

ZUCCHINI MS - LOW TO MEDIUM POWER BUSBAR

The flexibility of the Zucchini MS range during planning and installation makes it ideal for frequently changing requirements in small to medium sized commercial and industrial premises.

With versions ranging from 63 A to 160 A, the vast selection of elbows, tees and other accessories make any configuration possible, with bespoke solutions also available on request.

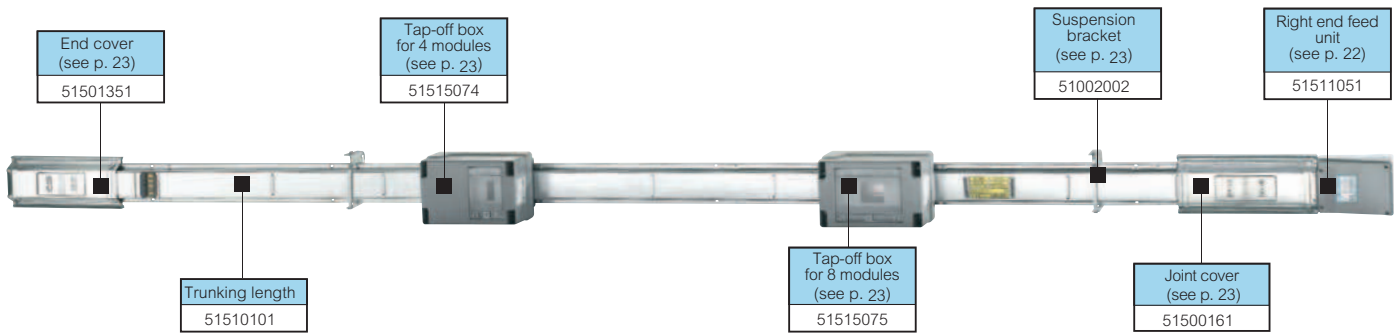
In addition to the wide range of accessories, a choice of tap-off boxes from 16 to 63 A accommodate protection devices up to 16 DIN modules.



To find out more call our technical support team on
+44 (0) 845 600 6266

MS double sided busbar

low and medium power 63/100/160 A



Dimensions and technical information p. 24
Technical data p. 27

Conforms to BS EN 60439-2. Casing manufactured from Senzimir quality galvanised steel suitable for use as a protective earth IP 40 as standard, increasing to IP 55 with use of appropriate accessories

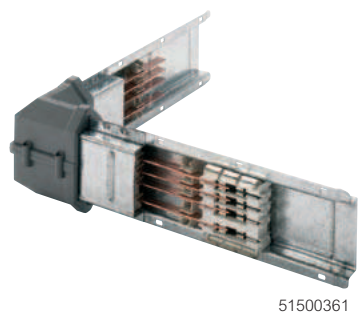
Pack	Cat. Nos.	63 A trunking lengths																											
		<p>Tap-off outlets are spaced every 1.0 m on both sides and are fitted with shutters to prevent accidental contact with live parts Expansion joints are not required</p> <p>Standard lengths</p> <table border="1"> <thead> <tr> <th>Length (m)</th> <th>Outlet points</th> <th>Weight (kg)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>3 + 3</td> <td>7.890</td> </tr> <tr> <td>2</td> <td>2 + 2</td> <td>5.260</td> </tr> <tr> <td>1.5</td> <td>1 + 1</td> <td>3.945</td> </tr> <tr> <td>1</td> <td>1 + 1</td> <td>2.630</td> </tr> <tr> <td>< 1.5</td> <td>-</td> <td>-</td> </tr> <tr> <td>> 1.5</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>Fire barrier Lengths are fitted with a fire barrier and are used to pass through fire-resistant walls In accordance with DIN 4102-9 and EN 1366-3</p> <p>Thrust unit Thrust unit to be located at the bottom and is required for vertical runs or riser applications exceeding 12-15 m</p> <table border="1"> <thead> <tr> <th>Length (m)</th> <th>Outlet points</th> <th>Weight (kg)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>3 + 3</td> <td>7.990</td> </tr> </tbody> </table>	Length (m)	Outlet points	Weight (kg)	3	3 + 3	7.890	2	2 + 2	5.260	1.5	1 + 1	3.945	1	1 + 1	2.630	< 1.5	-	-	> 1.5	-	-	Length (m)	Outlet points	Weight (kg)	3	3 + 3	7.990
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Pack	Cat. Nos.	160 A trunking lengths																																	
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MS double sided busbar

trunking components



51500361



51500461



51511151



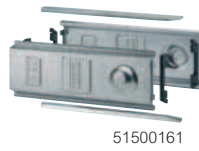
Dimensions and technical information p. 24-25

