ENERGY GROUP LTD

TRUNKING SYSTEMS

ШИНОПРОВОДНИ СИСТЕМИ

SP-H SERIES 100A-160A

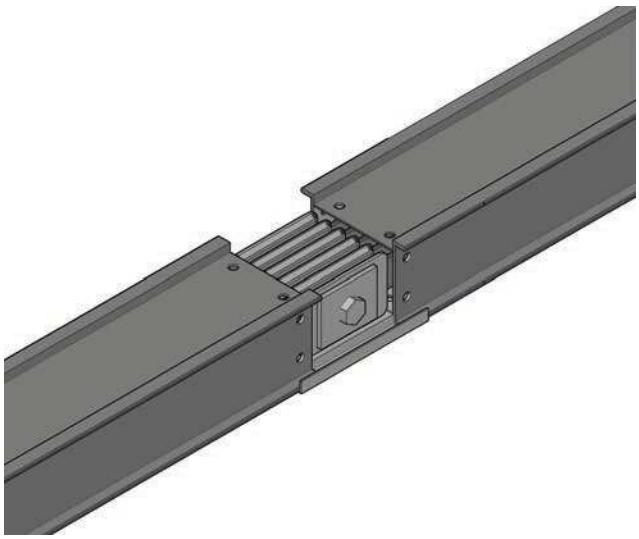
THE SMARTEST WAY OF POWER DISTRIBUTION

Най-умният начин за разпределение на електроенергия

DTM®

GENERAL FEATURES

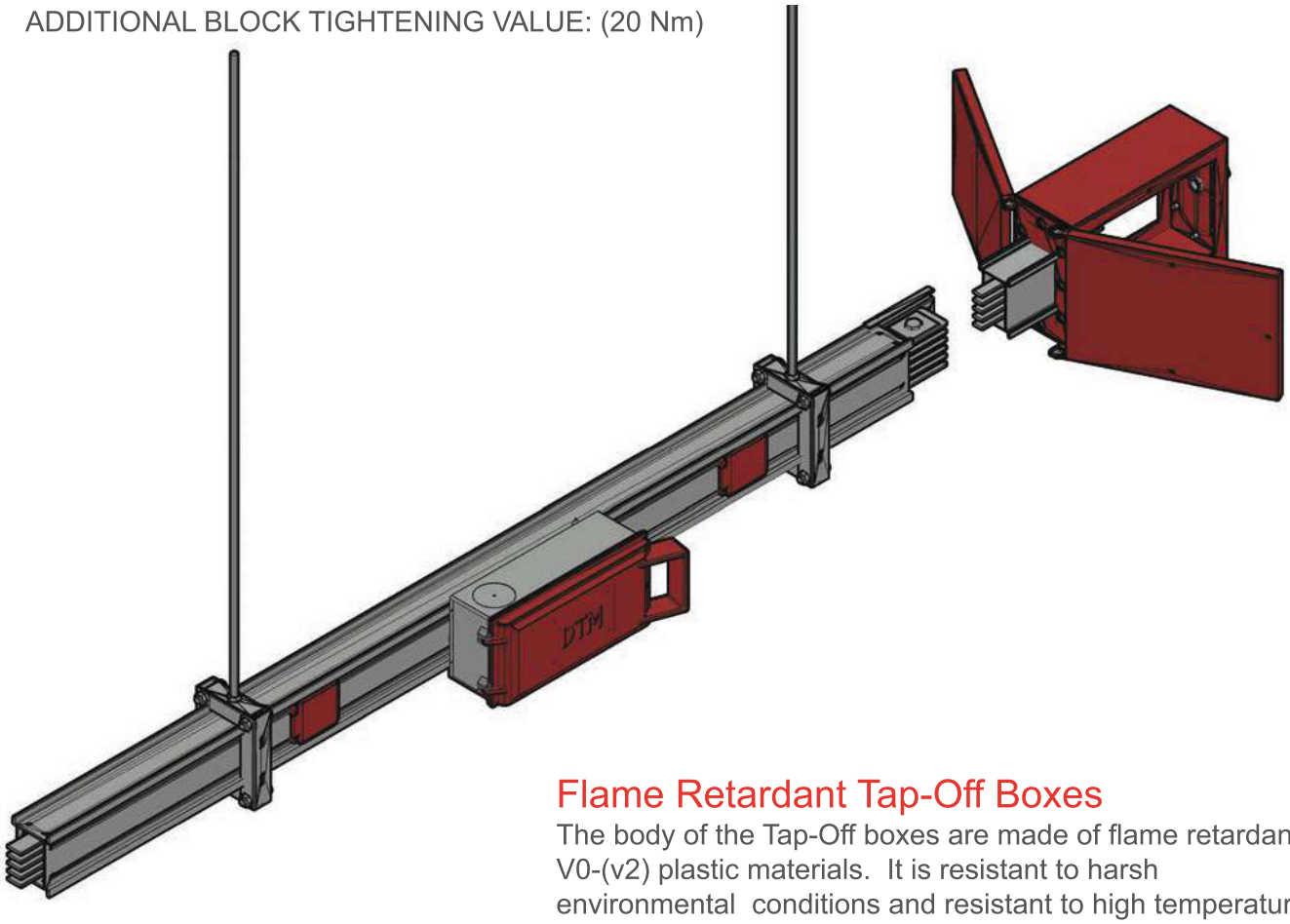
DTM SP-H 100A -160A Busbar trunking systems are used as an power distribution line where there is a need for energy distribution.
The outer body is produced from standard galvanized sheet metal or RAL7038 painted (optional).



