FRHF-EMC / BFSI-EMC

Copper power cable EMC FRHF

0,6/1 (1,2) kV

Application

Fire-resistant EMC power cable for fixed installations indoors and outdoors. May be buried directly in soil. EMC shielded cable gives an excellent protection against electromagnetic disturbancies. For locations where safety requires the operation of alarm, control, signalling and energy circuits also during a fire. The conductor insulation must be protected against UV-radiation. Installations must be in accordance with national regulations and rules of installations. No requirement for CPR-classification.

Design

Standards	SFS 5547, HD 604 5 D
Conductor	1,5-6 mm² circular solid copper, EN/IEC 60228 class 1 10-25 mm² circular stranded copper, EN/IEC 60228 class 2 35-240 mm² sector shaped stranded copper, EN/IEC 60228 class 2
Insulation	Cross-linked polyethylene XLPE and mica-tape
Core Identification	Blue, brown Brown, black, grey Blue, brown, black, grey
Inner covering	Extruded filling compound
Metal screen	EMC-copper foil and copper wires
Oversheath	UV-protected polyolefin compound , Orange
EMC-Shield	Copper foil with 100 % coverage

Temperature limits

Max. conductor temperature °C	90
Max. cond. temp. short circuit max. 5 s °C	250
Min. cable temperature during operation °C	-50
Min. cable temperature during handling °C	-15
Min. cable temperature during transport °C	-25

Additional information

IEC 60331-21 Fire-resistant, 180 min.
IEC 60331-1, -2 EN 50200, EN 50362 Fire-resistant with shock, 90 min.
EN/IEC 60332-3-22 Flame retardant in a bunch, Category A
EN/IEC 61034 Low smoke density
EN/IEC 60754 Halogen-free, non-corrosive
EN 50289-1-6 Electromagnetic performance

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Technical information	2x1,5/1,5	2x2,5/2,5	2x4/4	2x6/6	2x10/10	2x16/16	2x25/16	3x1,5/1,5	3x2,5/2,5	3x4/4
Product code	**1146620**	**1146621**	**1146622**	**1146623**	**1146624**	**1146625**	**1146626**	**1146630**	**1146631**	**1146632**
Nominal cable diameter mm	12	13	15	16	19	21	26	13	14	16
Nominal cable weight kg/km	207	253	342	446	638	881	1248	231	286	398
Nominal weight of copper kg/km	48	75	120	177	283	440	649	62	97	157
Nominal Insulation thicness mm	0,7	0,7	0,7	0,7	0,7	0,7	0,9	0,7	0,7	0,7
Nominal size of metal screen mm²	1,5	2,5	4	6	10	16	16	1,5	2,5	4
Nominal thickness of oversheath mm	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Fire load										
Fire load MJ/m	2,207	2,450	2,944	3,448	4,532	5,515	7,886	2,509	2,782	3,393
Fire load kWh/m	0,613	0,681	0,818	0,958	1,259	1,532	2,190	0,697	0,773	0,942
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,1	0,2	0,4	0,6	1,0	1,6	2,5	0,2	0,3	0,6
Max. pulling force by pulling-stocking kN	0,0	0,1	0,1	0,2	0,4	0,6	1,0	0,0	0,1	0,2
Minimum bending radii										
Minimum bending radius, handling mm	146	155	175	192	225	256	307	154	164	187
Minimum bending radius, final bending mm	102	109	122	134	158	179	215	108	115	131
Minimum bending radii										
During handling and installation, cable cm	15	16	17	19	23	26	31	15	16	19
In final installation, cable cm	10	11	12	13	16	18	21	11	11	13
Minimum bending radii										
During handling and installation, cable m	0,15	0,15	0,17	0,19	0,23	0,26	0,31	0,15	0,16	0,19
In final installation, cable m	0,10	0,11	0,12	0,13	0,16	0,18	0,21	0,11	0,12	0,13
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	12,1	7,41	4,61	3,08	1,83	1,15	0,727	12,1	7,41	4,61
Maximum DC resistance at 20 °C, metal screen Ω/km	12,1	7,41	4,61	3,08	1,83	1,15	1,15	12,1	7,41	4,61

