

FRHF / BFXI

Copper power cable FRHF

0,6/1 (1,2) kV



FlameRex

Application

Fire-resistant power cable for fixed installations indoors and outdoors. Not to be laid in soil nor directly in cast concrete. 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	HD 604 5 D, IEC 60502-1
Conductor	1,5-4 mm ² circular solid copper, EN/IEC 60228 class 1 6-70 mm ² circular stranded copper, EN/IEC 60228 class 2
Insulation	Cross-linked polyethylene XLPE and mica-tape
Core Identification	2x: Blue, brown 3x: Brown, black, grey 3G: Yellow-green, blue, brown 4G: Yellow-green, blue, brown, black (1,5 and 2,5 mm ²) 4G: Yellow-green, brown, black, grey (4 mm ² and above) 5G: Yellow-green, blue, brown, black, grey
Inner covering	Extruded filling compound
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 60332-3-22 Flame retardant in a bunch, Category A
EN/IEC 61034 Low smoke density
EN/IEC 60754 Halogen-free, non-corrosive

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Technical information	2x1,5 N	2x2,5 N	2x4 N	2x6 N	3x1,5	3G1,5	3G2,5	3G4	3G6	3G10
Product code	1146542	1146543	1146544	1146545	1146546	1146547	1146548	1146549	1146550	1146551
Nominal cross-sectional area of conductor mm ²	1,5	2,5	4	6	1,5	1,5	2,5	4	6	10
Nominal thickness of insulation mm	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Nominal thickness of oversheath mm	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Fire load MJ/m	1,864	2,090	2,402	3,034	2,094	2,094	2,347	2,692	3,412	4,117
Fire load kWh/m	0,518	0,581	0,667	0,843	0,582	0,582	0,652	0,748	0,948	1,144
Nominal cable diameter mm	10,800	11,560	12,580	14,300	11,280	11,280	12,100	13,190	15,040	16,930
Nominal cable weight kg/km	166,018	199,761	256,027	340,609	181,897	181,897	224,861	292,848	392,905	541,004
Nominal weight of copper kg/m	0,026	0,043	0,071	0,106	0,039	0,039	0,064	0,107	0,160	0,260
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,0	0,0	0,1	0,1	0,0	0,0	0,1	0,1	0,2	0,4
Max. pulling force by pulling-stocking kN	0,0	0,1	0,1	0,2	0,0	0,0	0,1	0,2	0,3	0,6
Minimum bending radii										
During handling and installation, cable cm	13	14	15	17	14	14	15	16	18	20
In final installation, cable cm	9	10	11	12	9	9	10	11	13	14
Minimum bending radii										
During handling and installation, cable m	0,13	0,14	0,15	0,17	0,14	0,14	0,14	0,16	0,18	0,20
In final installation, cable m	0,09	0,10	0,11	0,12	0,10	0,10	0,10	0,11	0,13	0,14
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	12,1	7,41	4,61	3,08	12,1	12,1	7,41	4,61	3,08	1,83
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	23	31	42	53	23	23	31	42	53	73
three loaded conductor, conductor 70 °C A					19			35		
two loaded conductor, conductor 90 °C A	27	37	51	66	27	27	37	51	66	89
three loaded conductor, conductor 90 °C A					24					
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	22	30	40	51	22	22	30	40	51	70
three loaded conductor, conductor 70 °C A					18,5			34		
two loaded conductor, conductor 90 °C A	26	36	49	63	26	26	36	49	63	86
three loaded conductor, conductor 90 °C A					23					
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	0,2	0,3	0,6	0,9	0,2	0,2	0,3	0,6	0,9	1,6
Phase (initial 90 °C, final 250 °C) kA	0,2	0,3	0,5	0,8	0,2	0,2	0,3	0,5	0,8	1,4

