

Project Name	Sample
Job No.	Sample
Calculation Name	Cable Calculation

Table1 Standards

Australian Standard AS/NZS 3008.1.1
AS/NZS 3000:2018 Wiring Rules

Table2 Cable

Insulation	Thermoplastic (75 deg.C)
Conductor	Copper Solid/Stranded
Cores	Single core
Installation	Unenclosed Spaced

Table3 Load

Current (A)	100
Power Factor	0.85
Phase Angle (degrees)	31.8

Table4 Supply

Phases	1 ph
Voltage (V)	230 (ph-n)
Permissible Voltage Drop (%)	2.5
Length of Run (m)	50
Fault Level (kA)	3

Table5 Protection

Short-circuit Clearing Time (s)	0.1
Device Type	MCB
Rating (A)	100 A
Curve	B
Earth Fault Time	0.4 s
Trip Current (A)	400
Trip Multiplier	4
RCD	FALSE

Table6 Results

	Minimum conductor cross-sectional area (mm ²)	No. of circuits
Active Conductor	35	1
Neutral Conductor	35	1
Earth Conductor	2.5	1

Table7 Current-carrying Capacity: PASS

Current Rating of Circuit-derated (A)	153
Spare Current-carrying Capacity of Circuit (A)	53
Overall Derating Factor	1
Conductor Operating Temperature (deg.C.)	54.95
Reference (Ambient) Temperature (deg.C.)	40
Tabulated Current-carrying Capacity of Cable (A)	153
Standard TABLE No. Ref.	4
Standard Column No. Ref.	2

Table8 Voltage Drop: PASS

Voltage Drop (V)	5.52
Voltage Drop (%)	2.4
Permissible Voltage Drop (%)	2.5
Maximum Length of Run (m)	52.08
Phase Conductor Resistance (Ohms/km)	0.597
Neutral Conductor Resistance (Ohms/km)	0.576
Resistance Table No. Ref.	34
Resistance Col. No. Ref. @ min. temp.	2
Resistance Col. No. Ref. @ max. temp.	4
Phase Conductor Reactance (Ohms/km)	0.1
Neutral Conductor Reactance (Ohms/km)	0.1
Reactance Table No. Ref.	30
Reactance Col. No. Ref.	3

Table9 Fault Loop Impedance: PASS

Protective Device Impedance, Z _{max} (Ohms)	0.575
Total Loop Impedance, Z _s (Ohms)	0.529499
Upstream (system) Impedance, Z _{ext} (Ohms)	0.04869
Internal Conductors Impedance, Z _{1+Z2} (Ohms)	0.48081
Impedance of Phase Conductors, Z ₁ (Ohms)	0.030253
Impedance of Return Conductors, Z ₂ (Ohms)	0.450557

Table10 Short-circuit Performance - Active Conductors: PASS

Phase-to-Neutral Short-circuit Current (A)	2360.8
Duration of Short-circuit (s)	0.1
Material, Initial and Final Temperature Constant, K	125.57
Min. Active Size to Withstand Short-circuit (mm ²)	5.95

Table11 Short-circuit Performance - Earth Conductors: PASS

Active-to-Earth Short-circuit Current (A)	434.4
Duration of Short-circuit (s)	0.1
Material, Initial and Final Temperature Constant, K	125.57
Min. Earth Size to Withstand Short-circuit (mm ²)	1.09