KUPFERRHEYDT

MAXIFLEX

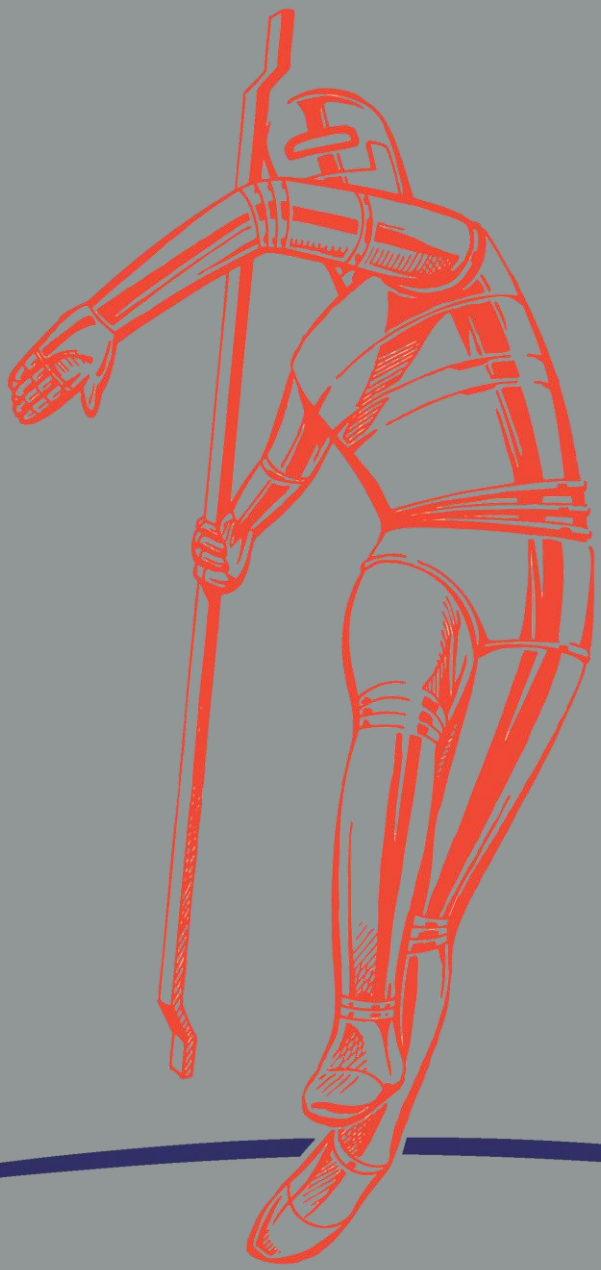
FLEXIBLE INSULATED BUSBARS

GINDRE GROUP

KUPFERRHEYDT

Kupferrheydt GmbH, a high-performance medium-sized company, is the German subsidiary of the internationally active Group Gindre based in France and is one of the market leaders in Europe.

We are a manufacturer of semi-finished copper products, components and MAXIFLEX – insulated busbars for industry and trade. With our products, we support the energy transition and the expansion of artificial intelligence and offer our partners in the electrical industry, mechanical engineering, renewable energies, forming technology and automotive a comprehensive range of technical solutions.



With expert advice and a motivated team, we offer you the ALL-IN-ONE solution for your demanding applications.

With state-of-the-art production technology, we react individually and flexibly to customer requests at any time.

We are certified according to DIN ISO 9001:2015 and constantly meet the highest quality requirements.

MAXIFLEX

FLEXIBLE INSULATED BUSBARS

SPECIFICATIONS

COPPER

Cu-ETP (CW004A) R200 copper strip according to EN 13599.

Thickness of the straps: 0.5 mm to 1.0 mm. Other thicknesses on request.

Width of the straps: 9 mm to 100mm.

Standard length: 2 meters. 3m and 4m can also be produced on request.

Number of straps: 2 to 10 slats.

All dimensions are available in both plain and tin-plated.

ISOLATION

High-quality PVC Class II sheathing according to EN 61439.

PVC insulation self-extinguishing and flame retardant according to UL 94 V0.

Wall thickness: min. 1.65 mm (average 1.85 m).

Standard color: black, other colors on request.

Elongation > 200%

Tensile strength > 15 N/mm²

Tight solitary bond, the insulation is highly tear and stab resistant.

ELECTRICAL CHARACTERISTICS

Dielectric strength of insulation: > 20 KV/mm.

Operating voltage: 1000 V AC / 1500 V DC.

Operating temperature: -40°C to 105°C, high temperature version up to 125°C*.

