

FLEXICOPPER®

FLEXIBLE ELEMENTS - Range PVC 105°C

DEFINITION

The flexible copper busbars in the FLEXICOPPER range consist of an assembly of (Cu-ETP) copper strips, protected by an extruded PVC sheath (from 9mm to 50mm)* which ensures the products are dielectrically insulated irrespective of how the bars are distorted or their conditions of use.

FIELDS OF APPLICATIONS:

FLEXICOPPER has been designed:

- For all electrical connections in switchgear, panel board and electrical appliances in the Low Voltage area.
- With the intent of connecting generator, transformer, inverter and panel control.

PRODUCT RANGE

Standard length	2000 mm – 3000 mm	Designation		
Strip	Bare copper or Tinned copper.			
Width of the strip	9 - 13 – 15.5 - 20 -24 - 32 – 40- 50 – 63 -80 & 100 mm			
Thickness of strip	0.5 mm (or width of 13 mm) 0.8 mm (for width of 9 & 15.5 mm) 1 mm (for other width)			
Quantity of strip	up to 12			
Insulation	PVC			

24	x	1	x	8
Width		Strip thickness		Strip quantity

RAW MATERIAL

Conductor		Insulated part	
Bare Copper strip according to EN 13599		Compound	PVC
Désignation	Cu-ETP	Colour	Black (Under request: Orange/Blue)
Material Condition	Recocido / Annealed	Density (ISO 1183-1)	1.36
Copper rate	99.9 %	Hardness, shore A (ISO R 868)	86
Resistivity at 20°C	1.7241 µΩ.cm (100% IACS)	Tensile strength (EN 60811-1-1)	~ 18 MPa
Tensile strength	> 200 MPa	Ultimate Elongation (EN 60811-1-1)	~ 300 %
Elongation at breaking	> 30 %	Operating temperature	-40°C/+105°C
Tinned copper strip according to EN 14436 :		Regulation	
Tin coating	Sn99	- Product in compliance with RoHS directive. - EC mark (Low Voltage directive). - UL approval.	
Tin thickness	2 to 4µm	Calculation coefficient for parallel bars	
Características generales / General features		For 2 bars	1,72
Maximum Operating Voltage	1000 V AC o/ or 1500 V DC	For 3 bars	2,25
Maximum Operating Temperature	90 °C o / or 105°C		
Nominal Insulation thickness	2 mm.		
Dielectric Strength			
Beetween conductor and earth	15 kV/mm (50Hz) / 15 kV (RMS)		
Beetween conductors	30 kV/mm (50Hz) / 30 kV (RMS)		
Self Extinguishing (NFC 32070 / IEC 60332-1)	C2		

PERMISSIBLE CURRENT RATING

The steady operating current shall be such that the temperature reached by the conductor shall not be greater than 90°C or 105°C (See values on table herein after).

Example:

Flexible Element ES 24X1X8 CRN
Temperature ambiente Ta = 40°C
Red copper conductor ΔT = 50°C
Then Ta + ΔT = 90°C
Select in the column 50°C rise the suitable current .
In this case the current is 700 A.

Note: According to L'UL recommendation, the current shall not be greater than 90°C for the red copper busbar and 105°C for tinned copper busbar.

TABLE OF RATED CURRENT & POWER LOSSES

Rated current accoding to UL file E230236
Theoretical power loss - 1 bar per phase - calculated in accordance with IEC 61439-1.
Power losses – 1 bar per phase – Estimation acc. to IEC 61439-1.

