Current carrying capacity XLPE-insulated LV cables

according to HD 603 S1, part 5G and HD 627 S1, part 4H
HD 603 and HD 627 are identical to DIN VDE 0276-603, DIN VDE 0276-627 respectively.

Bayka products

The values given below are applicable to these products:

Column ***N2XY/N2X2Y*** *[copper, without concentric conductor and braid]* (with or without CPR):

feedIN DC (without concentric conductor)	Flex Power +	Power +	Power PUR (no laying in earth)

Column ***N2XCY/N2XC2Y/N2XCWY/N2XCW2Y*** *[copper, with concentric conductor or braid]* (with or without CPR):

EMC PUR (no laying in earth)	EMC-UV-Flex Control	feedIN DC (with concentric conductor)	feedIN DC EMC
Flex Power + EMC	PTTA	Tram	VFD EMC Soil

General

This section applies to the current-carrying capacity under both standard and deviating provisions provided that the cables are in three-phase operation with three conductors loaded or one single-core cable in d.c.-operation.
The rated current-carrying capacity are only valid under standard conditions.

General conditions

Temperatures °C (conductor)	
Maximum permissible operating temperature	+90
Maximum short-circuit temperature	+250

Concentric conductors bonded at both ends.

Power frequency 50 Hz.

The tabulated rated current-carrying capacities are based on standard provisions such as:

- operating mode
- laying conditions
- environmental conditions

For deviating operating conditions the current-carrying capacities in the tables are to be multiplied by appropriate conversion factors which shall be based on the same calculation method and operating conditions as used for the current-carrying capacity given in this clause.

Current carrying capacity XLPE-insulated LV cables

Laying in earth (20°C)

Recommended values according to HD 603 S1, part 5G, table 14

	N2XY **N2X2Y** [copper, without concentric conductor and braid]			**N2XCY / N2XC2Y** **N2XCWY / N2XCW2Y** [copper, with concentric conductor or braid]		**NA2XY** **NA2X2Y** [aluminium, without concentric conductor and braid]			**NA2XCY / NA2XCWY** **NA2XC2Y / NA2XCW2Y** [aluminium, with concentric conductor or braid]	
										
Number of loaded conductors	1	3	3	3	3	1	3	3	3	3
cross-section mm²	**Copper conductor Rated current in A**					**Aluminium conductor Rated current in A**				
1,5	48	31	33	31	33	–	–	–	–	–
2,5	63	40	42	40	43	–	–	–	–	–
4	82	52	53	52	55	–	–	–	–	–
6	102	64	67	65	68	–	–	–	–	–
10	136	86	89	87	91	–	–	–	–	–
16	176	112	115	113	117	–	–	–	–	–
25	229	145	148	146	150	177	112	114	113	116
35	275	174	177	176	179	212	135	136	136	138
50	326	206	209	208	211	252	158	162	159	164
70	400	254	256	256	257	310	196	199	197	201
95	480	305	307	307	304	372	234	238	236	240
120	548	348	349	349	341	425	268	272	269	272
150	616	392	393	391	377	476	300	305	302	303
185	698	444	445	442	418	541	342	347	342	340
240	815	517	517	509	469	631	398	404	397	387
300	927	585	583	569	514	716	457	457	454	430
400	1064	671	663	637	565	825	529	525	520	479
500	1227	758	749	691	623	952	609	601	584	531
630	1421	–	843	–	690	1102	–	687	–	587
800	1638	–	935	–	–	1267	–	776	–	–
1000	1869	–	1023	–	–	1448	–	865	–	–

*) Rated current for cables in d.c. systems with return conductor far away.

Current carrying capacity XLPE-insulated LV cables

Laying in air (30°C)

Recommended values according to HD 603 S1, part 5G, table 15

	N2XY **N2X2Y** [copper, without concentric conductor and braid]			**N2XCY / N2XC2Y** **N2XCWY / N2XCW2Y** [copper, with concentric conductor or braid]		**NA2XY** **NA2X2Y** [aluminium, without concentric conductor and braid]			**NA2XCY / NA2XCWY** **NA2XC2Y / NA2XCW2Y** [aluminium, with concentric conductor or braid]	
										
Number of loaded conductors	1	3	3	3	3	1	3	3	3	3
cross-section mm²	**Copper conductor Rated current in A**					**Aluminium conductor Rated current in A**				
1,5	33	24	26	25	27	–	–	–	–	–
2,5	43	32	34	33	36	–	–	–	–	–
4	57	42	44	43	47	–	–	–	–	–
6	72	53	56	54	59	–	–	–	–	–
10	99	74	77	75	81	–	–	–	–	–
16	131	98	102	100	109	–	–	–	–	–
25	177	133	138	136	146	136	102	106	104	112
35	217	162	170	165	179	166	126	130	128	137
50	265	197	207	201	218	205	149	161	152	169
70	336	250	263	255	275	260	191	204	194	214
95	415	308	325	314	336	321	234	252	239	263
120	485	359	380	364	388	376	273	295	278	308
150	557	412	437	416	438	431	311	339	316	349
185	646	475	507	480	501	501	360	395	365	401
240	774	564	604	565	580	600	427	472	430	469
300	901	649	697	643	654	696	507	547	506	535
400	1060	761	811	737	733	821	600	643	575	615
500	1252	866	940	807	825	971	695	754	682	700
630	1486	–	1083	–	934	1151	–	882	–	790
800	1751	–	1228	–	–	1355	–	1019	–	–
1000	2039	–	1368	–	–	1580	–	1157	–	–

*) Rated current for cables in d.c. systems with return conductor far away.

Current carrying capacity XLPE-insulated LV cables

Admissible short-circuit temperatures and rated short-time current densities

Recommended values according to HD 603 S1, part 3G, table17

Cables with	Admissible short-circuit temperature in °C	Rated short-time current density in A/mm² for a rated short-circuit duration of 1 s							
		Conductor temperature at the beginning of short-circuit in °C							
		90	80	70	60	50	40	30	20
Copper conductor	250	143	149	154	159	165	170	176	181
aluminiu conductor	250	94	98	102	105	109	113	116	120

Current carrying capacity multicore cables

Group rating factors for multicore cables with different number of loaded conductors.

THD 603, Part 3, main section G, section V (current-carrying capacity) and section VI (annex), table 14 and table 15 (ampacity, cable in earth / in air), in both tables column 3 and column 5 for cables with PVC insulation.

and

HD 603, part 5, main section G, section V (current-carrying capacity) and section VI (annex), table 14 and table 15 (ampacity, cables in earth / in air), in both tables column 3 and column 5 for cables with XLPE insulation.

Group rating factors for multicore cables with different number of loaded cores
according to HD 627 S1, part 4H, table A.1

Group rating factors for multicore cables with different number of loaded cores according to HD 627 S1, part 4H, table A.1

number of loaded conductors	Laying in earth	Laying in air
5	0,70	0,75
7	0,60	0,65
10	0,50	0,55
14	0,45	0,50
19	0,40	0,45
24	0,35	0,40
40	0,30	0,35
61	0,25	0,30