



## Ω FLEX - Insulated copper flexible bars

Ω FLEX bars are made in red copper laminates (Cu ETP) coated with an extruded PVC insulation, which gives excellent electric insulation even in presence of dampness and with aggressive temperatures and environments.

**The fields of use** are all the connections for power transportation inside L.V. electric panel boards, in alternative to cable or rigid copper bars, connection of electric devices (disconnecting switches, circuit breakers, etc.), connections between transformers and/or electric panel boards and busducts.

Insulated flexible bars are the only electric connection system to offer great advantages compared to cable and rigid bar connections. The costs of connections made of flexible bars should be compared to the sum of the costs for cable + connection terminal + crimping time. In the case of rigid bars, the same sum + support systems + bending time.

### ADVANTAGES COMPARED TO RIGID BAR

- Increased ampacity with equal cross-section, with improved safety.
- Weight and volume savings inside panel boards.
- Easy and quick shaping of the conductor thanks to laminate flexibility.
- Bar support or insulator fitting cost and time saving, since the conductor is insulated.

### ADVANTAGES COMPARED TO CABLE

- Increased ampacity with equal cross-section.
- Connection terminal fitting cost and time saving.
- Elimination of the contact resistances between cable and connection terminals.
- Volume saving compared to the minimum admissible curving radius for cables.

### RANGE

- Standard length: 2 meters - 3 meters
- Copper laminate thickness: from 0.5 to 1 mm
- Laminate number: from 2 to 12

# Ω FLEX - Insulated copper flexible bars



file n° E300607

## TECHNICAL FEATURES

### Conductor

Electrolytic copper Cu-ETP 99.90%  
Laminate thickness 0.5 ÷ 1 mm

### Insulation

Self-extinguishing PVC UL 94-V0  
Fire Class: V0  
Thickness: 2 mm  
Max. elongation: 365%  
Hardness Shore A: 85°  
Tensile strength: 19.6 MPa  
Recyclable

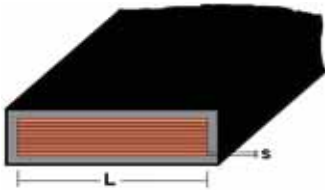
### Finished product

Dielectric rigidity: 20KV/mm  
Rated voltage: 1000 V AC/1500 V DC  
Working temperature: -40°C ÷ +105°C

### Reference example

#### BFX 4X20X1

Laminate number: 4  
Laminate width: L = 20 mm  
Laminate thickness: s = 1 mm



### Selection based on temperature

$I_n$  = Rated current A  
 $T_f$  = Working temperature °C  
 $T_a$  = Room temperature °C  
 $\Delta T$  = Temperature rise °C

### For $I_n = 630$ A at $T_f = 90^\circ\text{C}$

we can use for example one  
**BFX 5X32X1** at  $\Delta T = 50^\circ\text{C}$

In fact:

$BFX 5x32x1 = I_n 670$  A with  $\Delta T = 50^\circ\text{C}$   
 $T_a = 40^\circ\text{C}$

$T_f = T_a + \Delta T = 40^\circ\text{C} + 50^\circ\text{C} = 90^\circ\text{C}$

### Icc value (1 second)

(effective short-circuit current)

### Icc parameters calculation

#### Initial temperature:

105°C - maximum working temperature of the conductor

#### Final temperature:

**160°C** - limit of temperature for PVC insulation compliant with IEC 60724 for cross-sections < 300 mm<sup>2</sup>

**140°C** - limit of temperature for PVC insulation compliant with IEC 60724 for cross-section > 300 mm<sup>2</sup>

Table of ampacities (A) based on temperature rise  $\Delta T$   
as per IEC 60439-1  
Reference room temperature 40°C