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Technical information	2x1,5/1,5	2x2,5/2,5	2x4/4	2x6/6	2x10/10	2x16/16	2x25/16	3x1,5/1,5	3x2,5/2,5	3x4/4
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	23	31	42	53	73	98	124	23	31	42
three loaded conductor, conductor 70 °C A								19	26	35
two loaded conductor, conductor 90 °C A	27	37	51	66	89	120	155	27	37	51
three loaded conductor, conductor 90 °C A								24	33	44
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	22	30	40	51	70	94	119	22	30	40
three loaded conductor, conductor 70 °C A								18,5	25	34
two loaded conductor, conductor 90 °C A	26	36	49	63	86	115	149	26	36	49
three loaded conductor, conductor 90 °C A								23	32	42
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 65 °C A	26	35	46	57	77	100	130	26	35	46
Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 90 °C A	27	35	46	58	77	100	129	23	30	39
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	0,2	0,3	0,6	0,9	1,6	2,5	3,9	0,2	0,3	0,6
Phase (initial 90 °C, final 250 °C) kA	0,2	0,3	0,5	0,8	1,4	2,3	3,6	0,2	0,3	0,5
Metal screen (initial 80 °C, final 250 °C) kA	0,2	0,4	0,6	0,9	1,5	2,4	2,4	0,2	0,4	0,6

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STANDARD PACKAGES	2x1,5/1,5	2x2,5/2,5	2x4/4	2x6/6	2x10/10	2x16/16	2x25/16	3x1,5/1,5	3x2,5/2,5	3x4/4
Product code	1146620	1146621	1146622	1146623	1146624	1146625		1146630	1146631	1146632
GTIN code	6438176009338	6438176009352	6438176009376	6438176009383	6438176009390	6438176009406		6438176009413	6438176009437	6438176009451
Package	500 K8	500 K8	500 K9	500 K10	500 K11	500 K12		500 K8	500 K8	500 K10

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Technical information	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70	3x150/70
Product code	**1146633**	**1146634**	**1146646**	**1146636**	**1146637**	**1146638**	**1146639**	**1146640**	**1146641**	**1146642**
Nominal cable diameter mm	17	20	22	26	26	30	34	37	40	43
Nominal cable weight kg/km	503	723	1026	1431	1538	2154	2905	3739	4742	5621
Nominal weight of copper kg/km	232	370	580	873	1112	1559	2170	2990	3815	4572
Nominal Insulation thicness mm	0,7	0,7	0,7	0,9	0,9	1,0	1,1	1,1	1,2	1,4
Nominal size of metal screen mm²	6	10	16	16	16	25	35	50	70	70
Nominal thickness of oversheath mm	1,8	1,8	1,8	1,8	1,8	1,8	1,9	2,1	2,2	2,3
Fire load										
Fire load MJ/m	3,794	4,999	6,622	8,321	7,702	10,198	12,772	14,144	16,902	20,376
Fire load kWh/m	1,054	1,389	1,839	2,311	2,139	2,833	3,548	3,929	4,695	5,660
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,9	1,5	2,4	3,7	5,2	7,5	10,5	14,2	18,0	20,0
Max. pulling force by pulling-stocking kN	0,3	0,6	0,9	1,5	2,1	3,0	4,2	5,7	7,2	8,5
Minimum bending radii										
Minimum bending radius, handling mm	200	236	269	317	315	361	406	446	480	520
Minimum bending radius, final bending mm	140	165	188	222	220	253	284	312	336	364
Minimum bending radii										
During handling and installation, cable cm	20	24	27	32	31	36	41	45	48	52
In final installation, cable cm	14	16	19	22	22	25	28	31	34	36
Minimum bending radii										
During handling and installation, cable m	0,20	0,24	0,27	0,32	0,32	0,36	0,41	0,45	0,48	0,52
In final installation, cable m	0,14	0,17	0,19	0,22	0,22	0,25	0,28	0,31	0,34	0,36
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	3,08	1,83	1,15	0,727	0,524	0,387	0,268	0,193	0,153	0,124
Maximum DC resistance at 20 °C, metal screen Ω/km	3,08	1,83	1,15	1,15	1,15	0,727	0,524	0,387	0,268	0,268

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Technical information	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70	3x150/70
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	53	73	98	124	154	187	241	293	341	394
three loaded conductor, conductor 70 °C A	45	62	83	105	131	159	204	248	287	332
two loaded conductor, conductor 90 °C A	66	89	120	155	192	234	301	366	426	492
three loaded conductor, conductor 90 °C A	56	78	104	132	164	200	256	310	360	415
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	51	70	94	119	148	180	232	282	328	379
three loaded conductor, conductor 70 °C A	43	60	80	101	126	153	196	238	276	319
two loaded conductor, conductor 90 °C A	63	86	115	149	185	225	289	352	410	473
three loaded conductor, conductor 90 °C A	54	75	100	127	158	192	246	298	346	399
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 65 °C A	57	77	100	130	160	190	240	285	325	370
Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 90 °C A	49	65	84	107	129	153	188	226	257	287
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	0,9	1,6	2,5	3,9	5,5	7,8	10,9	14,9	18,8	23,5
Phase (initial 90 °C, final 250 °C) kA	0,8	1,4	2,3	3,6	5,0	7,2	10,0	13,6	17,2	21,5
Metal screen (initial 80 °C, final 250 °C) kA	0,9	1,5	2,4	2,4	2,4	3,7	5,2	7,4	10,4	10,4

