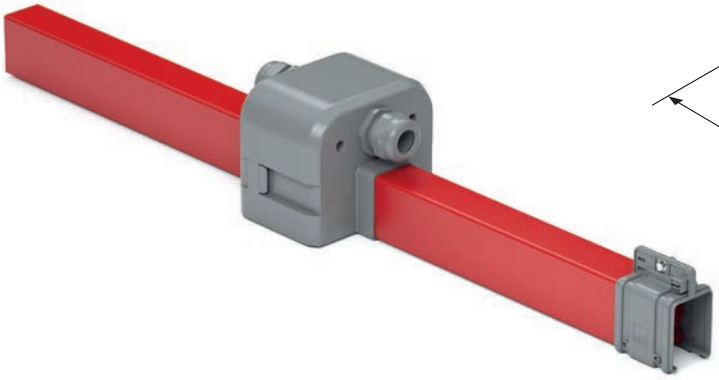


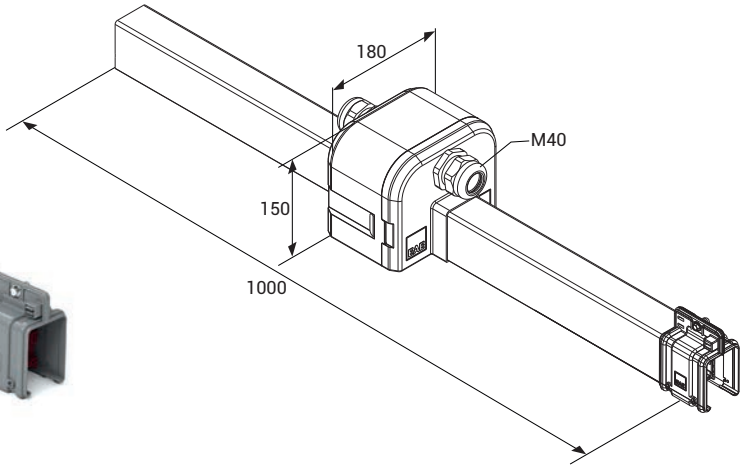
Type of the feeding element is selected by calculating the voltage drop and the location of the power supply that shall provide power to the system.

Model	Weight (gr)	Order Code
TBX-S Line Feed Unit - Jointed Type	1650	**3135818**

- May be used with busbars with 4 or 5 conductors
- Produced with standard M40 cable glands
- Halogen-free plastic raw material
- High impact resistance
- Design resistant against ambient conditions
- Ease of installation with snap-on design with a single screw.

▶▶ TBX-S REPAIR ZONE UNIT



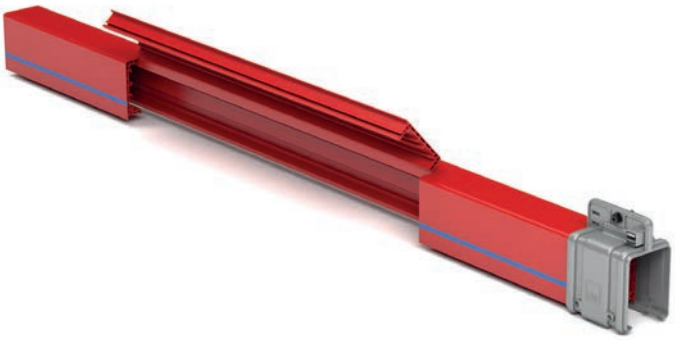


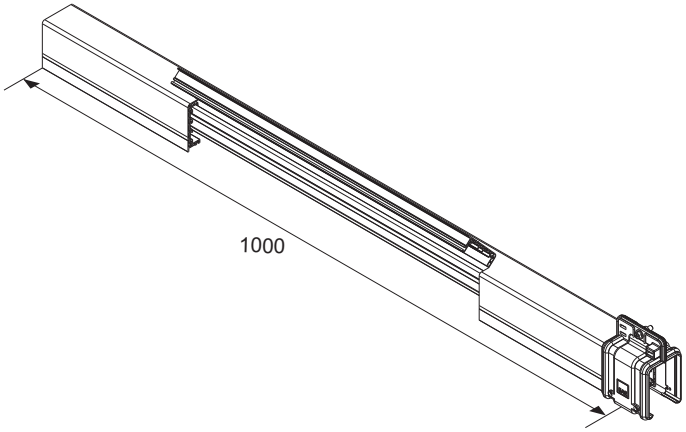
Current supply shall be cut off when a machine working on the line shall be maintained or repaired. Repair zone module is used to create a currentless area on the busbar so that the other machines operating on the same line may continue to work.

Description	Weight (gr)	Order Code
TBX-S Repair Zone Module	2050	**3135817**

- Produced with standard M40 cable glands
- Halogen-free plastic raw material
- High impact resistance
- Design resistant against ambient conditions

▶▶ TBX-S CURRENT COLLECTOR REPLACEMENT MODULE

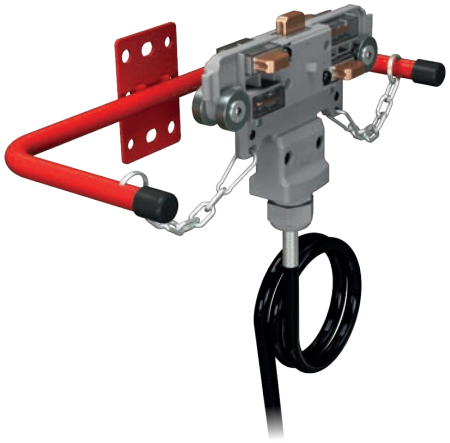


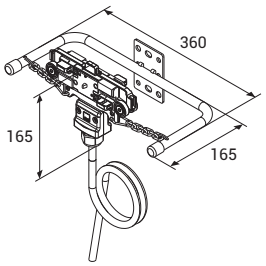


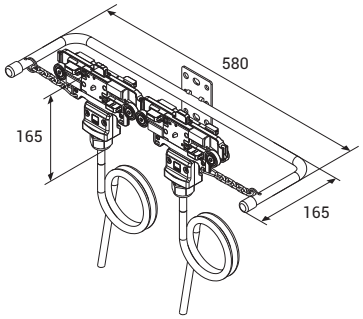
This unit is used to remove an existing current collector or to add extra trolleys. The unit is obtained by cutting a 50cm section from the PVC housing.