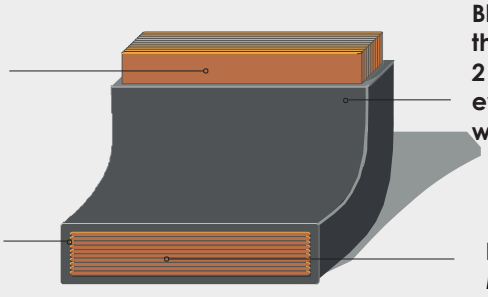
* Not under dynamic load

The full amperage range, from 100 to 2600 ampere.

Allows for a smaller bend radius than standard power cords.

Copper with high conductivity

Rounded edges on all slats to avoid the risk of insulation cracking



Black PVC with a thickness of 1.65 to 2 mm, extruded even for large widths

Final annealing Maximum flexibility

Advantages of flexible busbars

MAXIFLEX

For a 1,000A AC installation, MAXIFLEX requires less than 60% of the cross-section of a comparable cable installation and less than 10% of the installation time than fixed busbars. **No busbar supports are required and smaller control cabinets can be realized.**

MAXIFLEX allows for a smaller bending radius than standard power cables and can also be folded (zero radius bending) , **saving space and therefore copper.** (A)

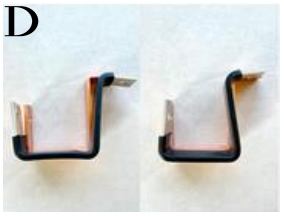
MAXIFLEX offers **highly secure connections because no cable lugs are used.** This saves mounting hardware and eliminates faulty connections that can be caused by incorrectly crimped lugs.

The MAXIFLEX connection offers a **reduced installation height.** (B)

In AC applications, MAXIFLEX enables higher current density due to the skin effect, **which leads to cost savings due to reduced copper use.** (C)

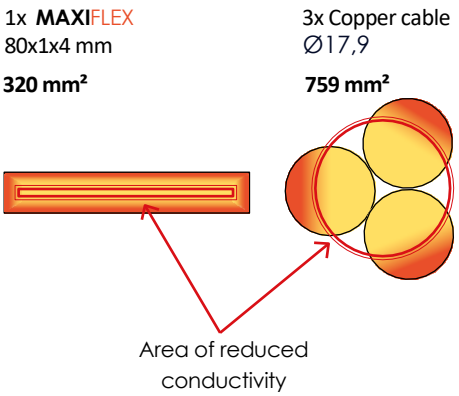
MAXIFLEX is less sensitive to movement than fixed busbars, compensates for vibrations, is easier to install due to higher elasticity **and thus compensates for manufacturing tolerances.** (D)

The MAXIFLEX insulation is extruded around the copper strips under pressure. As a result, the insulation is perfectly shaped, without air gaps or defects, and holds the individual straps firmly together. **This guarantees good heat transfer from the copper strips through the insulation to the environment.**



Skin effect in alternating current (AC) applications

Skin effect prevents an even distribution of the current flow within a circular conductor, causing most of the current to be concentrated in the outer radius. This reduces the effective cross-sectional area and limits the current carrying capacity of the conductor.
In contrast, conductors with a flat (rectangular) cross-section reduce the negative effects of the skin effect. This is because they provide a larger area at the outer edge, which allows for higher current density and improves the efficiency of the conductor.



MAXIFLEX HF

HALOGEN-FREE

NEW HALOGEN-FREE MAXIFLEX WITH AN OPERATING TEMPERATURE OF -75 TO 115°C

High UV Constancy

High resistance to oils and liquids

UL 94 V0 Flame Retardant

Low smoke development

High flexibility at low and high temperatures
from -75 °C to 115 °C

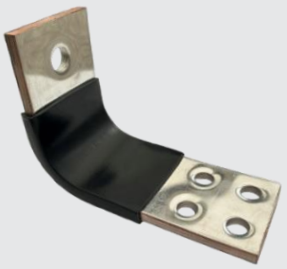
Reinforced insulation of class II EN 61439

MAXIFLEX Components

The processing of MAXIFLEX copper bars to a component is one of our absolute core competencies. These components are cut to fixed lengths, stripped, bent, perforated and configured as a finished installation kit according to customer specifications.

MAXIFLEX laminated copper components can be used for all electrical connections in control cabinets and in low-voltage applications. Our solutions are designed to allow for more space within panel boards. This allows for more efficient use of space and the installation of additional components.

Our development team has extensive experience in supporting our partners with individual solutions tailored to their needs.



