



Installation, Operation and Maintenance Manual 160T3 & 225T3 Metric Systems





REVISION REGISTER

Version	Details of Update	Date
1	Original document creation	04/15
2	Updated nomenclature, temporarily removed Product Selection Guide pages	06/16
3	Redesign; inclusion of Product Selection Guide pages	05/17
4	Updated Universal Global Services and warranty section	05/18
5	Redesign; Separation of US Domestic, Metric, and Global offerings	04/19



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PRODUCT SPECIFICATION



Section 1: Product Specification



BUSWAY SYSTEM 160 & 225A T3

1 SUMMARY

- 1.1 This specification covers the electrical characteristics and general requirements for a track busway system, hereafter referred to as Track Busway. The system shall be designed primarily for overhead power distribution of electrical power. Once installed, the Track Busway will provide simple, versatile, fast and economic means of distributing power. Loads fed from Track Busway plug-in units can be added or removed without shutting down the busway.
- **1.2** Specification includes:
 - **1.2.1** Three-phase Track Busway system with the following features:

1.2.1.1	Extruded aluminum busway housing with conductors
1.2.1.2	Power Feed
1.2.1.3	Plug-in units for power distribution
1.2.1.4	Monitoring
1.2.1.5	Installation tool and joint kits
1.2.1.6	Optional accessories

2 STANDARDS AND CERTIFICATION

- 2.1 The Track Busway shall be designed and manufactured to the following standards:
 - 2.1.1 Electrical Testing Laboratories (ETL) (US/Canada) Certified to UL 857.
 - **2.1.2** CCC (China) Certified to GB 7251.1-2013.
 - 2.1.3 CE (Europe) Certified to IEC 61439-1 and IEC 61439-6.
 - 2.1.4 VDE (Germany) Certified to IEC 61439-1 and IEC 61439-6.
 - 2.1.5 NOM (Mexico) Certified to NOM-003-SCFI-2000

3 SYSTEM DESCRIPTION

- 3.1 Electrical Requirements
 - 3.1.1 System voltage: 3.1.1.1 415V
 - 3.1.2 Frequency: 3.1.2.1 50/60 Hz.



PRODUCT SPECIFICATION

- 3.1.3 Ampacity: 3.1.3.1 160A 3.1.3.2 225A
- 3.1.4Neutral Ampacity:
3.1.4.1Minimum of 100% of rating (optional 200% for 100T3)
- 3.1.5 Short circuit current ratings:

3.1.5.1 Short Circuit Withstand (Icw - 1 Second):

- **3.1.5.1.1** 160T3; 10kA
- **3.1.5.1.2** 225T3; 15kA
- 3.1.5.2 Conditional Short Circuit Rating (Icc)
 - 3.1.5.2.1 100T3; 100kA with ABB XT4 or Schneider NSX series upstream circuit protection
 3.1.5.2.2 225T3; 100kA with ABB XT4 or Schneider NSX series upstream circuit protection
- **3.1.6** Conductors: 3 phase conductors, 1 neutral conductor solid copper, tin plated
- 3.1.7Earthing:
3.1.7.1Protective Earth (PE): Aluminum casing
Functional Earth (FE): 1 dedicated conductor solid copper, tin plated
- 3.2 Operational Requirements
 - **3.2.1** Environmental Conditions: The Track Busway shall be capable of operating continuously in the following environmental conditions without mechanical or electrical damage, degradation or derating of operating capability.
 - **3.2.1.1** Busway shall operate with continuous load with no derating up to 55 degrees Celsius, 0.95 at 60 degrees Celsius, 0.925 at 65 degrees Celsius and 0.9 at 70 degrees Celsius
 - 3.2.1.2 Relative humidity: 0 to 95 percent, noncondensing
 - 3.2.1.3 Altitude: Sea level to 2000 meters (6600 feet)
- 3.3 Manufacturers Qualification
 - **3.3.1** A minimum of 10 years' experience in the manufacturing of the busway products.
- 3.4 Manufacturing Requirements
 - **3.4.1** All Track Busway components and accessories shall be manufactured by Universal Electric Corporation (dba Universal Global Corporation).

Universal Electric Corporation 168 Georgetown Rd. Canonsburg, PA 15317 (724) 597-7800

4 SUBMITTALS



- 4.1 Submittals shall be in accordance with specified procedures. Submit shop drawing and product data for record purposes prior to shipment. Shop drawings for Track Busway must include:
 - 4.1.1 Detailed equipment assemblies and dimensions, weights, location and identification of each field connection
 - 4.1.2 Wiring Connection: For power and monitoring wiring
 - 4.1.3 Orientation of plug-in units face in final installation
 - 4.1.4 Include plug-in schedule with detailed description
- 4.2 Provide electrical characteristics and connection requirements for the system and accessories.
- 4.3 Indicate special receiving and handling procedures.

5 WARRANTY

- 5.1 The Track Busway manufacturer shall guarantee the entire system against defective material and workmanship for a period of one (1) year from date of shipment.
- 5.2 Additional years of warranty and ability for start-up services must be an option if required per drawings.
- 5.3 Warranty shall only cover Track Busway product components manufactured by Universal Electric Corporation; use of any aftermarket components with Track Busway shall void warranty and any certifying listings completely

6 **PRODUCT COMPONENTS**

- 6.1 Track Busway Housing
 - 6.1.1 Extruded aluminum housing certified to serve as a 100% ground. Standard housing lengths are 1.5, 3 and 6 meters (5, 10 and 20 feet). 6 meter (20 ft.) maximum lengths can be cut in customizable lengths down to 3 centimeters (1 inch). The housing should be properly extruded with a slot to receive rod mount hangers to hang from a ceiling. This housing should be open on the bottom to accept plug-in units anywhere along its length. This opening shall pass IEC IP2X finger probe test.
 - 6.1.2 All conductors shall be made of copper, and sized to handle 100% of its rating continuously up to the maximum ambient temperature. The conductors shall be electrically isolated from the housing. All insulators must IEC compliant.
 - 6.1.2.1 Earth conductor: An internal ground conductor is to be supplied if shown on the drawings
 - 6.1.2.2 Oversized neutral: An oversized, 200% neutral conductor shall be supplied if shown on the drawings
 - **6.1.3** Track Busway housing sections shall be joined together by a 'press fit' that requires no bolted connection and no future maintenance.
 - 6.1.4 Track Busway housing shall be available in standard silver, red, blue, black, white or custom RAL colors
- 6.2 Power Feed



6.2.1 The power feed shall provide the connections from the incoming cables to the Track Busway system. The power feed shall have internal connection to a section of busway conductors. End feeds, top feeds, center feeds and bottom feeds shall be available depending upon what Track Busway system is required. Feeds shall have the option to be designed with mechanical or compression type lugs.

6.3 Plug-In Tap-off Units

- 6.3.1 Plug-in units shall be polarized to avoid incorrect installation
- 6.3.2 Plug-in units can be added, removed or repositioned without de-energizing the busway
- 6.3.3 Plug-in units shall use either a circuit breaker or a fuse for branch circuit protection as shown in the schedule on the project drawings
- 6.3.4 Plug-in units shall be capable of being built with customer-specified circuit protection, outlets and accessories
- 6.3.5 Plug-in units shall not require any tools to mount to the busway
- **6.3.6** Plug-in units shall not have a mechanism to engage the electrical connection to the busway conductors, unless specified.
- 6.3.7 Plug-in units shall have locking hangers or bolt-on tabs to secure units to the busway
- 6.3.8 Plug-in units that include drop cords shall be manufactured with cord grips and receptacles as specified in the drawings
- 6.3.9 Plug-in units shall be configured by the manufacturer to balance the load based on quantity of plug-in unit types provided
- 6.3.10 Plug-in units shall have the ability to provide up to a 225 amp load in certain plug-in unit configurations
- 6.3.11 Plug-in units shall have a minimum of 10kA and the ability to obtain a maximum of 200kA
- 6.3.12 Plug-in units shall be interchangeable within each Track Busway series (T1, T2, T3, T5)
- 6.3.13 Plug-in units shall be available with optional, revenue grade metering devices
- 6.3.14 Plug-in units authenticity shall be proven by the presence of a Starline ratings label

6.4 Accessories (OPTIONAL)

- 6.4.1 Closure strip and access panels shall be available for conductor access points to minimize accidental contact or build-up of debris
- 6.4.2 Integrated cable management solutions as part of the aluminum housing (T5 series), capable of handling accessories such as the data channel cover, hinged wire way, data cable strap, and multi-use mounting bracket
 - 6.4.2.1 Data channel covers are color-coded for integrated cable management solutions



6.4.3 Universal Server Cabinet Mounting Brackets shall be available as an alternative hanging solution; meant for mission critical applications

6.5 Monitoring (OPTIONAL)

6.5.1 Power Feed Monitoring: The power feed is to be provided with the following power measurements and remote monitoring interface:

