

FRHF-EMC / BFSI-EMC

Copper power cable EMC FRHF

0.6/1 (1.2) kV



FlameRex

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 disturbances. 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 mm ² circular solid copper, EN/IEC 60228 class 1 10-25 mm ² circular stranded copper, EN/IEC 60228 class 2 35-240 mm ² sector shaped stranded copper, EN/IEC 60228 class 2
Insulation	Halogen-free XLPE, mica tape
Separation sheath	Halogen-free filling compound
Metal screen	EMC-copper foil and copper wires
EMC-Shield	Copper foil with 100 % coverage
Oversheath	UV-protected halogen-free polyolefin compound
Colour of the oversheath	Orange

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

Technical information	2x1,5/1,5	2x2,5/2,5	2x4/4	2x6/6	2x10/10	2x16/16	2x25/16	2x35/16	3x1,5/1,5	3x2,5/2,5
Product code	1146620	1146621	1146622	1146623	1146624	1146625	1146626	1146627	1146630	1146631
Nominal diameter of complete cable mm	12	13	15	16	19	21	26	27	13	14
Nominal weight of cable kg/km	205	251	340	444	636	877	1272	1499	229	283
Nominal cross-sectional area of conductor mm ²	1,5	2,5	4	6	10	16	25	35	1,5	2,5
Nominal thickness of insulation mm	0,7	0,7	0,7	0,7	0,7	0,7	0,9	0,9	0,7	0,7
Nominal size of metal screen mm ²	1,5	2,5	4	6	10	16	16	16	1,5	2,5
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
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,0	0,0	0,1	0,1	0,3	0,4	0,7	1,0	0,0	0,1
Max. pulling force by pulling-stocking kN	0,0	0,1	0,1	0,2	0,4	0,6	1,0	1,4	0,0	0,1
Minimum bending radii										
Minimum bending radius, handling mm	144	156	180	192	228	252	312	324	156	168
Minimum bending radius, final bending mm	101	109	126	134	160	176	218	227	109	118
Minimum bending radii										
During handling and installation, cable cm	14	16	18	19	23	25	31	32	16	17
In final installation, cable cm	10	11	13	13	16	18	22	23	11	12
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	0,524	12,1	7,41
Maximum DC resistance at 20 °C, metal screen Ω/km	12,1	7,41	4,61	3,08	1,83	1,15	1,15	1,15	12,1	7,41

Technical information	2x1,5/1,5	2x2,5/2,5	2x4/4	2x6/6	2x10/10	2x16/16	2x25/16	2x35/16	3x1,5/1,5	3x2,5/2,5
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	23	31	42	53	73	98	124	154	23	31
three loaded conductor, conductor 70 °C A									19	26
two loaded conductor, conductor 90 °C A	27	37	51	66	89	120	155	192	27	37
three loaded conductor, conductor 90 °C A									24	33
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	22	30	40	51	70	94	119	148	22	30
three loaded conductor, conductor 70 °C A									18,5	25
two loaded conductor, conductor 90 °C A	26	36	49	63	86	115	149	185	26	36
three loaded conductor, conductor 90 °C A									23	32
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	160	26	35
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	155	23	30
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	5,5	0,2	0,3
Phase (initial 90 °C, final 250 °C) kA	0,2	0,3	0,5	0,8	1,4	2,3	3,6	5,0	0,2	0,3
Metal screen (initial 80 °C, final 250 °C) kA	0,2	0,4	0,6	0,9	1,5	2,4	2,4	2,4	0,2	0,4