STANDARD PACKAGES	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70	3x150/70
Product code	1146633	1146634	1146646	1146636	1146637	1146638	1146639	1146640	1146641	
GTIN code	6438176009468	6438176009475		6438176009499	6438176009505	6438176009512	6438176009529	6438176009536	6438176009543	
Package	500 K10	500 K11		500 K14	500 K14	500 K14	500 K18	500 K18	500 K20	

Technical information	3x185/95	3x240/120	4x1,5/1,5	4x2,5/2,5	4x4/4	4x6/6	4x10/10	4x16/16	4x25/16	4x35/16
Product code	**1146643**	**1146644**	**1146660**	**1146661**	**1146662**	**1146663**	**1146664**	**1146676**	**1146666**	**1146667**
Nominal cable diameter mm	50	55	14	15	17	18	21	24	29	29
Nominal cable weight kg/km	7255	9240	286	353	461	588	852	1197	1727	1945
Nominal weight of copper kg/km	5811	7609	77	121	194	288	459	720	1102	1432
Nominal Insulation thicness mm	1,6	1,7	0,7	0,7	0,7	0,7	0,7	0,7	0,9	0,9
Nominal size of metal screen mm²	95	120	1,5	2,5	4	6	10	16	16	16
Nominal thickness of oversheath mm	2,5	2,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Fire load										
Fire load MJ/m	26,820	31,559	3,073	3,410	3,891	4,368	5,808	7,015	9,810	9,592
Fire load kWh/m	7,450	8,767	0,854	0,947	1,081	1,213	1,613	1,949	2,725	2,664
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	20,0	20,0	0,3	0,5	0,8	1,2	2,0	3,2	5,0	7,0
Max. pulling force by pulling-stocking kN	8,5	8,5	0,1	0,2	0,3	0,4	0,8	1,2	2,0	2,8
Minimum bending radii										
Minimum bending radius, handling mm	603	660	171	182	200	215	254	289	344	343
Minimum bending radius, final bending mm	422	462	120	128	140	150	178	202	241	240
Minimum bending radii										
During handling and installation, cable cm	60	66	17	18	20	21	25	29	34	34
In final installation, cable cm	42	46	12	13	14	15	18	20	24	24
Minimum bending radii										
During handling and installation, cable m	0,60	0,66	0,17	0,18	0,20	0,21	0,25	0,29	0,34	0,34
In final installation, cable m	0,42	0,46	0,12	0,13	0,14	0,15	0,18	0,20	0,24	0,24
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	0,0991	0,0754	12,1	7,41	4,61	3,08	1,83	1,15	0,727	0,524
Maximum DC resistance at 20 °C, metal screen Ω/km	0,193	0,153	12,1	7,41	4,61	3,08	1,83	1,15	1,15	1,15

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Technical information	3x185/95	3x240/120	4x1,5/1,5	4x2,5/2,5	4x4/4	4x6/6	4x10/10	4x16/16	4x25/16	4x35/16
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	451	535	23	31	42	53	73	98	124	154
three loaded conductor, conductor 70 °C A	379	447	19	26	35	45	62	83	105	131
two loaded conductor, conductor 90 °C A	564	667	27	37	51	66	89	120	155	192
three loaded conductor, conductor 90 °C A	474	560	24	33	44	56	78	104	132	164
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	434	514	22	30	40	51	70	94	119	148
three loaded conductor, conductor 70 °C A	364	430	18,5	25	34	43	60	80	101	126
two loaded conductor, conductor 90 °C A	542	641	26	36	49	63	86	115	149	185
three loaded conductor, conductor 90 °C A	456	538	23	32	42	54	75	100	127	158
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 65 °C A	420	480	26	35	46	57	77	100	130	160
Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m										
Cables in the ground, conductor 90 °C A	324	375	23	30	39	49	65	84	107	129
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	28,9	37,5	0,2	0,3	0,6	0,9	1,6	2,5	3,9	5,5
Phase (initial 90 °C, final 250 °C) kA	26,5	34,3	0,2	0,3	0,5	0,8	1,4	2,3	3,6	5,0
Metal screen (initial 80 °C, final 250 °C) kA	14,1	17,8	0,2	0,4	0,6	0,9	1,5	2,4	2,4	2,4
Environmental information										
The product is a declared item in the Supply Chain Declaration Portal (or short ”SCDP”) for New Buildings generation 4			Yes	Yes		Yes	Yes	Yes	Yes	Yes