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Technical information	3G16	3G25	3G35	3G50	3G70	4G1,5	4G2,5	4G4	4G6	4G10
Product code	1146552	1146553	1146554	1146555	1146556	1146558	1146559	1146560	1146561	1146562
Nominal cross-sectional area of conductor mm ²	16	25	35	50	70	1,5	2,5	4	6	10
Nominal thickness of insulation mm	0,7	0,9	0,9	1,0	1,1	0,7	0,7	0,7	0,7	0,7
Nominal thickness of oversheath mm	1,5	1,6	1,7	1,8	2,0	1,5	1,5	1,5	1,5	1,5
Fire load MJ/m	4,997	7,424	8,507	10,885	13,572	2,486	2,788	3,196	4,028	5,053
Fire load kWh/m	1,388	2,062	2,363	3,024	3,770	0,691	0,775	0,888	1,119	1,404
Nominal cable diameter mm	19,190	23,750	25,490	28,920	33,160	12,110	13,030	14,260	16,330	18,450
Nominal cable weight kg/km	758,131	1175,291	1518,293	1998,077	2702,878	211,499	267,824	353,271	474,897	675,787
Nominal weight of copper kg/m	0,413	0,669	0,915	1,242	1,781	0,052	0,085	0,143	0,213	0,347
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,7	1,1	1,5	2,2	10,5	0,0	0,1	0,2	0,3	0,6
Max. pulling force by pulling-stocking kN	0,9	1,5	2,1	3,0	3,1	0,1	0,2	0,3	0,4	0,8
Minimum bending radii										
During handling and installation, cable cm	23	29	31	35	40	15	16	17	20	22
In final installation, cable cm	16	20	21	24	28	10	11	12	14	15
Minimum bending radii										
During handling and installation, cable m	0,23	0,28	0,31	0,35	0,40	0,14	0,16	0,17	0,20	0,22
In final installation, cable m	0,16	0,20	0,21	0,24	0,28	0,10	0,11	0,12	0,14	0,15
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	1,15	0,727	0,524	0,387	0,268	12,1	7,41	4,61	3,08	1,83
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	98	124	154	187	241	23	31	42	53	73
three loaded conductor, conductor 70 °C A			131	159	204	19	26	35	45	62
two loaded conductor, conductor 90 °C A	120	155	192	234	301	27	37	51	66	89
three loaded conductor, conductor 90 °C A			164	200	256	24	33	44	56	78
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	94	119	148	180	232	22	30	40	51	70
three loaded conductor, conductor 70 °C A			126	153	196	18,5	25	34	43	60
two loaded conductor, conductor 90 °C A	115	149	185	225	289	26	36	49	63	86
three loaded conductor, conductor 90 °C A			158	192	246	23	32	42	54	75
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	2,5	3,9	5,5	7,8	10,9	0,2	0,3	0,6	0,9	1,6
Phase (initial 90 °C, final 250 °C) kA	2,3	3,6	5,0	7,2	10,0	0,2	0,3	0,5	0,8	1,4