Conforms to BS EN 60439-2. Casing manufactured from Senzimir quality galvanised steel suitable for use as a protective earth IP 40 as standard, increasing to IP 55 with use of appropriate accessories

Pack	Cat. Nos.	Trunking components	Pack	Cat. Nos.	Trunking components (continued)
		For changing the route of trunking, either horizontally or vertically			
		Horizontal elbows – right hand			
		Right and left elbows differ because of the position of junction blocks			
		Rating (A) Weight (kg)			
1	51530351	63 1.6	1	51530561	Left hand tee – female Rating (A) Weight (kg) 63 2.29 100 2.29 160 3.79
1	51500361	100 1.6	1	51500562	
1	51520351	160 2.6	1	51520561	
		Horizontal elbows – left hand			
		Rating (A) Weight (kg)			
1	51530361	63 1.6	1	51530581	Left hand tee – male Rating (A) Weight (kg) 63 2.29 100 2.29 160 3.79
1	51500362	100 1.6	1	51500564	
1	51520361	160 2.6	1	51520581	
		Horizontal elbows – right hand			
		Rating (A) Weight (kg)			
1	51530361	63 1.6	1	51530651	Crossovers Rating (A) Weight (kg) 63 2.29 100 2.29 160 3.79
1	51500362	100 1.6	1	51500661	
1	51520361	160 2.6	1	51520651	
		Vertical elbows – right hand			
		Rating (A) Weight (kg)			
1	51530451	63 1.6	1	51511261	Flexible elbow For horizontal and vertical changes of direction up to 90° Not available for 160 A rating Rating (A) Weight (kg) 63-100 2.29 160 3.79
1	51500461	100 1.7	1	51521261	
1	51520451	160 2.7			
		Vertical elbows – left hand			
		Rating (A) Weight (kg)			
1	51530461	63 1.6			Feed units End feed units IP 55 IP 55 protection as standard. Supplied with cable clamp and terminals for 35 mm (MS 63/100) and 70 mm (MS 160) cables Switched-end feed units are also available with in-line bus switches on request Rating (A) Weight (kg) Right 63-100 1.732 Left 63-100 1.874 Right 160 2.218 Left 160 2.360
1	51500462	100 1.6			
1	51520461	160 2.6			
		Right hand tees – male			
		Rating (A) Weight (kg)			
1	51530551	63 2.29	1	51511051	Centre feed units IP 55 Rating (A) Weight (kg) 63-100 3.5 160 5.0
1	51500561	100 2.29	1	51511052	
1	51520551	160 3.79	1	51521051	
		Right hand tees – female			
		Rating (A) Weight (kg)			
1	51530571	63 2.29	1	51521052	
1	51500563	100 2.29			
1	51520571	160 3.79			

MS double sided busbar

tap-offs and accessories



Tap-offs can be supplied pre-wired and fitted with protective devices

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Dimensions and technical information p. 25-26

Tap-off boxes can be used to connect and energise one and three phase loads up to 63 A. Tap-offs can be inserted and removed when the busbar is energised and when the fixture is under load, up to a capacity 32 A. Compliant with IEC 60695-2-10 with V1 self-extinguishing degree (UL 94) Standard IP 55 degree of protection

