

Cable Calculation

Unit Test Cables Project Number: 170202 Created by: Steven on 2/2/2017	<i>myCableEngineering</i>
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=170513-W1 [Edvard Post Calculation]

From: Supply Authority To: 20/0.3 kV Transformer	Voltage: 22,000V (a.c. 3-ph), Frequency: 50 Hz, Load Current (Ib): 361 A 1x(1x3c) 240 mm ² Cu/XLPE/SWA, Length: 100 m, Soil Resistivity: 100 Ω.m Nexans Olex 12.7/22 kV XLPE Cable. Three Core Copper SWA.
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Current Capacity

Sizing Method: IEC 60502, table B6	Design Current: 361 A, power factor 0.95 No Protective Device	Base Capacity: 431 A Derated Capacity: 353 A
Calculation Details: Multicore cable [3 cores], three phase. In ground - direct Multicore cables directly buried		
<ul style="list-style-type: none">Ambient air temperature °C: = 20, derating = 1.00 [IEC 60502 table B11]Depth of laying, m: = 0.8, derating = 1.00 [IEC 60502 table B12]Number of cables in group: = 3, derating = 0.82 [IEC 60502 table B18]Soil thermal resistivity 1.2K.m/W, Nominal Conductor area, mm²: = 240, derating = 1.00 [IEC 60502 table B16]		

Voltage Drop and Impedance

Max.Specified Voltage Drop: 1%	Average Voltage Drop:5.06 V Percentage Voltage Drop: 0.04% Power Loss: 4,133 W	Z1 = 0.01057 + j0.00919 Ω Z0 = 0.07398 + j0.01904 Ω
Temperature Max.Allowed: 90 °C, Actual: 93 °C		

Fault Rating

Three Phase Fault	source end: 8.41/8.41 kA, 0.9pf, [0.02 s] => load end: 9.17/8.34 kA, 0.9pf
(3ph-system) Line-Earth Fault	source end: 8.41/8.41 kA, 0.9pf, [0.02 s] => load end: 26.22/23.83 kA, 0.9pf
I2t (x10 ³ A2s)	three phase fault: 1415, earth fault: 1415, cable: 1211040 [cable 1s rating = 34.8 kA]

*fault levels calculated in accordance with IEC 60909