Model	Weight (gr)	Order Code
TBX-S Current Collector Replacement Module	1100	**3233921**

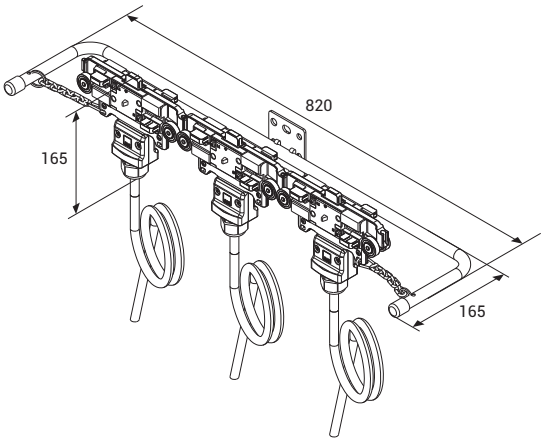
▶▶ TB5 CURRENT COLLECTORS WITH CABLE





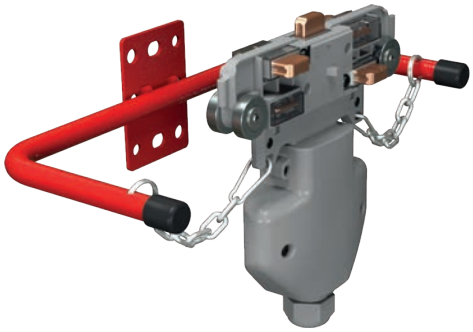


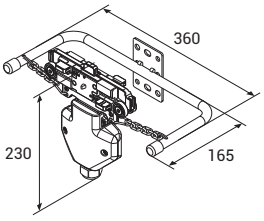
Model	Brushes Number-Current	Weight (gr)	Order Code
TB5	4P - 35A (Single)	1700	**3024385**
	4P - 70A (Double)	2950	**3024386**
	4P - 105A (Triple)	4450	**3024387**
	5P - 35A (Single)	1900	**3024376**
	5P - 70A (Double)	3250	**3024377**
	5P - 105A (Triple)	4700	**3024378**

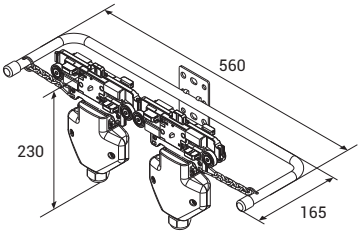


Model	Brushes Number-Current	Weight (gr)	Order Code
TB5	4P - 60A (Single)	2000	**3203193**
	5P - 60A (Single)	2200	**3203194**

▶▶ TB5 CURRENT COLLECTORS WITH CLIP

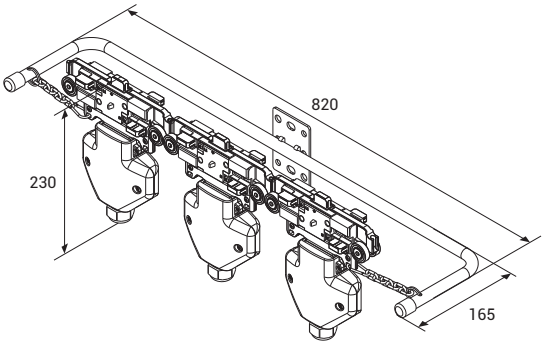






Model	Brushes Number-Current	Weight (gr)	Order Code
TB5	4P - 35A (Single)	1350	**3024388**
	4P - 70A (Double)	2050	**3024389**
	4P - 105A (Triple)	3050	**3024390**
	5P - 35A (Single)	1350	**3024379**
	5P - 70A (Double)	2250	**3024380**
	5P - 105A (Triple)	3200	**3024381**

