

# LB PLUS busbar trunking systems

## technical data

### ■ LB PLUS - Type A

Type		252	254	256	258	404	408	634
Number of live conductors		2	4	6	8	4	8	4
Casing overall dimensions	LxH [mm]	35 x 46	35 x 46	35 x 46	35 x 46	35 x 46	35 x 46	35 x 46
Rated current	I <sub>n</sub> [A]	25	25	25	25	40	40	63
Operating voltage	U <sub>e</sub> [V]	400	400	400	400	400	400	400
Insulation voltage	U <sub>i</sub> [V]	500	500	500	500	500	500	500
Frequency	f [Hz]	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (0.1 s)	I <sub>cw</sub> [kArms]	–	2.2	2.2	2.2	2.7	2.7	2.7
Peak current	I <sub>pk</sub> [kA]	–	3.3	3.3	3.3	4.1	4.1	4.1
Single phase rated short-time current (0.1 s)	I <sub>cw</sub> [kArms]	1.3	1.3	1.3	1.3	1.6	1.6	1.6
Single phase peak current	I <sub>pk</sub> [kA]	2.0	2.0	2.0	2.0	2.4	2.4	2.4
Thermal limit	I <sup>2</sup> t [A <sup>2</sup> s x 10 <sup>6</sup> ]	0.174	0.484	0.484	0.484	0.729	0.729	0.729
20° C phase resistance	R <sub>20</sub> [mΩ/m]	4.761	4.761	4.761	4.761	3.190	3.190	1.595
Phase resistance at thermal conditions	R <sub>t</sub> [mΩ/m]	5.656	5.656	5.656	5.656	3.802	3.802	1.901
Phase reactance (50Hz)	X [mΩ/m]	0.229	0.229	0.229	0.229	0.236	0.236	0.118
Phase impedance	Z [mΩ/m]	4.767	4.767	4.767	4.767	3.199	3.199	1.599
Resistance of the protective conductor <sup>1</sup>	R <sub>PE</sub> [mΩ/m]	1.695	1.695	1.695	1.695	1.695	1.695	1.695
Reactance of the protective conductor <sup>1</sup> (50Hz)	X <sub>PE</sub> [mΩ/m]	0.222	0.222	0.222	0.222	0.222	0.222	0.222
Resistance of the fault loop	R <sub>o</sub> [mΩ/m]	6.456	6.456	6.456	6.456	4.885	4.885	3.290
Reactance of the fault loop (50Hz)	X <sub>o</sub> [mΩ/m]	0.451	0.451	0.451	0.451	0.458	0.458	0.340
Impedance of the fault loop	Z <sub>o</sub> [mΩ/m]	6.472	6.472	6.472	6.472	4.906	4.906	3.308
Voltage drop with distributed load referred to V3f <sup>3</sup>	ΔV 10 <sup>-3</sup> cosφ = 0.70 [V/m/A]	4.123 <sup>2</sup>	3.570	3.570	3.570	2.830	2.451	1.225
	ΔV 10 <sup>-3</sup> cosφ = 0.75 [V/m/A]	4.393 <sup>2</sup>	3.805	3.805	3.805	3.008	2.605	1.302
	ΔV 10 <sup>-3</sup> cosφ = 0.80 [V/m/A]	4.662 <sup>2</sup>	4.038	4.038	4.038	3.183	2.757	1.378
	ΔV 10 <sup>-3</sup> cosφ = 0.85 [V/m/A]	4.928 <sup>2</sup>	4.268	4.268	4.268	3.356	2.906	1.453
	ΔV 10 <sup>-3</sup> cosφ = 0.90 [V/m/A]	5.190 <sup>2</sup>	4.495	4.495	4.495	3.525	3.052	1.526
	ΔV 10 <sup>-3</sup> cosφ = 0.95 [V/m/A]	5.445 <sup>2</sup>	4.715	4.715	4.715	3.686	3.192	1.596
	ΔV 10 <sup>-3</sup> cosφ = 1.00 [V/m/A]	5.656 <sup>2</sup>	4.898	4.898	4.898	3.802	3.293	1.646
Weight	p [kg/m]	1.00	1.04	1.25	1.28	1.19	1.56	1.56
Fire load	[kWh/m]	1.0	1.0	1.9	1.9	1.0	1.9	1.9
Protection index	IP	55	55	55	55	55	55	55
Degree of impact-resistance	IK	07	07	07	07	07	07	07
Joule effect losses at rated current	P [W/m]	10.6	10.6	10.6	10.6	18.2	18.2	22.6
Ambient temperature min / MAX	t [°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

1 : Metal casing

2 : Single phase values with distributed load

3 : Three phase

$$\Delta V_{3f} = \sqrt{3}/2 \times (R_t \cos\phi + X \sin\phi)$$

$$\Delta V_{3f}(I_n) = I \times L \times \Delta V_{3f} : (\text{knowing the current and length of the line})$$

$$\Delta V_{3f}(I_n)\% = (\Delta V_{3f}(I_n) / U_e) \times 100 (\%)$$

To calculate the ΔV1f (Single phase) on distributed load:

$$\Delta V_{1f} = 1/2 \times (2R_t \cos\phi + 2X \sin\phi)$$

$$\Delta V_{1f}(I_n) = I \times L \times \Delta V_{1f} : (\text{knowing the current and length of the line})$$

$$\Delta V_{1f}(I_n)\% = (\Delta V_{1f}(I_n) / U_e) \times 100 (\%)$$

I = operating current (A)

L = length (m)

Short circuit protection for Zucchini's product ranges (I<sub>n</sub> ≤ 100A)