SP-H

Joint Stack

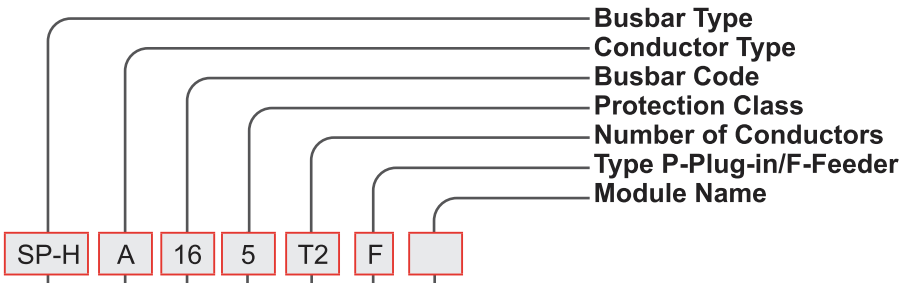
With the plug-in screw system, the assembly is done safely in a short time. It is used by tightening the screw with the nut.
ADDITIONAL BLOCK TIGHTENING VALUE: (20 Nm)



Flame Retardant Tap-Off Boxes

The body of the Tap-Off boxes are made of flame retardant V0-(v2) plastic materials. It is resistant to harsh environmental conditions and resistant to high temperatures. It is possible to supply currents up to 80 A with Tap-Off boxes. Tap-Off boxes are easily and safely installed without requiring any elements.

ORDER CODE SYSTEM



BUSBAR NAME

Busbar Type

ALUMINUM (AL)	(A)
COPPER (CU)	(C)

Conductor Type

SP-H AL		SP-H CU	
CURRENT	BUSBAR CODE	CURRENT	BUSBAR CODE
100	10	100	11
160	16	160	17

Busbar Current

IP 55	5

Protection Class

Number of Conductors

Number of Conductors	CODE	L1	L2	L3	N	1/2 GRND	CLEAN GRND	1/2 CLEAN GRND	GRND (BODY)
3P+N+PE (4P)	T1	□	□	□	□				□
3P+N+PE+FE1 (5P)	T2	□	□	□	□	□	□		□

Module Name

Feeder Busbar	FS
Plug-In Busbar	PS
Horizontal Elbow	YD
Vertical Elbow	DD
Feeder Special Length	FX
Plug-In Special Length	PX
Tap-Off Box	KP
Feed Box	BM
End Feed Box	SM
Center Feed Module Right	BR
Termination Module	S
Expansion Units	D
Suspension Set	A
Center Feed Module Left	BL

Type
Information About Busbar Usage Purpose.

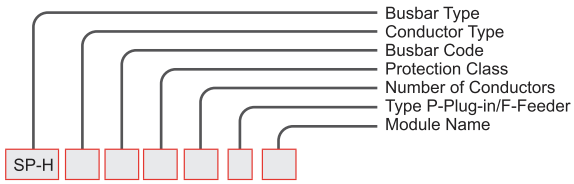
PLUG-IN IT IS USED FOR GETTING CURRENT FROM PLUG-IN POINTS IN FLAT SIZES.
FEEDER IT IS USED WHERE DIRECT FEEDING IS MADE.

Type P-Plug-in / F-Feeder

TECHNICAL TABLE (SP-H AL)				
ALUMINUM CONDUCTOR (AL)				
Rated Current	In	A	100	160
Busbar Code			SP-HA10	SP-HA16
Protection Class	IP55			
Standards	IEC 61439-6 TS EN 61439-6 IEC 61439-1 TS EN 61439-1			
Max. Rated Operating Voltage	Ue	Vac	690	400-1000
Rated Impact Withstand Voltage	Uimp	kV	8	400-1000
Frequency	f	Hz	50	400-1000
Rated Insulation Voltage	Ui	V	1000	Category IV
Mechanical Impact Resistance (IK Code)	Plug-in Busbar IK10			
Measures for the Protection of People	Basic Protection (TS-HD 60364-4-41, item A1)			
Rated Short Term Current (1s)	Icw	kA	3.77	6
Rated Peak Withstand Current	Ipk	kA	5.44	9.18
Rated Short Time Current for Neutral Conductor (1s)	Icw	kA	2.22	3.6
Rated Peak Withstanding Current for Neutral Conductor	Ipk	kA	3.15	5.29
Rated Short Time Current For Prot. Circuit (1s)	Icw	kA	2.22	3.6
Rated Peak Withstand Current for Prot. Circuit	Ipk	kA	3.15	5.29

TECHNICAL TABLE (SP-H CU)				
COPPER CONDUCTOR (CU)				
Rated Current	In	A	100	160
Busbar Code			SP-HC11	SP-HC17
Protection Class	IP55			
Standards	IEC 61439-6 TS EN 61439-6 IEC 61439-1 TS EN 61439-1			
Max. Rated Operating Voltage	Ue	Vac	690	
Rated Impact Withstand Voltage	Uimp	kV	8	
Frequency	f	Hz	50	
Rated Insulation Voltage	Ui	V	1000	Category IV
Mechanical Impact Resistance (IK Code)	Plug-in Busbar IK10			
Measures for the Protection of People	Basic Protection (TS-HD 60364-4-41, item A1)			
Rated Short Term Current (1s)	Icw	kA	3.7	6.5
Rated Peak Withstand Current	Ipk	kA	5.3	10.3
Rated Short Time Current for Neutral Conductor (1s)	Icw	kA	2.2	3.7
Rated Peak Withstanding Current for Neutral Conductor	Ipk	kA	3.25	5.5
Rated Short Time Current For Prot. Circuit (1s)	Icw	kA	2.2	3.7
Rated Peak Withstand Current for Prot. Circuit	Ipk	kA	3.25	5.5