Pack	Cat. Nos.	Tap-off boxes IP 55	Pack	Cat. Nos.	Tap-off boxes with isolating device on the cover								
1	51515071	<p>Energy withstand 400·10³ A²S Totally insulated tap-off box Max. cable size 25 mm²</p> <p>Max. power losses 10 W</p> <p>Empty tap-off box with DIN (4 mod.)</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·68</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·68	1	51515051	<p>Tap-off box with CH10 fuseholder (10·3 x 38)</p> <p>10·3 x 38 fuses not included</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>16</td> <td>0·908</td> </tr> </table>	Rating (A)	Weight (kg)	16	0·908
Rating (A)	Weight (kg)												
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1	51515076	<p>Tap-off box with CH10 fuseholder (10·3 x 38)</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·68</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·68	1	51515052	<p>Tap-off box with CH14 fuseholder (14 x 51)</p> <p>14 x 51 fuses not included</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>50</td> <td>0·908</td> </tr> </table>	Rating (A)	Weight (kg)	50	0·908
Rating (A)	Weight (kg)												
32	0·68												
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50	0·908												
1	51515077	<p>Tap-off box with D01 fuseholder</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>16</td> <td>0·95</td> </tr> </table>	Rating (A)	Weight (kg)	16	0·95	1	51515057	<p>63 A tap-off boxes</p> <p>Energy withstand 400·10³ A²S MAX power losses 20W Tap-off box with transparent cover Weight 1·1 kg</p>				
Rating (A)	Weight (kg)												
16	0·95												
1	51515078	<p>Tap-off box with D02 fuseholder</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·95</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·95	1	51515056	<p>Tap-off box with transparent cover and hinged door (up to 4 mod.) Weight 1·2 kg</p>				
Rating (A)	Weight (kg)												
32	0·95												
1	51515072	<p>Tap-off box for (4 mod.) DIN</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·73</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·73	1	51515067	<p>Tap-off box with hinged door (up to 7 mod.) Weight 1·1 kg</p>				
Rating (A)	Weight (kg)												
32	0·73												
1	51515073	<p>Max. power losses 16 W</p> <p>Empty tap-off box (8 mod.)</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·93</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·93	1	51515058	<p>Tap-off box with hinged door (up to 16 mod.)</p> <p>Energy withstand 400·10³ A²S MAX power losses 20W Weight 2·5 kg</p>				
Rating (A)	Weight (kg)												
32	0·93												
1	51515074	<p>Tap-off box (4 mod) DIN (long version)</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·96</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·96	1	51501351	<p>Accessories</p> <p>End cover IP 55</p> <p>End covers are fitted to the last length in each run to maintain IP 55 protection Weight 0·57 kg</p>				
Rating (A)	Weight (kg)												
32	0·96												
1	51515075	<p>Tap-off box (8 mod) DIN (long version)</p> <table border="1"> <tr> <td>Rating (A)</td> <td>Weight (kg)</td> </tr> <tr> <td>32</td> <td>0·99</td> </tr> </table>	Rating (A)	Weight (kg)	32	0·99	1	51500161	<p>Joint cover IP 55</p> <p>One for each joint Weight 0·788 kg</p>				
Rating (A)	Weight (kg)												
32	0·99												
			1	51500160	<p>Tap-off outlet cover IP 55</p> <p>6 per 3 m straight length Weight 0·061 kg</p>								
			1	51002002	<p>Suspension bracket</p> <p>Universal fixing brackets enable trunking to be either suspended or wall mounted 1 per 2 m Weight 0·1 kg</p>								

MS double sided busbar

technical information

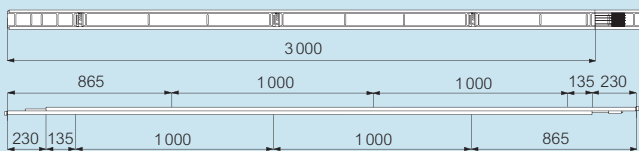
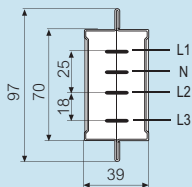
General features

MS is fully compliant with BS EN 60439-2. Specifically, the rated current of the Zucchini busbar trunking system is always referred to the average ambient temperature of 40°C (NB : the standard requires 35°C), thus offering the market suitably oversized products

Trunking lengths

The components and the features of the MS trunking lengths are :