Zucchini busbar trunking systems with a rated current lower than or equal to 100A (LB PLUS-MS 63 and 100) are properly protected through an MCB (Miniature Circuit Breaker) with a rated current lower than or equal to that of the busbar. This protection is guaranteed up to the MCB breaking capacity

Product fully in compliance with IEC 61439-6

# LB PLUS busbar trunking systems

## technical data

### ■ LB PLUS – Type B

Type		252	254	256	258	404	408	634
Number of live conductors		2	4	6	8	4	8	4
Casing overall dimensions	LxH [mm]	35 x 77	35 x 77	35 x 77	35 x 77	35 x 77	35 x 77	35 x 77
Rated current	I <sub>n</sub> [A]	25	25	25	25	40	40	63
Operating voltage	U <sub>e</sub> [V]	400	400	400	400	400	400	400
Insulation voltage	U <sub>i</sub> [V]	500	500	500	500	500	500	500
Frequency	f [Hz]	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated short-time current (0.1 s)	I <sub>cw</sub> [kArms]	–	2.2	2.2	2.2	2.7	2.7	2.7
Peak current	I <sub>pk</sub> [kA]	–	3.3	3.3	3.3	4.1	4.1	4.1
Single phase rated short-time current (0.1 s)	I <sub>cw</sub> [kArms]	1.3	1.3	1.3	1.3	1.6	1.6	1.6
Single phase peak current	I <sub>pk</sub> [kA]	2.0	2.0	2.0	2.0	2.4	2.4	2.4
Thermal limit	I <sup>2</sup> t [A <sup>2</sup> s x 10 <sup>6</sup> ]	0.174	0.484	0.484	0.484	0.729	0.729	0.729
20 °C phase resistance	R <sub>20</sub> [mΩ/m]	4.761	4.761	4.761	4.761	3.190	3.190	1.595
Phase resistance at thermal conditions	R <sub>t</sub> [mΩ/m]	5.656	5.656	5.656	5.656	3.802	3.802	1.901
Phase reactance (50Hz)	X [mΩ/m]	0.229	0.229	0.229	0.229	0.236	0.236	0.118
Phase impedance	Z [mΩ/m]	4.767	4.767	4.767	4.767	3.199	3.199	1.599
Resistance of the protective conductor <sup>1</sup>	R <sub>PE</sub> [mΩ/m]	1.195	1.195	1.195	1.195	1.195	1.195	1.195
Reactance of the protective conductor <sup>1</sup> (50Hz)	X <sub>PE</sub> [mΩ/m]	0.274	0.274	0.274	0.274	0.274	0.274	0.274
Resistance of the fault loop	R <sub>o</sub> [mΩ/m]	5.956	5.956	5.956	5.956	4.385	4.385	2.790
Reactance of the fault loop (50Hz)	X <sub>o</sub> [mΩ/m]	0.503	0.503	0.503	0.503	0.510	0.510	0.392
Impedance of the fault loop	Z <sub>o</sub> [mΩ/m]	5.977	5.977	5.977	5.977	4.415	4.415	2.817
Voltage drop with distributed load referred to V3f <sup>3</sup>	ΔV 10 <sup>-3</sup> cosφ = 0.70 [V/m/A]	4.123 <sup>2</sup>	3.570	3.570	3.570	2.830	2.451	1.225
	ΔV 10 <sup>-3</sup> cosφ = 0.75 [V/m/A]	4.393 <sup>2</sup>	3.805	3.805	3.805	3.008	2.605	1.302
	ΔV 10 <sup>-3</sup> cosφ = 0.80 [V/m/A]	4.662 <sup>2</sup>	4.038	4.038	4.038	3.183	2.757	1.378
	ΔV 10 <sup>-3</sup> cosφ = 0.85 [V/m/A]	4.928 <sup>2</sup>	4.268	4.268	4.268	3.356	2.906	1.453
	ΔV 10 <sup>-3</sup> cosφ = 0.90 [V/m/A]	5.190 <sup>2</sup>	4.495	4.495	4.495	3.525	3.052	1.526
	ΔV 10 <sup>-3</sup> cosφ = 0.95 [V/m/A]	5.445 <sup>2</sup>	4.715	4.715	4.715	3.686	3.192	1.596
	ΔV 10 <sup>-3</sup> cosφ = 1.00 [V/m/A]	5.656 <sup>2</sup>	4.898	4.898	4.898	3.802	3.293	1.646
Weight	p [kg/m]	1.80	1.83	2.02	2.02	1.98	2.33	2.33
Fire load	[kWh/m]	1.1	1.1	2.1	2.1	1.1	2.1	2.1
Protection index	IP	55	55	55	55	55	55	55
Degree of impact-resistance	IK	07	07	07	07	07	07	07
Joule effect losses at rated current	P [W/m]	10.6	10.6	10.6	10.6	18.2	18.2	22.6
Ambient temperature min-/MAX-	t [°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

1 : Metal casing

2 : Single phase values with distributed load

3 : Three phase - see pg 12

### Temperature rating schedule according to the room temperature

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 rated current for room temperature values different from 40° C

#### Mechanical loads permitted table

The table shows the maximum weights (kg) that can be supported, both for concentrated, and distributed loads

LB PLUS – TYPE B	LB PLUS – TYPE A	Distance between suspension brackets	Concentrated load	Distributed load
		1.5	40	50 kg/m (75 kg) <sup>4</sup>
	2.0	30	30 kg/m (60 kg) <sup>4</sup>	
	3.0	20	13 kg/m (39 kg) <sup>4</sup>	
	5.0	13	5 kg/m (25 kg) <sup>4</sup>	
	7.0	7	2 kg/m (14 kg) <sup>4</sup>	

4 : Distributed load total weight