Standard Lengths

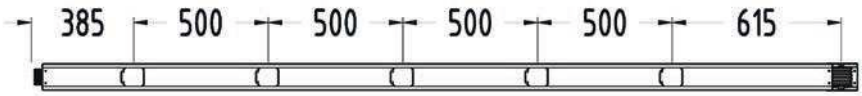


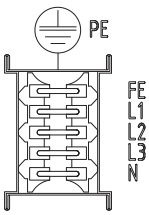
Plug-In Busbar	PS

SAMPLE ORDER

160 A Aluminum,
Plug-in IP 55 5 Conductors

SP-HA165T2PS



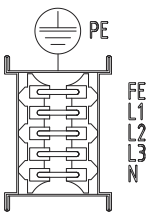


Feeder Busbar	FS

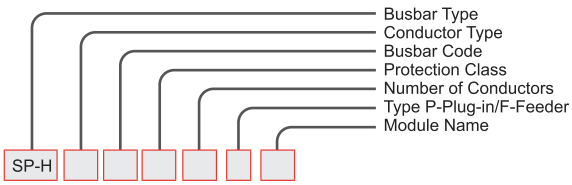
SAMPLE ORDER

100 A Aluminum,
Feeder IP 55 5 Conductors

SP-HA105T2FS



Special Lengths

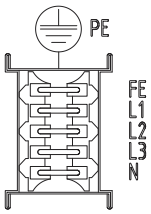


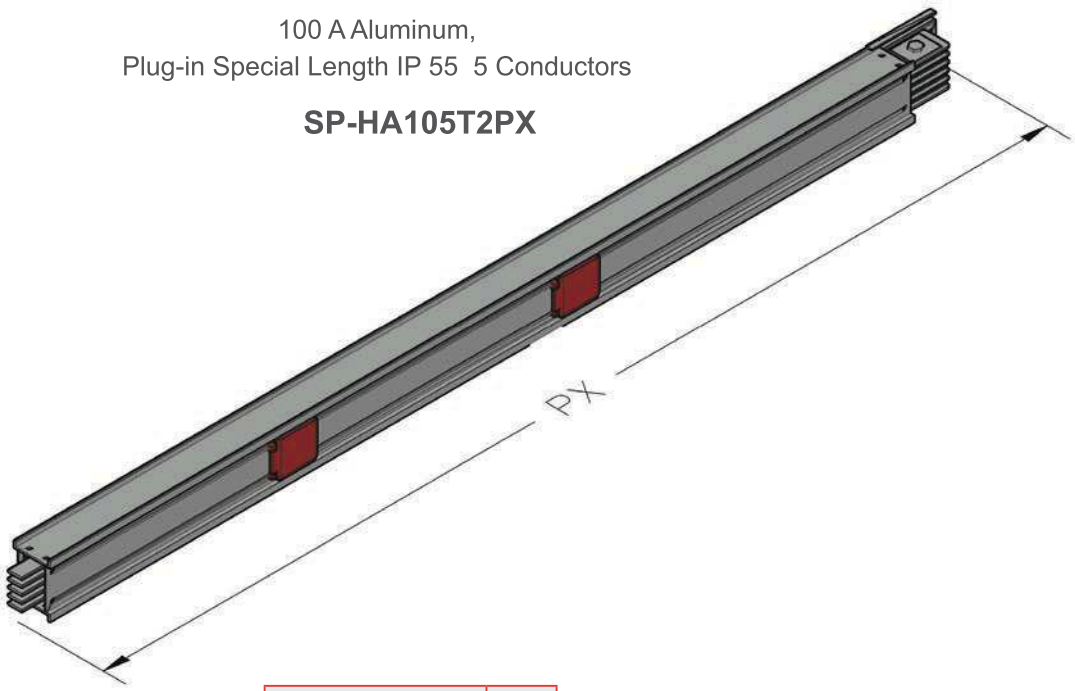
Plug-in Busbar Special Length	PX

SAMPLE ORDER

100 A Aluminum,
Plug-in Special Length IP 55 5 Conductors

SP-HA105T2PX



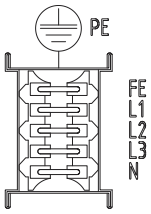


Feeder Busbars Special Length	FX

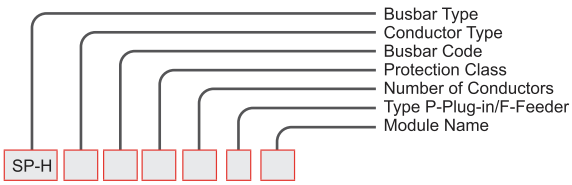
SAMPLE ORDER

160 A Aluminum,
Feeder Special Length IP 55 5 Conductors

SP-HA165T2FX



Elbow Modules

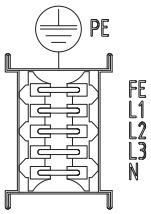


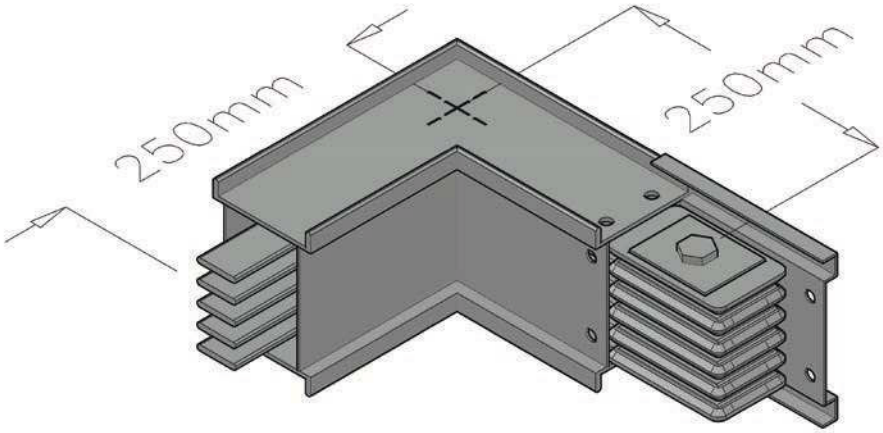
Horizontal Elbow Module	YD

SAMPLE ORDER

100 A Aluminum,
Horizontal Elbow IP 55 5 Conductors

SP-HA105T2YD



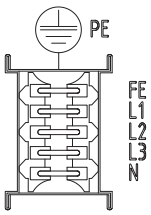


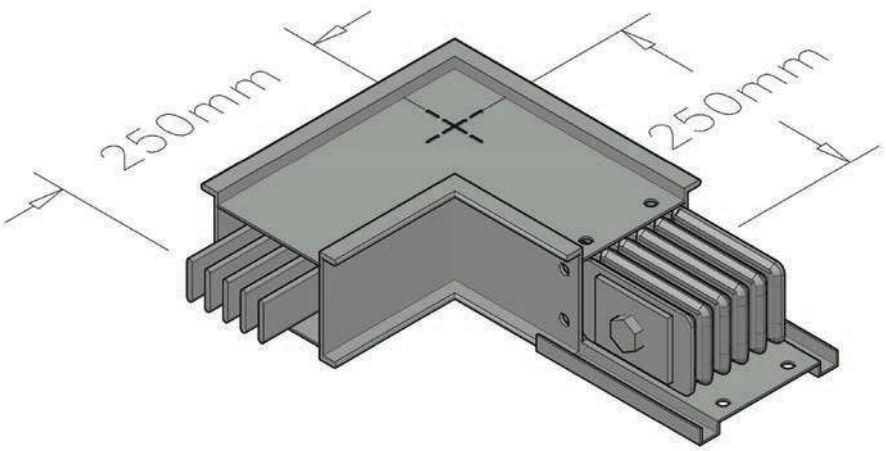
Vertical Elbow Module	DD

SAMPLE ORDER

160 A Aluminum,
Vertical Elbow IP 55 5 Conductors

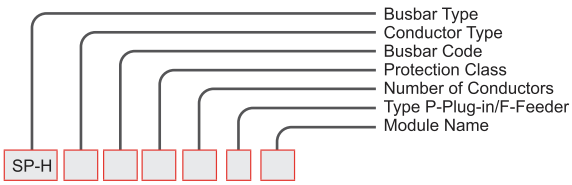
SP-HA165T2DD





SP-H

Expansion Units

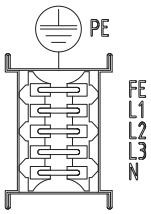