6.5.1.1	Input Voltage (L/L and L/N)
6.5.1.1	Input Voltage (L/L and L/N)

- 6.5.1.2 Current per Phase (Min/Max)
- 6.5.1.3 Voltage per Phase (Min/Max)
- 6.5.1.4 Neutral Current
- 6.5.1.5 Power Factor
- 6.5.1.6 Frequency
- 6.5.1.7 Power (Active, Reactive, Apparent)
- 6.5.1.8 Demand (kWH)
- 6.5.1.9 Current Peak Demand
- 6.5.1.10 Power Feed Lug Temperature
- 6.5.1.11 Communications is Modbus RTU, Modbus TCP, Ethernet SNMP, BACnet and optional wireless
- 6.5.1.12 LED colored, 4.9 inch (125mm) display
- 6.5.2 Plug-In Unit Monitoring: The plug-in units as indicated on the schedule on the project drawings shall have the following power measurements and remote monitoring interface.
 - 6.5.2.1 Input Voltage (L/L and L/N)
 - 6.5.2.2 Current per Phase (Min/Max)
 - 6.5.2.3 Voltage per Phase (Min/Max)
 - 6.5.2.4 Power Factor
 - 6.5.2.5 Frequency
 - 6.5.2.6 Power (Active, Reactive, Apparent)
 - 6.5.2.7 Demand (kWH)



6.5.2.8 Current Peak Demand
6.5.2.9 Accuracy is better than 0.5%
6.5.2.10 Communications is Modbus RTU, Modbus TCP, Ethernet SNMP, BACnet and optional wireless plus available daisy chain Ethernet topology
6.5.2.11 Optional display

7 INSTALLATION

- 7.1 The contractor shall install Track Busway in accordance with the manufacturer's instructions.
 - 7.1.1 Track Busway runs shall consist of lengths as shown on the drawings.
 - 7.1.2 The plug-in unit orientation shall be indicated on the drawings.
 - 7.1.3 Hanging of the Busway: The Track Busway shall be hung from a structure above the busway, using the supplied busway hangers. The hangers shall connect to the busway, and to an all thread rod provided by the installing contractor. The spacing of the hangers along the busway is 3 meters (10 feet).
 - 7.1.4 The busway shall be installed with the open access channel facing downward, or to the side for special applications. Special installation shall be agreed upon by the manufacturer.
 - 7.1.5 Connecting Sections of Track Busway: At a junction of Track Busway sections, the installer will use a Joint Kit (includes Housing Couplers and Bus Connector) and an Installation Tool supplied by the manufacturer. Two sections are joined together by a 'press fit' that requires no bolted connection and no future maintenance.
 - 7.1.6 End of Runs: End caps will be provided to install at the end of each run.
 - 7.1.7 Closure Strip: The closure strip is an optional accessory that can be cut and fitted to cover the bottom opening of the Track Busway housing to prevent dust and debris. Closure Strip can be field modified for fit.
- 7.2 All Track Busway joints are non-bolted, compression fit and shall require no maintenance after installation

8 FIELD QUALITY CONTROL

- 8.1 Manufacturers Field Services: Track Busway shall be accompanied by optional services, such as on-site support and system startup, ongoing support, metering services and extended warranty programs. These services include:
 - 8.1.1 On-site Training
 - 8.1.2 Installation Inspection, Commissioning and Certification
 - 8.1.2.1 Includes comprehensive visual inspection and certified report once results are satisfactory, which extends standard factory warranty from one to two years
 - 8.1.3 Load Bank Testing
 - 8.1.4 IR Scanning and other Ongoing Support



- 8.1.5 Extended Warranty Programs (Meter programming, commissioning and support)
- 8.1.6 24/7 Emergency Service and Phone Support

9 **DOCUMENTATION**

- 9.1 The following documentation shall be available to assist in product selection and installation, and is available for download at http://downloads.uecorp.com/:
 - 9.1.1 Track Busway Product Selection Guide
 - 9.1.2 Operation, Installation and Maintenance Manuals
 - 9.1.3 Installation Instructions
- 9.2 Product drawings shall be rendered and provided at the time of ordering



PRODUCT SELECTION GUIDE



Section 2: Product Selection Guide





SYSTEM LAYOUT DRAWING



Plug-In Units For further information on applicable T3 plug-in unit options, please consult the factory.



STRAIGHT SECTIONS

Product Description

Track Busway straight sections consist of an extruded aluminum shell with channel type solid copper busbars contained in a full length insulator mounted on one side of the interior wall. Each straight has an open access slot over its entire length for the insertion of turn-n-lock plug-in units. Housing configuration is 4 pole, 415 Volt. Busway joint connections are made using a joint kit, which includes a housing coupler and bus connector. An installation tool is used to insert the bus connector in between the busbar channels of the two sections for a solid spring-tempered electrical connection. A housing coupler is then used to make a solid mechanical connection.

Material

Extruded Aluminum

Ratings

100% Protective Earth 160 Amp, 415 Volt

Length

1.5 m, 3 m, 6 m; or custom lengths between 1.5 - 6 m

Weight

3m 4 pole: 11.8 kg 3m 4 pole w/ ground: 13.6 kg 3m 4 pole w/ 200% N: 15 kg 3m 4 pole w/ ground & 200% N: 15.4 kg





STRAIGHT SECTIONS: PRODUCT NUMBERS



1. System (standard of measure)					
М	Metric				
2. Pr	oduct Type (section compon	ent)			
S	Straight Section				
3. Pr	oduct Frame (maximum amp	perage,)		
160	160 amps				
4. Co	ompatibility (frame compatibi	ility)			
Т3	T3 Series				
5. Ma	aterial (busbar material)				
С	Copper				
6. Ne	eutral/Ground Busbar (size	of neu	tral busbar and/or ground)		
4	3 Phase plus Neutral	G	3 Phase plus Neutral plus		
Ν	N 3 Phase plus 200% Neutral F 3 Phase plus 200% Neutral plus Internal Ground Conductor Conductor				
7. Polarization (orientation of section for mating purposes)					
S	Standard				
8. Straight Length (length of section) MXYY X = meters, YY = centimeters					

9. Busway Access (how plugs access the busway)					
С	Continuous				
10. Pa	10. Paint Color (allows painting of the busway housing)				
STD	Factory Mill Finish	RED	Paint Factory Red		
BLK	Paint Factory Black	BLU	Paint Factory Blue		
WHT	Paint Factory White **RAL (please see page 3.35)				
11. Tape Marking (colored tape on both sides of busway housing)					
0	None	6	Tape Factory Red		
3	Tape Factory Black	7	Tape Factory Blue		
4	Tape Factory White	8	Tape Factory Green		

EXAMPLES

<u>MS160T3C4S-M200C-STD0</u> = Metric System, Straight Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, 2 meter Straight Length, Continuous Busway Access, Standard Mill Finish, No Tape Marking

<u>MS160T3CNS-M600C-P013</u> = Metric System, Straight Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus 200% Neutral, Standard Polarization, 6 meter Straight Length, Continuous Busway Access, Painted RAL 1001, Black Tape Marking



ELBOW SECTIONS

Product Description

Elbows are used for making a 90 degree in a busway run. Horizontal elbows are available. Specify external or internal elbow according to the orientation of the busbars in the busway sections to be connected. Elbow sections are connected to adjacent busway sections using an installation tool and joint kit that includes a housing coupler and bus connector (ordered separately). This handles both the mechanical and electrical connection between a straight section and elbow section of busway.



Weight 2.5 kg





ELBOW SECTIONS: PRODUCT NUMBERS



1. S	ystem (standard of measure)		
Μ	Metric		
2. P	roduct Type (section compon	ent)	
Е	Elbow Section		
3. P	roduct Frame (maximum amp	erage,)
160	160 amps		
4. C	ompatibility (frame compatibi	lity)	
Т3	T3 Series		
5. M	aterial (busbar material)		
С	Copper		
6. N	eutral/Ground Busbar (size	of neu	tral busbar and/or ground)
4	3 Phase plus Neutral	G	3 Phase plus Neutral plus Internal Ground Conductor
Ν	3 Phase plus 200% Neutral	F	3 Phase plus 200% Neutral plus Internal Ground Conductor
7. Polarization (orientation of section for mating purposes)			
S	Standard		

8. Turning Direction (direction of section polarizing stripe)			
IN	Internal	EX External	
HN	Seismic Internal	GX	Seismic External
9. Paint Color (allows painting of the busway housing)			
STD	Factory Mill Finish	RED	Paint Factory Red
BLK	Paint Factory Black	BLU	Paint Factory Blue
WHT	Paint Factory White	**RAL (PLEASE SEE PAGE 3.35)	
10. Tape Marking (colored tape on both sides of busway housing)			
0	None	6	Tape Factory Red
3	Tape Factory Black	7	Tape Factory Blue
4	Tape Factory White	8	Tape Factory Green

EXAMPLES

<u>ME160T3C4S-IN-BLK4</u> = Metric System, Elbow Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization- Internal Turning Direction- Painted Factory Black, White Tape Marking

<u>ME160T3CNS-EX-STD0</u> = Metric System, Elbow Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus 200% Neutral, Standard Polarization- External Turning Direction- Standard Mill Finish, No Tape Marking



TEE SECTIONS

Product Description

Tee sections are used for creating a 90 degree branch leg in a busway run. When laying out a system, specify the correct busbar orientation of the tee. Indicate right or left, external or internal busbars. External tees are preferred. Tee sections are connected to adjacent busway sections using an installation tool and joint kit that includes a housing coupler and bus connector (ordered separately). This handles both the mechanical and electrical connection between a straight section and tee section of busway.



