

Cable Calculation Report



Project Reference: Westside Electrical	Job Number: Marthastoon	Rev Date: 25/03/2021
Document No: Street Light - Amtech	Created On: 25/03/2021	Revision: A
Created By: SB	Revised By: SB	

Calculated in accordance with BS 7671:2018

Active Source: Source-1

Circuit

Id No.: LS-1	Name: FP to A1
Connected From: CU-1/1/L1	To: LC-1 / Col A1
Load Type: Lighting Column	Design Current Ib (A): 3.0
Comments:	

Protective Device

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

Overcurrent protection: Generic BS 88-2 Fuse System E	
Rating In (A): 10 [f]	Overload Setting Ir (A): N/A
	AFDD: N/A

Conductors

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

Multicore, 70°C thermoplastic insulated, armoured Cu Table 4D4	1 x 1 x 2c	Size (mm²): 10 [f]
Euro Class: Undefined		Length (m): 20
Neutral: 10 mm ² [a]		
73 - Direct in the ground (with cable covers)		

Rating Factors

Ground Temperature (°C) = 20.0	Ctg = 1.00	Cgg = 1.00
Circuits In Group = 1	Depth of Lay (m) = 0.70	Cd = 1.00
	Thermal Resistivity = 2.50	Cs = 1.000
3rd Harmonics (%) = 1.50	Ch = 1.00	
Buried Circuit	Cc = 0.900	[Appendix 4 5.1.1 (iii) b]

Cable sizing (A)

Sized For: Phase Current Carrying Capacity

Auto-sized for current-carrying capacity and voltage drop limits.

Design Current Ib = 3.0	
Device Rating In = 10	Overload Setting Ir = N/A [Ir ≥ Ib]
Min. Cable Capacity Iz = 11.1	
Actual Cable Rating It = 60.0	[It ≥ Iz]

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	3.0 / 0.80	0.0 / 0.00	0.0 / 0.00	3.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	0.19 / 0.08	0.00 / 0.00	0.00 / 0.00	-----
Voltage Drop - From Source (V/%)	0.19 / 0.08	0.00 / 0.00	0.00 / 0.00	-----

Earth Fault

Circuit Protective Conductor (mm²)

Armour 41 [a]

[a] = Auto, [f] = Fixed

Earth Fault Loop Impedance (Ω)	Ze 0.02483	Z1 0.04400	Z2 0.10142	Zs 0.16764	Max. Zs 6.82811	Earth Fault Current (kA)	
Disconnection time (s)	From characteristic: 0.04						Maximum for circuit: 5.00
Circuit Protective Conductor (mm²)	Armour 41 [a]						1.30
CPC Adiabatic check (mm²)	CPC Section = Armour 18.2		Total = 18.2		Min. Section = 0.15		

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

Phase Fault

Phase Fault Current Max./Min. (kA)	Source End: 9.300 / 9.300	Load End: 2.410 / 2.091
Protective Device Breaking Capacity (kA)	Icu: 80	Ics: 80
Adiabatic Check:	CPD Energy Let-through (A²s): 280.00	Adiabatic Limit k²S² (A²s): 1.32 x 10 ⁶

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Active Source: Source-1

Circuit	Id No.: LS-1	Name: A1 to A2
	Connected From: LC-1	To: LC-2 / Col A2
	Load Type: Lighting Column	Design Current Ib (A): 2.0
Comments:		

Protective Device	[a] = Auto, [f] = Fixed, [m] = Max.	
Overcurrent protection:	Generic BS 88-2 Fuse System E	
Rating In (A):	10 [f]	Overload Setting Ir (A): N/A
		AFDD: N/A

Conductors	[a] = Auto, [f] = Fixed, [d] = Double	
Multicore, 70°C thermoplastic insulated, armoured Cu Table 4D4	1 x 1 x 2c	Size (mm²): 10 [f]
Euro Class: Undefined		Length (m): 30
Neutral: 10 mm ² [a]		
73 - Direct in the ground (with cable covers)		

Rating Factors				
Ground Temperature (°C)	= 20.0	Ctg = 1.00		Cgg = 1.00
Circuits In Group	= 1		Depth of Lay (m) = 0.70	Cd = 1.00
			Thermal Resistivity = 2.50	Cs = 1.000
3rd Harmonics (%)	= 1.50	Ch = 1.00		
Buried Circuit		Cc = 0.900	[Appendix 4 5.1.1 (iii) b]	

Cable sizing (A)	Sized For: Phase Current Carrying Capacity		Auto-sized for current-carrying capacity and voltage drop limits.	
Design Current Ib	= 2.0			
Device Rating In	= 10	Overload Setting Ir = N/A	[Ir ≥ Ib]	
Min. Cable Capacity Iz	= 11.1			
Actual Cable Rating It	= 60.0		[It ≥ Iz]	