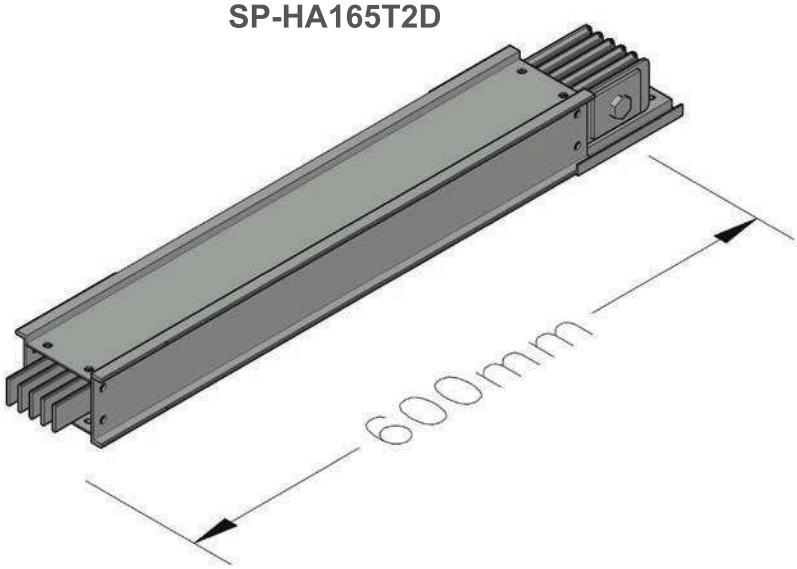
Expansion Module	D

SAMPLE ORDER

160 A Aluminum,
Expansion IP 55 5 Conductors

SP-HA165T2D



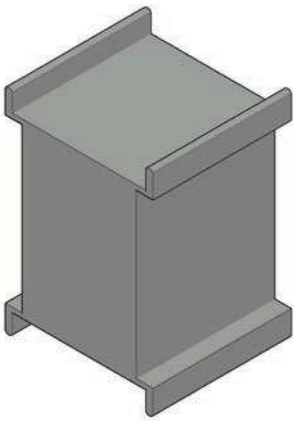


End Covers	S

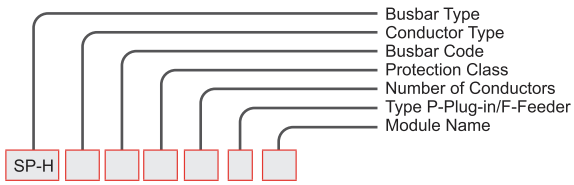
SAMPLE ORDER

100 A Aluminum,
Termination IP 55 5 Conductors

SP-HA105T2S



Tap-Off Boxes



Standard Tap-Off Boxes (EMPTY) 16A			
CRRNT	Conductor	CONFIGURATION	CODE
16	4	L1,L2,L3,N,PE (BODY)	SPHA1654B1
	5	L1,L2,L3,N,PE +(BODY)	SPHA1655B2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA1655B3

Standard Tap-Off Boxes (EMPTY) 32A			
CRRNT	Conductor	CONFIGURATION	CODE
32	4	L1,L2,L3,N,PE (BODY)	SPHA3254B1
	5	L1,L2,L3,N,PE +(BODY)	SPHA3255B2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA3255B3

Standard Tap-Off Boxes (EMPTY) 40A			
CRRNT	Conductor	CONFIGURATION	CODE
40	4	L1,L2,L3,N,PE (BODY)	SPHA4054B1
	5	L1,L2,L3,N,PE +(BODY)	SPHA4055B2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA4055B3

Standard Tap-Off Boxes (EMPTY) 63A			
CRRNT	Conductor	CONFIGURATION	CODE
63	4	L1,L2,L3,N,PE (BODY)	SPHA6354B1
	5	L1,L2,L3,N,PE +(BODY)	SPHA6355B2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA6355B3

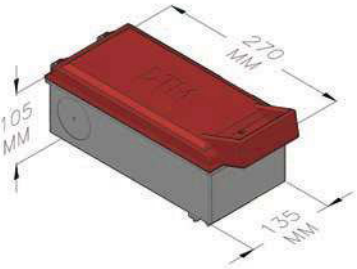
Standard Tap-Off Boxes (EMPTY) 80A			
CRRNT	Conductor	CONFIGURATION	CODE
80	4	L1,L2,L3,N,PE (BODY)	SPHA8054B1
