

## FRHF-XCMK / BFSI

### Copper power cable FRHF

### 0,6/1 (1,2) kV



FlameRex

### Application

Fire-resistant power cable for fixed installations indoors and outdoors. May be buried directly in soil. 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

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

### Temperature limits

<b>Max. conductor temperature °C</b>	90
<b>Max. cond. temp. short circuit max. 5 s °C</b>	250
<b>Min. cable temperature during operation °C</b>	-50
<b>Min. cable temperature during handling °C</b>	-15
<b>Min. cable temperature during transport °C</b>	-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 60332-3-24 Flame retardant in a bunch, Category C  
EN/IEC 61034 Low smoke density  
EN/IEC 60754 Halogen-free, non-corrosive

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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
<b>Product code</b>	<b>1146810</b>	<b>1146811</b>	<b>1146812</b>	<b>1146813</b>	<b>1146814</b>	<b>1146815</b>	<b>1146816</b>	<b>1146817</b>	<b>1146819</b>	<b>1146820</b>
Nominal cross-sectional area of conductor mm <sup>2</sup>	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 <sup>2</sup>	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
Fire load MJ/m	2,221	2,463	2,957	3,461	4,546	5,529	7,689	8,321	2,522	2,795
Fire load kWh/m	0,617	0,684	0,821	0,962	1,263	1,536	2,136	2,312	0,701	0,776
Nominal cable diameter mm	12,270	13,030	14,650	16,090	18,870	21,430	25,560	26,580	12,950	13,770
Nominal cable weight kg/km	200,338	245,439	332,037	433,854	622,290	866,125	1193,433	1401,710	223,223	276,684
Nominal weight of copper kg/m	0,040	0,066	0,109	0,164	0,266	0,424	0,595	0,756	0,053	0,088
<b>Maximum forces during installation when pulling by</b>										
Max. pulling force by pulling-eye kN	0,1	0,2	0,4	0,6	1,0	1,6	2,5	3,5	0,2	0,3
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
<b>Minimum bending radii</b>										
Minimum bending radius, handling mm	147	156	176	193	226	257	307	319	155	165
Minimum bending radius, final bending mm	103	109	123	135	159	180	215	223	109	116
<b>Minimum bending radii</b>										
During handling and installation, cable cm	15	16	18	19	23	26	31	32	16	17
In final installation, cable cm	10	11	12	14	16	18	21	22	11	12
<b>Minimum bending radii</b>										
During handling and installation, cable m	0,15	0,16	0,18	0,19	0,23	0,26	0,31	0,32	0,15	0,17
In final installation, cable m	0,10	0,11	0,12	0,14	0,16	0,18	0,21	0,22	0,11	0,12
<b>DC resistance</b>										
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

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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
<b>Current ratings</b>										
<b>Cables in air (25 °C)</b>										
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
<b>Cables in air (30 °C)</b>										
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
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 65 °C A	26	35	46	57	77	100	130	160	26	35
<b>Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 90 °C A	27	35	46	58	77	100	129	155	23	30
<b>Maximum thermal short circuit current during 1 s</b>										
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

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Technical information	3x4/4	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70
<b>Product code</b>	<b>1146821</b>	<b>1146822</b>	<b>1146823</b>	<b>1146824</b>	<b>1146825</b>	<b>1146826</b>	<b>1146827</b>	<b>1146828</b>	<b>1146829</b>	<b>1146830</b>
Nominal cross-sectional area of conductor mm <sup>2</sup>	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 <sup>2</sup>	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
Fire load MJ/m	3,406	3,807	5,012	6,635	8,321	7,702	10,199	13,198	14,144	16,920
Fire load kWh/m	0,946	1,058	1,392	1,843	2,311	2,140	2,833	3,666	3,929	4,700
Nominal cable diameter mm	15,660	16,780	19,740	22,500	26,420	26,210	30,120	33,820	37,150	40,090
Nominal cable weight kg/km	386,196	489,737	705,888	1009,497	1374,544	1481,933	2087,805	2888,385	3652,398	4653,298
Nominal weight of copper kg/m	0,145	0,218	0,352	0,562	0,816	1,056	1,493	2,093	2,903	3,725
<b>Maximum forces during installation when pulling by</b>										
Max. pulling force by pulling-eye kN	0,6	0,9	1,5	2,4	3,7	5,2	7,5	10,5	14,2	18,0
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
<b>Minimum bending radii</b>										
Minimum bending radius, handling mm	188	201	237	270	317	315	361	406	446	481
Minimum bending radius, final bending mm	132	141	166	189	222	220	253	284	312	337
<b>Minimum bending radii</b>										
During handling and installation, cable cm	19	20	24	27	32	31	36	41	45	48
In final installation, cable cm	13	14	17	19	22	22	25	28	31	34
<b>Minimum bending radii</b>										
During handling and installation, cable m	0,19	0,20	0,24	0,27	0,32	0,32	0,36	0,41	0,45	0,48
In final installation, cable m	0,13	0,14	0,17	0,19	0,22	0,22	0,25	0,28	0,31	0,34
<b>DC resistance</b>										
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

