



Table 12-1: current rating

For cables with a nominal voltage of up to 1000 V and for heat-resistant cables at an ambient temperature of + 30 °C.

Cable category						
Installation type	A Single-core cables • Rubber insulation • PVC insulation • TPE insulation • Heat-resistant	B Multi-core cables for domestic/handheld equipment • Rubber insulation • PVC insulation • TPE insulation		C Multi-core cables excl. domestic/handheld equipment • Rubber insulation • PVC insulation • TPE insulation • Heat-resistant	D Multi-core rubber-sheathed cables min. 0.6/1 kV Single-core Special rubber core cables 0.6/1 or 1.8/3 kV	
Number of cores under load	1 ³⁾	2	3	2 or 3	3	1 ³⁾
Nominal cross-section in mm ²	Current rating in A	Current rating in A		Current rating in A	Current rating in A	
0.08 ¹⁾	1.5	-	-	1	-	-
0.14 ¹⁾	3	-	-	2	-	-
0.25 ¹⁾	5	-	-	4	-	-
0.34 ¹⁾	8	-	-	6	-	-
0.5	12 ²⁾	3	3	9 ²⁾	-	-
0.75	15	6	6	12	-	-
1.0	19	10	10	15	-	-
1.5	24	16	16	18	23	30
2.5	32	25	20	26	30	41
4	42	32	25	34	41	55
6	54	40	-	44	53	70
10	73	63	-	61	74	98
16	98	-	-	82	99	132
25	129	-	-	108	131	176
35	158	-	-	135	162	218
50	198	-	-	168	202	276
70	245	-	-	207	250	347
95	292	-	-	250	301	416
120	344	-	-	292	-	488
150	391	-	-	335	-	566
185	448	-	-	382	-	644
240	528	-	-	453	-	775
300	608	-	-	523	-	898
400	726	-	-	-	-	-
500	830	-	-	-	-	-
Current rating from:	DIN VDE 0298-4, 2003-08 Table 11/column 2	DIN VDE 0298-4, 2003-08 Table 11/columns 3 + 4		DIN VDE 0298-4, 2003-08 Table 11/column 5	DIN VDE 0298-4, 2003-08 Table 15/columns 4 + 2	

IMPORTANT:

The information portrayed in this table differs from that in VDE 0298-4. As such, in the event of any uncertainty the current version of DIN VDE 0298-4 always applies. Please also observe all applicable conversion factors going beyond table 12-1 for:

- differing ambient temperatures: table T12-2
- several-core cables up to 10 mm² with more than 3 cores under load: table 12-3
- heat-resistant cables for ambient temperatures exceeding 50 °C: table T12-4
- for wound cables: table 12-5
- bundling of single-core or multi-core cables in pipes, ducts, walls or flooring: T12-6
- bundling of multi-core cables on troughs or conduits: table 12-7
- bundling of single-core cables on troughs or conduits: table 12-8

Cable designs as per table 12-1 category

A: Single-core cables: LiY, LiYCY- EA, H05V-K, H07V-K, H07Z-K, multi-standard single-core cable, ÖLFLEX® HEAT, ÖLFLEX® HEAT 180 single cores, ÖLFLEX® HEAT 205/260 single cores

B: Multi-core connecting cables for domestic/handheld devices: all ÖLFLEX® connecting cables, H05VV-F, H05RR-F, H05RN-F, H05BQ-F, H07BQ-F

C: Multi-core and several-core connecting and/or control cables for all other applications except domestic/household equipment: all ÖLFLEX®, ÖLFLEX® CRANE, ÖLFLEX® HEAT, ÖLFLEX® HEAT 180, ÖLFLEX® HEAT 205/260 cables

D: Multi-core rubber-sheathed cables V₀/V min. 0.6/1 kV: ÖLFLEX® CRANE PUR, ÖLFLEX® CRANE VS, NSHTÖU, NSSHÖU; ÖLFLEX® HEAT 145 multi-core cables. Single-core special rubber core cables V₀/V 0.6/1 kV or 1.8/3 kV: NSGAFÖU, NSHXAFÖU; ÖLFLEX® HEAT 145 single-core cables.

Current rating of other cables:

ESUY earthing cable: see VDE 0105, part 1
H07RN-F/A 07RN-F/H07BQ-F for industrial applications: see catalogue table T12-9.
Welding cable H01N2-D: see catalogue table T12-10.

Cables for fixed installation in buildings (NYM, NHXMH, NYY, NYCY, NYCWY, NHXHX): see VDE 0298-4, 2003-08, tables 3 + 4.