	5	L1,L2,L3,N,PE +(BODY)	SPHA8055B2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA8055B3

Output Box

SAMPLE ORDER

16 A Aluminum,
Tap-Off Box Empty
IP 55 5 Conductors

SPHA1655B2



SWITCH TYPE CODE	
SWITCH	EMPTY
M	B

Standard Tap-Off Boxes (MCB) 16A			
CRRNT	Conductor	CONFIGURATION	CODE
16	4	L1,L2,L3,N,PE (BODY)	SPHA1654M1
	5	L1,L2,L3,N,PE +(BODY)	SPHA1655M2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA1655M3

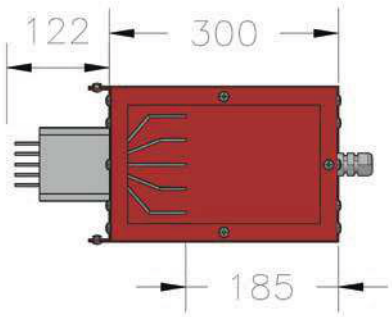
Standard Tap-Off Boxes (MCB) 32A			
CRRNT	Conductor	CONFIGURATION	CODE
32	4	L1,L2,L3,N,PE (BODY)	SPHA3254M1
	5	L1,L2,L3,N,PE +(BODY)	SPHA3255M2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA3255M3

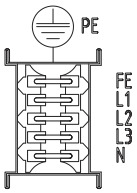
Standard Tap-Off Boxes (MCB) 40A			
CRRNT	Conductor	CONFIGURATION	CODE
40	4	L1,L2,L3,N,PE (BODY)	SPHA4054M1
	5	L1,L2,L3,N,PE +(BODY)	SPHA4055M2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA4055M3

Standard Tap-Off Boxes (MCB) 63A			
CRRNT	Conductor	CONFIGURATION	CODE
63	4	L1,L2,L3,N,PE (BODY)	SPHA6354M1
	5	L1,L2,L3,N,PE +(BODY)	SPHA6355M2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA6355M3

Standard Tap-Off Boxes (MCB) 80A			
CRRNT	Conductor	CONFIGURATION	CODE
80	4	L1,L2,L3,N,PE (BODY)	SPHA8054M1
	5	L1,L2,L3,N,PE +(BODY)	SPHA8055M2
	5	L1,L2,L3,N,CPE,PE (BODY)	SPHA8055M3