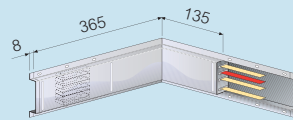
- a casing made of Senzimir quality galvanised steel, with a sheet-metal thickness that allows its use as the protective earth (PE) and ensures the electrical continuity during mounting with no added accessories
- section bar dimensions : 39 x 97 mm
- number of conductors : 4 with the same section 3P + N available for capacities 63 A, 100 A and 160 A
- separation between the conductors using plastic insulating devices, reinforced with 20% of glass fibres, which ensure a V1 self-extinguishing degree (according to UL94) and are in compliance with the glow-wire test according to IEC 60695-2-10
- tap-off outlets with a constant centre distance of 1 m on both sides of the busbar (3 + 3 outlets every 3 m), set up for connection to tap-off boxes
- an electric joint block, with silver-plated copper contacts for automatically connecting live parts and the PE (protective earth) Quick connection between straight lengths. One operation provides an electrical and mechanical connection, whilst at the same time, IP 40 protection is guaranteed. The upgrade to IP 55 is easily achieved by adding joint covers and outlet covers. Flame retardant in compliance with the IEC 60332-3 standard
- trunking lengths with fire barrier (internal + external) are used when fire-resistant walls need to be passed through. The lengths fitted with a fire barrier have been lab-tested (in accordance with DIN 4102-9 and EN 1366-3) in order to confirm that, if correctly installed, they will maintain the essential fire-resistant features of the wall
- trunking lengths with thrust unit are provided with a device which blocks the conductors from slipping when supporting the weight of the riser (when installed vertically). This type of length is required for 10 m riser intervals



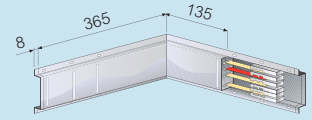
Trunking components

IP 55 (according to BS EN 60529)

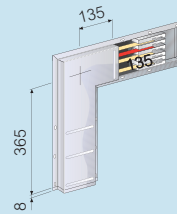
Horizontal elbow - right hand



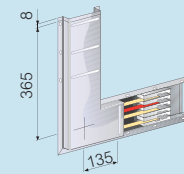
Horizontal elbow - left hand



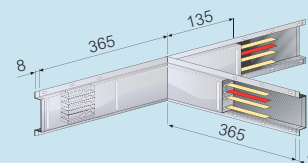
Vertical elbow - right hand



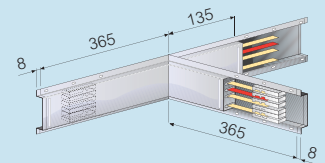
Vertical elbow - left hand



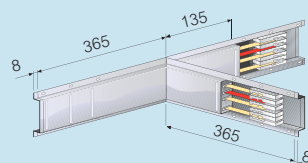
Right hand tees - male



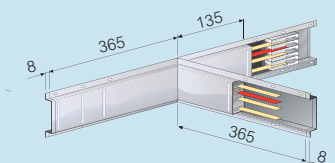
Right hand tees - female



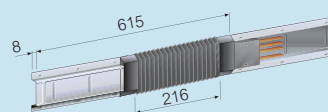
Left hand tees - female



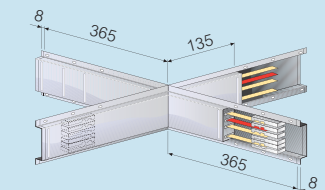
Left hand tees - male



Flexible elbow



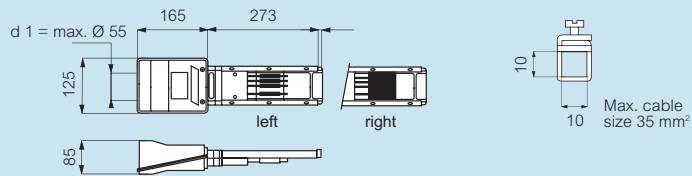
Crossovers



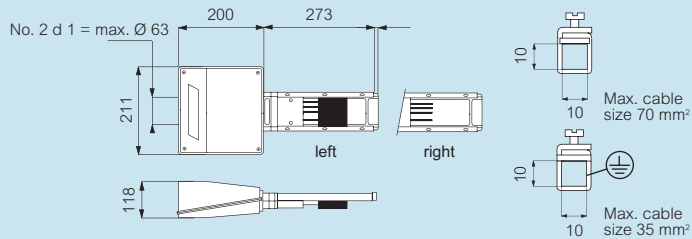
■ End feed units

Installation is carried out with a quick junction connection. The feed units have terminals for the connection of copper cables for sections of up to 35 mm² for the 63/100 A feed unit and 70 mm² for the 160 A feed unit. The entrance point of the cables is positioned at the end of the feed unit.