Cables in machinery: DIN EN 60204-1/VDE 0113-1

Current rating for cables in the USA: see NEC excerpt table 13

¹⁾ Current rating values for small conductor cross-sections taken from VDE 0891-1 (0.08 mm² – 0.34 mm²)

²⁾ Extended range for 0.5 mm² in line with VDE 0298-4, 2003-08, table 11 column 2

³⁾ When bundling single-core, touching or bundled cables:

- When installed on surfaces, the following calculations must be performed on the current rating values in table 12-1 column A or D prior to applying the conversion factors as per table 12-6
- - Multiplied by a factor of 0.76 for single-phase AC or DC circuits or
- - Multiplied by a factor of 0.67 for three-phase circuits.
- When installed in the open air or on cable conduits, the following calculations must be performed on the current rating values in table 12-1 column A or D prior to applying conversion table 12-8
- - Multiplied by a factor of 0.8 for single-phase AC and DC circuits or
- - Multiplied by a factor of 0.7 for three-phase circuits.

• **ATTENTION:** For the current rating of core cables in pipes for electrical installations fitted on and in buildings (installation type A1 or B1), the values from VDE 0298 tables 3 or 5, columns 2, 3, 6 or 7 respectively, must be multiplied with the conversion factors stated in VDE 0298 table 21.

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Table 12-2: conversion factors

For ambient temperatures other than 30 °C in line with DIN VDE 0298-4, 2003-08, table 17.

Table 12-4 of this appendix applies to heat-resistant cables.

Permissible/recommended operating temperature at the conductor (Details of the maximum value in °C can be found in the field "Technical data, temperature range for fixed or flexible installation" on the relevant product page in the catalogue)					
	60 °C	70 °C	80 °C	85 °C	90 °C
Ambient temperature in °C	Conversion factors to be applied to the current rating values in T12-1				
10	1.29	1.22	1.18	1.17	1.15
15	1.22	1.17	1.14	1.13	1.12
20	1.15	1.12	1.10	1.09	1.08
25	1.08	1.06	1.05	1.04	1.04
30	1.00	1.00	1.00	1.00	1.00
35	0.91	0.94	0.95	0.95	0.96
40	0.82	0.87	0.89	0.90	0.91
45	0.71	0.79	0.84	0.85	0.87
50	0.58	0.71	0.77	-	0.82
55	0.41	0.61	0.71	-	0.76
60	-	0.50	0.63	-	0.71
65	-	0.35	0.55	-	0.65
70	-	-	0.45	-	0.58
75	-	-	0.32	-	0.50
80	-	-	-	-	0.41
85	-	-	-	-	0.29


Table 12-3: conversion factors

For several-core cables with conductor cross-sections up to 10 mm² (DIN VDE 0298-4, 2003-08, table 26).

Number of cores under load	Conversion factor for installation in the open air	Conversion factor for installation underground
5	0.75	0.70
7	0.65	0.60
10	0.55	0.50
14	0.50	0.45
19	0.45	0.40
24	0.40	0.35
40	0.35	0.30
61	0.30	0.25

**Table 12-4: conversion factors for heat-resistant cables**

Permissible/recommended operating temperature at the conductor (Details of the maximum value in °C can be found in the field "Technical data, temperature range for fixed or flexible installation" on the relevant product page in the catalogue)				
	ÖLFLEX® HEAT 105 H07V2-K ÖLFLEX®-FD ROBUST H07Z-K 90 °C	Halogen-free single core H07Z-K 110 °C	ÖLFLEX® HEAT 145	ÖLFLEX® HEAT 180 Silicone
Ambient temperature in °C	Conversion factors to be applied to the current rating values for heat-resistant cables in T 12-1, column A, C or D. (Source: DIN VDE 0298-4, 2003-08, table 18)			
up to 50	1.00	1.00	1.00	1.00
55	0.94	1.00	1.00	1.00
60	0.87	1.00	1.00	1.00
65	0.79	1.00	1.00	1.00
70	0.71	1.00	1.00	1.00
75	0.61	1.00	1.00	1.00
80	0.50	1.00	1.00	1.00
85	0.35	0.91	1.00	1.00
90	-	0.82	1.00	1.00
95	-	0.71	1.00	1.00
100	-	0.58	0.94	1.00
105	-	0.41	0.87	1.00
110	-	-	0.79	1.00
115	-	-	0.71	1.00
120	-	-	0.61	1.00
125	-	-	0.50	1.00
130	-	-	0.35	1.00
135	-	-	-	1.00
140	-	-	-	1.00
150	-	-	-	1.00
155	-	-	-	0.91
160	-	-	-	0.82
165	-	-	-	0.71
170	-	-	-	0.58
175	-	-	-	0.41

**Table 12-5: conversion factors**

For wound cables (DIN VDE 0298-4, 2003-8, table 27).