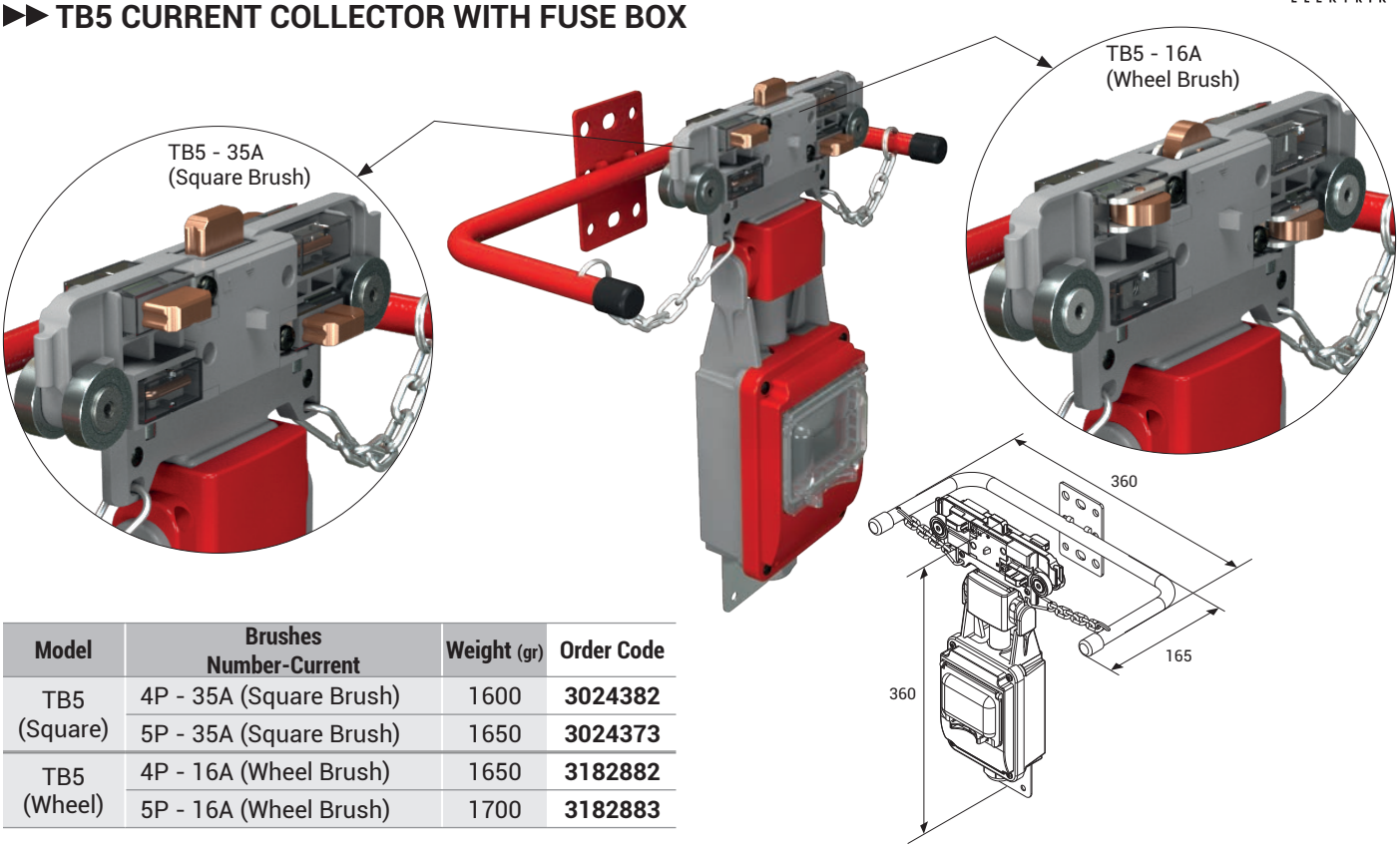
*Produced with standard M40 cable gland and 4mm² clip.



Current collector with clips allow the customers to perform cabling as they desire with the clips they include.

Current collector are the moving elements of the trolley busbar systems. Current collector brushes rub against the conductors and draw continuous current while they move through the busbar line. They adapt to shaky and vibrant conditions thanks to the moving brushes. As current collecting and transfer systems are included in the C-PVC housing, they are protected against human contact.

▶▶ TB5 CURRENT COLLECTOR WITH FUSE BOX



Model	Brushes Number-Current	Weight (gr)	Order Code
TB5 (Square)	4P - 35A (Square Brush)	1600	**3024382**
	5P - 35A (Square Brush)	1650	**3024373**
TB5 (Wheel)	4P - 16A (Wheel Brush)	1650	**3182882**
	5P - 16A (Wheel Brush)	1700	**3182883**

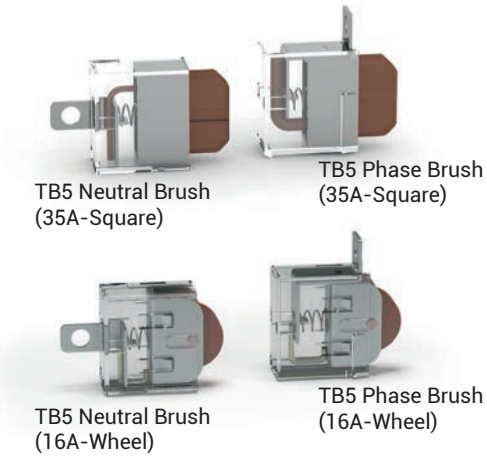
Insurance boxed with both staff and current receiving area carts current machine's safety can be raised to a higher level. In addition, when it is desired to cut the power of one of the machines on a line, the current is cut off through the fuse, other machines on the line can continue to operate.

Current collector with Wheel Brush simplify the movement of the current collectors inside the busbar by reducing the time at the installation tables when movement is provided by the personnel.

TB5 Current collector models operating speed is max. 100m/min.

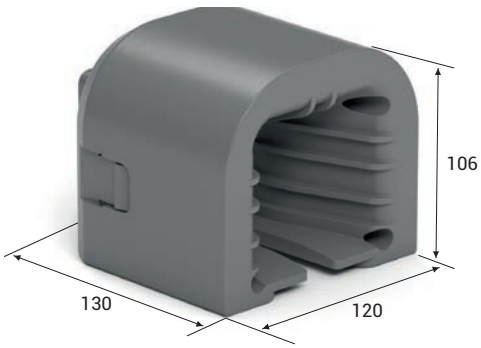
TB5 Current Collectors are produced with standard M40 cable gland.