63 – 100 A

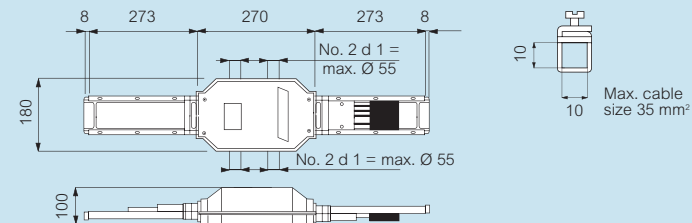


160 A

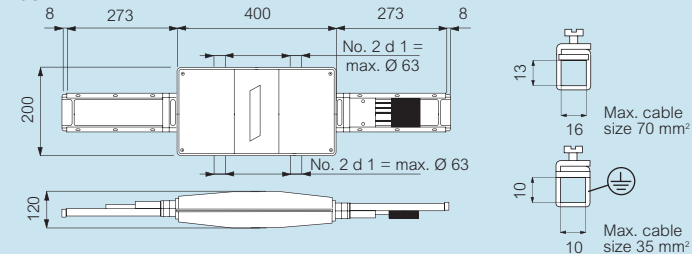


■ Centre feed units

63 – 100 A



160 A



Tap-off boxes

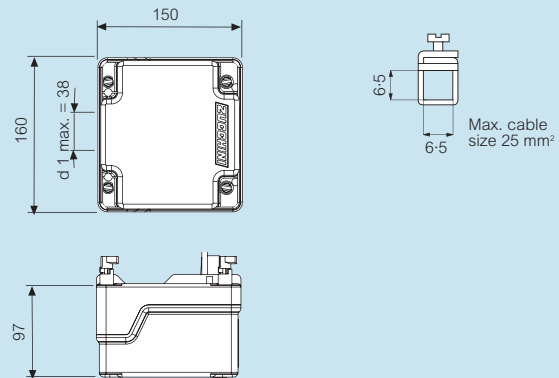
Used to connect and energise single phase and three phase loads up to 63 A. Features include :

- the PE contact (protective earth) is the first to make an electrical connection when inserting the box into the outlet and it is the last to disconnect when removing
- compliance with all insulating plastic components according to the glow-wire test (IEC 60695-2-10) with V1 self-extinguishing degree (UL94)
- standard IP 55 degree of protection without using additional accessories
- can be inserted and removed when the busbar is energised and when the fixture is under load, up to a capacity of 32 A

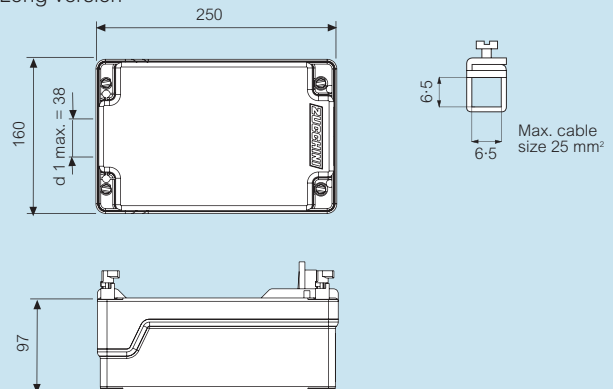
These boxes are available in a wide range of versions :

- 63 A empty boxes (only with a terminal board for connecting cables), with an internal DIN rail and transparent door
- 16 A - available with a set of three cylindrical fuse carriers (10.3 x 38 mm)
- 16/32 A - available with a set of three cylindrical fuse carriers - DIAZED (D01 : 16 A; D02 : 32 A);
- 50 A - available with cylindrical fuse carriers (14 x 51 mm)
- 63 A - available with 4-7-16 DIN mod.
- 16 to 63 A - available with a disconnection device integral with the cover