## INSULATED FLEXIBLE COPPER BARS LENGTH 2 METERS

L	Code	Reference	Icons	Weight (Kg)	Sect. (mm <sup>2</sup> )	Icc (A)	Temperature Rise $\Delta T$ (°C)					
							65°	50°	40°	30°	20°	
							Rated Intensity In (A)					
9	BFX1005	BFX 3X9X0,8	1	27	0,47	22	1.879	190	165	140	120	95
	BFX1020	BFX 6X9X0,8	1	27	0,87	43	3.757	295	255	210	175	135
	BFX1021	BFX 9X9X0,8	1	27	1,17	65	5.636	385	330	270	225	175
13	BFX1022	BFX 3X13X0,5	1	24	0,43	20	1.696	195	170	140	120	80
	BFX1023	BFX 6X13X0,5	1	12	0,80	39	3.392	285	250	210	170	130
	BFX1024	BFX 10X13X0,5	1	12	1,33	65	5.653	385	330	270	230	180
15,5	BFX1025	BFX 2X15,5X0,8	1	24	0,51	25	2.157	230	200	170	140	120
	BFX1035	BFX 4X15,5X0,8	1	24	1,01	50	4.314	340	295	245	210	160
	BFX1045	BFX 6X15,5X0,8	1	12	1,46	74	6.470	430	375	305	260	200
	BFX1050	BFX 10X15,5X0,8	1	12	2,36	124	10.784	590	510	410	345	270
20	BFX1055	BFX 2X20X1	1	20	0,85	40	3.479	320	280	230	195	150
	BFX1060	BFX 3X20X1	1	20	1,21	60	5.218	400	345	285	240	185
	BFX1065	BFX 4X20X1	1	20	1,58	80	6.957	470	410	335	280	215
	BFX1070	BFX 5X20X1	1	10	1,94	100	8.697	535	465	375	315	245
	BFX1075	BFX 6X20X1	1	10	2,30	120	10.436	595	515	415	350	270
	BFX1076	BFX 8X20X1	1	10	3,00	160	13.915	685	585	490	410	320
BFX1080	BFX 10X20X1	1	10	3,74	200	17.394	810	705	560	470	365	
24	BFX1085	BFX 2X24X1	1	16	1,02	48	4.174	370	320	265	225	175
	BFX1090	BFX 3X24X1	1	16	1,45	72	6.262	465	400	330	275	215
	BFX1095	BFX 4X24X1	1	16	1,88	96	8.349	545	470	380	320	250
	BFX1100	BFX 5X24X1	1	16	2,32	120	10.436	615	535	440	360	280
	BFX1105	BFX 6X24X1	1	8	2,75	144	12.523	680	590	475	400	310
	BFX1110	BFX 8X24X1	1	8	3,61	192	16.698	810	700	560	470	370
	BFX1115	BFX 10X24X1	1	8	4,48	240	20.872	925	800	630	530	410
32	BFX1120	BFX 2X32X1	1	12	1,35	64	5.566	475	410	335	280	220
	BFX1125	BFX 3X32X1	1	12	1,92	96	8.349	585	510	410	295	270
	BFX1130	BFX 4X32X1	1	12	2,50	128	11.132	685	590	480	400	310
	BFX1135	BFX 5X32X1	1	12	3,07	160	13.915	775	670	540	450	350
	BFX1140	BFX 6X32X1	1	6	3,65	192	16.698	855	735	600	500	385
	BFX1145	BFX 8X32X1	1	6	4,80	256	22.264	1000	870	690	580	450
	BFX1150	BFX 10X32X1	1	6	5,95	320	22.496	1135	980	780	655	510
40	BFX1155	BFX 2X40X1	1	12	1,67	80	6.957	575	495	400	335	260
	BFX1160	BFX 3X40X1	1	12	2,39	120	10.436	705	615	490	415	320
	BFX1165	BFX 4X40X1	1	12	3,11	160	13.915	820	715	570	480	375
	BFX1170	BFX 5X40X1	1	6	3,83	200	17.394	925	805	640	540	420
	BFX1175	BFX 6X40X1	1	6	4,54	240	20.872	1020	880	705	590	460
	BFX1180	BFX 8X40X1	1	6	5,94	320	22.496	1195	1035	815	685	530
	BFX1185	BFX 10X40X1	1	6	7,41	400	28.120	1340	1160	915	770	595
50	BFX1190	BFX 3X50X1	1	10	2,98	150	13.045	855	745	590	495	385
	BFX1195	BFX 4X50X1	1	10	3,88	200	17.394	990	860	685	575	445
	BFX1200	BFX 5X50X1	1	5	4,77	250	21.742	1110	965	770	645	500
	BFX1205	BFX 6X50X1	1	5	5,67	300	22.090	1220	1060	840	705	545
	BFX1210	BFX 8X50X1	1	3	7,46	400	28.120	1410	1220	970	815	620
	BFX1215	BFX 10X50X1	1	3	9,25	500	35.150	1585	1370	1080	905	705
63	BFX1220	BFX 3X63X1	1	8	3,75	189	16.437	1050	900	715	600	460
	BFX1225	BFX 4X63X1	1	8	4,87	252	21.916	1200	1040	825	680	535
	BFX1230	BFX 5X63X1	1	4	6,00	315	22.144	1340	1160	925	775	600
	BFX1235	BFX 6X63X1	1	4	7,13	378	26.573	1470	1270	1010	840	650
	BFX1240	BFX 8X63X1	1	4	9,38	504	35.431	1680	1460	1160	970	750
	BFX1245	BFX 10X63X1	1	2	11,63	630	44.288	1875	1625	1280	1075	830
80	BFX1250	BFX 3X80X1	1	4	4,75	240	20.872	1280	1115	870	730	560
	BFX1255	BFX 4X80X1	1	4	6,17	320	22.496	1475	1275	1010	865	650
	BFX1260	BFX 5X80X1	1	4	7,60	400	28.120	1640	1425	1120	935	725
	BFX1265	BFX 6X80X1	1	4	9,03	480	33.744	1780	1550	1220	1025	790
	BFX1270	BFX 8X80X1	1	2	11,89	640	44.991	2045	1775	1390	1170	910
	BFX1275	BFX 10X80X1	1	2	14,75	800	56.239	2260	1960	1545	1300	1005
100	BFX1280	BFX 4X100X1	1	4	7,71	400	28.120	1780	1550	1210	1015	785
	BFX1285	BFX 5X100X1	1	4	9,49	500	35.150	1980	1720	1350	1125	875
	BFX1290	BFX 6X100X1	1	2	11,28	600	42.179	2150	1870	1455	1225	950
	BFX1295	BFX 8X100X1	1	2	14,85	800	56.239	2410	2110	1655	1395	1080
	BFX1300	BFX 10X100X1	1	2	18,42	1000	70.299	2680	2325	1830	1545	1190
	BFX1305	BFX 12X100X1	1	2	21,99	1200	84.359	3135	2720	2135	1800	1385



