

**TECHNICAL DATA SHEET 6181Y**

**PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y**

UK cable code: **6181Y**

British standard: **BS 6004:2012**

Conductor: **Class 1 plain copper, solid or class 2 plain copper, stranded, as shown below**

Insulation: **PVC type TI 1**

Sheath: **PVC type 6**

Colour of sheath: **Grey (other colours may be used by agreement between manufacturer & customer)**

BASEC Product Certification Schedule No: **229/001/009 (expiry date: 04/12/2021)**

Range of approval: **BS 6004:2012 / Table 3 / 1.0 mm<sup>2</sup> to 2.5 mm<sup>2</sup> (Class 1 conductor) nominal cross-sectional area of conductors inclusive / Single core**  
**BS 6004:2012 / Table 3 / 4 mm<sup>2</sup> to 35 mm<sup>2</sup> (Class 2 conductor) nominal cross-sectional area of conductors inclusive / Single core**

**TABLE 1: Core identification for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y**

Number of cores	Colour of cores
1	Brown or Blue

**TABLE 2: General data for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y**

Nominal cross-sectional area of conductors	Class of conductor	Radial thickness of insulation	Radial thickness of sheath	Mean overall dimensions		Ovality (maximum difference)	Minimum insulation resistance at 70 °C	Maximum conductor resistance at 20 °C
				Lower limit	Upper limit			
(mm <sup>2</sup> )		(mm)	(mm)	(mm)	(mm)	(mm)	(MΩ • km)	(Ω / km)
1.0	1	0.6	0.8	3.7	4.5	0.675	0.011	18.1
1.5	1	0.7	0.8	4.2	5.0	0.750	0.011	12.1
2.5	1	0.8	0.8	4.8	5.7	0.855	0.010	7.41
4	2	0.8	0.9	5.5	6.7	1.005	0.0077	4.61
6	2	0.8	0.9	6.0	7.3	1.095	0.0065	3.08
10	2	1.0	0.9	7.3	8.8	1.320	0.0065	1.83
16	2	1.0	1.0	8.4	10.1	1.515	0.0052	1.15
25	2	1.2	1.1	10.0	12.1	1.810	0.0050	0.727
35	2	1.2	1.1	11.1	13.5	2.025	0.0044	0.524

**TABLE 3: Electrical tests for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y**

Test	Details of test	Specified limit	Standard
Conductor resistance	20 °C	Not more than the maximum value specified in the table 2	BS EN 60228:2005 + AMD 17085:2007
Voltage withstand	2.0 kV A.C. / 15 min	No breakdown of the insulation shall occur	BS 6004:2012
Voltage test on cores	1.5 kV A.C. / 5 min <sup>(1)</sup>	No breakdown of the insulation shall occur	BS EN 50395:2005 + AMD:2011

<sup>(1)</sup>: For insulation thickness up to and including 0.6 mm

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**TABLE 3: Electrical tests for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y (continued)**

Test	Details of test	Specified limit	Standard
Voltage test on cores	2.0 kV A.C. / 5 min <sup>(2)</sup>	No breakdown of the insulation shall occur	BS EN 50395:2005 + AMD:2011
Insulation resistance	70 °C	Not less than the minimum value specified in the table 2	BS EN 50395:2005 + AMD:2011
Long term resistance of insulation to d.c.	220 V D.C. / 60 ± 5 °C / 10 days	No breakdown of the insulation and no damage to the surface	BS EN 50395:2005 + AMD:2011
Absence of faults in the insulation	–	No breakdown of the insulation shall occur	BS EN 50395:2005 + AMD:2011 + BS EN 62230:2007 + AMD:2014 + COR: 2017
Absence of faults in the sheath	–	No breakdown of the insulation shall occur	BS EN 62230:2007 + AMD:2014 + COR: 2017 + BS 5099: 2004 + AMD 15644:2004
Insulation resistance constant (K) on PVC sheath	20 °C	Not less than the minimum value (0.0035 MΩ • km) specified in the table 2 of standard BS 7655–4.2:2000	BS 6469–99.2:1992 + AMD 16086:2006

