

LV Cable Sizing per IEC 60364-5-52

cBallast · IEC 60364-5-52:2019 · Design reference

Three sizing constraints

Current-carrying capacity I_z "e I_b (with protection I_n in between); voltage drop 9EP "d design limit (3% lighting, 5% motor+power); short-circuit thermal withstand I^2t "d k^2S^2 .

Installation-method reference

Method	Description
A1	Single cores in conduit, thermally insulating wall
A2	Multi-core cable in conduit, thermally insulating wall
B1	Single cores in conduit on wall
B2	Multi-core in conduit on wall
C	Clipped direct to wall or ceiling void
D1	Multi-core in conduit/duct buried
D2	Multi-core buried direct
E	Multi-core free air on tray
F	Single cores touching in free air
G	Single cores spaced in free air

PVC-insulated Cu I_z (A, 70 C, 30 C ambient)

mm ²	A1	B1	C	D1	E
1.5	13.5	16.5	19.5	22	22
2.5	18	23	27	29	31
4	24	30	36	37	41
6	31	38	46	46	53
10	42	52	63	60	72
16	56	69	85	78	97
25	73	90	112	99	128
35	89	111	138	119	157
50	108	133	168	140	190
70	136	168	213	173	240
95	164	201	258	204	290
120	188	232	299	231	335
150	216	-	344	261	386
185	245	-	392	293	441
240	286	-	461	339	520

Ambient temp correction

°C	PVC	XLPE
10	1.22	1.15
20	1.12	1.08
30 ref	1.00	1.00
40	0.87	0.91
50	0.71	0.82
60	0.50	0.71

Grouping factor (touching on tray)

Circuits	Factor
1	1.00
2	0.80
3	0.70
4	0.65
5	0.60
6	0.57
9	0.52
12	0.45

Voltage drop (V/A·km)

mm ²	2-core 1-ph	3-core 3-ph
1.5	29.0	25.0
2.5	18.0	15.0
4	11.0	9.5
6	7.3	6.4
10	4.4	3.8
16	2.8	2.4
25	1.75	1.50
35	1.25	1.10
50	0.93	0.80
70	0.63	0.55
95	0.46	0.40
120	0.36	0.31

Short-circuit thermal (k)

Insulation	Conductor	k (A·s ^{0.5} /mm ²)
PVC	Cu	115
PVC	Al	76
XLPE/EPR	Cu	143

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