SIZE	Width (mm)	Thickness of individual copper sheet (mm)	No. Of laminates	Cross Section (mm²)	Rated current for 50°C rise (A)	Rated current for 65°C rise (A)	Power losses ΔT 50°C Tc = 90°C Pv (W/m)
9x0,8x2	9	0,8	2	14,4	135	160	28,9
9x0,8x3	9	0,8	3	21,6	165	195	28,8
9x0,8x4	9	0,8	4	28,8	195	230	30,2
9x0,8x5	9	0,8	5	36	225	260	32,2
9x0,8x6	9	0,8	6	43,2	255	295	34,5
9x0,8x7	9	0,8	7	50,4	275	320	34,4
9x0,8x8	9	0,8	8	57,6	295	345	34,7
9x0,8x9	9	0,8	9	64,8	330	385	38,9
9x0,8x10	9	0,8	10	72	340	395	36,9
13x0,5x2	13	0,5	2	13	140	160	34,6
13x0,5x3	13	0,5	3	19,5	170	195	34
13x0,5x4	13	0,5	4	26	200	230	35,3
13x0,5x5	13	0,5	5	32,5	225	260	35,8
13x0,5x6	13	0,5	6	39	250	285	36,8
13x0,5x7	13	0,5	7	45,5	270	315	36,8
13x0,5x8	13	0,5	8	52	290	335	37,2
13x0,5x9	13	0,5	9	58,5	310	360	37,8
13x0,5x10	13	0,5	10	65	330	385	38,6
15,5x0,8x2	15	0,8	2	24	200	230	59,3
15,5x0,8x3	15	0,8	3	36	250	290	61,8
15,5x0,8x4	15	0,8	4	48	295	340	64,6
15,5x0,8x5	15	0,8	5	60	330	385	65
15,5x0,8x6	15	0,8	6	72	375	430	69,7
15,5x0,8x7	15	0,8	7	84	400	465	68
15,5x0,8x8	15	0,8	8	96	430	500	68,8
15,5x0,8x9	15	0,8	9	108	460	535	70,1
15,5x0,8x10	15	0,8	10	120	510	590	77,6
20x1x2	20	1	2	40	280	320	45,3
20x1x3	20	1	3	60	345	400	45,9
20x1x4	20	1	4	80	410	470	48,7
20x1x5	20	1	5	100	465	535	50,3
20x1x6	20	1	6	120	515	595	51,5
20x1x7	20	1	7	140	545	630	49,5
20x1x8	20	1	8	160	585	685	50
20x1x9	20	1	9	180	625	730	50,8
20x1x10	20	1	10	200	705	810	58,3

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TABLE OF RATED CURRENT & POWER LOSSES

SIZE	Width (mm)	Thickness of individual copper sheet (mm)	No. Of laminates	Cross Section (mm²)	Rated current for 50°C rise (A)	Rated current for 65°C rise (A)	Power losses ΔT 50°C Tc = 90°C Pv (W/m)
24x1x2	24	1	2	48	325	375	51,1
24x1x3	24	1	3	72	400	465	51,7
24x1x4	24	1	4	96	470	545	53,6
24x1x5	24	1	5	120	535	615	55,7
24x1x6	24	1	6	144	590	680	56,6
24x1x7	24	1	7	168	620	720	53,7
24x1x8	24	1	8	192	700	810	60,1
24x1x9	24	1	9	216	720	870	56,6
24x1x10	24	1	10	240	800	925	63,1
32x1x2	32	1	2	64	410	475	61
32x1x3	32	1	3	96	510	585	63,6
32x1x4	32	1	4	128	595	685	65,1
32x1x5	32	1	5	160	670	775	66,2
32x1x6	32	1	6	192	740	855	67,5
32x1x7	32	1	7	224	780	895	64,5
32x1x8	32	1	8	256	870	1000	70,4
32x1x9	32	1	9	288	905	1025	67,9
32x1x10	32	1	10	320	985	1135	72,7
40x1x2	40	1	2	80	495	575	72,2
40x1x3	40	1	3	120	615	705	74,6
40x1x4	40	1	4	160	715	825	75,9
40x1x5	40	1	5	200	805	925	77,3
40x1x6	40	1	6	240	885	1020	78,1
40x1x7	40	1	7	280	940	1065	75,8
40x1x8	40	1	8	320	1040	1195	81,5
40x1x9	40	1	9	360	1080	1230	78,5
40x1x10	40	1	10	400	1160	1340	81,8
50x1x2	50	1	2	100	585	670	81,5
50x1x3	50	1	3	150	745	855	88,5
50x1x4	50	1	4	200	860	990	88,9
50x1x5	50	1	5	250	965	1110	89,9
50x1x6	50	1	6	300	1060	1220	90,9
50x1x7	50	1	7	350	1130	1285	88,9
50x1x8	50	1	8	400	1225	1410	91,9
50x1x9	50	1	9	450	1300	1475	92,4
50x1x10	50	1	10	500	1375	1585	93,5
63x1x2	63	1	2	126	715	815	97,08
63x1x3	63	1	3	189	905	1045	105,1
63x1x4	63	1	4	252	1045	1205	105,6
63x1x5	63	1	5	315	1165	1345	105,8
63x1x6	63	1	6	378	1275	1470	106,1
63x1x7	63	1	7	441	1375	1560	106,3
63x1x8	63	1	8	504	1465	1685	106,4
63x1x9	63	1	9	567	1580	1790	110,5
63x1x10	63	1	10	630	1630	1875	110,6
80x1x2	80	1	2	160	850	965	110,6
80x1x3	80	1	3	240	1115	1285	127,8
80x1x4	80	1	4	320	1280	1475	127,2
80x1x5	80	1	5	400	1425	1640	127,1
80x1x6	80	1	6	480	1550	1785	126,2
80x1x7	80	1	7	560	1690	1915	129,5
80x1x8	80	1	8	640	1775	2045	125,9
80x1x9	80	1	9	720	1930	2190	133,3
80x1x10	80	1	10	800	1960	2260	124,6
100x1x2	100	1	2	200	1075	1220	144,01
100x1x3	100	1	3	300	1320	1500	146,2
100x1x4	100	1	4	400	1550	1785	152,5
100x1x5	100	1	5	500	1720	1980	151,6
100x1x6	100	1	6	600	1870	2155	150,7
100x1x7	100	1	7	700	2045	2320	155,8
100x1x8	100	1	8	800	2110	2435	146,4
100x1x9	100	1	9	900	2200	2650	142,7
100x1x10	100	1	10	1000	2330	2690	145,3

