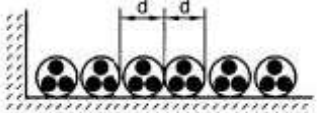
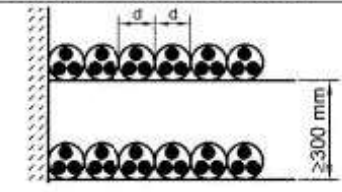
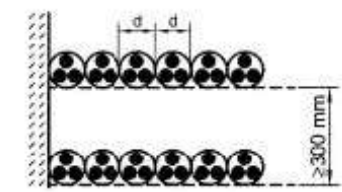
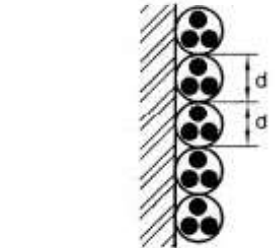
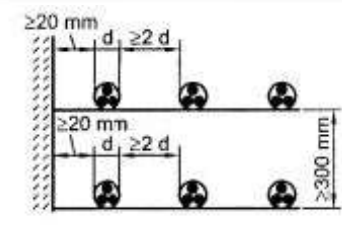


Correction factors aerial cables

Three core cable and multicore cables only single mode cable

1		2	3	4	5	6	7	8	
Arrangement		Installation side by side							
1	Number of adjacent cables	1	2	3	4	6	9		
2	Installation on earth	0,97	0,85	0,78	0,75	0,71	0,68		
3	In cable channels with poor air circulation	Number of cable shelves							
		1	0,97	0,85	0,78	0,75	0,71		0,68
		2	0,97	0,84	0,76	0,73	0,68		0,63
		3	0,97	0,83	0,75	0,72	0,66		0,61
6	0,97	0,81	0,73	0,69	0,63	0,58			
4	In the cable channels	Number of cable shelves							
		1	1,00	0,87	0,82	0,80	0,79		0,78
		2	1,00	0,86	0,80	0,78	0,76		0,73
		3	1,00	0,85	0,79	0,76	0,73		0,70
6	1,00	0,83	0,76	0,73	0,69	0,66			
5	Number of overlying systems	1	2	3	4	6	9		
6	Application on either shelves or the wall	0,95	0,70	0,73	0,72	0,60	0,66		
7	Installation with no need to reduce the load current	Randomly selected number of cables							
1) Correction factors for the varying air temperatures at the table 15 are applied, provided that ambient temperature rises in the result of the heat by dissipation in the cable for closed spaces or large groupings.									

Kabel an die aktuellen Ladebedingungen Cable to the current loading conditions

Tabelle 11

Effektiver Widerstand.

Table 11

Effective resistance.

Nennquerschnitte des Leiters Nominal Cross Sections of the Conductor	Widerstand Resistance	
	Cu	Al
mm ²	Ω/km	Ω/km
1.5	12.10	-
2.5	7.41	-
4	1.61	-
6	3.08	-
10	1.83	-
16	1.15	1.91
25	0.727	1.20
35	0.524	0.868
50	0.387	0.641
70	0.268	0.443
95	0.193	0.320
120	0.153	0.253
150	0.124	0.206
185	0.0991	0.164
240	0.0754	0.125
300	0.0601	0.100
400	0.0470	0.0778

Conversion of conductor resistance values for deviating

$$R_{20} = R_{\delta} \cdot \frac{254.5}{234.5 + \delta} \text{ (Cu)}$$

$$R_{20} = R_{\delta} \cdot \frac{248}{228 + \delta} \text{ (Al)}$$

R_{20} : Conductor resistance at 20°C (Ω/km)
 R_{δ} : (Conductor resistance at δ °C) (Ω/km)
 δ : (conductor temperature) (°C)

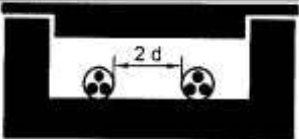
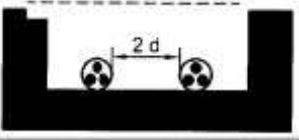
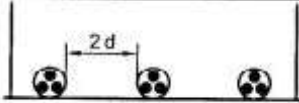