Feed Units



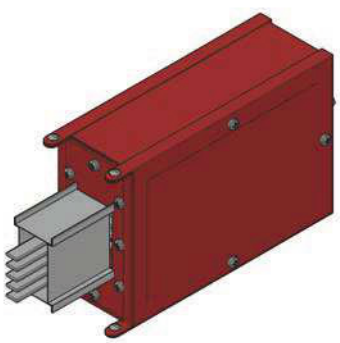


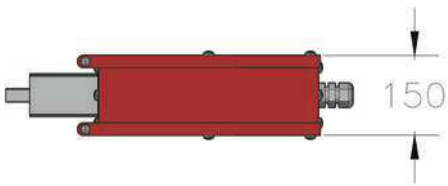
Feed Units	BM

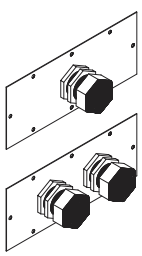
SAMPLE ORDER

160 A Aluminum,
Feed Unit IP 55 5 Conductors

SP-HA165T2BM



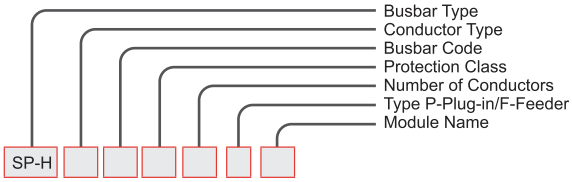


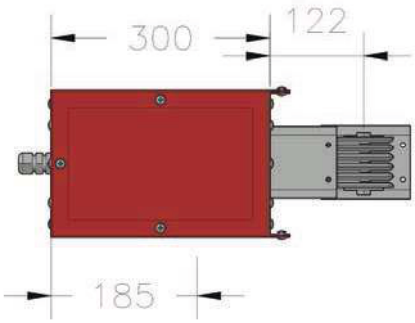


FITTING PLATES		
AMR.	FITTING TYPE	CODE
100	PG21	BR1
160	PG36	BR2

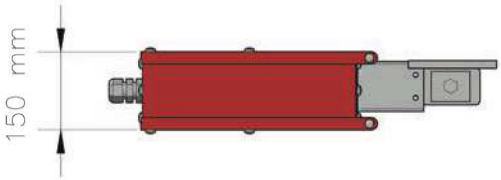
SWITCH TYPE CODE	
SWITCH	EMPTY
M	B

Feed Units





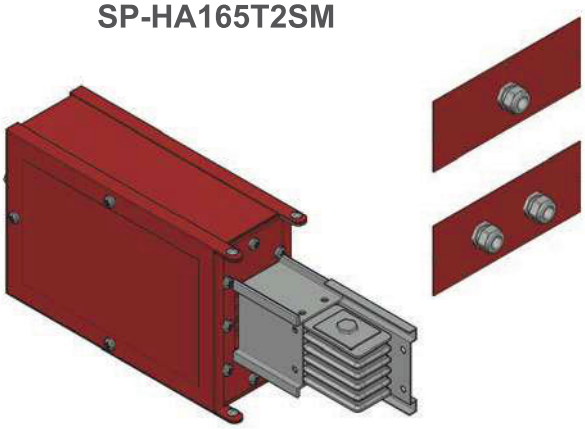
End Feed Unit	SM



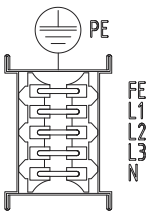
SAMPLE ORDER

160 A Aluminum,
Feed Unit IP 55 5 Conductors

SP-HA165T2SM



FITTING PLATES		
AMR.	FITTING TYPE	CODE
100	PG21	SR1
160	PG36	SR2

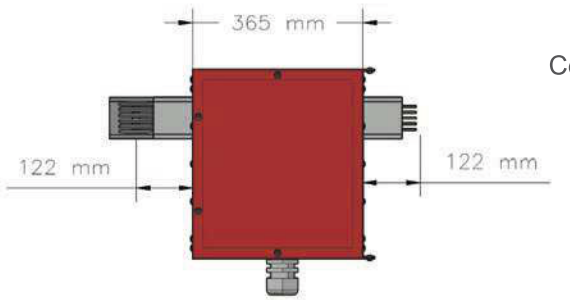


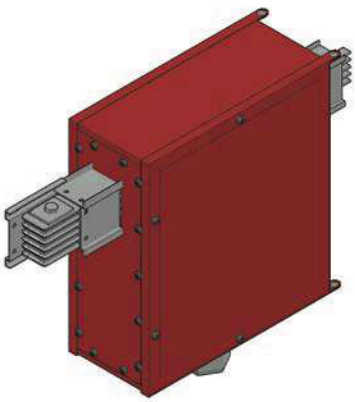
Center Feed Units Left	BL

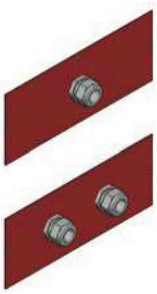
SAMPLE ORDER

100 A Aluminum,
Center Feed Unit IP 55 5 Conductors

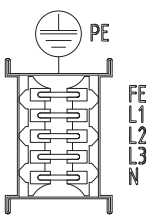
SP-HA105T2BL



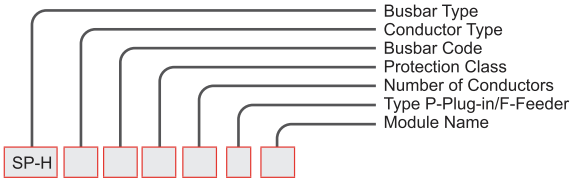


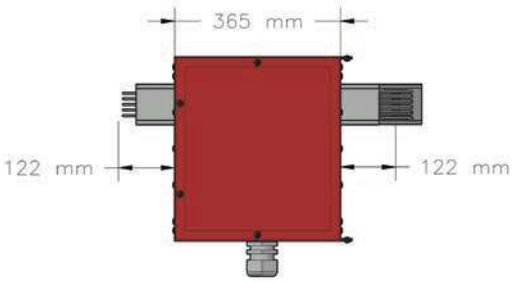


