Doncaster Cables

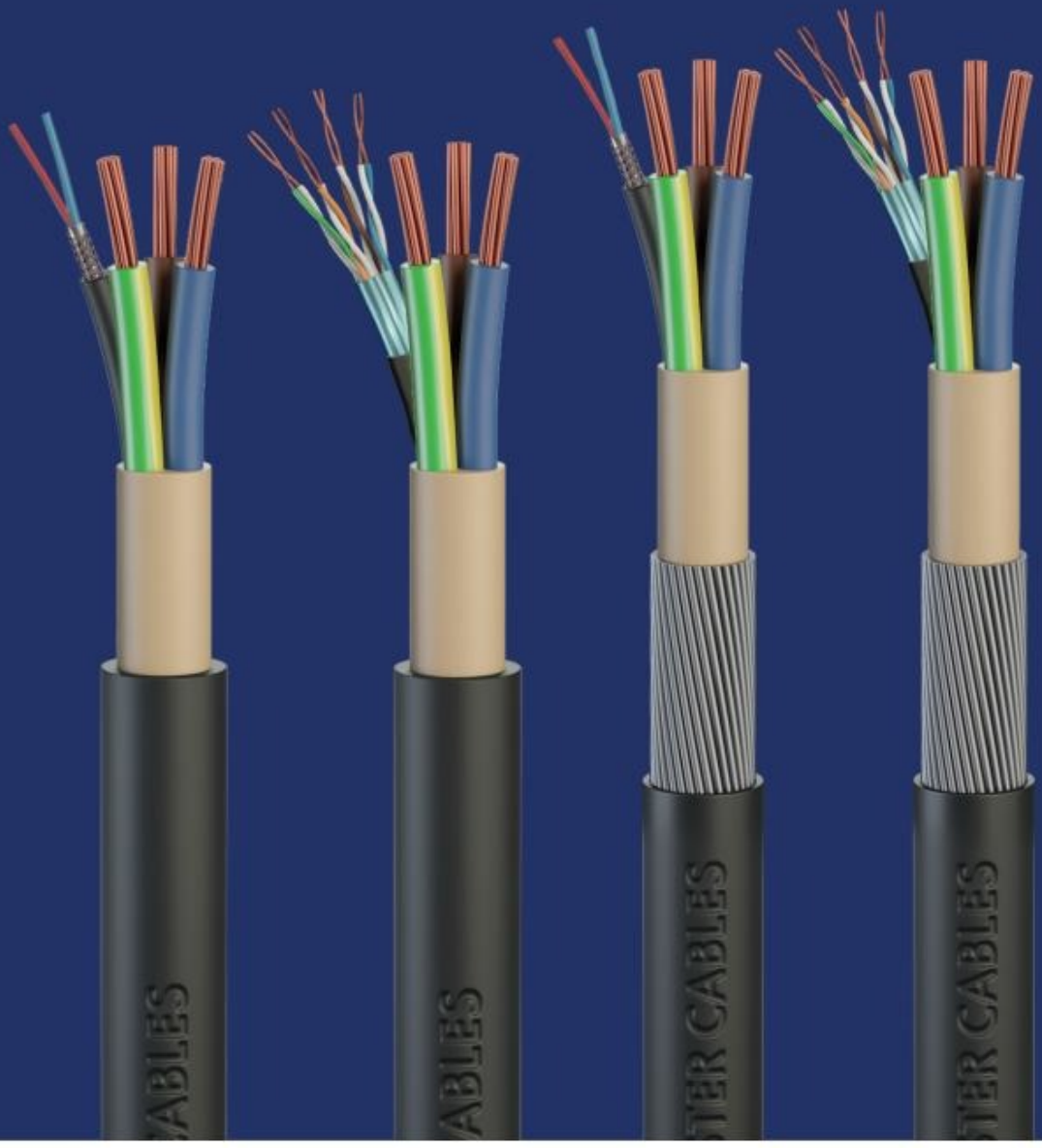
The Electricians Cable of Choice

Products for a sustainable world

CONTENTS

Patented

EV-Ultra®



EV-Ultra® is an innovative cable designed and manufactured by Doncaster Cables. Originally designed for electric vehicle charge points, EV-Ultra® incorporates power conductors and data within the same cable, making it neater, faster, and easier to install. Helping to develop the EV infrastructure to get the UK driving more electric vehicles.