Technical information	3x4/4	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70
Product code	1146632	1146633	1146634	1146646	1146636	1146637	1146638	1146639	1146640	1146641
Nominal diameter of complete cable mm	16	17	20	23	26	26	30	34	37	40
Nominal weight of cable kg/km	395	501	720	1022	1427	1534	2149	2976	3732	4734
Nominal cross-sectional area of conductor mm ²	4	6	10	16	25	35	50	70	95	120
Nominal thickness of insulation mm	0,7	0,7	0,7	0,7	0,9	0,9	1,0	1,1	1,1	1,2
Nominal size of metal screen mm ²	4	6	10	16	16	16	25	35	50	70
Nominal thickness of oversheath mm	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,9	2,1	2,2
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,1	0,2	0,4	0,7	1,1	1,5	2,2	3,1	4,2	5,4
Max. pulling force by pulling-stocking kN	0,2	0,3	0,6	0,9	1,5	2,1	3,0	4,2	5,7	7,2
Minimum bending radii										
Minimum bending radius, handling mm	192	204	240	276	312	312	360	408	444	480
Minimum bending radius, final bending mm	134	143	168	193	218	218	252	286	311	336
Minimum bending radii										
During handling and installation, cable cm	19	20	24	28	31	31	36	41	44	48
In final installation, cable cm	13	14	17	19	22	22	25	29	31	34
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	4,61	3,08	1,83	1,15	0,727	0,524	0,387	0,268	0,193	0,153
Maximum DC resistance at 20 °C, metal screen Ω/km	4,61	3,08	1,83	1,15	1,15	1,15	0,727	0,524	0,387	0,268

Technical information	3x4/4	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	42	53	73	98	124	154	187	241	293	341
three loaded conductor, conductor 70 °C A	35	45	62	83	105	131	159	204	248	287
two loaded conductor, conductor 90 °C A	51	66	89	120	155	192	234	301	366	426
three loaded conductor, conductor 90 °C A	44	56	78	104	132	164	200	256	310	360
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	40	51	70	94	119	148	180	232	282	328
three loaded conductor, conductor 70 °C A	34	43	60	80	101	126	153	196	238	276
two loaded conductor, conductor 90 °C A	49	63	86	115	149	185	225	289	352	410
three loaded conductor, conductor 90 °C A	42	54	75	100	127	158	192	246	298	346
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	46	57	77	100	130	160	190	240	285	325
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	39	49	65	84	107	129	153	188	226	257
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	0,6	0,9	1,6	2,5	3,9	5,5	7,8	10,9	14,9	18,8
Phase (initial 90 °C, final 250 °C) kA	0,5	0,8	1,4	2,3	3,6	5,0	7,2	10,0	13,6	17,2
Metal screen (initial 80 °C, final 250 °C) kA	0,6	0,9	1,5	2,4	2,4	2,4	3,7	5,2	7,4	10,4

Technical information	3x150/70	3x185/95	3x240/120	4x1,5/1,5	4x2,5/2,5	4x4/4	4x6/6	4x10/10	4x16/16	4x25/16
Product code	1146642	1146643	1146644	1146660	1146661	1146662	1146663	1146664	1146676	1146666
Nominal diameter of complete cable mm	43	50	56	14	15	17	18	21	24	29
Nominal weight of cable kg/km	5648	7244	9412	284	351	458	586	849	1193	1722
Nominal cross-sectional area of conductor mm ²	150	185	240	1,5	2,5	4	6	10	16	25
Nominal thickness of insulation mm	1,4	1,6	1,7	0,7	0,7	0,7	0,7	0,7	0,7	0,9
Nominal size of metal screen mm ²	70	95	120	1,5	2,5	4	6	10	16	16
Nominal thickness of oversheath mm	2,3	2,5	2,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	6,7	8,3	10,8	0,0	0,1	0,2	0,3	0,6	0,9	1,5
Max. pulling force by pulling-stocking kN	8,5	8,5	8,5	0,1	0,2	0,3	0,4	0,8	1,2	2,0
Minimum bending radii										
Minimum bending radius, handling mm	516	600	672	168	180	204	216	252	288	348
Minimum bending radius, final bending mm	361	420	470	118	126	143	151	176	202	244
Minimum bending radii										
During handling and installation, cable cm	52	60	67	17	18	20	22	25	29	35
In final installation, cable cm	36	42	47	12	13	14	15	18	20	24
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	0,124	0,0991	0,0754	12,1	7,41	4,61	3,08	1,83	1,15	0,727
Maximum DC resistance at 20 °C, metal screen Ω/km	0,268	0,193	0,153	12,1	7,41	4,61	3,08	1,83	1,15	1,15