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Technical information	4G16	4G25	4G35	4G50	4G70	5G1,5	5G2,5	5G4	5G6	5G10
Product code	1146563	1146564	1146565	1146566	1146567	1146569	1146570	1146571	1146572	1146573
Nominal cross-sectional area of conductor mm ²	16	25	35	50	70	1,5	2,5	4	6	10
Nominal thickness of insulation mm	0,7	0,9	0,9	1,0	1,1	0,7	0,7	0,7	0,7	0,7
Nominal thickness of oversheath mm	1,5	1,7	1,7	1,9	2,1	1,5	1,5	1,5	1,5	1,5
Fire load MJ/m	6,101	9,357	10,003	13,200	17,132	2,872	3,323	3,796	4,889	6,032
Fire load kWh/m	1,695	2,599	2,779	3,667	4,759	0,798	0,923	1,055	1,358	1,676
Nominal cable diameter mm	20,980	26,200	27,420	31,430	36,620	13,040	14,070	15,440	17,770	20,140
Nominal cable weight kg/km	951,574	1492,850	1857,725	2477,369	3468,365	245,769	315,918	416,678	567,948	809,439
Nominal weight of copper kg/m	0,551	0,892	1,214	1,647	2,377	0,065	0,107	0,178	0,267	0,434
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	0,9	1,5	2,1	3,0	14,0	0,1	0,1	0,3	0,4	0,7
Max. pulling force by pulling-stocking kN	1,2	2,0	2,8	4,0	4,2	0,1	0,2	0,4	0,6	1,0
Minimum bending radii										
During handling and installation, cable cm	25	31	33	38	44	16	17	19	21	24
In final installation, cable cm	18	22	23	26	31	11	12	13	15	17
Minimum bending radii										
During handling and installation, cable m	0,25	0,31	0,33	0,38	0,44	0,16	0,17	0,18	0,21	0,24
In final installation, cable m	0,18	0,22	0,23	0,26	0,31	0,11	0,12	0,13	0,15	0,17
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	1,15	0,727	0,524	0,387	0,268	12,1	7,41	4,61	3,08	1,83
Current ratings										
Cables in air (25 °C)										
two loaded conductor, conductor 70 °C A	98	124	154	187	241	23	31	42	53	73
three loaded conductor, conductor 70 °C A	83	105	131	159	204	19	26	35	45	62
two loaded conductor, conductor 90 °C A	120	155	192	234	301	27	37	51	66	89
three loaded conductor, conductor 90 °C A	104	132	164	200	256	24	33	44	56	78
Cables in air (30 °C)										
two loaded conductor, conductor 70 °C A	94	119	148	180	232	22	30	40	51	70
three loaded conductor, conductor 70 °C A	80	101	126	153	196	18,5	25	34	43	60
two loaded conductor, conductor 90 °C A	115	149	185	225	289	26	36	49	63	86
three loaded conductor, conductor 90 °C A	100	127	158	192	246	23	32	42	54	75
Maximum thermal short circuit current during 1 s										
Phase (initial 65 °C, final 250 °C) kA	2,5	3,9	5,5	7,8	10,9	0,2	0,3	0,6	0,9	1,6
Phase (initial 90 °C, final 250 °C) kA	2,3	3,6	5,0	7,2	10,0	0,2	0,3	0,5	0,8	1,4

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Technical information	5G16	5G25	5G35	5G50	5G70
Product code	1146574	1146575	1146576	1146577	1146578
Nominal cross-sectional area of conductor mm ²	16	25	35	50	70
Nominal thickness of insulation mm	0,7	0,9	0,9	1,0	1,1
Nominal thickness of oversheath mm	1,6	1,7	1,8	2,0	2,1
Fire load MJ/m	7,337	11,666	12,767	16,918	20,452
Fire load kWh/m	2,038	3,240	3,546	4,699	5,681
Nominal cable diameter mm	23,180	29,140	30,720	35,170	40,460
Nominal cable weight kg/km	1158,847	1854,702	2325,866	3143,481	4255,334
Nominal weight of copper kg/m	0,693	1,121	1,521	2,073	2,972
Maximum forces during installation when pulling by					
Max. pulling force by pulling-eye kN	1,2	1,8	2,6	3,7	17,5
Max. pulling force by pulling-stocking kN	1,6	2,5	3,5	5,0	5,2
Minimum bending radii					
During handling and installation, cable cm	28	35	37	42	49
In final installation, cable cm	19	24	26	30	34
Minimum bending radii					
During handling and installation, cable m	0,28	0,35	0,37	0,42	0,49
In final installation, cable m	0,20	0,24	0,26	0,29	0,34
DC resistance					
Max. DC resistance of conductor at 20 °C Ω/km	1,15	0,727	0,524	0,387	0,268
Current ratings					
Cables in air (25 °C)					
two loaded conductor, conductor 70 °C A	98	124	154	187	241
three loaded conductor, conductor 70 °C A	83	105	131	159	204
two loaded conductor, conductor 90 °C A	120	155	192	234	301
three loaded conductor, conductor 90 °C A	104	132	164	200	256
Cables in air (30 °C)					
two loaded conductor, conductor 70 °C A	94	119	148	180	232
three loaded conductor, conductor 70 °C A	80	101	126	153	196
two loaded conductor, conductor 90 °C A	115	149	185	225	289
three loaded conductor, conductor 90 °C A	100	127	158	192	246
Maximum thermal short circuit current during 1 s					
Phase (initial 65 °C, final 250 °C) kA	2,5	3,9	5,5	7,8	10,9
Phase (initial 90 °C, final 250 °C) kA	2,3	3,6	5,0	7,2	10,0