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Technical information	3x4/4	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70
<b>Current ratings</b>										
<b>Cables in air (25 °C)</b>										
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
<b>Cables in air (30 °C)</b>										
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
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 65 °C A	46	57	77	100	130	160	190	240	285	325
<b>Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 90 °C A	39	49	65	84	107	129	153	188	226	257
<b>Maximum thermal short circuit current during 1 s</b>										
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

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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
<b>Product code</b>	<b>1146831</b>	<b>1146832</b>	<b>1146833</b>	<b>1146835</b>	<b>1146836</b>	<b>1146837</b>	<b>1146838</b>	<b>1146839</b>	<b>1146840</b>	<b>1146841</b>
Nominal cross-sectional area of conductor mm <sup>2</sup>	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 <sup>2</sup>	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
Fire load MJ/m	20,320	26,859	32,373	3,086	3,423	3,905	4,381	5,821	7,029	9,810
Fire load kWh/m	5,645	7,461	8,992	0,857	0,951	1,085	1,217	1,617	1,952	2,725
Nominal cable diameter mm	43,300	50,460	55,610	14,380	15,300	16,730	17,980	21,260	24,170	28,670
Nominal cable weight kg/km	5538,700	7143,555	9246,360	276,014	341,966	447,254	573,169	832,149	1177,879	1662,708
Nominal weight of copper kg/m	4,473	5,697	7,494	0,066	0,109	0,180	0,272	0,438	0,700	1,038
<b>Maximum forces during installation when pulling by</b>										
Max. pulling force by pulling-eye kN	20,0	20,0	20,0	0,3	0,5	0,8	1,2	2,0	3,2	5,0
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
<b>Minimum bending radii</b>										
Minimum bending radius, handling mm	520	606	667	173	184	201	216	255	290	344
Minimum bending radius, final bending mm	364	424	467	121	129	141	151	179	203	241
<b>Minimum bending radii</b>										
During handling and installation, cable cm	52	61	67	17	18	20	22	26	29	34
In final installation, cable cm	36	42	47	12	13	14	15	18	20	24
<b>Minimum bending radii</b>										
During handling and installation, cable m	0,52	0,61	0,67	0,17	0,18	0,20	0,22	0,26	0,29	0,34
In final installation, cable m	0,36	0,42	0,47	0,12	0,13	0,14	0,15	0,18	0,20	0,24
<b>DC resistance</b>										
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

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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
<b>Current ratings</b>										
<b>Cables in air (25 °C)</b>										
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
<b>Cables in air (30 °C)</b>										
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
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 65 °C A	370	420	480	26	35	46	57	77	100	130
<b>Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m</b>										
Cables in the ground, conductor 90 °C A	287	324	375	23	30	39	49	65	84	107
<b>Maximum thermal short circuit current during 1 s</b>										
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

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Technical information	4x35/16	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
<b>Product code</b>	<b>1146842</b>	<b>1146843</b>	<b>1146844</b>	<b>1146845</b>	<b>1146846</b>	<b>1146847</b>	<b>1146848</b>	<b>1146849</b>
Nominal cross-sectional area of conductor mm <sup>2</sup>	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 <sup>2</sup>	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
Fire load MJ/m	9,592	12,263	14,716	17,421	20,265	25,291	34,026	39,808
Fire load kWh/m	2,664	3,406	4,088	4,839	5,629	7,025	9,452	11,058
Nominal cable diameter mm	28,580	33,210	35,490	40,820	44,370	48,750	56,550	61,940
Nominal cable weight kg/km	1880,757	2553,251	3458,196	4619,066	5782,365	7016,563	9080,633	11657,246
Nominal weight of copper kg/m	1,368	1,913	2,697	3,729	4,770	5,769	7,307	9,660
<b>Maximum forces during installation when pulling by</b>								
Max. pulling force by pulling-eye kN	7,0	10,0	14,0	19,0	20,0	20,0	20,0	20,0
Max. pulling force by pulling-stocking kN	2,8	4,0	5,6	7,6	8,5	8,5	8,5	8,5
<b>Minimum bending radii</b>								
Minimum bending radius, handling mm	343	399	426	490	532	585	679	743
Minimum bending radius, final bending mm	240	279	298	343	373	410	475	520
<b>Minimum bending radii</b>								
During handling and installation, cable cm	34	40	43	49	53	59	68	74
In final installation, cable cm	24	28	30	34	37	41	48	52
<b>Minimum bending radii</b>								
During handling and installation, cable m	0,34	0,40	0,43	0,49	0,53	0,58	0,68	0,74
In final installation, cable m	0,24	0,28	0,30	0,34	0,37	0,41	0,47	0,52
<b>DC resistance</b>								
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

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Technical information	4x35/16	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
<b>Current ratings</b>								
<b>Cables in air (25 °C)</b>								
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
<b>Cables in air (30 °C)</b>								
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
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>								
Cables in the ground, conductor 65 °C A	160	190	240	285	325	370	420	480
<b>Cables in the ground (20 °C and 2,5 K.m/W), Installation depth 0,7 m</b>								
Cables in the ground, conductor 90 °C A	129	153	188	226	257	287	324	375
<b>Maximum thermal short circuit current during 1 s</b>								
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