▶▶ TB5 CURRENT COLLECTOR BRUSHES



Description	Weight (gr)	Order Code
TB5 Phase Brush (35A-Square)	40	**3024371**
TB5 Neutral Brush (35A-Square)	40	**3024372**
TB5 Phase Brush (16A-Wheel)	40	**3165078**
TB5 Neutral Brush (16A-Wheel)	40	**3165080**

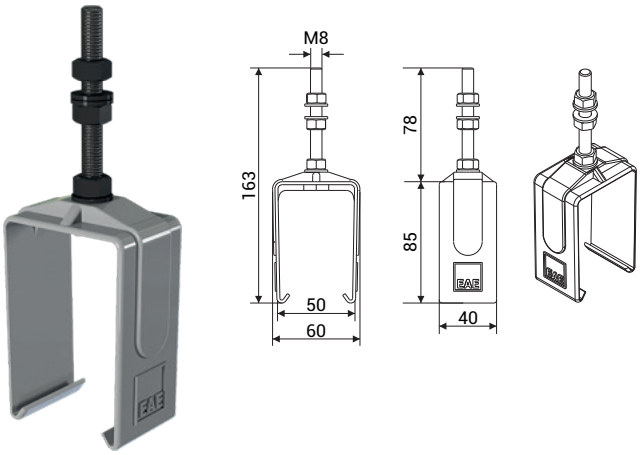
▶▶ TBX TROLLEY TRANSFER TOOL



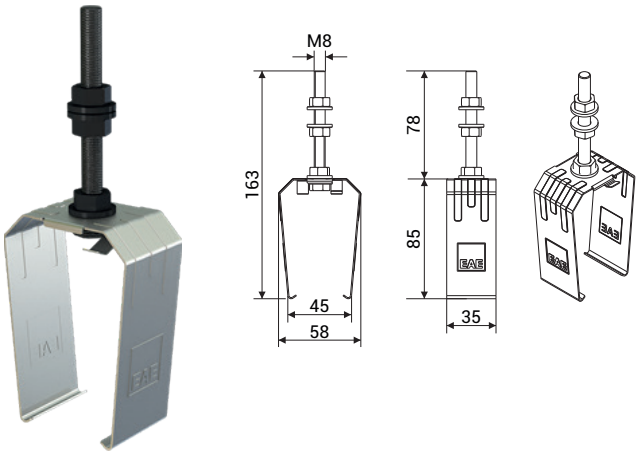
Description	Weight (gr)	Order Code
TBX Trolley Transfer Tool	250	**3179529**

ELINETBX-S

▶▶ TB5 PLASTIC SLIDING HANGER



▶▶ TB5 STEEL SLIDING HANGER

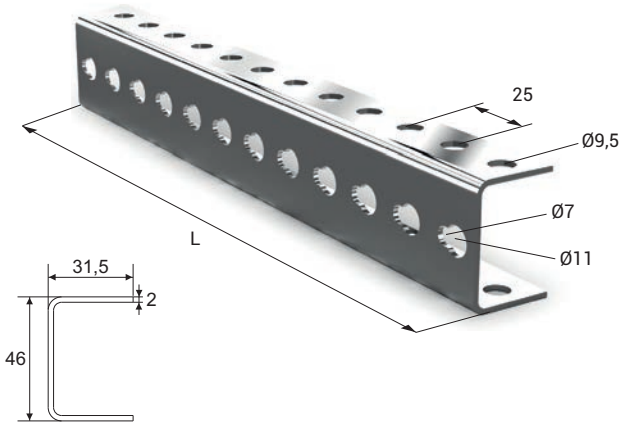


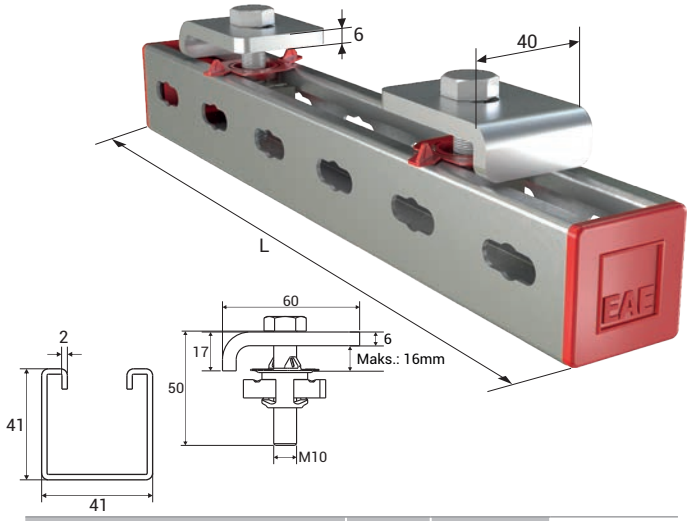
Trolley busbar should be mounted with slinding hanges and each hangers should be between 1300mm and 1500mm.