Technical Details

Running data and power in a single cable is a concern for many electricians, with most believing that segregation of power (Band II) and data (Band I) is always required.

It is however already common to find power and data inside one cable in many existing applications, an example is DALI networks which incorporate data within a 5 core power cable.

It is recommended that the screening of the data cable is terminated to earth.

What do the regulations say?

Voltage Band I is defined as levels of voltage which are too low to provide serious electric shocks; effectively this limits the band to extra-low voltage (ELV), including telecommunications, signalling, bell, control and alarm circuits.

Voltage Band II is defined as all voltages which are used in electrical installations not included in Band I. This means that all 230V supplies are included in Band II.

Proximity of electrical services (extract from 528.1) - Except where one of the following methods is adopted, neither a Band I nor a Band II circuit shall be contained in the same wiring system as a circuit of nominal voltage exceeding that of low voltage, and a Band I circuit shall not be contained in the same wiring system as a Band II circuit. (i) - Every cable or conductor is insulated for the highest voltage present. EV-Ultra® consists of power conductors and data cables that are rated to the same nominal voltage – therefore segregation of power and data is not required.

Proximity of communications cables (extract from 528.2) - Special considerations of electrical interference, both electromagnetic and electrostatic, may apply to telecommunication circuits, data transfer circuits and the like.

EV-Ultra® has been designed with these considerations in mind, it incorporates super screened, twisted pair data cables and is also constructed with a lay length that reduces interference. Laboratory and on-site installation tests have also been conducted and no interference or degradation of signal was recorded.

Patented EV-Ultra®

Now using CARBONTEK®

3 CORE + 2 CORE SIGNAL CABLE

For single phase applications. Available in Tuff Sheath® and SWA

Cable Construction

Conductor: Plain Annealed Copper Class 2 Stranded to BS EN 60228
Insulation: Thermosetting XLPE Type GP8 to BS 7655-1.3
Bedding: CarbonTek®
Steel Wire Armour: Galvanised steel wire armour (where applicable)
Sheathing: CarbonTek®
Data Cable: 2 core super screened signal cable

Application

The cable is designed for use in the installation of electric vehicle charge points. The cable incorporates power conductor and a 2 core super screened signal cable encapsulated in a double sheathed design for extra protection. Whilst designed for use in electric vehicle charge points, the cable is also suitable for other installations where power and a 2 core signal cable is required. These cables are designed to be installed in air, clipped to surface, on cable tray/ladder work and embedded in concrete. The cables can be laid direct in the ground providing that suitable mechanical protection is in place.

Understanding the product codes

	Conductor Size	3 Core	5 Core	2 Core Signal	4 Pair CAT5 Data	Steel Wire Armour	CarbonTek®
EV-ULTRA3C4.0	4.0mm²	✓		✓			✓
EV-ULTRA3C4.0SWA	4.0mm²	✓		✓		✓	✓
EV-ULTRA3C6.0	6.0mm²	✓		✓			✓
EV-ULTRA3C6.0SWA	6.0mm²	✓		✓		✓	✓

Dimensional Details:

Product Code	Number & nominal CSA of conductors	Nominal overall diameter of bedding	Approx. overall diameter	Approx. weight
EV-ULTRA3C4.0	3 x 4.0mm² + 2 Core Signal	11.0mm	13.6mm	265kg/km
EV-ULTRA3C4.0SWA	3 x 4.0mm² + 2 Core Signal	11.0mm	15.0mm	480kg/km
EV-ULTRA3C6.0	3 x 6.0mm² + 2 Core Signal	12.0mm	14.4mm	350kg/km
EV-ULTRA3C6.0SWA	3 x 6.0mm² + 2 Core Signal	12.0mm	16.8mm	625kg/km

Electrical Properties:

	4.0mm²	6.0mm²
Maximum current rating (A)	45	58
Voltage drop (mV/A/m)	12	7.9

Weight and dimensional information is provided as an approximate guide only.