file n° E300607

Table of ampacities (A) based on temperature rise  $\Delta T$   
as per IEC 60439-1  
Reference room temperature 40°C

## INSULATED FLEXIBLE COPPER BARS LENGTH 3 METERS

L	Code	Reference		Weight (Kg)	Sect. (mm²)	Icc (A)	Temperature Rise $\Delta T$ (°C)				
							65°	50°	40°	30°	20°
							Rated Intensity In (A)				
20	BFX3055	BFX 2X20X1-3	1	1,281	40	3.479	320	<b>280</b>	230	195	150
	BFX3060	BFX 3X20X1-3	1	1,821	60	5.218	400	<b>345</b>	285	240	185
	BFX3070	BFX 5X20X1-3	1	2,907	100	8.697	535	<b>465</b>	375	315	245
24	BFX3085	BFX 2X24X1-3	1	1,527	48	4.174	370	<b>320</b>	265	225	175
	BFX3090	BFX 3X24X1-3	1	2,175	72	6.262	465	<b>400</b>	330	275	215
	BFX3095	BFX 4X24X1-3	1	2,823	96	8.349	545	<b>470</b>	380	320	250
	BFX3100	BFX 5X24X1-3	1	3,474	120	10.436	615	<b>535</b>	440	360	280
32	BFX3125	BFX 3X32X1-3	1	2,88	96	8.349	475	<b>410</b>	335	280	220
	BFX3135	BFX 5X32X1-3	1	4,608	160	13.915	775	<b>670</b>	540	450	350
	BFX3145	BFX 8X32X1-3	1	7,194	256	22.264	1000	<b>870</b>	690	580	450
40	BFX3170	BFX 5X40X1-3	1	5,739	200	17.394	925	<b>805</b>	640	540	420
	BFX3185	BFX 10X40X1-3	1	11,121	400	28.120	1340	<b>1160</b>	915	770	595
50	BFX3200	BFX 5X50X1-3	1	7,155	250	21.742	1110	<b>965</b>	770	645	500

Further sizes available on request

For ampacity values related to UL standard, please contact our technical department.

Derating coefficient for the use of bars in parallel			
Number of bars in parallel	2 bars	3 bars	4 bars
Coefficient to use	1,8	2,5	3,2

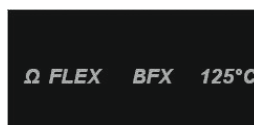
EXAMPLE FOR BFX 5X100X1	In with $\Delta T$ 50°C	= 1720 A
BFX 5X100X1 in parallel	= 1720 A x 1,8	= 3096 A
	= 1720 A x 2,5	= 4300 A
	= 1720 A x 3,2	= 5504 A

### UPON REQUEST:

Tinned copper or aluminum bars



Insulation for temperatures up to 125°C



Halogen-free insulation up to 90°C

