

FRHF-XCMK / BFSI

Copper power cable FRHF

0,6/1 (1,2) kV



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

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	Cross-linked polyethylene XLPE and mica-tape
Core	Blue, brown
Identification	Brown, black, grey Blue, brown, black, grey
Inner covering	Extruded filling compound
Metal screen	Copper wires and copper tape
Oversheath	UV-protected polyolefin compound , 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 60332-3-24 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	3x1,5/1,5	3x2,5/2,5	3x4/4
Product code	1146810	1146811	1146812	1146813	1146814	1146815	1146816	1146819	1146820	1146821
Nominal cable diameter mm	12	13	15	16	19	21	26	13	14	16
Nominal cable weight kg/km	200	245	332	434	622	866	1193	223	277	386
Nominal weight of copper kg/km	40	66	109	164	266	424	595	53	88	145
Nominal Insulation thickness 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 mm ²	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	2,220	2,463	2,957	3,461	4,545	5,529	7,689	2,522	2,795	3,406
Fire load kWh/m	0,617	0,684	0,821	0,962	1,263	1,536	2,136	0,701	0,776	0,946
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	147	156	176	193	226	257	307	155	165	188
Minimum bending radius, final bending mm	103	109	123	135	159	180	215	109	116	132
Minimum bending radii										
During handling and installation, cable cm	15	16	18	19	23	26	31	16	17	19
In final installation, cable cm	10	11	12	14	16	18	21	11	12	13
Minimum bending radii										
During handling and installation, cable m	0,15	0,16	0,18	0,19	0,23	0,26	0,31	0,15	0,17	0,19
In final installation, cable m	0,10	0,11	0,12	0,14	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	1146810	1146811	1146812	1146813	1146814	1146815	1146816	1146819	1146820	1146821
GTIN code	6438176307694	6438176307700	6438176307717	6438176307724	6438176307731	6438176307748	6438176307755	6438176307762	6438176307779	6438176307786
Package	500 K7	500 K7	500 K7	500 K8	500 K9	500 K10	500 K12	500 K7	500 K7	500 K8

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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	1146822	1146823	1146824	1146825	1146826	1146827	1146828	1146829	1146830	1146831
Nominal cable diameter mm	17	20	23	26	26	30	34	37	40	43
Nominal cable weight kg/km	490	706	1009	1375	1482	2088	2888	3652	4653	5539
Nominal weight of copper kg/km	218	352	562	816	1056	1493	2093	2903	3725	4473
Nominal Insulation thickness 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 mm ²	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	3,807	5,012	6,635	8,321	7,702	10,198	13,197	14,144	16,920	20,320
Fire load kWh/m	1,058	1,392	1,843	2,311	2,139	2,833	3,666	3,929	4,700	5,644
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	201	237	270	317	315	361	406	446	481	520
Minimum bending radius, final bending mm	141	166	189	222	220	253	284	312	337	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	17	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

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STANDARD PACKAGES	3x6/6	3x10/10	3x16/16	3x25/16	3x35/16	3x50/25	3x70/35	3x95/50	3x120/70	3x150/70
Product code	1146822	1146823	1146824	1146825	1146826	1146827	1146828	1146829	1146830	1146831
GTIN code	6438176307793	6438176307809	6438176307816	6438176307823	6438176307830	6438176307847	6438176307854	6438176307861	6438176307878	6438176307885
Package	500 K9	500 K9	500 K10	500 K12	500 K12	500 K16	500 K16	500 K16	500 K18	500 K20

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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
Product code	1146832	1146833	1146835	1146836	1146837	1146838	1146839	1146840	1146841	1146842
Nominal cable diameter mm	50	56	14	15	17	18	21	24	29	29
Nominal cable weight kg/km	7144	9246	276	342	447	573	832	1178	1663	1881
Nominal weight of copper kg/km	5697	7494	66	109	180	272	438	700	1038	1368
Nominal Insulation thickness 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 mm ²	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	26,859	32,373	3,086	3,423	3,905	4,381	5,821	7,029	9,810	9,592
Fire load kWh/m	7,461	8,992	0,857	0,951	1,085	1,217	1,617	1,952	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	606	667	173	184	201	216	255	290	344	343
Minimum bending radius, final bending mm	424	467	121	129	141	151	179	203	241	240
Minimum bending radii										
During handling and installation, cable cm	61	67	17	18	20	22	26	29	34	34
In final installation, cable cm	42	47	12	13	14	15	18	20	24	24
Minimum bending radii										
During handling and installation, cable m	0,61	0,67	0,17	0,18	0,20	0,22	0,26	0,29	0,34	0,34
In final installation, cable m	0,42	0,47	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

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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	1146832	1146833	1146835	1146836	1146837	1146838	1146839	1146840	1146841	1146842
GTIN code	6438176307892	6438176307908	6438176307915	6438176307922	6438176307939	6438176307946	6438176307953	6438176307960	6438176307977	6438176307984
Package	500 K22	500 K26	500 K7	500 K7	500 K9	500 K9	500 K10	500 K11	500 K12	500 K12

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Technical information	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Product code	1146843	1146844	1146845	1146846	1146847	1146848	1146849
Nominal cable diameter mm	33	35	41	44	49	57	62
Nominal cable weight kg/km	2553	3458	4619	5782	7017	9081	11657
Nominal weight of copper kg/km	1913	2697	3729	4770	5769	7307	9660
Nominal Insulation thickness mm	1,0	1,1	1,1	1,2	1,4	1,6	1,7
Nominal size of metal screen mm ²	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	17,421	20,265	25,291	34,026	39,808
Fire load kWh/m	3,406	4,088	4,839	5,629	7,025	9,452	11,058
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	399	426	490	532	585	679	743
Minimum bending radius, final bending mm	279	298	343	373	410	475	520
Minimum bending radii							
During handling and installation, cable cm	40	43	49	53	59	68	74
In final installation, cable cm	28	30	34	37	41	48	52
Minimum bending radii							
During handling and installation, cable m	0,40	0,43	0,49	0,53	0,58	0,68	0,74
In final installation, cable m	0,28	0,30	0,34	0,37	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

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STANDARD PACKAGES	4x50/25	4x70/35	4x95/50	4x120/70	4x150/70	4x185/95	4x240/120
Product code	1146843	1146844	1146845	1146846	1146847	1146848	1146849
GTIN code	6438176307991	6438176308004	6438176308011	6438176308028	6438176308035	6438176308042	6438176308059
Package	500 K16	500 K16	500 K18	500 K20	500 K22	500 K26	500 K26