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TABLE OF THE TOLERANCES

SIZE	Width (mm)	Strip thickness (mm)	No of strip	Nominal overall width (mm)	Maximal overall width (mm)	Espesor nominal Nominal overall height (mm)	Espesor máximo Maximal overall height (mm)
9x0,8x2	9	0,8	2	13	16	5,6	8,1
9x0,8x3	9	0,8	3	13	16	6,4	8,9
9x0,8x4	9	0,8	4	13	16	7,2	9,7
9x0,8x5	9	0,8	5	13	16	8	10,5
9x0,8x6	9	0,8	6	13	16	8,8	11,3
9x0,8x7	9	0,8	7	13	16	9,6	12,1
9x0,8x8	9	0,8	8	13	16	10,4	12,9
9x0,8x9	9	0,8	9	13	16	11,2	13,7
9x0,8x10	9	0,8	10	13	16	12	14,5
13x0,5x2	13	0,5	2	17	21	5	7,5
13x0,5x3	13	0,5	3	17	21	5,5	8
13x0,5x4	13	0,5	4	17	21	6	8,5
13x0,5x5	13	0,5	5	17	21	6,5	9
13x0,5x6	13	0,5	6	17	21	7	9,5
13x0,5x7	13	0,5	7	17	21	7,5	10
13x0,5x8	13	0,5	8	17	21	8	10,5
13x0,5x9	13	0,5	9	17	21	8,5	11
13x0,5x10	13	0,5	10	17	21	9	11,5
15,5x0,8x2	15,5	0,8	2	19,5	22,5	5,6	8,1
15,5x0,8x3	15,5	0,8	3	19,5	22,5	6,4	8,9
15,5x0,8x4	15,5	0,8	4	19,5	22,5	7,2	9,7
15,5x0,8x5	15,5	0,8	5	19,5	22,5	8	10,5
15,5x0,8x6	15,5	0,8	6	19,5	22,5	8,8	11,3
15,5x0,8x7	15,5	0,8	7	19,5	22,5	9,6	12,1
15,5x0,8x8	15,5	0,8	8	19,5	22,5	10,4	12,9
15,5x0,8x9	15,5	0,8	9	19,5	22,5	11,2	13,7
15,5x0,8x10	15,5	0,8	10	19,5	22,5	12	14,5
20x1x2	20	1	2	24	27	6	8,5
20x1x3	20	1	3	24	27	7	9,5
20x1x4	20	1	4	24	27	8	10,5
20x1x5	20	1	5	24	27	9	11,5
20x1x6	20	1	6	24	27	10	12,5
20x1x7	20	1	7	24	27	11	13,5
20x1x8	20	1	8	24	27	12	14,5
20x1x9	20	1	9	24	27	13	15,5
20x1x10	20	1	10	24	27	14	16,5
24x1x2	24	1	2	28	31	6	8,5
24x1x3	24	1	3	28	31	7	9,5
24x1x4	24	1	4	28	31	8	10,5
24x1x5	24	1	5	28	31	9	11,5
24x1x6	24	1	6	28	31	10	12,5
24x1x7	24	1	7	28	31	11	13,5
24x1x8	24	1	8	28	31	12	14,5
24x1x9	24	1	9	28	31	13	15,5
24x1x10	24	1	10	28	31	14	16,5
32x1x2	32	1	2	36	39	6	8,5
32x1x3	32	1	3	36	39	7	9,5
32x1x4	32	1	4	36	39	8	10,5
32x1x5	32	1	5	36	39	9	11,5
32x1x6	32	1	6	36	39	10	12,5
32x1x7	32	1	7	36	39	11	13,5
32x1x8	32	1	8	36	39	12	14,5
32x1x9	32	1	9	36	39	13	15,5
32x1x10	32	1	10	36	39	14	16,5

