Cable Calculation Report

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Project Reference:	**Job Number:**	
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Calculated in accordance with BS 7671

Active Source: TX 1

Circuit

Id No.: **(2/22)** Name: MCC16(E)
Connected From: **EMDB01** **To:** **MCC16(E)**
Load Type: **Distribution Board** Design Current Ib (A): 30.7

Comments:

What is the meaning of simultaneous overload?

Protective Device

[a] = Auto, [f] = Fixed, [m] = Max.

Overcurrent protection: Schneider Compact NSX MCCB NSX100H Micrologic 2.2
Rating In (A): 100 [f] Overload Setting Ir (A): 63 [f]

Conductors

[a] = Auto, [f] = Fixed, [d] = Double

Pirelli FP400 Fire resistant cable Cu **1 x 1 x 4c** **Size (mm²):** **35 [f]**
Neutral: 35 mm² [a] **Length (m):** **180**
31 - On horizontal/vertical perforated tray Arrangement: Horizontal Touching

Rating Factors

Air Temperature (°C)	= 30.0	Ca	= 1.00	[BS 7671, Table 4B1]	
Circuits In Group	= 10	Cg	= 0.72	[BS 7671, Table 4C4]	Not Subject to Simultaneous Overload
No. of trays = 1	No. of circuits per tray = 12				
3rd Harmonics (%)	= 0.00	Ch	= 1.00		

What is Iz? How this value is arrived at?

Cable sizing (A)

Sized For: Phase Current Carrying Capacity — Auto-sized for current-carrying capacity and voltage drop limits.

Design Current Ib	= 30.7		
Device Rating In	= 100	Overload Setting Ir = 63	[Ir ≥ Ib]
Min. Cable Capacity Iz	= 66.3		[BS 7671, Appendix 4.5, Formula (3/4)]
Actual Cable Rating It	= 162.0		[It ≥ Iz]

Is this the actual current carrying capacity of the cable without any derating factors?

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	30.7 / 0.95	30.7 / 0.95	30.7 / 0.95	0.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	3.30 / 1.44	3.30 / 1.44	3.30 / 1.44	-----
Voltage Drop - From Source (V/%)	5.49 / 2.39	5.49 / 2.39	5.49 / 2.39	-----

Earth Fault

Circuit Protective Conductor (mm²) Separate 25 [f] [a] = Auto, [f] = Fixed

Earth Fault Loop Impedance ( ) Ω	Ze 0.00783	Z1 0.12069	Z2 0.17664	Zs 0.29932	Max. Zs 0.39411	Earth Fault Current (kA)
Disconnection time (s)	From characteristic: 0.08			Maximum for circuit: 5.00		0.73
Circuit Protective Conductor (mm²)					Separate 25 [f]	
CPC Adiabatic check (mm) ²	CPC Section = Separate 25			Total = 25.0	Min. Section = 1.45	

Note: Earth Fault Current and Max Zs have been factored by Cmin

Phase Fault

≈ Includes motor fault contribution

Phase Fault Current Max./Min. (kA)	Source End: ≈34.629 / 28.856	Load End: ≈2.360 / 0.944
Protective Device Breaking Capacity (kA)	Icu: 70 Ics: 70	

Adiabatic Check:	CPD Energy Let-through (A²s): 70.83 x 10^3	Adiabatic Limit k²S² (A²s): 25.05 x 10^6