3.6 kg





TEE SECTIONS: PRODUCT NUMBERS



1. S	ystem (standard of measure)		
М	Metric		
2. P	roduct Type (section compon	ent)	
Т	Tee Section		
3. P	roduct Frame (maximum amp	berage,)
160	160 amps		
4. C	ompatibility (frame compatible	ility)	
Т3	T3 Series		
5. M	aterial (busbar material)		
С	Copper		
6. N	eutral/Ground Busbar (size	of neu	tral busbar and/or ground)
4	3 Phase plus Neutral	G	3 Phase plus Neutral plus Internal Ground Conductor
Ν	3 Phase plus 200% Neutral	F	3 Phase plus 200% Neutral plus Internal Ground Conductor
7. Polarization (orientation of section for mating purposes)			
S	Standard		

8. Turning Direction (direction of section polarizing stripe)			
IL	Internal-Left	EL	External-Left
IR	Internal-Right	ER	External-Right
HL	Seismic Internal-Left	GL	Seismic External-Left
HR	Seismic Internal-Right	GR	Seismic External-Right
0 Dai	int Color (allows painting of t	hahus	way bousing)
3. Fai		ne busi	vay nousing)
STD	Factory Mill Finish	RED	Paint Factory Red
BLK	Paint Factory Black	BLU	Paint Factory Blue
WHT	Paint Factory White	**RAL	(PLEASE SEE PAGE 3.35)
10. Tape Marking (colored tape on both sides of busway housing)			
0	None	6	Tape Factory Red
3	Tape Factory Black	7	Tape Factory Blue
4	Tape Factory White	8	Tape Factory Green

EXAMPLES

<u>MT160T3C4S-IR-RED0</u> = Metric System, Tee Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, Internal-Right Turning Direction, Painted Factory Red, No Tape Marking

<u>MT160T3CGS-EL-STD0</u> = Metric System, Tee Section, 160 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral plus Internal Ground Conductor, Standard Polarization, External-Left Turning Direction, Standard Mill Finish, No Tape Marking



END FEED UNITS

Product Description

End power feed units connect to the end of the busway. A large size, factory assembled unit consists of a steel junction box, with removable sides, connected to a 305 millimeter section of busway. The assembly includes connection lugs, a ground lug and shrink tubing for wires up to 150 mm².

End power feed units are connected to adjacent busway sections using an installation tool and housing coupler set *(ordered separately)*.

Special need power feed units for confined spaces as found in mission critical data centers can also be designed and fabricated requiring minimum quantities.

Standard Box		
	305 mm	
406 mm	Top V.	ew standard orientation
•		
	-	reversed orientation
130 mm	5 mm	

Infrared (IR) Window options: Refer to option 10. Accessories Package on **page 3.18** End Feed Units: Product Numbers



	Boxes				
Lugs	Standard Large Fused				
Standard	S	L			
Double	D	А			
Bolt					

Box size and Lug options: Refer to option 8. Lug/Box Options on page 3.18 End Feed Units: Product Numbers

*Isolated or dedicated ground is determined at the feed during installation. For further details about Dedicated Ground vs. Isolated Ground, please reference our tech brief on **downloads**. **uecorp.com/starline/**



END FEED UNITS: METERING

Product Description

Standard end power feed units connect to the end of the busway. A factory assembled unit consists of a steel junction box, with removable sides, connected to a 305 millimeter section of busway. The assembly includes connection lugs, a ground lug, and shrink tubing for wires up to 150 mm².

Integral CPM installed in the end feed provides power monitoring and alarm capabilities. The M40 models are for AC busway, while the M60 models are for DC busway. Nuisance tripping may be avoided using the current information to protect against overloading phases. The monitors also assist in the continuous challenge to balance the three phase loads. An automated email will be sent at 80% of full load as a warning to the user. This level may be changed in the field using the integrated webpage.

AC End Feed Meter Options

ne Ena	
M41	WiFi, \leq 415V Y, \leq 240V Δ
M43	No WiFi, ≤415V Y, ≤240V ∆
M45	WiFi, 600V Y, 347V Δ

- **M47** No WiFi, 600V Y, 347V Δ
 - $Y = wye, \Delta = delta$

DC End Feed Meter Options

M61	Single Eth./WiFi, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)
M63	Single Eth./No WiFi, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)
M67	Dual Eth., single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/- 190VDC)
M69	Dual Eth/Dual Modbus, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)



Box/Lugs Option	1 Meter or Accessory	1 Meter & 1 Accessory (opposite lids)			
(S) Standard Box, Standard Lugs					
(L) Large Box, Standard Lugs	Х	Х			
(D) Standard Box, Double Lugs					
(A) Large Box, Double Lugs	Х	Х			
*Large box with one meter or accessory is 7.62" deep, and large					

box with one meter and accessory (on opposite lids) extends the depth to 10.12".

A meter and accessory can not be on the same lid.



*The above arrows show how to determine your meter location on an end feed (*Refer to* option 9. Meter Location on **page 3.18** End Feed Units: Product Numbers)



END FEED UNITS: PRODUCT NUMBERS

	I. 2. 3. System Product P	160	4. Compatibility	5. Material	6. Neutral/	S 7. Polarization] -	S 8. Lug/Box	9. Meter	10. Acces	S sories	N 11. Accessories]
	- MO3 12. Straight Leng	th B	C -	14. Paint C	Ground busbar	0 15. Tape Marking	-	Options 16. Meter Release	Location 1 1 17. 17. M4 Op	Packa S 0 tions	18. System Config. CT Typ	n e	
1. Sys M	stem (standard of measure) Metric)				10. Ac S	cessori Standaro	es Packa g	ge (optior	nal acce R	ssorie: IR Wi	s <i>for feed</i> indow - Re	<i>l units)</i> ectangular
2. Pro F	duct Type (section compo End Feed	nent)				C T O	IR Windo IR <i>(rect.)</i> Seismic	ow - Circula) + Angled L Mounting	r _id	A L D	Angle IR <i>(ci</i> Seisn	ed Meter L <i>irc.)</i> + Ang nic with IF	_id gled Lid ? Window -
3. Pro 160	duct Frame (maximum am 160 amps	nperage)				۵	Seismic Rectang	with IR Win ular	dow		Circu	Ilar	
4. Co T3	mpatibility (frame compatil T3 Series	bility)				11. Ac	None (N	es Locatio	on (from t	he term R	<i>inal, si</i> Right	ide with a	ccessory)
5. Ma ⁻ C	terial (busbar material) Copper					12. St	raight Lo	ength (len	gth of sec	r tion)	Front	(consult i	the factory)
6. Nei 4	utral/Ground Busbar (size 3 Phase plus Neutral 3 Phase plus 200% Neutral	e of neur G F	tral busbar an 3 Phase plu Internal Gro 3 Phase plu	d/or grou is Neutral jund Condu	nd) plus uctor leutral	M030 13. Bu C	.3 meter Isway A Continuo	s ccess ous		(For ot	ther len	gths, cons	sult the factory)
7. Pol	arization (orientation of sec	ction for	plus Interna Conductor mating purpo	I Ground		14. Pa STD	Factory Paint Factory	or (allows p Mill Finish	painting of	f the bus RED	sway h Paint Paint	nousing) Factory R	Red
S	Standard	R	Reversed			WHT	Paint Fa	ctory White		**RAL	(PLEA	SE SEE	PAGE 3.35)
<mark>8. Lug</mark> S L	J/Box Options (standard/o Standard lugs, Standard box Standard lugs, Large box	double/b D A	bolt lugs and politication of the second sec	<i>box size)</i> , Standard , Large bo	l box x	15. Ta 0 3	pe Mark None Tape Fac	king (colore ctory Black	ed tape o	n both s 6 7	sides o Tape Tape	<i>f busway</i> Factory R Factory B	r <i>housing)</i> ed lue
9. Me R N	ter Location (from the tern Right None (N/A)	ninal, sid L	le with remov Left	able lid)		4	Tape Fac	ctory White		8	Tape	Factory G	reen

EXAMPLE

MF160T3C4R-LNSN-M030C-STD0 = Metric System, End Feed, 160 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Reversed Polarization, Standard Lugs, Large Box, No Meter Location, Standard Accessory Package, No Accessory Location, .3 meter Straight Length, Continuous Busway Access, Painted Factory Silver, No Tape Marking



ABOVE FEED UNITS

Product Description

The above feed power unit comes as a completely pre-wired steel box to the top of a 762 millimeter section of busway. A connection lug is located inside the box for field termination of supply power cable up to 1/0. This unit is then connected to the end of an adjoining busway section using an installation tool and set of housing couplers (ordered separately).