SIZE	Width (mm)	Strip thickness (mm)	No of strip	Nominal overall width (mm)	Maximal overall width (mm)	Espesor nominal Nominal overall height (mm)	Espesor máximo Maximal overall height (mm)
40x1x2	40	1	2	44	47	6	8,5
40x1x3	40	1	3	44	47	7	9,5
40x1x4	40	1	4	44	47	8	10,5
40x1x5	40	1	5	44	47	9	11,5
40x1x6	40	1	6	44	47	10	12,5
40x1x7	40	1	7	44	47	11	13,5
40x1x8	40	1	8	44	47	12	14,5
40x1x9	40	1	9	44	47	13	15,5
40x1x10	40	1	10	44	47	14	16,5
50x1x2	50	1	2	54	57	6	8,5
50x1x3	50	1	3	54	57	7	9,5
50x1x4	50	1	4	54	57	8	10,5
50x1x5	50	1	5	54	57	9	11,5
50x1x6	50	1	6	54	57	10	12,5
50x1x7	50	1	7	54	57	11	13,5
50x1x8	50	1	8	54	57	12	14,5
50x1x9	50	1	9	54	57	13	15,5
50x1x10	50	1	10	54	57	14	16,5
63x1x2	63	1	2	67	72,5	6	10,5
63x1x3	63	1	3	67	72,5	7	11,5
63x1x4	63	1	4	67	72,5	8	12,5
63x1x5	63	1	5	67	72,5	9	13,5
63x1x6	63	1	6	67	72,5	10	14,5
63x1x7	63	1	7	67	72,5	11	15,5
63x1x8	63	1	8	67	72,5	12	16,5
63x1x9	63	1	9	67	72,5	13	17,5
63x1x10	63	1	10	67	72,5	14	18,5
80x1x2	80	1	2	84	89,5	6	10,5
80x1x3	80	1	3	84	89,5	7	11,5
80x1x4	80	1	4	84	89,5	8	12,5
80x1x5	80	1	5	84	89,5	9	13,5
80x1x6	80	1	6	84	89,5	10	14,5
80x1x7	80	1	7	84	89,5	11	15,5
80x1x8	80	1	8	84	89,5	12	16,5
80x1x9	80	1	9	84	89,5	13	17,5
80x1x10	80	1	10	84	89,5	14	18,5
100x1x2	100	1	2	104	109,5	6	10,5
100x1x3	100	1	3	104	109,5	7	11,5
100x1x4	100	1	4	104	109,5	8	12,5
100x1x5	100	1	5	104	109,5	9	13,5
100x1x6	100	1	6	104	109,5	10	14,5
100x1x7	100	1	7	104	109,5	11	15,5
100x1x8	100	1	8	104	109,5	12	16,5
100x1x9	100	1	9	104	109,5	13	17,5
100x1x10	100	1	10	104	109,5	14	18,5

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