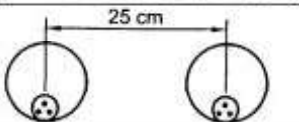
Correction laying depth factors

Depth cm	U=1000 V	
	S ≤ 50 mm ²	70-240 mm ²
50	1,02	1,04
60	1,01	1,02
70	1,00	1,00
80	0,99	0,98
100	0,97	0,96
120	0,95	0,94
150	0,93	0,92






Reduction factors for different ground thermal resistivity

Nominal area mm ²	Thermal resistivity K x cm / W								
	50	70	80	100	120	150	200	250	300
1,5	1,14	1,08	1,05	1	0,96	0,90	0,83	0,77	0,72
2,5	1,15	1,08	1,05	1	0,96	0,90	0,82	0,76	0,71
4	1,16	1,08	1,05	1	0,95	0,89	0,82	0,76	0,71
6	1,16	1,09	1,06	1	0,95	0,89	0,81	0,75	0,70
10	1,17	1,09	1,07	1	0,95	0,89	0,80	0,75	0,70
16	1,18	1,10	1,08	1	0,95	0,89	0,80	0,74	0,69
25	1,20	1,10	1,08	1	0,94	0,89	0,79	0,72	0,67
50	1,24	1,13	1,08	1	0,94	0,89	0,77	0,70	0,65
95	1,24	1,13	1,08	1	0,94	0,86	0,77	0,70	0,64
150	1,25	1,13	1,08	1	0,94	0,86	0,76	0,69	0,64
240	1,25	1,13	1,08	1	0,93	0,86	0,76	0,69	0,64

Reduction factors related to closeness to other cables laid in cable channels, channels with cable equipment and ducts.

		Number of multi-core cables				
		2	3	4	5	6
Closed cable channels		0,94	0,90	0,88	0,86	0,85
Half open cable channels		0,95	0,91	0,89	0,87	0,86
With closed cable channels		0,94	0,90	0,88	0,86	0,85
With open cable channels		0,97	0,93	0,91	0,89	0,88
Ducts depth 120 cm		0,91	0,85	0,81	0,78	0,76

Reduction factors related to influence for with cable channel, channel with cable equipment and duct.

		Nominal area mm^2	multi-core cables
Closed cable channels			0,90
Half open cable channels			0,95
With closed cable channels			0,90
With open cable channels			0,98
Ducts depth 120 cm		$\leq 0,50$ 70 – 150 240	0,81 0,80 0,79

Korrekturfaktoren für Mittelspannungskabel Medium Voltage cables correction factors

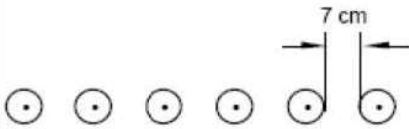
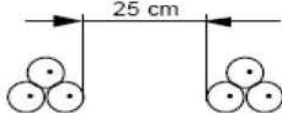
Reduction factors thermal resistivity on the ground for single mode cables.

Cross sectional area mm^2	Thermal resistivity K.m/W								
	0,50	0,70	0,80	1,00	1,20	1,50	2,00	2,50	3,00
25	1,37	1,19	1,12	1,00	0,91	0,80	0,67	0,58	0,52
50	1,39	1,20	1,12	1,00	0,91	0,80	0,67	0,58	0,52
95	1,42	1,21	1,13	1,00	0,91	0,79	0,67	0,58	0,52
150	1,45	1,22	1,13	1,00	0,90	0,78	0,66	0,57	0,51
240	1,47	1,23	1,14	1,00	0,90	0,78	0,65	0,57	0,51
400	1,49	1,23	1,14	1,00	0,90	0,78	0,65	0,56	0,50
630	1,51	1,24	1,14	1,00	0,89	0,77	0,65	0,56	0,50
1000	1,53	1,25	1,15	1,00	0,89	0,77	0,64	0,55	0,49
240	1,29	1,15	1,09	1,00	0,93	0,85	0,75	0,68	0,62
400	1,30	1,15	1,09	1,00	0,93	0,84	0,74	0,67	0,62
630	1,30	1,15	1,09	1,00	0,92	0,84	0,74	0,66	0,61
1000	1,32	1,16	1,10	1,00	0,92	0,83	0,73	0,66	0,61