Description	Weight (gr)	Order Code
TB5 Plastic Sliding Hanger	85	**1003664**

Description	Weight (gr)	Order Code
TB5 Steel Sliding Hanger	100	**1005954**

▶▶ TB HANGER BRACKET

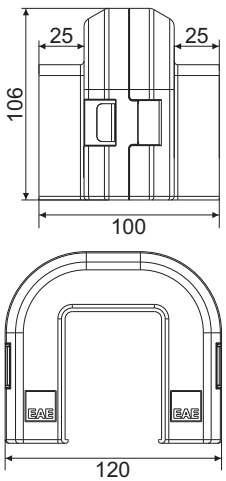




Description	L (mm)	Weight (gr)	Order Code
TB Hanger Bracket	250	350	**3025153**
URC-C/S Hanger Bracket	500	700	**3034560**
URC-A Hanger Bracket	750	1050	**3025382**

Description	L (mm)	Weight (gr)	Order Code
TB BR Hanger Bracket	300	800	**3178916**
URC-C/S BR Hanger Bracket	600	1250	**3178917**
URC-A BR Hanger Bracket	800	1550	**3178918**

▶▶ TBX EXTENSİON ELEMENT

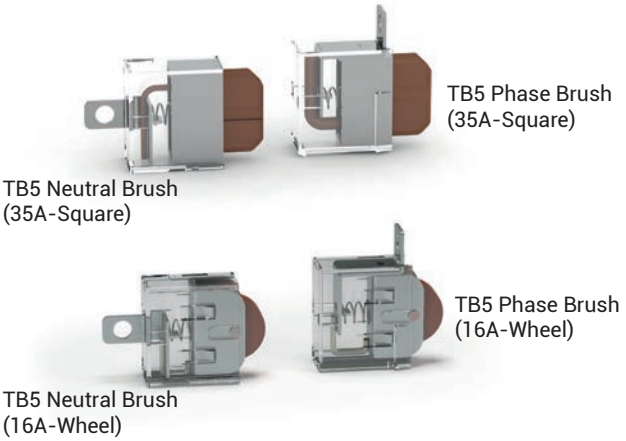


When the busbar line needs to be extended, you may remove the End Closure and install the joint unit to extend.

- Halogen-free plastic raw material
- High impact resistance.
- Design resistant against ambient conditions.

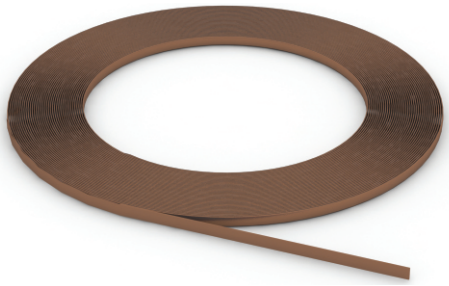
Description	Weight (gr)	Order Code
TBX Extension Element	280	**3136703**

▶▶ TB5 CURRENT COLLECTOR BRUSHES



Description	Weight (gr)	Order Code
TB5 Phase Brush (35A-Square)	40	**3024371**
TB5 Neutral Brush (35A-Square)	40	**3024372**
TB5 Phase Brush (16A-Wheel)	40	**3165078**
TB5 Neutral Brush (16A-Wheel)	40	**3165080**

▶▶ TB5 COPPER CONDUCTORS



Description (mm x mm)	Order Code
TB5 0.80x16,00 (TB5 Copper)	**1003097**
TB5 1.00x16,00 (TB5 Copper - 75A)	**1002254**
TB5 1.50x16,00 (TB5 Copper - 105A)	**1002275**
TB5 2.00x16,00 (TB5 Copper - 130A)	**1003094**

▶▶ TB CONDUCTOR CASETTE

Conductor cassette shall be used to prevent damage to the conductors while the copper conductors are installed on the busbar.

Description	Weight (gr)	Order Code
TB Conductor Casette	6800	**3025151**

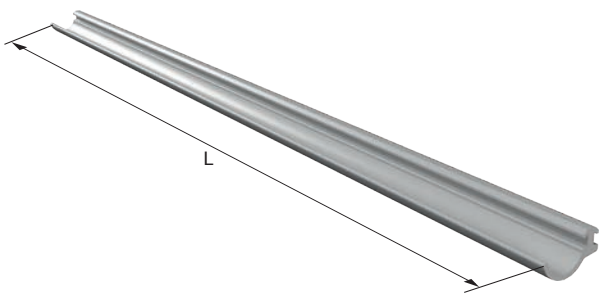
▶▶ TB5 CONDUCTOR MOUNTING TOOL

Description	Weight (gr)	Order Code
TB5 Conductor Mounting Tool	215	**3024456**

▶▶ TBX GASKET

■ Continuous length is maximum 300 meters.

Description	Weight (gr/m)	Order Code
TBX Gasket Roll (m)	30	**1037761**



■ Gasket should be ordered twice the line length.

Description	L (mm)	Weight (gr)	Order Code
TBX Gasket Straight Length (Pcs.)	4000	120	**1037762**

▶▶ VOLTAGE DROP

The voltage drop in the busbar lines shall be inspected as per the busbar type selected according to the total current calculated based on the ambient temperature and operating period of the system. Maximum acceptable value for voltage drop is 3%.

For Direct Current	$\Delta U = 2.L_t.I_G.R$	ΔU = Voltage Drop [V]
		I_G = Total current [A]
For Mono-Phase Alternative Current	$\Delta U = 2.L_t.I_G.Z$	R = Resistance of the busbar [Ω/m]
		Z = Impedance of the busbar [Ω/m]
For Three-Phase Alternative Current	$\Delta U = \sqrt{3}.L_t.I_G.Z$	L_t = Calculated Hole Length [m]

Note : Calculation of the current drawn during first start in various motor types;

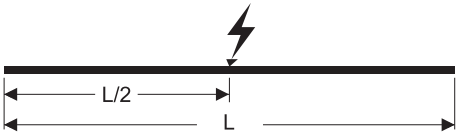
I_A= Total current drawn in the first start of the motors [A]

For the starting current;	Three-phase asynchronous drive in direct start	$I_A = I_G$ x calculated as 5 to 6
	Slip ring rotor motor	$I_A = I_G$ x calculated as 2 to 3
	Frequency converter	$I_A = I_G$ x 1,20 to1,50 calculated between.