Standard version



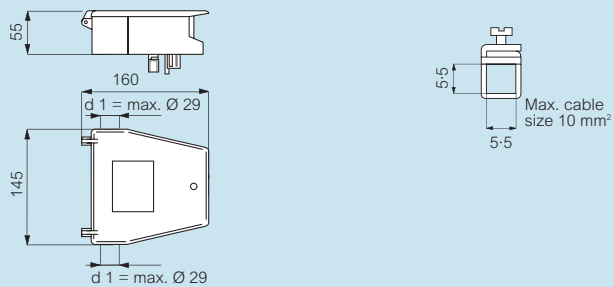
Long version



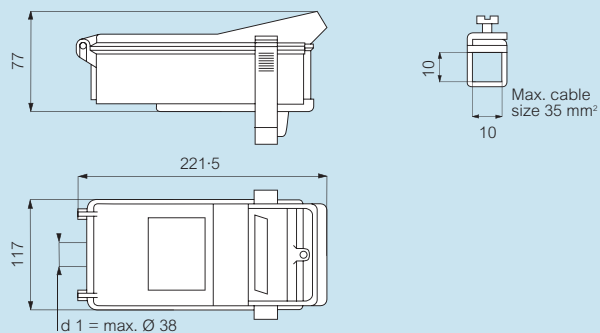
MS double sided busbar

technical information

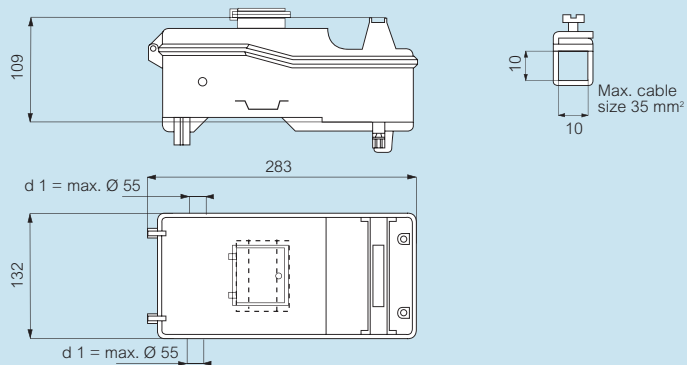
■ Tap-off box with CH10 fuseholder (10-3 x 38)



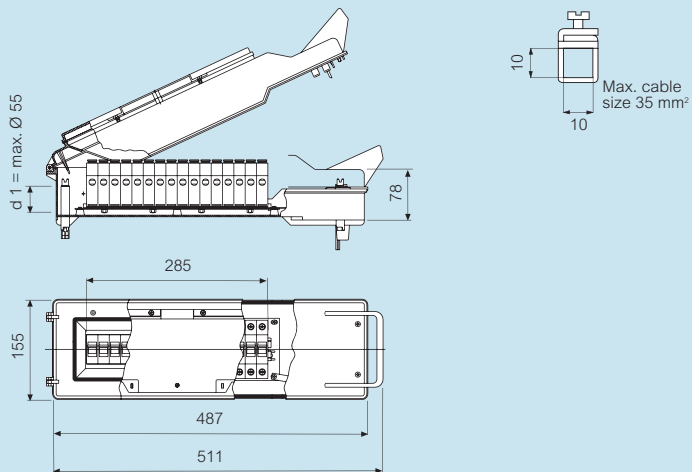
■ Tap-off box with CH14 fuseholder (14 x 51)



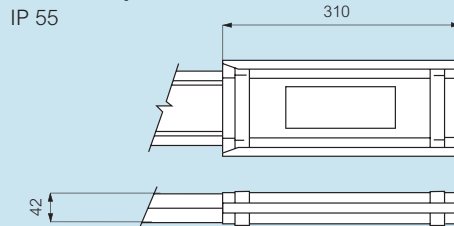
■ 63 A tap-off boxes



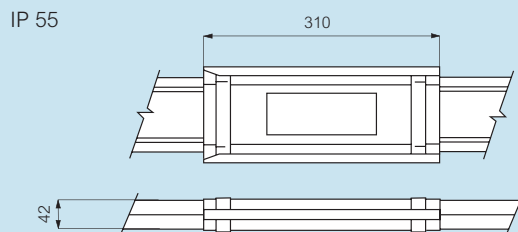
Tap-off box with hinged door (up to 16 modules DIN)



