

Nominal voltage and Operating voltage

Nominal voltage

Voltage of cables and wires, by which the construction and the tests in respect of electrical characteristics are to be referred.

According to DIN VDE 0298 and IEC 183 the cables are specified U_0/U , where

U_0 = cable nominal voltage between the conductor and the metal covering or earth and
 U = cable nominal voltage between the phase conductors, for 3-phase $U = \sqrt{3} U_0$.

According to IEC regulations, the maximum permissible voltage U_m is given in brackets. The identification is: $U_0/U (U_m)$.

As the insulation of plastic insulated cables are measured with a nominal voltage $U_0/U = 0,6/1$ kV and all radial field cables for the voltage U_0 , these cables are suitable for installation:

- in single phase systems, in which the both phase conductors are insulated, with nominal voltage $U_N = 2 U_0$
- in single phase systems, in which one phase conductor is earthed, with the nominal voltage $U_N = U_0$

Operating voltage

Voltage between conductors of a power system or between a conductor and earth under specified condition in a given time during an undisturbed operation.

Coordination of cable-Nominal voltages

Nominal-voltages U_0/U kV	for 3-phase system kV	for 1-phase alternating current	
		both phase conductors insulated kV	one phase conductor earthed kV
0,6/1	1	1,2	0,6
3,6/6	6	7,2	3,6
6/10	10	12	6
12/20	20	24	12
18/30	30	36	18

Coordination of maximum permissible Operating voltages

Nominal voltages U_0/U kV	maximum voltage for 3-phase system kV	maximum voltage for 1-phase alternating current	
		both phase conductors insulated kV	one phase conductor earthed kV
0,6/1	1,2	1,4	0,7
3,6/6	7,2	8,3	4,1
6/10	12	14	7
12/20	24	28	14
18/30	36	42	21

Note:

Cable with $U_0/U 0,6/1$ kV is allowed for **Direct Current Systems**, of those the maximum operating voltage conductor/conductor 1,8 kV or conductor/earth 0,9 kV not to be exceeded.