▶▶ CALCULATION OF FEEDING POINTS

When we take L_t as the length of the line, feeding points may be selected as shown in the diagrams below to keep the L voltage drop at minimum and it may be used as the hole length for the calculation of L_t voltage drop.

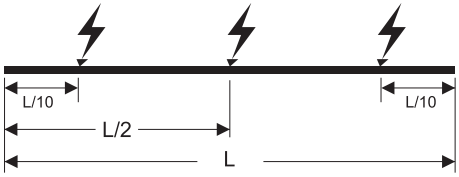
1 feeding point from the start, Lt=L



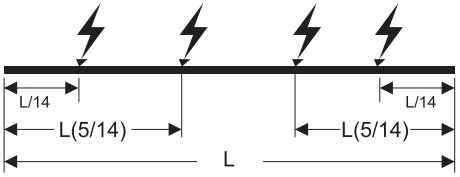
1 feeding point from the center, Lt=L/2

2 feeding points from the start points, Lt=L/4

2 feeding points, Lt=L/6



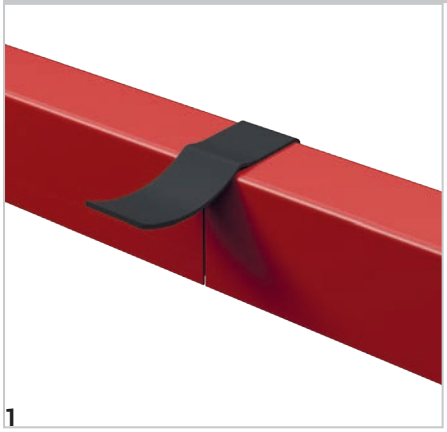
3 feeding points, Lt=L/10



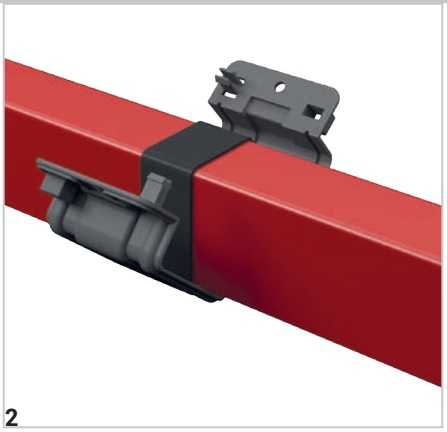
4 feeding points, Lt=L/14

▶▶ INSTALLATION MANUAL

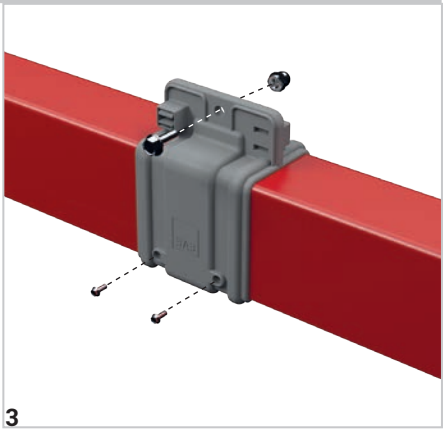
TBX-S - INSTALLATION OF JOINT UNIT



1
The joint point is covered using a self-adhesive EPDM gasket.

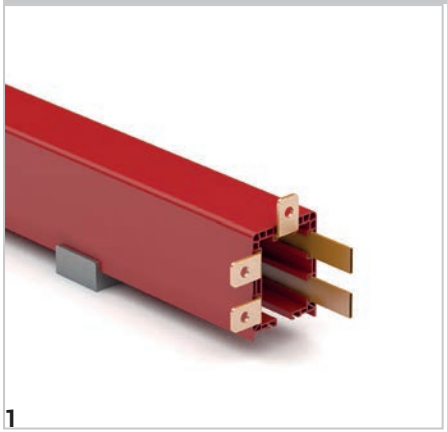


2
Engage the joint unit to the bottom of the busbar and close it.

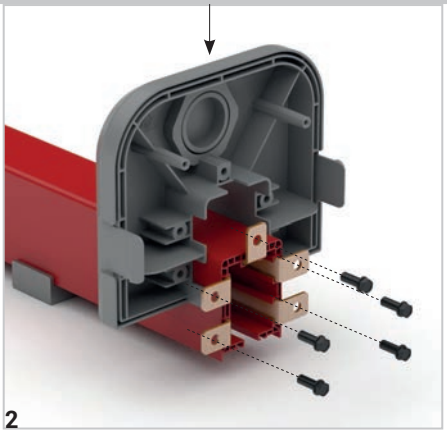


3
Secure it to the housing with screws.

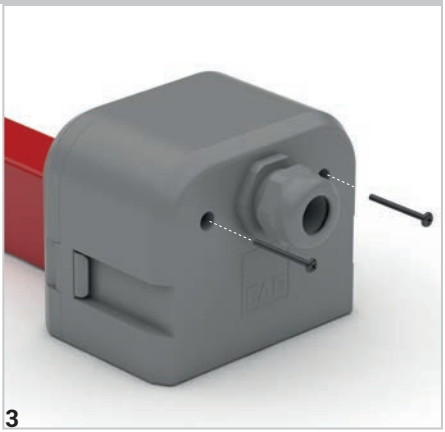
TBX-S - FEEDER UNIT



1
Conductors are bend 90° and pushed into the housing.