Weight

7.5 kg

*Isolated or dedicated ground is determined at the feed during installation. For further details about Dedicated Ground vs. Isolated Ground, please reference our tech brief on <u>downloads.</u> uecorp.com/starline/





ABOVE FEED UNITS: PRODUCT NUMBERS



1. Sy	1. System (standard of measure)				
М	Metric				
2. Pr	oduct Type (section o	compor	nent)		
Α	Above Feed				
3. Pr	oduct Frame (maxim	um am	perage)		
160	160 amps				
4. Co	mpatibility (frame co	mpatib	oility)		
Т3	T3 Series				
5. Ma	aterial (busbar materia	al)			
С	Copper				
6. Ne	eutral/Ground Busba	ar (size	of neu	tral busbar and	d/or ground)
4	3 Phase plus Neutral		G	3 Phase plu	s Neutral plus
N	3 Phase plus 200% N	loutral	F	Internal Grou	und Conductor
14	5 Thase plus 20070 R	eutiai		plus Internal	Ground
				Conductor	
7. Po	larization (orientation	of sec	tion for	mating purpo	ses)
S	Standard		R	Reversed	
8. Lu	g/Box Options (star	ndard/o	louble/l	bolt lugs and b	oox size)
S	Standard lugs, Standa	rd box	L	Standard lug	gs, Large box
9. Me	eter Location (from th	ne term	inal, sid	le with remova	able lid)
R	Right	L	Left	Ν	None <i>(N/A)</i>
10. Accessories Package (optional accessories for feed units)					
S	Standard				
11. Accessories Location (from the terminal, side with removable lid)					
Ν	None (N/A)	R	Right	А	Rear
L	Left	Т	Тор	F	Front
12. S	traight Length (lengt	th of se	ction)		
M076	.76 meters				

13. Busway Access (how plugs access the busway)								
С	Continuous							
14. Fe	ed Location (location of the	center of	of the top feed)					
038	38 centimeters	(For oth	ner lengths, consult the factory)					
15. Pa	15. Paint Color (allows painting of the busway housing)							
STD	Factory Mill Finish	RED	Paint Factory Red					
BLK	Paint Factory Black	BLU	Paint Factory Blue					
WHT	Paint Factory White	**RAL	(PLEASE SEE PAGE 3.35)					
16. Ta	pe Marking (colored tape on	both si	des of busway housing)					
0	None	6	Tape Factory Red					
3	Tape Factory Black	7	Tape Factory Blue					
4	Tape Factory White	8	Tape Factory Green					
*17. M	eter Release (M40 Series M	leters)						
M41	WiFi, ≤415V Y, ≤240V ∆							
M43	No WiFi, \leq 415V Y, \leq 240V Δ							
M45	WiFi, 600V Y, 347V ∆							
M47	No WiFi, 600V Y, 347V Δ							
*18. N a	I40 Options (choose from a - udible alarm and/or a tempera	4.1" dis ature mo	play, measured neutral, onitor)					
S	Standard (M60s also)	F	Featured (D+A)					
D	Display <i>(M60s also)</i>	Е	Enhanced (N+A)					
Ν	(Measured) Neutral	Р	Professional (D+N)					
А	Audible Alarm	U	Ultimate (D+N+A)					
*19. System Configuration and CT Type (line-line or line-neutral and wye or delta systems)								
1	LLD - Standard, Milivolt	К	LLD - SC, 5A					
2	LLY - Standard, Milivolt	L	LLY - SC, 5A					
3	LNY - Standard, Milivolt	М	LNY - SC, 5A					

EXAMPLE

<u>MA160T3CFS-LNSN-M076C038-STD0</u> = Metric System, Above Feed, 160 amps, T3 Series, Copper Conductor, 3 Phase plus 200% Neutral plus Internal Ground Conductor, Standard Polarization, Standard Lugs, Large Box, No Lid Orientation, Standard Accessory Package, No Accessory Location, .76 meter Straight Length, Continuous Busway Access, 38 centimeter Feed Location, Painted Factory Silver, No Tape Marking



STRAIGHT SECTIONS

Product Description

Track Busway straight sections consist of an extruded aluminum shell with channel type solid copper busbars contained in a full length insulator mounted on one side of the interior wall. Each straight has an open access slot over its entire length for the insertion of turn-n-lock plug-in units. Housing configuration is 4 pole, 415 Volt. Busway joint connections are made using a joint kit, which includes a housing coupler and bus connector. An installation tool is used to insert the bus connector in between the busbar channels of the two sections for a solid spring-tempered electrical connection. A housing coupler is then used to make a solid mechanical connection.

Material

Extruded Aluminum

Ratings

100% Protective Earth 225 Amp, 600 Volt

Length

1.5 m, 3 m, 6 m; or custom lengths between 1.5 - 6 m

Weight

3m 4 pole: 15 kg





STRAIGHT SECTIONS: PRODUCT NUMBERS



1. Sys	stem (standard of measure)			
Μ	Metric			
2. Pro	duct Type (section component)			
S	Straight Section			
3. Pro	duct Frame (maximum amperage)			
225	225 amps			
4. Co	mpatibility (frame compatibility)			
Т3	T3 Series			
5. Ma	terial (busbar material)			
С	Copper			
6. Ne	utral/Ground Busbar (size of neutral busbar and/or ground)			
4	3 Phase plus Neutral			
7. Polarization (orientation of section for mating purposes)				
S	Standard			
8. Straight Length (length of section)				
MXYY	X = meters, YY = centimeters			

9. Busway Access (how plugs access the busway)						
С	Continuous					
10. Paint Color (allows painting of the busway housing)						
STD	Factory Mill Finish	RED	Paint Factory Red			
BLK	Paint Factory Black	BLU	Paint Factory Blue			
WHT	Paint Factory White	**RAL	(PLEASE SEE PAGE 3.35)			
11 Te	ne Marking (colored tapa or	both c	ides of husway housing)			
11.10	ipe Marking (colored lape of	i bour s	ides of busivay flousing)			
0	None	6	Tape Factory Red			
3	Tape Factory Black	7	Tape Factory Blue			
4	Tape Factory White	8	Tape Factory Green			

EXAMPLES

<u>MS225T3C4S-M100C-STD6</u> = Metric System, Straight Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, 1 meter Straight Length, Continuous Busway Access, Standard Mill Finish, Red Tape Marking

MS225T3C4S-M600C-P013 = Metric System, Straight Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, 6 meter Straight Length, Continuous Busway Access, RAL 1001, Black Tape Marking



ELBOW SECTIONS

Product Description

Elbows are used for making a 90 degree in a busway run. Horizontal elbows are available. Specify external or internal elbow according to the orientation of the busbars in the busway sections to be connected. Elbow sections are connected to adjacent busway sections using an installation tool and joint kit that includes a housing coupler and bus connector (ordered separately). This handles both the mechanical and electrical connection between a straight section and elbow section of busway.



Weight 2.5 kg





ELBOW SECTIONS: PRODUCT NUMBERS



1. Sy	stem (standard of measure)				
Μ	Metric				
2. Pr	oduct Type (section component)				
Е	Elbow Section				
3. Pr	oduct Frame (maximum amperage)				
225	225 amps				
4. Co	ompatibility (frame compatibility)				
Т3	T3 Series				
5. Ma	aterial (busbar material)				
С	Copper				
6. Neutral/Ground Busbar (size of neutral busbar and/or ground)					
4	3 Phase plus Neutral				
7. Po	7. Polarization (orientation of section for mating purposes)				
S	Standard				

8. Turning Direction (direction of section polarizing stripe)						
IN	Internal	EX	External			
HN	Seismic Internal	GX	Seismic External			
9. Paint Color (allows painting of the busway housing)						
STD	Factory Mill Finish	RED	Paint Factory Red			
BLK	Paint Factory Black	BLU	Paint Factory Blue			
WHT	Paint Factory White	**RAL	(PLEASE SEE PAGE 3.35)			
10. Ta	ape Marking (colored tape or	n both s	ides of busway housing)			
0	None	6	Tape Factory Red			
3	Tape Factory Black	7	Tape Factory Blue			
4	Tape Factory White	8	Tape Factory Green			

EXAMPLES

<u>ME225T3C4S-EX-WHT0</u> = Metric System, Elbow Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, External Turning Direction, Painted Factory White, No Tape Marking

ME225T3C4S-IN-PH40 = Metric System, Elbow Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, Internal Turning Direction, Painted RAL 501 4, No Tape Marking



TEE SECTIONS

Product Description

Tee sections are used for creating a 90 degree branch leg in a busway run. When laying out a system, specify the correct busbar orientation of the tee. Indicate right or left, external or internal busbars. External tees are preferred. Tee sections are connected to adjacent busway sections using an installation tool and joint kit that includes a housing coupler and bus connector *(ordered separately)*. This handles both the mechanical and electrical connection between a housing section and tee section of busway.