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	2.0 / 0.80	0.0 / 0.00	0.0 / 0.00	2.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	0.19 / 0.08	0.00 / 0.00	0.00 / 0.00	-----
Voltage Drop - From Source (V/%)	0.38 / 0.16	0.00 / 0.00	0.00 / 0.00	-----

Earth Fault	Circuit Protective Conductor (mm ²)					Armour 41 [a]	[a] = Auto, [f] = Fixed
Earth Fault Loop Impedance (Ω)	Ze 0.16764	Z1 0.06600	Z2 0.15213	Zs 0.38546	Max. Zs 6.82811		Earth Fault Current (kA)
Disconnection time (s)	From characteristic: 0.04					Maximum for circuit: 5.00	
Circuit Protective Conductor (mm ²)	CPC Section = Armour 18.2					Total = 18.2	
CPC Adiabatic check (mm ²)							0.57

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

Phase Fault			
Phase Fault Current Max./Min. (kA)	Source End: 2.410 / 2.091	Load End: 1.122 / 0.952	
Protective Device Breaking Capacity (kA)	Icu: 80	Ics: 80	
Adiabatic Check:	CPD Energy Let-through (A ² s): 280.00	Adiabatic Limit k ² S ² (A ² s): 1.32 x 10 ⁶	

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Active Source: Source-1

Circuit	Id No.: LS-1	Name: A2 to A3
	Connected From: LC-2	To: LC-3 / Col A3
	Load Type: Lighting Column	Design Current Ib (A): 1.0
Comments:		

Protective Device	[a] = Auto, [f] = Fixed, [m] = Max.	
Overcurrent protection:	Generic BS 88-2 Fuse System E	
Rating In (A):	10 [f]	Overload Setting Ir (A): N/A
		AFDD: N/A

Conductors	[a] = Auto, [f] = Fixed, [d] = Double	
Multicore, 70°C thermoplastic insulated, armoured Cu Table 4D4	1 x 1 x 2c	Size (mm²): 10 [f]
Euro Class: Undefined		Length (m): 30
Neutral: 10 mm ² [a]		
73 - Direct in the ground (with cable covers)		

Rating Factors				
Ground Temperature (°C)	= 20.0	Ctg = 1.00		Cgg = 1.00
Circuits In Group	= 1		Depth of Lay (m) = 0.70	Cd = 1.00
			Thermal Resistivity = 2.50	Cs = 1.000
3rd Harmonics (%)	= 1.50	Ch = 1.00		
Buried Circuit		Cc = 0.900	[Appendix 4 5.1.1 (iii) b]	

Cable sizing (A)	Sized For: Phase Current Carrying Capacity		Auto-sized for current-carrying capacity and voltage drop limits.	
Design Current Ib	= 1.0			
Device Rating In	= 10	Overload Setting Ir = N/A	[Ir ≥ Ib]	
Min. Cable Capacity Iz	= 11.1			
Actual Cable Rating It	= 60.0		[It ≥ Iz]	

Load Current and Voltage Drop	L1	L2	L3	Neutral
Design Current Ib (A/PF)	1.0 / 0.80	0.0 / 0.00	0.0 / 0.00	1.0
3rd Harmonic Current (A)	0.0	0.0	0.0	0.0
Voltage Drop - This circuit (V/%)	0.09 / 0.04	0.00 / 0.00	0.00 / 0.00	-----
Voltage Drop - From Source (V/%)	0.47 / 0.20	0.00 / 0.00	0.00 / 0.00	-----

Earth Fault	Circuit Protective Conductor (mm ²)					Armour 41 [a]	[a] = Auto, [f] = Fixed
Earth Fault Loop Impedance (Ω)	Ze 0.38546	Z1 0.06600	Z2 0.15213	Zs 0.60345	Max. Zs 6.82811		Earth Fault Current (kA)
Disconnection time (s)	From characteristic: 0.04					Maximum for circuit: 5.00	
Circuit Protective Conductor (mm ²)	CPC Section = Armour 18.2					Total = 18.2	
CPC Adiabatic check (mm ²)							0.36

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

Phase Fault			
Phase Fault Current Max./Min. (kA)	Source End: 1.122 / 0.952	Load End: 0.730 / 0.616	
Protective Device Breaking Capacity (kA)	Icu: 80	Ics: 80	
Adiabatic Check:	CPD Energy Let-through (A ² s): 280.00	Adiabatic Limit k ² S ² (A ² s): 1.32 x 10 ⁶	