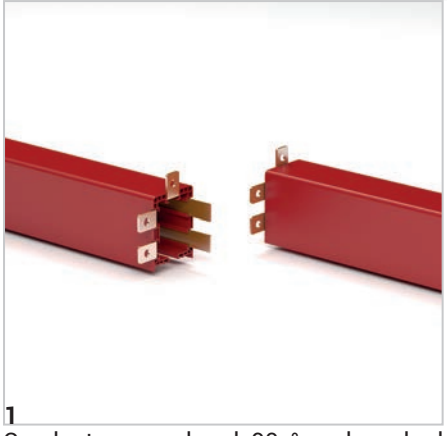


2
Housing and screw them to the feeding module.

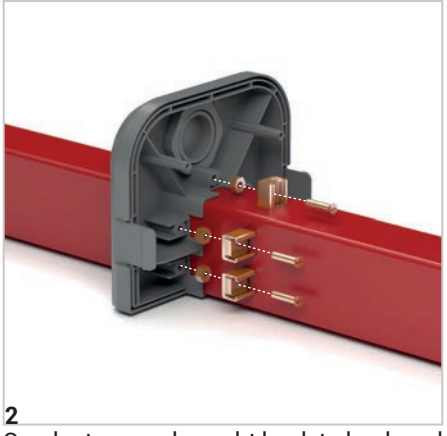


3
Close the module cover and screw it.

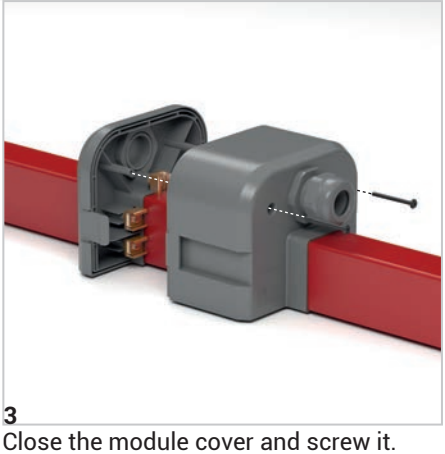
TBX-S - LINE FEED UNIT - 2 (JOINTED TYPE)



1
Conductors are bend 90 ° and pushed into the housing. The two housing are combined in such a way that the bent conductors remain in the notched area.



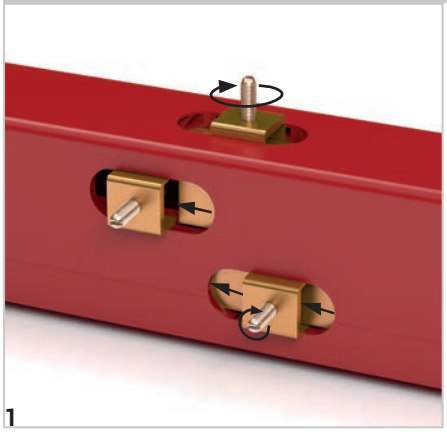
2
Conductors are brought back to back and combined with clips. Supply cables are connected to clips.



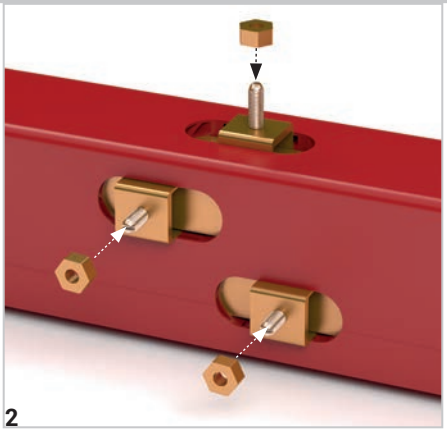
3
Close the module cover and screw it.

▶▶INSTALLATION MANUAL

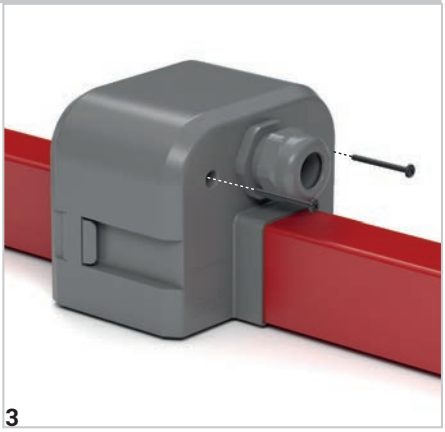
TBX-S - LINE FEED UNIT - 1 (CONTINUOUS TYPE)



1
Put the conductors through the clips and screw them.

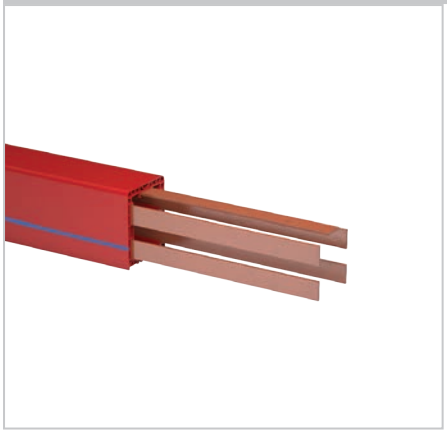


2
Connect the feeding cables to the clips with nuts.

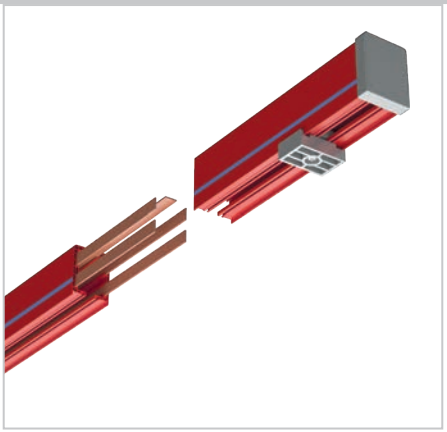


3
Close the module cover and screw it.

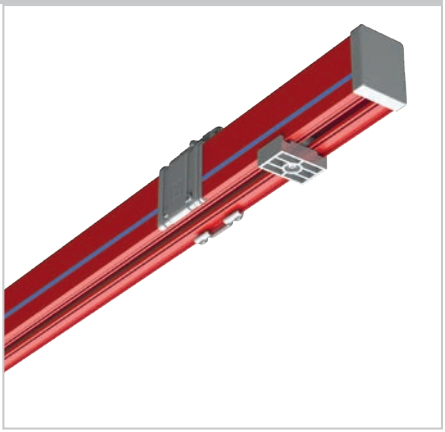
TBX-S - END CLOSURE



Cut the coppers at the end of the line by leaving a extra length of 15 cm.