Current carrying capacities based on ambient temperature of 30°C and conductor operating temperature of 90°C. Refer to BS7671 for further details including grouping factors and ambient temperatures other than 30°C

MINIMUM OPERATING TEMPERATURE -15°C

MAXIMUM OPERATING TEMPERATURE 90°C

MINIMUM BENDING RADIUS 8xØ

STANDARD CORE COLOURS

3 core

Patented
EV-Ultra® Cat5

3 CORE + 4 PAIR DATA

For single phase applications. Available in Tuff Sheath® and SWA

Cable Construction

Conductor: Plain Annealed Copper Class 2 Stranded to BS EN 60228

Insulation: Thermosetting XLPE Type GP8 to BS 7655-1.3

Bedding: CarbonTek®

Steel Wire Armour: Galvanised steel wire armour (where applicable)

Sheathing: CarbonTek®

Data Cable: 4 pair super screened data cable

Application

The cable is designed for use in the installation of electric vehicle charge points. The cable incorporates power conductor and a 4 pair super screened data cable, encapsulated in a double sheathed design for extra protection. Whilst designed for use in electric vehicle charge points, the cable is also suitable for other installations where power and a 4 pair data/signal cable is required. These cables are designed to be installed in air, clipped to surface, on cable tray/ladder work and embedded in concrete. The cables can be laid direct in the ground providing that suitable mechanical protection is in place.

MINIMUM OPERATING TEMPERATURE -15°C

MAXIMUM OPERATING TEMPERATURE 90°C

MINIMUM BENDING RADIUS 8xØ

STANDARD CORE COLOURS

3 core

Understanding the product codes

	Conductor Size	3 Core	5 Core	2 Core Signal	4 Pair CAT5 Data	Steel Wire Armour	CarbonTek®
EV-ULTRA3C4.0CAT5	4.0mm²	✓			✓		✓
EV-ULTRA3C4.0CAT5SWA	4.0mm²	✓			✓	✓	✓
EV-ULTRA3C6.0CAT5	6.0mm²	✓			✓		✓
EV-ULTRA3C6.0CAT5SWA	6.0mm²	✓			✓	✓	✓
EV-ULTRA3C710.0CAT5	10.0mm²	✓			✓		✓
EV-ULTRA3C710.0CAT5SWA	10.0mm²	✓			✓	✓	✓
EV-ULTRA3C716.0CAT5	16.0mm²	✓			✓		✓
EV-ULTRA3C716.0CAT5SWA	16.0mm²	✓			✓	✓	✓

Dimensional Details:

Product Code	Number & nominal CSA of conductors	Nominal overall diameter of bedding	Approx. overall diameter	Approx. weight
EV-ULTRA3C4.0CAT5	3 x 4.0mm² + Cat5e FTP	12.5mm	14.8mm	315kg/km
EV-ULTRA3C4.0CAT5SWA	3 x 4.0mm² + Cat5e FTP	12.5mm	16.5mm	510kg/km
EV-ULTRA3C6.0CAT5	3 x 6.0mm² + Cat5e FTP	13.6mm	16.0mm	410kg/km
EV-ULTRA3C6.0CAT5SWA	3 x 6.0mm² + Cat5e FTP	13.6mm	18.6mm	700kg/km
EV-ULTRA3C710CAT5	3 x 10.0mm² + Cat5e FTP	15.0mm	17.6mm	492kg/km
EV-ULTRA3C710CAT5SWA	3 x 10.0mm² + Cat5e FTP	15.0mm	20.2mm	835kg/km
EV-ULTRA3C716CAT5	3 x 16.0mm² + Cat5e FTP	17.4mm	20.0mm	715kg/km
EV-ULTRA3C716CAT5SWA	3 x 16.0mm² + Cat5e FTP	17.4mm	22.5mm	1094kg/km

Electrical Properties:

	4.0mm²	6.0mm²	10mm²	16mm²
Maximum current rating (A)	45	58	80	107
Voltage drop (mV/A/m)	12	7.9	4.7	2.9

Weight and dimensional information is provided as an approximate guide only.

Current carrying capacities based on ambient temperature of 30°C and conductor operating temperature of 90°C. Refer to BS7671 for further details including grouping factors and ambient temperatures other than 30°C