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STANDARD PACKAGES	3x185/95	3x240/120	4x1,5/1,5	4x2,5/2,5	4x4/4	4x6/6	4x10/10	4x16/16	4x25/16	4x35/16
Product code	1146643		1146660	1146661	1146662	1146663	1146664	1146676	1146666	1146667
GTIN code	6438176009567		6410006534012	6410006534029	6438176009628	6410006534067	6410006534104	6410006022274	6410006022281	6410006022298
Package	500 K22		500 K9	500 K10	500 K10	500 K10	500 K12	500 K12	500 K14	500 K14
Product code										1146667
GTIN code										6410006022007
Package										1000 K18

Technical information	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Product code	**1146668**	**1146669**	**1146670**	**1146671**	**1146672**	**1146673**	**1146674**
Nominal cable diameter mm	33	35	41	45	48	56	62
Nominal cable weight kg/km	2630	3540	4715	6007	7128	9210	11803
Nominal weight of copper kg/km	1990	2779	3828	4867	5885	7440	9809
Nominal Insulation thicness mm	1,0	1,1	1,1	1,2	1,4	1,6	1,7
Nominal size of metal screen mm²	25	35	50	70	70	95	120
Nominal thickness of oversheath mm	1,9	2,1	2,2	2,3	2,5	2,7	2,9
Fire load							
Fire load MJ/m	12,263	14,716	17,378	21,120	25,222	33,984	39,762
Fire load kWh/m	3,406	4,088	4,827	5,867	7,006	9,440	11,045
Maximum forces during installation when pulling by							
Max. pulling force by pulling-eye kN	10,0	14,0	19,0	20,0	20,0	20,0	20,0
Max. pulling force by pulling-stocking kN	4,0	5,6	7,6	8,5	8,5	8,5	8,5
Minimum bending radii							
Minimum bending radius, handling mm	401	426	487	540	581	676	741
Minimum bending radius, final bending mm	280	298	341	378	406	473	519
Minimum bending radii							
During handling and installation, cable cm	40	43	49	54	58	68	74
In final installation, cable cm	28	30	34	38	41	47	52
Minimum bending radii							
During handling and installation, cable m	0,40	0,43	0,49	0,54	0,58	0,68	0,74
In final installation, cable m	0,28	0,30	0,34	0,38	0,41	0,47	0,52
DC resistance							
Max. DC resistance of conductor at 20 °C Ω/km	0,387	0,268	0,193	0,153	0,124	0,0991	0,0754
Maximum DC resistance at 20 °C, metal screen Ω/km	0,727	0,524	0,387	0,268	0,268	0,193	0,153

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Technical information	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Current ratings							
Cables in air (25 °C)							
two loaded conductor, conductor 70 °C A	187	241	293	341	394	451	535
three loaded conductor, conductor 70 °C A	159	204	248	287	332	379	447
two loaded conductor, conductor 90 °C A	234	301	366	426	492	564	667
three loaded conductor, conductor 90 °C A	200	256	310	360	415	474	560
Cables in air (30 °C)							
two loaded conductor, conductor 70 °C A	180	232	282	328	379	434	514
three loaded conductor, conductor 70 °C A	153	196	238	276	319	364	430
two loaded conductor, conductor 90 °C A	225	289	352	410	473	542	641
three loaded conductor, conductor 90 °C A	192	246	298	346	399	456	538
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m							
Cables in the ground, conductor 65 °C A	190	240	285	325	370	420	480
Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m							
Cables in the ground, conductor 90 °C A	153	188	226	257	287	324	375
Maximum thermal short circuit current during 1 s							
Phase (initial 65 °C, final 250 °C) kA	7,8	10,9	14,9	18,8	23,5	28,9	37,5
Phase (initial 90 °C, final 250 °C) kA	7,2	10,0	13,6	17,2	21,5	26,5	34,3
Metal screen (initial 80 °C, final 250 °C) kA	3,7	5,2	7,4	10,4	10,4	14,1	17,8
Environmental information							
The product is a declared item in the Supply Chain Declaration Portal (or short ”SCDP”) for New Buildings generation 4	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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STANDARD PACKAGES	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Product code	1146668	1146669	1146670	1146671	1146672	1146673	1146674
GTIN code	6410006022304	6410006022311	6410006022328	6410006022335	6410006022342	6410006022359	6438176009741
Package	500 K16	500 K18	500 K20	500 K22	500 K22	500 K26	400 K26
Product code							1146674
GTIN code							6410006022366
Package							500 K26