Technical information	3x150/70	3x185/95	3x240/120	4x1,5/1,5	4x2,5/2,5	4x4/4	4x6/6	4x10/10	4x16/16	4x25/16
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	394	451	535	23	31	42	53	73	98	124
three loaded conductor, conductor 70 °C A	332	379	447	19	26	35	45	62	83	105
two loaded conductor, conductor 90 °C A	492	564	667	27	37	51	66	89	120	155
three loaded conductor, conductor 90 °C A	415	474	560	24	33	44	56	78	104	132
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	379	434	514	22	30	40	51	70	94	119
three loaded conductor, conductor 70 °C A	319	364	430	18,5	25	34	43	60	80	101
two loaded conductor, conductor 90 °C A	473	542	641	26	36	49	63	86	115	149
three loaded conductor, conductor 90 °C A	399	456	538	23	32	42	54	75	100	127
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	370	420	480	26	35	46	57	77	100	130
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	287	324	375	23	30	39	49	65	84	107
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	23,5	28,9	37,5	0,2	0,3	0,6	0,9	1,6	2,5	3,9
Phase (initial 90 °C, final 250 °C) kA	21,5	26,5	34,3	0,2	0,3	0,5	0,8	1,4	2,3	3,6
Metal screen (initial 80 °C, final 250 °C) kA	10,4	14,1	17,8	0,2	0,4	0,6	0,9	1,5	2,4	2,4

Technical information	4x35/16	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Product code	1146667	1146668	1146669	1146670	1146671	1146672	1146673	1146674
Nominal diameter of complete cable mm	29	33	35	41	44	49	57	62
Nominal weight of cable kg/km	1940	2623	3533	4707	5893	7117	9197	11787
Nominal cross-sectional area of conductor mm ²	35	50	70	95	120	150	185	240
Nominal thickness of insulation mm	0,9	1,0	1,1	1,1	1,2	1,4	1,6	1,7
Nominal size of metal screen mm ²	16	25	35	50	70	70	95	120
Nominal thickness of oversheath mm	1,8	1,9	2,1	2,2	2,3	2,5	2,7	2,9
Maximum forces during installation when pulling by								
Max. pulling force by pulling-eye kN	2,1	3,0	4,2	5,7	7,2	9,0	11,1	14,4
Max. pulling force by pulling-stocking kN	2,8	4,0	5,6	7,6	8,5	8,5	8,5	8,5
Minimum bending radii								
Minimum bending radius, handling mm	348	396	420	492	528	588	684	744
Minimum bending radius, final bending mm	244	277	294	344	370	412	479	521
Minimum bending radii								
During handling and installation, cable cm	35	40	42	49	53	59	68	74
In final installation, cable cm	24	28	29	34	37	41	48	52
DC resistance								
Max. DC resistance of conductor at 20 °C Ω/km	0,524	0,387	0,268	0,193	0,153	0,124	0,0991	0,0754
Maximum DC resistance at 20 °C, metal screen Ω/km	1,15	0,727	0,524	0,387	0,268	0,268	0,193	0,153

Technical information	4x35/16	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	154	187	241	293	341	394	451	535
three loaded conductor, conductor 70 °C A	131	159	204	248	287	332	379	447
two loaded conductor, conductor 90 °C A	192	234	301	366	426	492	564	667
three loaded conductor, conductor 90 °C A	164	200	256	310	360	415	474	560
Cables in air (30 °C)								
two loaded conductor, conductor 70 °C A	148	180	232	282	328	379	434	514
three loaded conductor, conductor 70 °C A	126	153	196	238	276	319	364	430
two loaded conductor, conductor 90 °C A	185	225	289	352	410	473	542	641
three loaded conductor, conductor 90 °C A	158	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	160	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	129	153	188	226	257	287	324	375
Maximum thermal short circuit current during 1 s								
Phase (initial 65 °C, final 250 °C) kA	5,5	7,8	10,9	14,9	18,8	23,5	28,9	37,5
Phase (initial 90 °C, final 250 °C) kA	5,0	7,2	10,0	13,6	17,2	21,5	26,5	34,3
Metal screen (initial 80 °C, final 250 °C) kA	2,4	3,7	5,2	7,4	10,4	10,4	14,1	17,8