THE *EV-Ultra*® RANGE

	Conductor Size	3 Core	5 Core
EV-ULTRA3C4.0	4.0mm²	✓	
EV-ULTRA3C4.0SWA	4.0mm²	✓	
EV-ULTRA3C6.0	6.0mm²	✓	
EV-ULTRA3C6.0SWA	6.0mm²	✓	
EV-ULTRA3C4.0CAT5	4.0mm²	✓	
EV-ULTRA3C4.0CAT5SWA	4.0mm²	✓	
EV-ULTRA3C6.0CAT5	6.0mm²	✓	
EV-ULTRA3C6.0CAT5SWA	6.0mm²	✓	
EV-ULTRA3C710.0CAT5	10mm²	✓	
EV-ULTRA3C710.0CAT5SWA	10mm²	✓	
EV-ULTRA3C716.0CAT5	16mm²	✓	
EV-ULTRA3C716.0CAT5SWA	16mm²	✓	
EV-ULTRA5C6.0CAT5	6.0mm²		✓
EV-ULTRA5C6.0CAT5SWA	6.0mm²		✓
EV-ULTRA5C710.0CAT5	10mm²		✓
EV-ULTRA5C710.0CAT5SWA	10mm²		✓
EV-ULTRA5C716.0CAT5SWA	16mm²		✓
EV-ULTRAPLUS3C6.0	6.0mm²	✓	
EV-ULTRAPLUS3C6.0SWA	6.0mm²	✓	

CLEATS AND GLANDS

EV-Ultra® 3 Core with 4 Pair Data (CAT5)

Type	Diameter	Gland	Cleat
EV-ULTRA3C4.0CAT5	15	Compression gland to suit	6
EV-ULTRA3C6.0CAT5	16.5		7
EV-ULTRA3C710CAT5	17.5		8
EV-ULTRA3C716CAT5	20.0		9
EV-ULTRA3C4.0CAT5SWA	16.7	20	7
EV-ULTRA3C6.0CAT5SWA	19.0	20	8
EV-ULTRA3C710CAT5SWA	20.5	25	9
EV-ULTRA3C716CAT5SWA	22.5	25	9

2 Core Signal	4 Pair CAT5 Data	Steel Wire Armour	CarbonTek®
✓			✓
✓		✓	✓
✓			✓
✓		✓	✓
	✓		✓
	✓	✓	✓
	✓		✓
	✓	✓	✓
	✓		✓
	✓	✓	✓
	✓		✓
	✓	✓	✓
	✓		✓
	✓	✓	✓
	✓		✓
	✓	✓	✓
	✓ ✓		✓
	✓ ✓		✓

EV-Ultra® 3 Core with 2 Core Signal

Type	Diameter	Gland	Cleat
EV-ULTRA3C4.0	13.6	Compression gland to suit	6
EV-ULTRA3C6.0	14.4		6
EV-ULTRA3C4.0SWA	15.0	20	6
EV-ULTRA3C6.0SWA	16.8		7

EV-Ultra® 5 Core with 4 Pair Data (CAT5)

Type	Diameter	Gland	Cleat
EV-ULTRA5C6.0CAT5	17.8	Compression gland to suit	8
EV-ULTRA5C710CAT5	19.5		8
EV-ULTRA5C6.0CAT5SWA	20.5	25	9
EV-ULTRA5C710CAT5SWA	23.4	25	10

Patented EV-Ultra®

5 CORE + 4 PAIR DATA

For three phase applications. Available in Tuff Sheath® and SWA

Cable Construction

Conductor: Plain Annealed Copper Class 2 Stranded to BS EN 60228

Insulation: Thermosetting XLPE Type GP8 to BS 7655-1.3

Bedding: CarbonTek®

Steel Wire Armour: Galvanised steel wire armour (where applicable)

Sheathing: CarbonTek®

Data Cable: 4 pair super screened data cable

Application

The cable is designed for use in the installation of electric vehicle charge points. The cable incorporates power conductor and a 4 pair super screened data cable. encapsulated in a double sheathed design for extra protection. Whilst designed for use in electric vehicle charge points, the cable is also suitable for other installations where power and a 4 pair data/ signal cable is required. These cables are designed to be installed in air, clipped to surface, on cable tray/ladder work and embedded in concrete. The cables can be laid direct in the ground providing that suitable mechanical protection is in place.

MINIMUM OPERATING TEMPERATURE -15°C

MAXIMUM OPERATING TEMPERATURE 90°C

MINIMUM BENDING RADIUS 8xØ

STANDARD CORE COLOURS

5 core

Understanding the product codes

	Conductor Size	3 Core	5 Core	2 Core Signal	4 Pair CAT5 Data	Steel Wire Armour	CarbonTek®
EV-ULTRA5C6.0CAT5	6.0mm²		✓		✓		✓
EV-ULTRA5C6.0CAT5SWA	6.0mm²		✓		✓	✓	✓
EV-ULTRA5C710.0CAT5	10.0mm²		✓		✓		✓
EV-ULTRA5C710.0CAT5SWA	10.0mm²		✓		✓	✓	✓
EV-ULTRA5C716.0CAT5SWA	16.0mm²		✓		✓	✓	✓