TEE SECTIONS: PRODUCT NUMBERS



1. Sy	rstem (standard of measure)			
М	Metric			
2. Pr	oduct Type (section component)			
Т	Tee Section			
3. Pr	oduct Frame (maximum amperage)			
225	225 amps			
4. Co	ompatibility (frame compatibility)			
Т3	T3 Series			
5. Ma	aterial (busbar material)			
С	Copper			
6. Neutral/Ground Busbar (size of neutral busbar and/or ground)				
4	3 Phase plus Neutral			
7. Po	larization (orientation of section for mating purposes)			
c	Standard			

8. Turning Direction (direction of section polarizing stripe)						
IL	Internal-Left	EL	External-Left			
IR	Internal-Right	ER	External-Right			
HL	Seismic Internal-Left	GL	Seismic External-Left			
HR	Seismic Internal-Right	GR	Seismic External-Right			
9 Pai	nt Color (allows painting of t	he husi	way housing)			
CTD			Deint Fester / Ded			
SID	Factory Mill Finish	RED	Paint Factory Red			
BLK	Paint Factory Black	BLU	Paint Factory Blue			
WHT	Paint Factory White	**RAL	(PLEASE SEE PAGE 3.35)			
10. Tape Marking (colored tape on both sides of busway housing)						
0	None	6	Tape Factory Red			
3	Tape Factory Black	7	Tape Factory Blue			
4	Tape Factory White	8	Tape Factory Green			

EXAMPLES

<u>MT225T3C4S-IR-BLU0</u> = Metric System, Tee Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, Internal-Right Turning Direction, Painted Factory Blue, No Tape Marking

MT225T3C4S-EL-STD0 = Metric System, Tee Section, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Standard Polarization, External-Left Turning Direction, Standard Mill Finish, No Tape Marking



END FEED UNITS

Product Description

Standard end power feed units connect to the end of the busway. Factory assembled unit consists of a steel junction box, with removable side, connected to a 305 millimeter section of busway. The assembly includes connection lugs, a ground lug and shrink tubing for wires up to 150 mm².

End power feed units are connected to adjacent busway sections using an installation tool and joint kit (ordered separately).

Special need power feed units for confined spaces as found in mission critical data centers can also be designed and fabricated requiring minimum quantities.

	Boxes							
Lugs	Standard	Large	Fused					
Standard	S	L						
Double	D	А						
Bolt								

Box size and Lug options: Refer to option 8. Lug/Box Options on PAGE 3.31 End Feed Units: Product Numbers



Infrared (IR) Window options

Refer to option 10. Accessories Package on **page 3.31** End Feed Units: Product Numbers





END FEED UNITS: METERING

Product Description

Standard end power feed units connect to the end of the busway. A factory assembled unit consists of a steel junction box, with removable sides, connected to a 305 millimeter section of busway. The assembly includes connection lugs, a ground lug, and shrink tubing for wires up to 150 mm².

Integral CPM installed in the end feed provides power monitoring and alarm capabilities. The M40 models are for AC busway, while the M60 models are for DC busway. Nuisance tripping may be avoided using the current information to protect against overloading phases. The monitors also assist in the continuous challenge to balance the three phase loads. An automated email will be sent at 80% of full load as a warning to the user. This level may be changed in the field using the integrated webpage.

AC End Feed Meter Options

M41	WiFi,	≤415\	/ Y, <u>s</u>	≤24	ΔVO

M43	No WiFi, ≤415V Y, ≤240V Δ

M45	WiFi, 600	DV Y,	347V	Δ

- **M47** No WiFi, 600V Y, 347V Δ
 - $Y = wye, \Delta = delta$

DC End Feed Meter Options

M61	Single Eth./WiFi, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)
M63	Single Eth./No WiFi, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)
M67	Dual Eth., single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/- 190VDC)
M69	Dual Eth/Dual Modbus, single phase, 120VDC - 300VDC OR split phase 120VDC (+/-60VDC) to 380V(+/-190VDC)



Box/Lugs Option	1 Meter or Accessory	1 Meter & 1 Accessory (opposite lids)						
(S) Standard Box, Standard Lugs								
(L) Large Box, Standard Lugs	Х	Х						
(D) Standard Box, Double Lugs								
(A) Large Box, Double Lugs	Х	Х						
*Large box with one meter or accessory is 193.5mm deep, and large box with one meter and accessory (on opposite lids)								

and large box with one meter and accessory (on opposite extends the depth to 257mm.

A meter and accessory can not be on the same lid.



*The above arrows show how to determine your meter location on an end feed (*Refer to option 9. Meter Location on* **page 3.31** *End Feed Units: Product Numbers*)



END FEED UNITS: PRODUCT NUMBERS



EXAMPLE

MF225T3C4R-DRSN-M030C-BLK0 = Metric System, End Feed, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Reversed Polarization, Double Lugs, Standard Box, Right Meter Location, Standard Accessory Package, No Accessory Location, .3 meter Straight Length, Continuous Busway Access, Painted Factory Black, No Tape Marking





ABOVE FEED UNITS

Product Description

The above feed power unit comes as a completely pre-wired steel box to the top of a 762 millimeter section of busway. A connection lug is located inside the box for field termination of supply power cable up to 1/0. This unit is then connected to the end of an adjoining busway section using an installation tool and a joint kit (ordered separately).

Weight

7.5 - 10.4 kg





ABOVE FEED UNITS: PRODUCT NUMBERS

	Μ	ΙΑ	225	T 3	С	4	S	_	S	Ν		5 N	7
	1. System	2. Product Type	3. Product Frame	4. Compatibility	5. Material	6. Neutral/ Ground busbar	7. Polarizatio	'n	8. Lug/Box Options	9. Meter Location	10. Acces Packa	11. sories Accessori ge Location	es
	-	M030	0 C	038	3 -	ST	D	0	- [M41		S 1	
		12. Straight Length	13. Busway Access	14. Feed Locatio	on	15. Paint Color	16. Tapo Mar	e king	*17 Ме	ter Release	*18. M40 Option	*19. System ns Config. a CT Type	nd
1. Sys M	stem (stan Metric	dard of measu	ure)				13. B C	usway / Continu	Access (h ious	now plugs a	ccess tl	he busway)	
2. Pro A	duct Type Above Fee	e (section con	nponent)				14. Fo	eed Loc 38 cen	ation (loo timeters	cation of the	e <mark>center</mark> (For ot	of the top fee ther lengths, co	d) nsult the factory)
3. Pro 225	duct Fran 225 amps	ne (maximum	amperage)				15. P STD	aint Col Factory	or (allows Mill Finish	s painting of	the bus	sway housing, Paint Factory) Red
4. Co T3	mpatibility T3 Series	I (frame comp	oatibility)				BLK WHT	Paint Fa Paint Fa	actory Blac actory Whi	te	BLU **RAL	Paint Factory (PLEASE SE	Blue E PAGE 3.35)
5. Ma	terial (busi	bar material)					16. Ta	ape Mar	king (col	ored tape or	n both s	ides of buswa	iy housing)
С	Copper						0	None	oton Plac	L	6	Tape Factory	Red
6. Ne	utral/Grou	und Busbar (size of neut	ral busbar ar	nd/or aro	und)	3	таре на Таро Бо	ctory blac	ĸ	/ Q	Tape Factory	Groop
4	3 Phase p	lus Neutral			0	Í	-						
7 Del		Contracted and a f	()		*17. N	leter Re		40 Series N	Aeters)		
7. POI	Standard	orientation of	section for i	Reversed	oses)		IVI4 I	VVIEI, S	410V Y, ≦2				
<u> </u>	Otanuaru						IVI43		I, ≤415V Y	, ≤240V Δ			
8. Lug	g/Box Opt	tions (standa	rd/double/b	olt lugs and	box size)		M45	WIFI, 60	JUV Y, 347				
S	Standard I	ugs, Standard I	DOX L	Standard lu	igs, Large	box	M47	No WiF	i, 600V Y,	347νΔ			
9. Me R	ter Locatio Right	on (from the t L	erminal, side Left	e with remov N	<i>able lid)</i> None	(N/A)	*18. N	140 Opt audible a	t ions (cho larm and/	oose from a ′or a temper	4.1" dis rature m	splay, measur oonitor)	ed neutral,
10. Ac	cessories	s Package (c	ptional acce	essories for f	eed units	;)	S	Standa	rd <i>(M60s a</i>	lso)	F	Featured (D+	·A)
s	Standard		,			,	D	Display	(M60s als	o)	Е	Enhanced (N	+A)
11 Δα	cessories	a Location (fr	rom the term	ninal side wi	th remov	able lid)	N	(Measu	<i>red)</i> Neutr	al	Р	Professional	(D+N)
N	None (N/A	A) R	Right	A	Rear		Α	Audible	Alarm		U	Ultimate (D+	N+A)
L	Left	T	Тор	F	Front		*19. S	System and wye	Configur or delta s	ation and (vstems)	СТ Туре	e (line-line or	line-neutral
12. St	raight Ler	ngth (length c	of section)				1	LLD - S	Standard, N	lilivolt	к	LLD - SC, 5A	L.
M076	.76 meters						2	LLY - S	tandard, M	ilivolt	L	LLY - SC, 5A	
							3	LNY - S	Standard, N	lilivolt	М	LNY - SC, 54	4