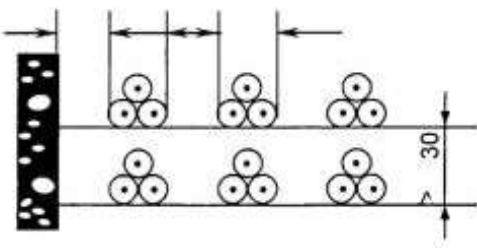
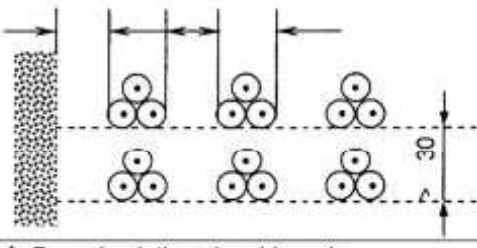
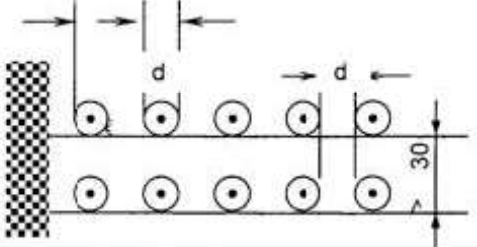
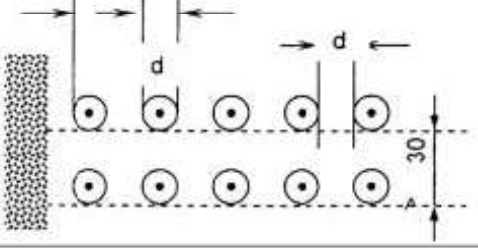
Laying depth reducing factors

Depth (cm)	U≤15 kV S ≤ 300 mm ²	U≤15 kV S > 300 mm ²	U >15 kV S ≤ 300 mm ²	U >15 kV S > 300 mm ²
50	1,03	1,05	-	-
60	1,02	1,03	-	-
70	1,00	1,00	-	-
80	0,99	0,98	1,02	1,03
100	0,97	0,95	1,00	1,00
120	0,95	0,93	0,99	0,98
150	0,93	0,91	0,97	0,95
200	-	-	0,94	0,92
250	-	-	0,92	0,90

S: Cross-sectional area of the conductor

Number of systems	Cross sectional area mm^2	2	3	4	5	6	8	10
			25	0,86	0,78	0,73	0,70	0,67
	50	0,85	0,77	0,72	0,69	0,67	0,64	0,62
	95	0,85	0,77	0,72	0,69	0,67	0,63	0,62
	150	0,84	0,76	0,72	0,68	0,66	0,63	0,62
	240	0,84	0,76	0,71	0,68	0,66	0,63	0,61
	400	0,84	0,75	0,71	0,67	0,65	0,62	0,60
	630	0,83	0,75	0,70	0,65	0,65	0,62	0,60
	1000	0,82	0,74	0,69	0,64	0,64	0,61	0,59
	25	0,89	0,81	0,77	0,73	0,72	0,69	0,67
	50	0,89	0,80	0,76	0,73	0,71	0,68	0,66
	95	0,89	0,80	0,76	0,73	0,71	0,68	0,66
	150	0,88	0,80	0,76	0,72	0,70	0,67	0,65
	240	0,88	0,79	0,75	0,72	0,70	0,67	0,65
	400	0,87	0,78	0,74	0,71	0,69	0,66	0,64
	630	0,87	0,77	0,73	0,70	0,68	0,65	0,63
	1000	0,86	0,76	0,72	0,69	0,67	0,64	0,62

Reduction factors for the other cable systems in the air

	Number of racks	Number of systems		
		1	2	3
A. Poor circulation air cable racks $\geq 2 \text{ cm}$ $2d$ $2d$ 	1	0,95	0,90	0,88
	2	0,90	0,85	0,83
	3	0,88	0,83	0,81
	6	0,86	0,81	0,79
B. Good circulation air cable racks $\geq 2 \text{ cm}$ $2d$ $2d$ 	1	1,00	0,98	0,96
	2	1,00	0,95	0,93
	3	1,00	0,94	0,92
	6	1,00	0,93	0,90
A. Poor circulation air cable racks $\geq 2 \text{ cm}$ 	1	0,92	0,89	0,88
	2	0,87	0,84	0,83
	3	0,84	0,82	0,81
	6	0,82	0,80	0,79
B. Good circulation air cable racks $\geq 2 \text{ cm}$ 	1	1,00	0,97	0,96
	2	1,00	0,94	0,93
	3	1,00	0,93	0,92
	6	1,00	0,91	0,90