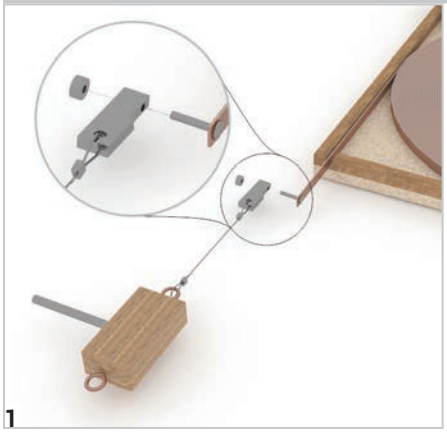


After placing the current collector to the system, place the End Closure so that it shall house the coppers.

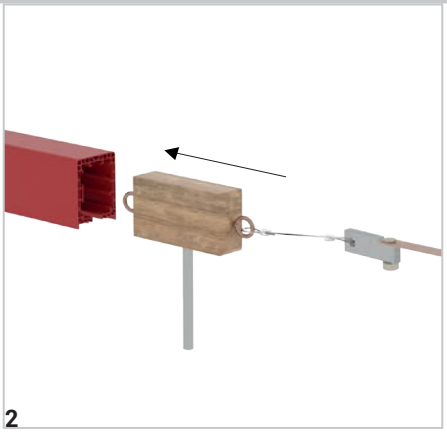


Install it on the system as you do while installing the extension.

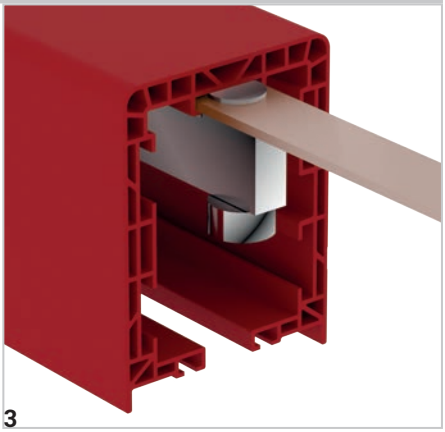
TBX-S - CONDUCTOR MOUNTING TOOL



1
Screw the conductor to the conductor mounting tool.



2
Drive the conductor mounting tool along the line.



3
Ensure that the conductor is seated.

ELINETROLLEY BUSBAR

EAE ELEKTRİK

▶▶ OFFER REQUEST FORM

Date :

Project Name	:	
Company	:	
Name Surname	:	
Tel	:	
E-Mail	:	
Address	:	

General Data

Track Length	:	
Number of Cranes on Track	:	
Crane Travel Speed	:	

Environmental Data

Operating Environment	:	☐ Indoor ☐ Outdoor
Ambient Temparature	:	°C min. / °C max.
Other Operating Conditions (Humidty, Dust, Chemical Influence, etc.)	:	

Electirical Data

Operating Voltage	:	Volts ☐ AC ☐ DC
		Phases ☐ N ☐ PE
Position and Number of Feeder	:	from End / from Middle
Duty Cycle (%)	:	☐ 50% ☐ 60% ☐ 70% ☐ 80% ☐ 90% ☐ 100%

Motor Specifications		Crane - 1		Crane - 2		Crane - 3	
		Power (kW)	Current (A)	Power (kW)	Current (A)	Power (kW)	Current (A)
Hoist motors	:						
Auxiliary motor	:						
Long travel	:						
Cross travel	:						

Options

Brackets Required	:	☐ Yes		☐ No	
Repair Zone Required	:	☐ Yes	Qty	☐ No	
Collector Replacement Required:		☐ Yes	Qty	☐ No	
Descriptions	:				

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CE DECLARATION OF CONFORMITY

Product Group E-Line TB Trolley Busbar Systems

Manufacturer Akcaburgaz Mahallesi, 3114. Sokak,
No:10 34522 Esenyurt-Istanbul

The objects of the declaration described below is in conformity with the relevant Cable gland harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

Standard:

TS EN 61439-6

Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems

CE - Directive:

2014/35/EU "The Low Voltage Directive"

2014/30/EU "(EMC) Electromagnetic Compatibility Directive"

2011/65/EU "RoHS Directive"

Technical Document Preparation Official:

EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
Akcaburgaz Mahallesi, 3114. Sokak, No:10 34522 Esenyurt-Istanbul

Emre GÜRLEYEN

Date

20.04.2016

Document Authorized Signatory

Elif Gamze KAYA OK
Deputy General Manager

PRODUCT TYPES

BUSBAR ENERGY DISTRIBUTION SYSTEMS

CABLE TRAYS

TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS

INDOOR SOLUTIONS

SUPPORT SYSTEMS

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www.eaeelectric.com

IEC 61439-6

Catalogue 08-Eng. / Rev 07 / 500 pcs. 08/12/2021
S.S.