Number of layers on the coil, drum, reel	1	2	3	4	5
Conversion factor	0.80	0.61	0.49	0.42	0.38

A conversion factor of 0.8 applies to spiral winding (in one layer).

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**Table 12-6: conversion factors**

For bundling on walls, in pipes and ducts, on flooring and under ceilings (in line with DIN VDE 0298-4, 2003-08, table 21).

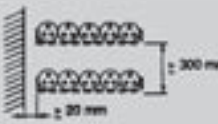
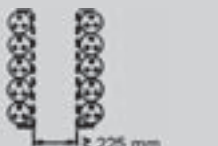
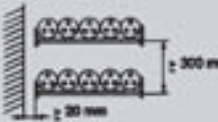
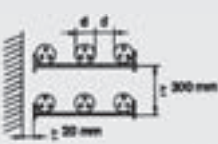
Number of multi-core cables or number of AC or three-phase circuits formed by single-core cables (2 or 3 live conductors)																
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	20	
Configuration for installation	Conversion factors to be applied to the current rating values in table 12-1															
Bundled directly on the wall, on the floor, in pipes or ducts for electrical installations.		1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
In a single layer on the wall or floor, touching.		1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
In a single layer on the wall or floor, with a gap equal to outer diameter d.		1.00	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
In a single layer under the ceiling, touching.		0.95	0.81	0.72	0.68	0.66	0.64	0.63	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.61
In a single layer under the ceiling, with a gap equal to outer diameter d.		0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85

⊙ = Symbol for single-core or multi-core cable

IMPORTANT: The conversion factors must be applied in order to determine the current rating for cables of the same type and under the same load, when bundled in the same installation type. In the process, the nominal conductor cross-sections must not vary by more than one cross-section classification.

**Table 12-7: conversion factors**

For bundling multi-core cables on troughs and conduits (in line with DIN VDE 0298-4, 2003-08, table 22).

Configuration for installation			Number of troughs or conduits	Number of multi-core cables					
				1	2	3	4	6	9
Conversion factors									
Non-perforated cable troughs	touching		1	0.97	0.84	0.78	0.75	0.71	0.68
			2	0.97	0.83	0.76	0.72	0.68	0.63
			3	0.97	0.82	0.75	0.71	0.66	0.61
			6	0.97	0.81	0.73	0.69	0.63	0.58
Perforated cable troughs	touching		1	1.00	0.88	0.82	0.79	0.76	0.73
			2	1.00	0.87	0.80	0.77	0.73	0.68
			3	1.00	0.86	0.79	0.76	0.71	0.66
			6	1.00	0.84	0.77	0.73	0.68	0.64
	with gap		1	1.00	1.00	0.98	0.95	0.91	–
			2	1.00	0.99	0.96	0.92	0.87	–
			3	1.00	0.98	0.95	0.91	0.85	–
	touching		1	1.00	0.88	0.82	0.78	0.73	0.72
			2	1.00	0.88	0.81	0.76	0.71	0.70
	with gap		1	1.00	0.91	0.89	0.88	0.87	–
			2	1.00	0.91	0.88	0.87	0.85	–
Cable conduits	touching		1	1.00	0.87	0.82	0.80	0.79	0.78
			2	1.00	0.86	0.81	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
	with gap		1	1.00	1.00	1.00	1.00	1.00	–
			2	1.00	0.99	0.98	0.97	0.96	–
			3	1.00	0.98	0.97	0.96	0.93	–

IMPORTANT: The factors stated in this table apply only to groups of cables installed in a single layer in configurations as specified above. However, they do not apply if the cables are touching and installed over one another, or if the actual gap dimensions between the cable troughs or cable conduits fall short of the specified gaps. If this is the case, reduce the conversion factors (e.g. as per table 12-6).

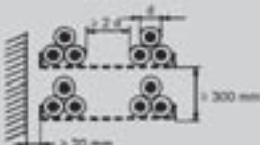
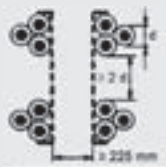
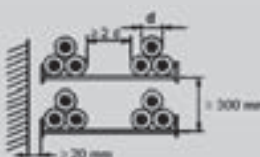
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Table 12-8: conversion factors

For bundling single-core cables on troughs and conduits. Applicable to the rating values as per table 12-1 (T12-8 corresponds to DIN VDE 0298-4 2003-08, table 23).