EXAMPLE <u>MA225T3C4R-SNSN-M076C038-STD0</u> = Metric System, Above Feed, 225 amps, T3 Series, Copper Conductor, 3 Phase plus Neutral, Reversed Polarization, Standard Lugs, Standard Box, No Meter Location, Standard Accessory Package, No Accessory Location, .76 meters Straight Length, Continuous Busway Access, 38 centimeter Feed Location, Painted Factory Silver, No Tape Marking


RAL COLORS

1st Character



2nd Character

0	100
1	101
2	102
3	103
4	200
5	201
А	300
В	301
С	302
D	303
E	400
F	401
G	500
Н	501
J	502
Κ	600
L	601
М	602
Ν	603
Р	700
Q	701
R	702
S	703
Т	704
U	800
V	801
W	802
Х	900
Y	901
Z	902

3rd Character

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

4th Character



Example: P B 2 0 = Paint RAL 3012



ACCESSORIES: SUPPORT HARDWARE

Threaded Rod

For mounting to 3/8 - 16 threaded rod. Can be inserted anywhere along the top full-access slot of busway. Hanger support is required every 3 meters maximum. Part Number MBRH-M10 Available in plain zinc or black (-BLK) Weight .14 kg



Seismic Threaded Rod

For mounting to 3/8 - 16 threaded rod. Can be inserted anywhere along the top full-access slot of busway, and includes a seismic brace. Hanger support is required every 3 meters maximum. Part Number MBRS-M10 Available in plain zinc or black (-BLK) Weight .14 kg



Standard

For mounting to strut or other flat surfaces. Twist-in design allows inserting anywhere along the top full-access slot on the busway. Hanger support is required every 3 meters maximum. Part Number MBH-M10 Available in plain zinc or black (-BLK) Weight .09 kg



Weight Hook

Can be used as a hanger to suspend the busway from chains or cables. Can also be used to hang loads up to 45.4 kg under the busway, such as light fixtures, tools and balancers. Part Number SWHRT3 Available in plain zinc Weight .09 kg



Recessed Suspended Ceilings For hanging busway into a recessed ceiling.

*Hanger bolt must be ordered separately

Part Number SRMT3-1 Available in plain zinc





Raised Access Floor

For mounting the busway vertically (*with access slot facing down*) for under floor applications.

AR

Part Number MRFBT3-1 *MBH-M10 comes included Available in plain zinc or black (-BLK)



Raised Mounting Bracket

For mounting the busway horizontally *(with access slot facing to the side)* for under floor applications. Pedestal not included.

Part Number MRFBT3-2 Available in plain zinc or black (-BLK) Weight .09 kg



Side Mount Brackets Mounted to vertical supports

Mounted to vertical supports. Vertical supports not included, only bracket.

Part Number MBSS-1 Available in plain zinc or black (-BLK) Weight .09 kg



Mounted to overhead supports.

Part Number MBH-T3-SIDE Available in plain zinc or black (-BLK) Weight .59 kg





ACCESSORIES: SUPPORT HARDWARE

Universal Server Cabinet Mounting Brackets

The Universal Server Cabinet Mounting Brackets are designed with generous 3/8 inch (9.5 millimeter) wide through slots to mount directly onto virtually any server cabinet.

These accessories quickly and easily provide a flexible busway mounting solution on top of server cabinets, eliminating the need for threaded rod and strut support from the ceiling. The brackets are adjustable in height, can be ordered in virtually any color, and can be positioned at any depth on the server cabinet. Moreover, they can accommodate up to (2) runs of busway. Hanger Bolt Included – MBH-M10

Material

Galvanneal Steel

Height

449 mm Min 603 mm Max

Maximum Spacing

Every 3 m per run



C: Color (1, 3, 4, 6, 7)

- 1- Anodized Silver
- 3- Black
- 4- White
- 6- Red
- 7- Blue

*consult factory for custom colors

X = System (T3)

- D = Depth (762 mm, 914 mm, 1067 mm, 1219 mm or custom length)
- C = Color(1, 3, 4, 6, 7)

EXAMPLES

MUSCMB-T3-762-4 = Metric System, Universal Server Cabinet Mounting Bracket, T3 Series, 762 millimeter Depth, White

Part Number MUSCMB-(X)-(D)-(C)

<u>**MUSCMB-T3-1219-3**</u> = Metric System, Universal Server Cabinet Mounting Bracket, T3 Series, 1219 millimeter Depth, Black



ACCESSORIES: CONNECTION HARDWARE

Joint Kit

For the connection of adjacent busway sections. One kit is required at each joint. Each kit is comprised of a housing coupler pair and bus connector set.

Bus Connector: copper blades secured to an insulating mounting plate. This makes the electrical connection between sections.

Housing Couplers: one pair that consists of a 2-bolt coupler for the top of busway, and a 4-bolt coupler for the bottom of busway.

*Installation tool is required (pg. 3.40)

For covering the end of 100T3 or 225T3

Part Number SJK160T3 (for 100 amp systems) SJK160T3G (for 100 amp systems with ground) SJK160T3N (for 100 amp systems with 200% neutral) SJK160T3F (for 100 amp systems with ground and 200% neutral) SJK225T3 (for 225 amp systems) Available in all standard and RAL colors



End Cap

busway.

Optional Closure Strip

Snaps into bottom access slot of busway housing. The optional closure strip is normally shipped in 6 meter lengths and can be field cut to fit exact desired length. The closure strip is offered in both nonconductive plastic material and aluminum.

Part Number SCST3-1 Aluminum closure strip: SCST3-1-AL -Plastic Closure Strip available in black & white -Aluminum Closure Strip available in all standard colors Maximum Cut Length: 6m

Part Number

SFCT3

Weight: .09 kg



End Feed Seismic Brace

For seismic applications, the end feed seismic brace bolts on to the end feed, to be used with threaded rod for gravity hanger.

Part Number SEFB-SIL





ACCESSORIES: INSTALLATION TOOL

Installation Tool

An installation tool is used to install the bus connector between two adjacent sections of busway. A joint kit, which is comprised of two housing couplers and a bus connector set, is required at every joint.

Busway sections are butted together and the top housing coupler is installed. The bus connector is inserted, centered and seated in the slot of the busway. The installation tool is inserted into the jointed intersection and rotated 90 degrees to form a spring-loaded, secure electrical connection. The housing coupler is then positioned over the bottom joint and tightened.

Weight

1.1 kg

Part Number (for all T3 systems) ST3IT No available colors







INSTALLATION INSTRUCTIONS



Section 3: Installation Instructions



INSTALLATION INSTRUCTIONS

BUSWAY SUPPORTS ARE SUPPLIED BY OTHERS WITH THE MAXIMUM SPACING BETWEEN HANGERS OF 3m. A VARIETY OF HANGERS ARE AVAILABLE TO SUIT MOST SITUATIONS. (SEE CATALOG).

Tools needed to install Busway: Installation tool (provided), 17mm open end wrench and a slotted head screw driver Two men are needed to install a 6m. section of the Busway.

- 1.) Begin installation at one end of the busway, preferably the end at the supplied power source.
- 2.) If an End Feed Box is used, it can be attached before or after the first section of Busway prior to the installation of the Busway on the supports. Power can also be connected to the Busway by using a Terminal Block or a Fused Plug-in Unit.
- 3.) Insert hanger bolts into the hanger channel of the Busway. Secure this section to the Busway Supports.
- 4.) Insert a Pair of SHCT3-2 Housing Couplers onto one housing Position them away from the joint. Insert a SBC225T3-4 Bus Connector into the Busway channel, position it over top the Busbars, centered on the busway joint. Start the Bus Connector into the channel with your fingers.
- 5.) Insert the ST3IT installation tool inside slot of the Busway joint Position the collar around Busway housing.
- 6.) Using the lever, rotate installation tool and release. Work tool toward end of Bus Connector until copper blades are firmly seated into channels. Busway sections should now be aligned If copper blades are not seated repeat step 6.
- 7.) Remove tool. Center the SHCT3-2 housing coupler around the joint and tighten bolts to 17 N-m. Tighten hanger bolts. Repeat the folowing steps until the Busway run is complete.

8.) Check to make sure that you have the appropriate elbow or tee for the direction of travel. Rever to illustration on right. The elbows or tees are designed to carry power around

a corner or "T' intersection. Warning: Plug-in Units cannot be installed into an elbow or tee.

You must be a minimun of 15 cm away from the housing couplers on the Busway to install a Plug-in Unit.

- 9.) Install the elbow or tee onto the end of the Busway section by using the installation tool supplied with your order. The elbow or tee can be installed onto the Busway section before or after suspension. After the elbow or tee is compressed snugly against the busway section, See steps 4 thu 7, center the housing couplers over the joint and torque the bolts to 17 N-m.
 - Check to be sure that all bolts are tight and electrical connections are secure.
- 10.) Install SECT3 End Cap at the end of the Busway run and tighten the set screw to secure it in place.