MAXIFLEX IEC

Continuous current load in relation to conductor temperature

Amperage group	Cu strip width (mm)		Cu strip thickness (mm)		No. of Cu strips	Weight kg/meter	Cu cross section (mm²)	Ampacity (A)*					Reduction factor with 2 bars	Reduction factor with 3 bars
								105°C (ΔT=70)	95°C (ΔT=60)	**85°C (ΔT=50)**	75°C (ΔT=40)	65°C (ΔT=30)		
125	9	x	0,8	x	2	0,128	14,4	145	133	**122**	109	94	1,72	2,25
	9	x	0,8	x	3	0,193	21,6	180	167	**152**	136	117	1,72	2,25
	9	x	0,8	x	4	0,256	28,8	214	198	**180**	162	139	1,72	2,25
	13	x	0,8	x	2	0,185	20,8	189	174	**160**	141	122	1,72	2,25
	15.5	x	0,8	x	2	0,214	24,8	214	199	**180**	162	139	1,72	2,25
250	9	x	0,8	x	5	0,321	36	242	224	**204**	184	158	1,72	2,25
	9	x	0,8	x	6	0,385	43,2	272	252	**230**	206	176	1,72	2,25
	13	x	0,8	x	3	0,278	31,2	235	218	**199**	177	151	1,72	2,25
	13	x	0,8	x	4	0,370	41,6	275	255	**232**	207	179	1,72	2,25
	15.5	x	0,8	x	3	0,331	37,2	267	248	**226**	201	172	1,72	2,25
	13	x	0,8	x	5	0,463	52	313	290	**264**	236	204	1,72	2,25
	13	x	0,8	x	6	0,555	62,4	351	326	**295**	263	226	1,72	2,25
	15.5	x	0,8	x	4	0,441	49,6	315	291	**263**	235	202	1,72	2,25
	20	x	1	x	2	0,357	40	298	274	**251**	222	193	1,72	2,25
	24	x	1	x	2	0,428	48	344	319	**289**	258	221	1,72	2,25
400	15.5	x	0,8	x	5	0,552	62	357	333	**301**	268	230	1,72	2,25
	15.5	x	0,8	x	6	0,642	74,4	398	366	**336**	297	257	1,72	2,25
	20	x	1	x	3	0,535	60	368	341	**311**	277	240	1,72	2,25
	20	x	1	x	4	0,714	80	433	401	**364**	327	281	1,72	2,25
	24	x	1	x	3	0,642	72	428	395	**361**	319	276	1,72	2,25
	32	x	1	x	2	0,571	64	436	404	**366**	327	281	1,72	2,25
500	15.5	x	0,8	x	8	0,883	99,2	471	438	**398**	352	307	1,72	2,25
	15.5	x	0,8	x	10	1,071	124	546	503	**457**	408	353	1,72	2,25
	20	x	1	x	5	0,890	100	493	455	**417**	366	320	1,72	2,25
	20	x	1	x	6	1,071	120	548	508	**463**	412	352	1,72	2,25
	24	x	1	x	4	0,857	96	502	463	**421**	374	323	1,72	2,25
	24	x	1	x	5	1,071	120	568	523	**476**	425	366	1,72	2,25
	32	x	1	x	3	0,857	96	540	497	**455**	404	344	1,72	2,25
	40	x	1	x	2	0,714	80	527	489	**442**	395	340	1,72	2,25
630	20	x	1	x	10	1,784	200	748	693	**629**	561	480	1,72	2,25
	24	x	1	x	6	1,285	144	629	582	**531**	472	404	1,72	2,25
	32	x	1	x	4	1,142	128	629	582	**531**	472	404	1,72	2,25
	32	x	1	x	5	1,428	160	714	659	**599**	531	457	1,72	2,25
	40	x	1	x	3	1,071	120	650	599	**544**	485	417	1,72	2,25
	50	x	1	x	2	0,890	100	642	591	**538**	479	411	1,72	2,25
800	24	x	1	x	8	1,713	192	748	689	**629**	561	484	1,72	2,25
	24	x	1	x	10	2,142	240	854	791	**718**	642	553	1,72	2,25
	32	x	1	x	6	1,713	192	786	727	**663**	578	506	1,72	2,25
	40	x	1	x	4	1,428	160	761	701	**638**	565	485	1,72	2,25
	40	x	1	x	5	1,784	200	854	795	**718**	638	548	1,72	2,25
	50	x	1	x	3	1,338	150	791	727	**663**	591	506	1,72	2,25
	63	x	1	x	2	1,121	126	786	725	**659**	670	502	1,72	2,25

