



Marcus Vaughan Electrical

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Power Rating	560.6 Watts	Max. Demand	2.4 Amps
Circuit Length	30 Metres		

#### Circuit Design

Maximum Demand	2.5 Amps	$I_b \leq I_n \leq I_z$
$I_b$ Design Current (Load - Applying Diversity)	1.7 Amps	
$I_n$ Rated Current of Protective Device	6.0 Amps	
$I_z$ Current Carrying Capacity of the Cable	16 Amps	

#### Cable Size

Install Reference Method	C	Correction Factors	
$C_a$ Correction for Ambient Temperature	1	$I_t \geq$	$I_n$
$C_g$ Correction for Grouping	0.7		1
$C_i$ Correction for Passing Through Insulation	1	$I_t \geq$	6.0
			0.7
Minimum Required Current Carrying Capacity of Cable		$I_t \geq$	8.6
Cable Cross Sectional Area Required (from Tables)	1 mm		

Permissible Voltage Drop for Lighting Circuit = 3% of 230V = 6.9 Volts

Permissible Voltage Drop for Other Circuits = 5% of 230V = 11.5 Volts

Voltage Drop =	Tabulated Value (mV/m)	x	$I_b$	x	Circuit Length (m)
	44		1.7		30
	2200 mV	=	2.20		Volts

#### Compliance With Maximum Disconnection Times (Max Zs)

Measured $Z_e$	0.36		Tab. Value (mΩ/m)	x	Circuit Length (m)
			36.2		30
		Calculated R1+R2 =	1086 mΩ		
			1.086 Ω		
Design Zs =	$Z_e$	+	R1+R2		Tabulated Max Zs at 20°C =
	0.36	+	1.086		7.28
	1.45 Ω				Correction Factor for Temp. =
					0.8
					Maximum Permissible Zs =
					5.82