For field wiring: Insert the end of the cable into the lug. This will accept up to 300 MCM cable. Secure by tightening the screw

according to the torque table shown below. Repeat for

TOROUE

N-m

31

31

31

the remaining connections.

WIRE SIZE

SIZE

2-1 1/0

2/0 3/0 4/0

250

300





The MFxxxT3C4S-SNSN-M030C End feed units are used to make field wiring connections to the Busway at the end of a run. The End Feed box installs like a standard section. There is a standard and reversed version. Wiring connections are made to the copper blades by means of aluminum box style lugs. It is best to begin Busway installation at the end where the power connections are made. For all versions, safety ground connection is made to the box with the lug provided. Isolated ground systems provide a seperate, additional connection.

Warning: Make sure the power is off before making your wire connections inside the End Feed Box.

 The End Feed Box can be installed on the Busway section before or after hanging the Busway.

"Starline® Tap Boxes are the only acceptable tap boxes or plug-in devices for use in Starline® Busway."



THE ALUMINUM HOUSING IS LISTED FOR USE AS PROTECTIVE EARTH. THE PLUG-IN UNITS THAT ARE B BUSWAY CAN BE GROUNDED THROUGH THE HOUSING. EXTENSION OF THIS GROUND TO THE CUSTOM SHOULD BE DONE IN A MANNER TO COMPLY WITH THE LOCAL CODES AND AUTHORITY HAVING JURISI



INSTALLATION INSTRUCTIONS



	Parts List					
ITEM	QTY	PART NUMBER	DESCRIPTION	Weight (Max)		
1	2	SECT3	END CAP, T3	.04 kg		
2	8	SJKxxxT3	JOINT KIT	1.0 kg		
3	1	ST3IT	INSTALLATION TOOL, T3	1.1 kg		
4	8	MBRH-M10	HANGER, THREADED ROD	.14 kg		
5	1	MExxxT3C4S-EX	BUSWAY ELBOW, 4 POLE, EXTERNAL	3.0 kg		
6	1	MExxxT3C4S-IN	BUSWAY ELBOW, 4 POLE, INTERNAL	3.0 kg		
7	1	MFxxxT3C4S-SNSN-M030C	END FEED, T3	4.2 kg.		
8	5	MSxxxT3C4S-M150C	STRAIGHT SECTION, 1.5 m	4.2 kg		
9	1	MTxxxT3C4S-EL	TEE, EXTERNAL LEFT	4.2 kg		





FEED CONDUCTOR CAPABILITY

Metric

Feed	Phase Lug	Neutral Lug	Ground Lug (Enclosure)	ISO Ground Lug	Max Size Blade Wire Torque Value Nm	Max Blade ISO Ground Wire Torque Value Nm	Max Case Ground Wire Torque Value Nm	Max Size Blade Bolt Torque Value
MF100G(S) MF100N(S) MF100F(S) MF1004(D) MF100N(D) MF100G(D) MF100F(D)	150mm ² 150mm ² 150mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ²	150mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ²	(2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ² (2)120mm ²	35mm ² N/A 35mm ² N/A N/A (2)35mm ² (2)35mm ²	36.7 36.7 36.7 36.7 36.7 36.7 36.7 36.7	8.5 N/A 8.5 N/A N/A 8.5 8.5	36.7 36.7 36.7 36.7 36.7 36.7 36.7 36.7	14.1 14.1 14.1 14.1 14.1 14.1 14.1 14.1
MA100G	177mm²	177mm²	70mm ²	70mm²	36.7	36.7	20.3	N/A
MA100N	177mm²	177mm²	70mm ²	N/A	36.7	36.7	20.3	N/A
MA100F	177mm²	177mm²	70mm ²	70mm²	36.7	36.7	20.3	N/A
MF2254	150mm ²	150mm ²	(2) 120mm ²	N/A	36.7	N/A	36.7	19.8
MF225G	150mm ²	150mm ²	(2) 120mm ²	40mm ²	36.7	16.95	36.7	19.8
MF2254(D)	(2)120mm ²	(2)120mm ²	(2) 120mm ²	N/A	36.7	N/A	36.7	14.1
MA2254	177mm ²	150mm ²	70mm ²	N/A	36.7	N/A	20.3	N/A
MA225G	177mm ²	150mm ²	70mm ²	70mm²	36.7	16.95	20.3	N/A

(S) = Standard lugs, Standard box

(D) = Double lugs, Standard box



INSTALLATION INSTRUCTIONS

GROUND OPTIONS

FAQ CASE GROUND, DEDICATED GROUND, ISOLATED GROUND

CASE GROUND

Uses aluminum housing and no extra copper bar.





100/225T3

DEDICATED GROUND

Extra bar in busway for ground. Everything tied together inside plugs. Bar and housing at same potential.





100T3 with ground

ISOLATED GROUND

Orange receptacles in plugs. Case ground isolated from copper ground bar. Isolated ground carried back to panel by others.



100T3 with ground





INSTALLATION INSTRUCTIONS

F160T3/F225T3 END FEED INSTALLATION

Warning: Hazardous voltage will cause severe shock or burn. Make sure the power is off before making your wire connections inside the box. Replace all parts and secure cover before turning on power.

The F100/225 Power Feed units are used to make field wiring connections to the end of a run of the 100/225T3 series. The end feed unit may be installed before or after hanging the busway. We recommend that you begin busway installation at the end where the power connections are to be made. Refer to Busway Installation Instructions for details.

To install, simply join the end feed feeder section to the run of busway using the standard housing coupler, coupling cover and installation tool, which are ordered separately. Secure the housing coupler.

Locate and knock out an appropriate sized hole for incoming wiring. Pressure wire connectors are provided in the box which accept up to 300MCM size cable. Heat shrinkable tubing for covering wire connections is provided. Slip this tubing over each cable. Make wiring connections paying close attention to the phase designations of the busway as shown below. Slide tubing over the joint to cover live electrical parts, heat to shrink. Make sure that all electrical connections are secure before you close the lid on the end feed unit. Secure the cover with the screws provided.

A ground lug is also provided which accepts up to 2/0-size wire. This makes the system ground connection to the busway housing.







INSTALLATION INSTRUCTIONS

F160T3 END FEED INSTALLATION

Warning: Make sure the power is off before making your wire connections inside the End Feed Box.

The F100T3 End Feed unit are used to make field wiring connections to the 100T3 Busway at the end of a run. The junction box fits over the end of the Busway and fastens with two hanger bolts. Wiring connections are made to exposed copper blades by means of aluminum box style lugs. Heat shrinkable tubing is supplied to cover the connections. It is best to begin Busway installation at the end where the power connections are to be made.

The End Feed Box can be installed on the Busway section before or after hanging the Busway. Insert the hanger bolts provided with the End Feed Box into the hanger slots on the Busway Housing. Slip the End Feed Box over the end of the Busway so the Busway protrudes 1/2"into the End Feed Box. Secure the box into position using the hanger bolts provided. Knock out the appropriate size hole for the box connector you are using into the end or side of the End Feed Box.

End Feed lugs are supplied with the box. Attach the lugs to the appropriate busway sections as follows. Beginning with the conductor at the bottom of the Busway, slip the lug over the copper blade. Slip the shrink tubing over the incoming power cable. Insert the end of the cable into the lug. This will accept up to a #1 AWG cable (but be advised the #1 is a very tight fit.). Secure by tightening the screw according to the torque table shown below. Slide the shrink tube provided over the copper blade and lug, heat to shrink. Repeat for remaining connections. We suggest trimming he copper blade in a diagonal pattern to give access to the screw of the lugs.





INSTALLATION INSTRUCTIONS

160T3 & 225T3 JOINT INSTALLATION

For connection of adjacent Busway sections. One Kit is required at each joint. Each Kit is comprised of a housing coupler pair and bus connector set. Specify configuration to match busway configuration.



Figure 1: Installation Tool

Insert the pair of Housing Couplers onto one housing section. The housing coupler and the hanger channel of the Busway are polarized; ensure they are aligned before inserting them. Position the bottom coupler away from the joint, and align the Busway with the adjacent Busway section. Center the top housing coupler around the joint and tighten the set screws securely. Next, begin to install the bus connector kit by inserting the A-B Bus Connector inside the slot of the Busway. Ensure the connector is centered on the joint and push the Bus Connector in until secure. Insert the installation tool inside the slot of the Busway at the joint. Position the collar around the Busway housing so that the radius on the tool is positioned against the Bus Connector cover. Using the lever, rotate the installation tool and release. Work toward the end of the blade cover until the copper blades are firmly seeded into channels.

Repeat each of these steps for the other side of the Bus Connector. Remove the installation tool, center the bottom housing coupler, and tighten the 24 set screws.

For further assistance, refer to the installation video here:

https://youtu.be/qfCv59QzIdA



INSTALLATION INSTRUCTIONS

HANGER BOLT INSTALLATION

There are two standard hanger options for mounting Starline Busway. UBRH-1 (Figure 1) is the standard hanger for supporting Starline Busway via 3/8" threaded rod. UBH-1 (Figure 2) is most commonly seen when hanging via unistrut. At a minimum, ten foot intervals support the busway via support hardware. Once the hanger is placed in the mounting channel and the support hardware is installed, tighten down with 3/4" wrench.



