



Tri-Rated Cable

UL/CSA BS6231 105°C
 Switchgear and
 panel wiring cable



We supply all the phase colours up to 95mm²

SIZE MM2	SIZE AWG	MAX AMPS	STANDARD STOCKED COLOURS													
0.5	22	11	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
0.75	20	14	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
1.0	18	17	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
1.5	16	21	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
2.5	14	30	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
4.0	12	41	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
6	10	53	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
10	8	75	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
16	6	100	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
25	4	136	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
35	2	167	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
50	1	204	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
70	2/0	259	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
95	3/0	321	Blue	Black	Brown	Grey	Green / Yellow	Red	Pink	Green	Orange	Light Blue	Dark Blue	White	Yellow	Violet
120		374	Black													
150		429	Black													
185		496	Black													
240		595	Black													
300		685	Black													

The current ratings tabulated above are based on single cables in free air, a maximum conductor temperature of 90°C and an ambient temperature of 45°C. For current ratings for multiple cables and / or for use in any other ambient temperature please refer to the following tables:

TEMPERATURE DE-RATING FACTORS								
Ambient Temperature Degrees C	45	50	55	60	65	70	75	
Current Rating Factor (1.45 x overload protection)	1.00	0.97	0.90	0.82	0.73	0.63	0.52	
RATING FACTORS FOR GROUPED CABLES								
Number of Wires	2	3	4	5	6	7	8	10
Current Rating Factor	0.80	0.70	0.65	0.60	0.56	0.53	0.50	0.46

To read the de-rated figure multiply the original current rating by the factors shown in the relevant table.

Sizes 10mm² and above can be supplied cut to length.
We can now supply Bi-Coloured Tri-rated cable for a small minimum order quantity of just 100 metres

- Single core PVC insulated TRI-RATED cable specifically designed for use in switch control, relay and instrumentation panels and for motor starters and controllers.
- Plain annealed copper conductors with heat resisting PVC insulation rated up to +105°C
- UL, AWM, CSA, TEW, BS6231 and SEMCO recognised
- Voltage Rating: BS6231: 600/1000V UL, CSA: 600V
- 10mm² and upwards can be supplied by the metre subject to our minimum order charge.
- Cables above 120mm² in size are referred to as Bi-rated as the CSA standard applies only to sizes up to and including 120mm²



Conversions

To convert to metric, multiply by the factor shown. To convert from metric divide by the factor shown:

Length

miles : kilometres	1.6093
yards : metres	0.9144
feet : metres	0.3048
inches : millimetres	25.4
inches : centimetres	2.54

Area

square miles : square kilometres	2.59
square miles : hectares	258.999
acres : square metres	0.8361
square yards : square metres	0.8361
square feet : square metres	0.0929
square feet : square centimetres	929.03
square inches : square millimetres	645.16

Volume

cubic yards : cubic metres	0.7646
cubic feet : cubic metres	0.0283
cubic inches : cubic centimetres	16.3871

Capacity

gallons : litres	4.546
US gallons : litres	3.785
quarts : litres	1.137
pints : litres	0.568
gills : litres	0.142

Velocity

miles per hours : kilometres per hour	1.6093
feet per second : metres per second	0.3048
feet per minute : metres per second	0.0051

Weight

tons : kilograms	1016.05
tons : tonnes	1.0160
hundredweights : kilograms	50.8023
quarters : kilograms	12.7006
stones : kilograms	6.3503
pounds : kilograms	0.4536
ounces : grams	28.3495





Fuel Consumption

gallons per mile : litres per kilometre	2.825
miles per gallon : kilometres per litre	0.354

AWG to Metric Conversions

AWG	Metric
20	.50mm
18	1mm
16	1.5mm
14	2.5mm
12	4.0mm
10	6.0mm
8	10mm
6	16mm
4	25mm
2	35mm
1	50mm
2/0	70mm
3/0	95mm
4/0	120mm

Harmonised Core Colours

Red		Brown (L1)
Yellow		Black (L2)
Blue		Grey (L3)
Black		Blue (N)

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Voltage Drop Calculations

Voltage drops are determined by using the following formula:

$$\Delta u = b \times l \times i_B (R \cos \phi + \lambda \sin \phi)$$

With :

Δu	voltage drop (in Volts)
b	coefficient equal to $\sqrt{3}$ for three-phases circuits, or 2 for single-phase circuits
R	electrical resistance of conductors in normal service (in Ω/km)
l	straight length of the wiring systems (in km)
$\cos \phi$	power factor, if no precise details, the power factor is taken equal to 0.8 ($\sin \phi = 0.6$)
λ	reactance per unit length of conductors (in Ω/km)
i_B	current value (in Ampere)

For the application of the formula it is necessary to know the exact cable specification.

For a fast calculation of the section it is recommended to use the following (right) tables which give the value of the voltage drop, available for most of the low voltage cables and for different values of $\cos \phi$.

Voltage drops are calculated for a three-phases circuit:

- 3 or 4 copper cores cables
- 3 single cores cables

Low voltage cables w/PVC insulation (max temperature: 70°C) 3 or 4 copper cores

Cross-section area (mm ²)	Voltage Drop (V/Ax km)			
	$\cos \phi = 1$	$\cos \phi = 0.9$	$\cos \phi = 0.8$	$\cos \phi = 0.6$
1.5	25.1	22.7	20.2	15.3
2.5	15.2	13.7	12.3	9.3
4	9.5	8.6	7.8	5.8
5	6.4	5.8	5.3	4
10	3.8	3.5	3.2	2.4
16	2.4	2.2	2	1.6
25	1.5	1.4	1.3	1.04
35	1.1	1.06	0.97	0.8
50	0.8	0.8	0.74	0.62
70	0.56	0.57	0.55	0.46
95	0.4	0.43	0.42	0.37
120	0.33	0.37	0.36	0.32
150	0.26	0.3	0.3	0.28
185	0.21	0.26	0.27	0.25
240	0.17	0.22	0.23	0.22
300	0.13	0.19	0.2	0.21

Low voltage cables with EPR or XLPE insulation (max. temperature: 90 °C) 3 or 4 copper cores

Cross-section area (mm ²)	Voltage drop (V/ A x km)			
	$\cos \phi = 1$	$\cos \phi = 0.9$	$\cos \phi = 0.8$	$\cos \phi = 0.6$
1.5	26	24.2	21.5	16.2
2.5	15.5	14.4	12.8	9.6
4	10	9	8	6.1
5	6.6	6.1	5.4	4.2
10	3.9	3.6	3.2	2.5
16	2.5	2.3	2.1	1.5
25	1.6	1.5	1.35	1.1
35	1.15	1.1	1	0.85
50	0.85	0.8	0.75	0.65
70	0.57	0.6	0.55	0.5
95	0.42	0.45	0.42	0.4
120	0.33	0.35	0.35	0.34
150	0.27	0.3	0.3	0.31
185	0.22	0.25	0.22	0.24
240	0.17	0.2	0.21	0.23
300	0.14	0.17	0.2	0.21