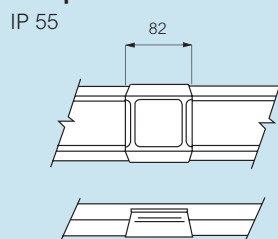
■ End stop



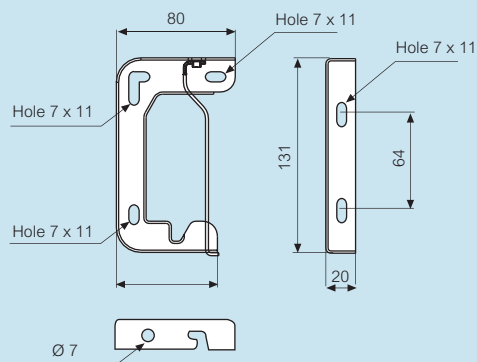
■ Joint cover



■ Tap-off outlet cover



■ Suspension bracket



All dimensions (mm) are nominal

MS double sided busbar

technical data

Complies to :
IEC 439-1 and 2, BS EN 60439 part 1 and 2,
DIN VDE 0660 part 500 and 502

Suitable for the following climates :
 Constant humid climate (DIN IEC 68 and 2- 3)
 Cyclical humid climate (DIN IEC 68 and 2- 30)

Short circuit protection for Zucchini product ranges (In≤100 A)

Zucchini busbar systems with a nominal current less or equal to 100 A (LB PLUS / MS 63 and 100 A) are correctly protected against short circuit effects through an MCB (Miniature Circuit Breaker) with a nominal current less or equal to the one of the busbar

This protection is assured up to MCB short circuit withstand

The busbar trunking systems LB PLUS / MS 63 and 100 A are flame retardant in compliance with IEC 332-3 : 1992

Rating (A)		63	100	160
Live conductors	No.	4	4	4
Casing overall dimension	A x B (mm)	39 x 97	39 x 97	39 x 97
Rated current	In (A)	63	100	160
Cross-section of conductors (3P + N)	S (mm ²)	26	26	39
Cross-section of protective conductor eq. Cu	SPE (mm ²)	21	21	21
Operational voltage	Ue (V)	400	400	400
Insulation voltage	Ui (V)	750	750	750
Rated frequency	f (Hz)	50/60	50/60	50/60
Rated short-time current (0.1 s)	Icw (kA)rms	2.3	4.5	5.5
Peak current	Ipk (kA)	10	10	10
Maximum thermal limit	I ² t (A ² s x 106)	5.29	20.25	30.25
Phase resistance	R20 (mΩ/m)	1.250	0.658	0.478
Phase reactance (50Hz)	X (mΩ/m)	0.366	0.366	0.247
Phase impedance	Z (mΩ/m)	1.302	0.753	0.538
Resistance of the protective bar	RPE (mΩ/m)	0.857	0.857	0.857
Reactance of the protective bar (50Hz)	XPE (mΩ/m)	0.090	0.090	0.102
Resistance of the fault loop	Ro (mΩ/m)	1.85	1.26	1.08
Reactance of the fault loop (50Hz)	Xo (mΩ/m)	0.456	0.456	0.349
Impedance of the fault loop	Zo (mΩ/m)	1.91	1.34	1.13
$\Delta V_{1F} = \frac{1}{2} (2 R_{20} \cos\varphi + 2 X \sin\varphi)$	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.70$	0.98	0.63	0.44
	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.75$	1.02	0.64	0.45
	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.80$	1.06	0.65	0.46
Voltage drop with distributed load (k)	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.85$	1.09	0.65	0.46
	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.90$	1.11	0.65	0.47
	$\Delta V (V/m/A)10^{-3} \cos\varphi = 0.95$	1.13	0.64	0.46
$\Delta V_{3F} = \frac{\sqrt{3}}{2} (R_{20} \cos\varphi + X \sin\varphi)$	$\Delta V (V/m/A)10^{-3} \cos\varphi = 1.00$	1.08	0.57	0.41
Straight length weight	p (kg/m)	2.0	2.6	2.8
Fire load	(kWh/m)	1.64	1.64	1.64
Protection degree	IP	40/55	40/55	40/55
Losses for the Joule effect at full load	P (W/m)	14.9	19.7	36.7
Min./max. ambient temperature	t (°C)	-5/+50	-5/+50	-5/+50

Temperature rating schedule

Mean room temperature (°C)	15	20	25	30	35	40	45	50	55	60
K1 factor	1.15	1.12	1.08	1.05	1.025	1	0.975	0.95	0.93	0.89

Multiplier coefficient of nominal rating for room temperature values different from 40°C