<sup>(2)</sup>: For insulation thickness exceeding 0.6 mm

**TABLE 4: Mechanical tests for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y**

Test	Details of test	Specified limit (insulation)	Specified limit (sheath)	Standard
Minimum tensile strength before ageing	–	12.5 N / mm <sup>2</sup>	6.0 N / mm <sup>2</sup>	BS EN 60811–501:2012 + AMD:2018
Minimum elongation at break before ageing	–	125 %	125 %	BS EN 60811–501:2012 + AMD:2018
Minimum tensile strength after ageing in air oven	80 ± 2 °C / 7 days	12.5 N / mm <sup>2</sup>	–	BS EN 60811–401:2012 + AMD:2018 + BS EN 60811–501:2012 + AMD:2018
Maximum variation of tensile strength after ageing in air oven	80 ± 2 °C / 7 days	± 20 %	–	BS EN 60811–401:2012 + AMD:2018 + BS EN 60811–501:2012 + AMD:2018
Minimum elongation at break after ageing in air oven	80 ± 2 °C / 7 days	125 %	–	BS EN 60811–401:2012 + AMD:2018 + BS EN 60811–501:2012 + AMD:2018
Maximum variation of elongation at break after ageing in air oven	80 ± 2 °C / 7 days	± 20 %	–	BS EN 60811–401:2012 + AMD:2018 + BS EN 60811–501:2012 + AMD:2018
Maximum loss of mass after ageing	80 ± 2 °C / 7 days	2.0 mg / cm <sup>2</sup>	2.0 mg / cm <sup>2</sup>	BS EN 60811–401:2012 + AMD:2018 + BS EN 60811–409:2012
Pressure test at high temperature (maximum depth of indentation)	80 ± 2 °C / 4 hrs	50 %	50 %	BS EN 60811–508:2012 + AMD:2018
Resistance to cracking	150 ± 2 °C / 1 hr	No cracks	No cracks	BS EN 60811–509:2012 + AMD:2018

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**TABLE 4: Mechanical tests for PVC insulated, PVC sheathed cable, 300/500 V, single core 6181Y (continued)**

Test	Details of test	Specified limit (insulation)	Specified limit (sheath)	Standard
Bending test at low temperature	- 15 ± 2 °C / 16 hrs	No cracks	No cracks	BS EN 60811-504:2012
Compatibility test of completed cable	80 ± 2 °C / 7 days	No exudation of insulation	No exudation of sheath	BS EN 60811-401:2012 + AMD:2018 + BS 6004:2012
Minimum tensile strength after ageing of completed cable in air oven	80 ± 2 °C / 7 days	12.5 N / mm <sup>2</sup>	6.0 N / mm <sup>2</sup>	BS EN 60811-401:2012 + AMD:2018 + BS EN 60811-501:2012 + AMD:2018
Maximum variation of tensile strength after ageing of completed cable in air oven	80 ± 2 °C / 7 days	± 20 %	± 20 %	BS EN 60811-401:2012 + AMD:2018 + BS EN 60811-501:2012 + AMD:2018
Minimum elongation at break after ageing of completed cable in air oven	80 ± 2 °C / 7 days	125 %	125 %	BS EN 60811-401:2012 + AMD:2018 + BS EN 60811-501:2012 + AMD:2018
Maximum variation of elongation at break after ageing of completed cable in air oven	80 ± 2 °C / 7 days	± 20 %	± 20 %	BS EN 60811-401:2012 + AMD:2018 + BS EN 60811-501:2012 + AMD:2018
Flame propagation on single cable (minimum distance from the lower edge of the top support to the upper onset of charring)	1 kW pre-mixed flame	-	50 mm	BS EN 60332-1-2:2004 + AMD:2015 + AMD:2016
Flame propagation on single cable (maximum distance from the lower edge of the top support to the lower onset of charring)	1 kW pre-mixed flame	-	540 mm	BS EN 60332-1-2:2004 + AMD:2015 + AMD:2016
Flame propagation on single cable (maximum distance from the upper to the lower onset of charring)	1 kW pre-mixed flame	-	425 mm	BS EN 60332-1-2:2004 + AMD:2015 + AMD:2016