*Continuous current load at conductor temperature increase from 35°Celsius to temperature as specified.
ΔT = conductor temperature – ambient temperature

MAXIFLEX IEC

Continuous current load in relation to conductor temperature

Amperage group	Cu strip width (mm)		Cu strip thickness (mm)		No. of Cu strips	Weight kg/meter	Cu cross section (mm²)	Ampacity (A)* 105°C (ΔT=70)	95°C (ΔT=60)	**85°C (ΔT=50)**	75°C (ΔT=40)	65°C (ΔT=30)	Reduction factor with 2 bars	Reduction factor with 3 bars
1000	32	x	1	x	8	2,284	256	931	859	**778**	693	595	1,72	2,25
	32	x	1	x	10	2,851	320	1058	976	**887**	786	676	1,72	2,25
	40	x	1	x	6	2,141	240	939	867	**791**	701	599	1,72	2,25
	40	x	1	x	8	2,848	320	1109	1024	**931**	825	706	1,72	2,25
	50	x	1	x	4	1,784	200	915	846	**765**	684	587	1,72	2,25
	50	x	1	x	5	2,231	250	1033	952	**865**	769	659	1,72	2,25
	63	x	1	x	3	1,686	189	965	888	**808**	718	615	1,65	2,12
	80	x	1	x	2	1,424	160	976	899	**816**	725	622	1,65	2,12
1250	40	x	1	x	10	3,569	400	1258	1156	**1054**	931	801	1,65	2,12
	50	x	1	x	6	2,677	300	1141	1046	**952**	847	723	1,65	2,12
	50	x	1	x	8	3,569	400	1320	1216	**1105**	982	840	1,65	2,12
	63	x	1	x	4	2,248	252	1118	1033	**935**	833	714	1,65	2,12
	63	x	1	x	5	2,811	315	1258	1160	**1054**	935	803	1,65	2,12
	63	x	1	x	6	3,373	378	1369	1260	**1143**	1020	876	1,65	2,12
	80	x	1	x	3	2,141	240	1196	1102	**1000**	888	761	1,65	2,12
	80	x	1	x	4	2,851	320	1386	1275	**1158**	1029	880	1,65	2,12
	100	x	1	x	2	1,780	200	1199	1105	**1003**	888	761	1,60	2,02
1600	50	x	1	x	10	4,461	500	1492	1377	**1250**	1108	948	1,72	2,12
	63	x	1	x	8	4,497	504	1598	1469	**1333**	1182	1012	1,65	2,12
	63	x	1	x	10	5,621	630	1794	1653	**1500**	1328	1139	1,65	2,12
	80	x	1	x	5	3,569	400	1547	1428	**1294**	1148	986	1,65	2,12
	80	x	1	x	6	4,283	480	1692	1560	**1415**	1254	1075	1,65	2,12
	80	x	1	x	8	5,710	640	1953	1798	**1629**	1449	1237	1,65	2,12
	80	x	1	x	10	7,138	800	2178	2006	**1815**	1611	1377	1,65	2,12
	100	x	1	x	3	2,670	300	1462	1347	**1224**	1084	931	1,60	2,02
	100	x	1	x	4	3,569	400	1693	1556	**1413**	1082	1071	1,60	2,02
	100	x	1	x	5	4,461	500	1881	1734	**1573**	1394	1193	1,60	2,02
	100	x	1	x	6	5,353	600	2049	1889	**1713**	1517	1301	1,60	2,02
	100	x	1	x	8	7,138	800	2349	2162	**1959**	1734	1483	1,60	2,02
	100	x	1	x	10	8,922	1000	2627	2410	**2185**	1932	1651	1,60	2,02

Table values for current strengths and conductor heating are theoretically determined guideline values. The actual values can be found in Depending on environmental factors and the installation situation, they must be determined by the user for each application.
MAXIFLEX busbars may only be installed and used as specified in the owner's manual. MAXIFLEX must be installed and used as indicated in the instructions for use.

The reduction with 2 or 3 rails applied in parallel is calculated as follows: 24 x 1 x 6 at 85°C > 531 amperes (A)
Application of 2 rails in parallel: 531 A x 1.72 = **913** amps
Application of 3 rails in parallel: 531 A x 2.25 = **1194** amps

*Continuous current load at conductor temperature increase from 35°Celsius to temperature as specified.
ΔT = conductor temperature – ambient temperature

Subject to change !

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SCAN ME

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