Configuration for installation		Number of troughs or conduits	Number of 3-pin circuits formed by single-core cables			To be used as the multiplier for the measurement value of:
			1	2	3	
Conversion factors						
Perforated cable troughs	touching		1	0.98	0.91	Three cables arranged horizontally and level
		2	0.96	0.87	0.81	
		3	0.95	0.85	0.78	
	touching		1	0.96	0.86	Three cables arranged vertically and level
			2	0.95	0.84	
	Cable conduits	touching		1	1.00	0.97
2			0.98	0.93	0.89	
3			0.97	0.90	0.86	
Perforated cable troughs		1	1.00	0.98	0.96	Three cables arranged in a horizontal, triangular configuration
		2	0.97	0.93	0.89	
		3	0.96	0.92	0.86	
		1	1.00	0.91	0.89	Three cables arranged in a vertical, triangular configuration
		2	1.00	0.90	0.86	
	Cable conduits		1	1.00	1.00	1.00
2			0.97	0.95	0.93	
3			0.96	0.94	0.90	

IMPORTANT: The factors stated in this table apply only to groups of single-core cables installed in a single layer in configurations as specified above. However, they do not apply if the cables are touching and installed over one another, or if the actual gap dimensions between the cable troughs or cable conduits fall short of the specified gaps. If this is the case, reduce the conversion factors (e.g. as per table 12-6). If circuits are connected in parallel, each three-conductor bundle of the parallel connection is to be considered as one circuit.

**Table 12-9: current rating of rubber-sheathed cables**

H07RN-F and A07RN-F for industrial applications (in line with DIN VDE 0298-4 Aug. 2003, table 13).

Permissible operating temperature at the conductor		60 °C					
Ambient temperature		30 °C					
Installation type: in the open air							
	2	3	2	2	3	3	3
Number of cores under load							
Nominal cross-section of copper cond. in mm²		Rating A					
1	-	-	15	15.5	12.5	13	13.5
1.5	19	16.5	18.5	19.5	15.5	16	16.5
2.5	26	22	25	26	21	22	23
4	34	30	34	35	29	30	30
6	43	38	43	44	36	37	38
10	60	53	60	62	51	52	54
16	79	71	79	82	67	69	71
25	104	94	105	109	89	92	94
35	129	117	-	135	110	114	-
50	162	148	-	169	138	143	-
70	202	185	-	211	172	178	-
95	240	222	-	250	204	210	-
120	280	260	-	292	238	246	-
150	321	300	-	335	273	282	-
185	363	341	-	378	309	319	-
240	433	407	-	447	365	377	-
300	497	468	-	509	415	430	-
400	586	553	-	-	-	-	-
500	670	634	-	-	-	-	-
630	784	742	-	-	-	-	-
Conversion factors for:							
Differing ambient temperature	see table T 12-2						
Bundling	-	T 12-8			T 12-7		
Wound cables	-	-				T 12-5	
Several-core cables	-				T12-3		-

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Table 12-10: operating conditions and ratings for welding cables

H01N2-D and H01N2-E (in line with DIN VDE 0298-4, 2003-08, table 16)

Permissible operating temperature at the conductor		85 °C					
Ambient temperature		30 °C					
Installation type: in the open air							
Number of cores under load		1					
Mode of operation	Continuous operation	Intermittent operation					
Run time	-	5 minutes					
Switch-on duration (ED)	100 %	85 %	80 %	60 %	35 %	20 %	8 %
Nominal cross-section of copper cond. in mm ²		Rating A					
10	96	97	98	102	114	137	198
16	130	132	134	142	166	204	301
25	173	179	181	196	234	293	442
35	216	226	229	250	304	384	584
50	274	287	293	323	398	508	779
70	341	360	368	409	510	655	1011
95	413	438	448	502	632	816	1266
120	480	511	523	588	745	966	1502
150	557	594	609	687	875	1137	1771
185	638	683	700	793	1012	1319	2059
Mode of operation	Continuous operation	Intermittent operation					
Run time	-	10 minutes					
Switch-on duration (ED)	100 %	85 %	80 %	60 %	35 %	20 %	8 %
Nominal cross-section of copper cond. in mm ²		Rating A					
10	96	96	96	97	102	113	152
16	130	131	131	133	144	167	233
25	173	175	176	182	204	244	351
35	216	220	222	233	268	324	477
50	274	281	284	303	356	439	654
70	341	352	358	387	463	578	872
95	413	430	438	478	582	734	1117
120	480	503	513	564	692	880	1348
150	557	586	597	661	819	1046	1609
185	638	674	688	765	955	1226	1892
Conversion factors for differing ambient temperature		Table T 12-2					