FITTING PLATES		
AMR.	FITTING TYPE	CODE
100	PG21	OR1
160	PG36	OR2

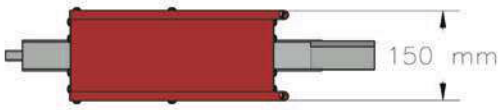


Feed Units





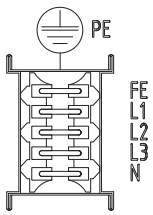
Center Feed Units Right	BR

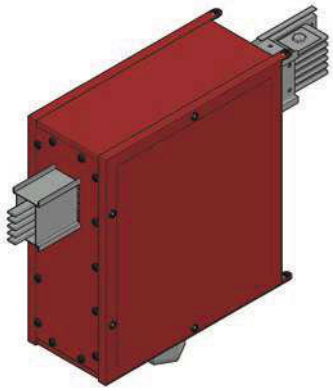


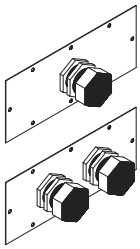
SAMPLE ORDER

160 A Aluminum,
Center Feed Box IP 55 5 Conductors

SP-HA165T2BR

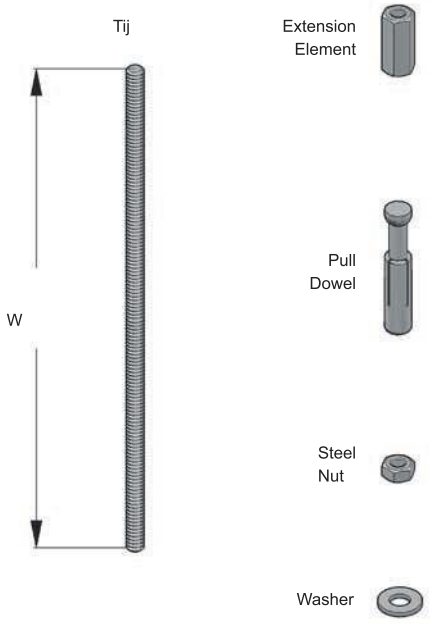






FITTING PLATES		
AMR.	FITTING TYPE	CODE
100	PG21	BR1
160	PG36	BR2

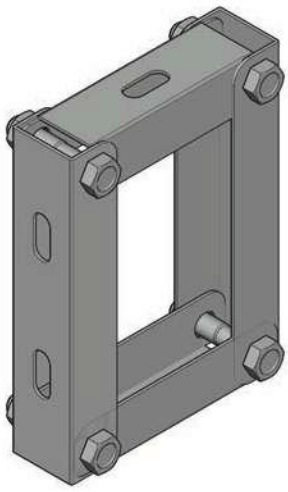
Suspension Elements	A



SAMPLE ORDER

100 A Aluminum,
Suspension Set IP 55 5 Conductors

SP-HA105T2A



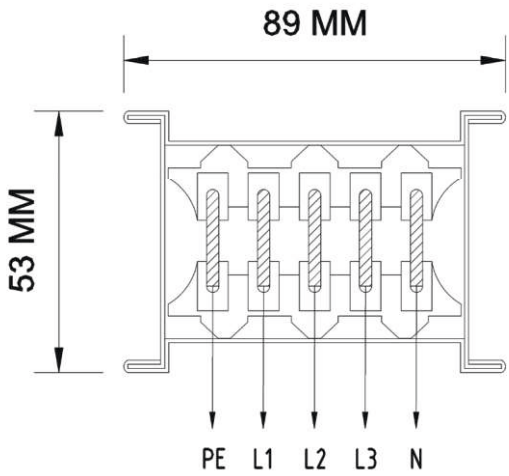
CONNECTION ELEMENTS		
W PART	(mm)	Code
B-E 8 Tij Hanger (M8)	500	T101
B-E 8 Tij Hanger (M8)	1000	T102
(M8) Extension Element	-	T103
M 8 Pull Dowel	-	T104
M 8 Steel Nut	-	T105

SP-H

Busbar Technical Information

ALUMINUM BUSBAR SIZES AND WEIGHT								
AMPER CLASS	BUSBAR MM			CONDUCTOR / SECTION MM			FEEDER KG+MT	
							3P+N+PE (4)	3P+N+PE+FE1 (5)
100A	53	X	89	3	X	16	2,05	2,2
160A	62		89			25	2,4	2,6