Figure 1: UBRH-1 (MBRH-M10)



Figure 2: UBH-1 (MBH-M10)







PLUG-IN INSERTION INSTRUCTIONS



Section 4: Plug-In Insertion Instructions



PLUG-IN INSERTION INSTRUCTIONS

INSTALLING A PLUG-IN UNIT

Before You Begin

- Always wear appropriate PPE
- Please consult NFPA 70E for information on calculating incident energy for the location of your work, and the necessary associated PPE for your particular installation.





DO NOT install Plug-in units under load. Make sure breakers are in the off position





PLUG-IN INSERTION INSTRUCTIONS

<u>Step 4</u>	Plug head inserted <u>completely</u> into busway
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	<u>Step 5</u>	Rotate so that the blades engage the busbars Enclosure firmly pressed up against the busway. (Hint: push UP against the busway as you begin to rotate)	
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PLUG-IN INSERTION INSTRUCTIONS

<u>Step 6</u>	Rotate plug-in to the right until it is parallel to the busway The typical circuit breaker/ receptacle faces the direction of the busbar side of busway for B225 and toward the polarizing strip for T5 systems.

<u>Step 7</u>	Engage lever to operate the mounting claw
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<u>Step 8</u>	Rotate locking lever to secure the locking claw
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PLUG-IN INSERTION INSTRUCTIONS

REMOVING A PLUG-IN UNIT





<u>Step 3</u>	Rotate the enclosure 90 degrees and pull down until the paddle is clear of the busway
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PLUG-IN INSERTION INSTRUCTIONS

PLUG-IN DISTANCE CLEARANCES

Side Distance Clearance

The following tech brief shows the side and height clearances of standard Universal Electric enclosures.





PLUG-IN INSERTION INSTRUCTIONS





PLUG-IN INSERTION INSTRUCTIONS





PLUG-IN INSERTION INSTRUCTIONS





PLUG-IN INSERTION INSTRUCTIONS





PLUG-IN INSERTION INSTRUCTIONS







FIELD SERVICES AND WARRANTY



Section 5: Field Services and Warranty



FIELD SERVICES AND WARRANTY

UNIVERSAL GLOBAL SERVICES

With over 30 years of experience in the busway market, Starline has the knowledge and expertise to ensure that your Track Busway system is functioning at a best-in-class level.

We are currently offering the following services:

Load Bank Testing and Equipment Rentals

Whether you are in need of rental equipment to test your power system or a team of technicians to test the system for you, Universal Global Services has you covered. Select testing equipment from our inventory of load banks and associated gear, or work with a UEC engineer to customize your own test plan to suit your individual needs.

Meter Services

Factory trained and certified technicians will provide comprehensive on-site meter commissioning that includes meter inspection, programming and detailed documentation. Our technicians will program CPM meters and offer optional integration services to your BMS or DCIM for any and all meters located within your facility.

Startup and System Certification

Certified technicians inspect and validate that the installation meets factory standards, ensuring ongoing reliability and compliance with facility safety requirements. Upon successful completion of system startup, Starline's standard one (1) year manufacturer's warranty will be automatically extended in duration.

- Double the length of the standard factory warranty
- · Ensure all joint and feed connections are properly installed with continuity testing
- Ensure proper installation of all plug-in units
- Validate that system will perform to your specified requirements
- Full certification report delivered electronically at conclusion of service

Engineering Studies (US Only)

Understanding the dangers and implementing a safety program is imperative to maintaining a safe work environment. Our professional engineers will conduct comprehensive facility electrical studies and recommend corrective actions, confirming your systems reliability and compliance with government and safety requirements.

Turnkey Installation Services (UK Only)

Our trained and factory certified Busbar installers are looking forward to completing your next job. You can order your best-in-class power distribution system and leave the rest to us. Our technicians will complete your installation quickly and safely and will reduce your overall TCO by extending your product warranty.



On-Site Installation Support

On-site installation support begins by scheduling a site trip during your system installation. All work is performed by certified technicians- including review of installation best practices prior to the job, visual inspection of safe system installation, contractor installation oversight, and inspection and verification of functionality after rework.

On-Site Product Training

Certified technicians will provide a comprehensive training course curriculum that meets our high factory system standards, ensuring ongoing reliability of the system while also emphasizing operational safety. This course curriculum takes place in both a classroom and on-site with equipment.

Extended Warranty and Enhanced Service Plans

Ensure that your equipment investment is always covered. Select from an extended factory warranty or one of our many Enhanced Service Plans to meet your organizational requirements.

Choice of Extended Warranty or Enhanced: Silver, Gold or Platinum Service Plans	Extended 1, 2, 3, 4 years	Silver 1, 2, 3, 4 years	Gold 1, 2, 3, 4 years	Platinum 2, 3, 4 years
Repair or replacement of defective parts throughout life of service agreement	Х	Х	Х	Х
24/7 technical support hotline	Х	Х	Х	Х
Visual inspection of meters		Х	Х	Х
Visual inspection of all joints for visible gaps		Х	Х	Х
Update firmware and verify all Starline CPMs		Х	Х	Х
Includes travel and expenses		Х	Х	Х
One (1) service site visit per year		Х		
Two (2) service site visits per year			Х	Х
Thermal imaging of all plug-in units			Х	Х
Thermal imaging of all Busway joints			Х	Х
Thermal imaging of all end feed units			Х	Х
Detailed and fully executed thermography report			Х	Х
Online portal for test reports & documentation			Х	Х
Spare parts inventory management program				Х

Contact your Starline Representative today to add services to your Track Busway order, or download detailed Statement of Work documents at <u>http://downloads.uecorp.com/services</u>.



STANDARD FACTORY WARRANTY

Contractor/Customer:

Customer Order:

Seller warrants all products sold by Universal Electric Corporation to be free from defects in material or workmanship for a period of one year from the date of shipping. Seller's liability on this warranty shall be limited to the repair or replacement of any product which is returned to the Seller, within one year of the date of delivery and which is found by the Seller to be defective in material or workmanship. Customer must have written authorization prior to returning any material to Universal Electric. The Buyer will be responsible for the cost of removing and reinstalling a defective part(s) or its replacement and all labor and material and all other costs or expenses incurred in connection therewith.

Notwithstanding any provision contained herein to the contrary, (i) Buyer's use of any plug-ins, parts and/or components that are not manufactured by UEC with the Products, and/or (ii) if any services and/or warranties are provided by any person/entity other than UEC without UEC's prior written consent, all warranties for all Products shall immediately terminate and be null and void.

Warranty Period: <u>1 year from delivery date</u>

STANDARD FACTORY WARRANTY PROCESS

- 1. Customer calls either UEC Rep or UEC direct.
- 2. Customer Service Specialist will issue Return Material Authorization (RMA).
- 3. Customer returns warranted item along with copy of RMA.
- 4. UEC will either rework item or manufacture new item depending on the customer needs.
- 5. UEC ships item back to customer.
- 6. UEC will determine reason for failure.
- 7. Corrective action will be documented.
- 8. If reason for failure is requested by customer. UEC will send report to customer.
- 9. All action items from corrective action report must be completed by assigned designer and returned to Quality Department.
- 10. Quality Assurance Department will track all warranted events and report them to UEC Managers, Directors, and the Executive Team.



MAINTENANCE





MAINTENANCE

STARLINE BUSWAY RECOMMENDED MAINTENANCE

Starline Track Busway is designed to be user friendly with no mandatory maintenance required. The joints, end feeds, and plugs also require little to no maintenance. Starline Track Busway uses a boltless connection for the joining of the copper conductors. The joint design uses a U-shaped conductor channel that utilizes a joint kit to connect two housing sections. This connection is mechanically pressed into the slot with the use of installation tools that can be purchased from UEC. The end result is a reliable, heat tested connection at every joint that takes little to no maintenance over the life of the product.

The housing couplers, end feed connections, mounting hardware, and hanger bolts can be checked at the user's discretion, but is not required by Universal Electric Corporation.

IR inspection of the end feed connections, joints, and plug-in units can be checked at the user's discretion, but is not required by Universal Electric Corporation.

We do recommend that the system be inspected periodically for physical damage or signs of any abnormalities.

Starline offers comprehensive on-going service plans that extend the life of the warranty over the duration of the plan. For more information, contact your Starline sales representative or email the factory at *service@uecorp.com*.

• Refer to NEMA bulletin BU1.1 for general maintenance instructions.

Starline, a brand of Legrand, has been a leader in power distribution since 1924. The company's founders led the way for many new technologies in the power distribution equipment industry. Today, Starline continues to pave the way for safer, more innovative and more reliable electrical power distribution systems. Visit **StarlinePower.com** to learn more about our flexible power solutions.



For additional information regarding the Starline Track Busway system, please visit: www.StarlinePower.com/Busway

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