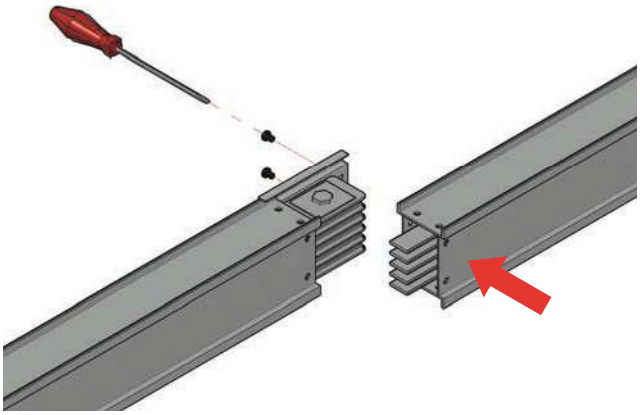
COPPER BUSBAR SIZES AND WEIGHT								
AMPER CLASS	BUSBAR MM			CONDUCTOR / SECTION MM			FEEDER KG+MT	
							3P+N+PE (4)	3P+N+PE+FE1 (5)
100A	53	X	89	3	X	10	2,45	3
160A	62		89			16	3	3,4

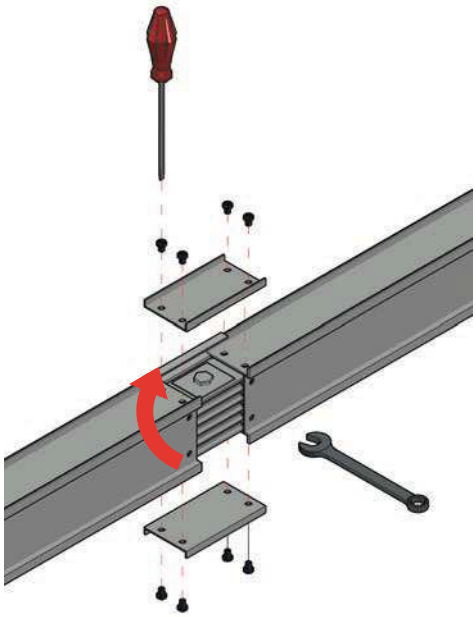


ELECTRICAL TECHNICAL INFO			
Resistance Current	R Reactance (mohm/m)	X Impedance (mohm/m)	Z Impedance (mohm/m)
Aluminum			
100	0,99	0,23	1,01
160	0,64	0,63	0,90
Copper			
100	0,96	0,21	0,98
160	0,55	0,17	0,58

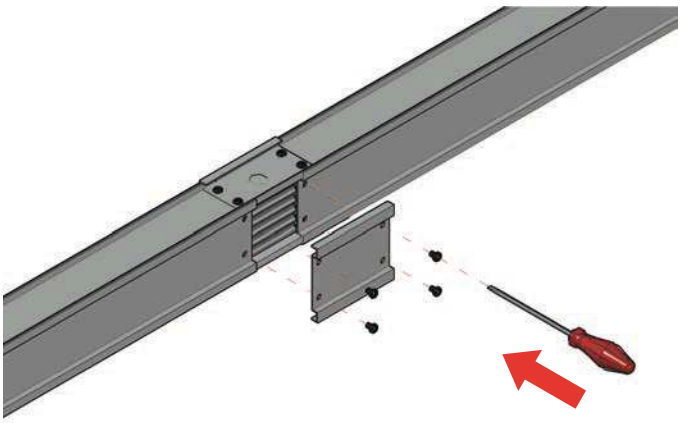
Calculate the voltage drop ΔV% according to the formula below.	
ΔV% = √3 x (R x cosφ + X x sinφ) x Ib x L / Ue x 100	
R: Resistance (mohm/m) (Electrical technical info is found from the table) X:	
Reactance (mohm/m) (Electrical technical info is found from the table) I_b: Sum	
of all extra effective charges	
L: Total length of busbar line	
U_e: Supply voltage	
Example: The calculation of 100 A Busbar is as follows.	
Line Length100 mt	
(I_b) Effective load65 A	
U_e : Supply voltage400 V	
Cos φ0,80	
R value is 0.99 x 10-3 ohm/m and X value is 0.23 x 10-3 ohm/m from the table	
(ΔV) Maximum allowable voltage drop 3%	
ΔV% = √3 x (R x cosφ + X x sinφ) x Ib x L / Ue x 100	
$\Delta V\% = \frac{1,73 \times (0,99 \times 0,8 + 0,23 \times 0,6) \times 10\text{-}3 \times 65 \times 100 \times 100}{400} = 2,62\%$	
The value found is less than 3%. 100 A Busbar selection is suitable according to voltage drop calculation.	

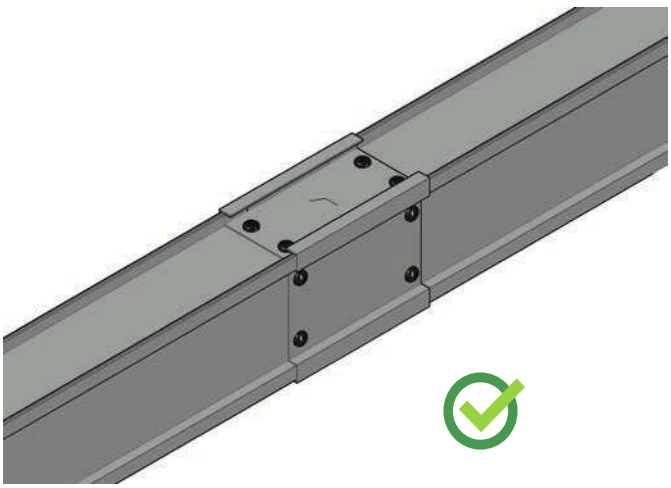
Installation Method





2 Install the additional block to the busbar and fix it to the next length body.





4 The tightening value with block torque is 20Nm.