Dimensional Details:

Product Code	Number & nominal CSA of conductors	Nominal overall diameter of bedding	Approx. overall diameter	Approx. weight
EV-ULTRA5C6.0CAT5	5 x 6.0mm² + Cat5e FTP	15.5mm	17.9mm	500kg/km
EV-ULTRA5C6.0CAT5SWA	5 x 6.0mm² + Cat5e FTP	15.5mm	20.5	836kg/km
EV-ULTRA5C710CAT5	5 x 10.0mm² + Cat5e FTP	18.4mm	19.8mm	709kg/km
EV-ULTRA5C710CAT5SWA	5 x 10.0mm² + Cat5e FTP	18.4mm	23.4mm	1083kg/km
EV-ULTRA5C716CAT5SWA	5 x 16.0mm² + Cat5e FTP	21.7mm	27.7mm	1770kg/km

Electrical Properties:

	6.0mm²	10mm²	16mm²
Maximum current rating (A)	52	71	91
Voltage drop (mV/A/m)	6.8	4.0	2.5

Patented EV-Ultra® Plus

Now using CARBONTEK®

3 CORE + PAIR OF 4 PAIR DATA

For single phase applications. Available in Tuff Sheath® and SWA

Cable Construction

Conductor: Plain Annealed Copper Class 2 Stranded to BS EN 60228
Insulation: Thermosetting XLPE Type GP8 to BS 7655-1.3
Bedding: CarbonTek®
Steel Wire Armour: Galvanised steel wire armour (where applicable)
Sheathing: CarbonTek®
Data Cable: Cat5e FTP—Foil Screened 4 twisted pair

Application

This cable is designed for use in the installation of electric vehicle charge points. The cable incorporates power conductors and an enhanced Cat 5 screened data cable, encapsulated in a double sheathed design for extra protection. Whilst designed for use in electric vehicle charge points, the cable is also suitable for other installations where power and data is required.

Also available with two Cat5e data cables to satisfy various installations.

These cables are designed to be installed in air, clipped to surface, on cable tray/ladder work and embedded in concrete. The cables can be laid direct in the ground providing that suitable mechanical protection is in place.

Understanding the product codes

	Conductor Size	3 Core	5 Core	2 Core Signal	4 Pair CAT5 Data	Steel Wire Armour	CarbonTek®
EV-ULTRA3C4.0	6.0mm²	✓			✓✓		✓
EV-ULTRA3C6.0SWA	6.0mm²	✓			✓✓		✓

Dimensional Details:

Product Code	Number & nominal CSA of conductors	Nominal overall diameter of bedding	Approx. overall diameter	Approx. weight
EV-ULTRA3C6.0	3 x 6.0mm² + Cat5e FTP + Cat5e FTP	15.7mm	18.2mm	600kg/km
EV-ULTRA3C6.0SWA	3 x 6.0mm² + Cat5e FTP + Cat5e FTP	15.7mm	20.6mm	890kg/km

Electrical Properties:

	6mm²
Maximum current rating (A)	58
Voltage drop (mV/A/m)	7.9

Weight and dimensional information is provided as an approximate guide only.

Current carrying capacities based on ambient temperature of 30°C and conductor operating temperature of 90°C. Refer to BS7671 for further details including grouping factors and ambient temperatures other than 30°C

MINIMUM OPERATING TEMPERATURE
-15°C

MAXIMUM OPERATING TEMPERATURE
90°C

MINIMUM BENDING RADIUS
8xØ

STANDARD CORE COLOURS
3 core

We are proud that EV-Ultra® cables are manufactured in the UK and are BASEC approved

BASEC CAD 045 Certficate gained in October 2021

BASEC
BRITISH APPROVALS SERVICE FOR CABLES

Case Study

Manufacturer: Doncaster Cables

Certificate of Assessed Design for EV-Ultra cable

As the largest British owned manufacturer of general wiring products in the United Kingdom, Doncaster Cables has a wealth of experience in the cable market. The brand has grown extensively since launching in 1984 and is internationally recognised throughout the industry.

Doncaster Cables

PATENT PENDING
EV-Ultra®

The company produces a comprehensive range of cable products within their extensive facilities, based in northern England. Providing such a wide offering helps to meet demand for a varied range of industries. Product ranges include general wiring polyvinyl chloride and low smoke halogen free variants, fire performance cables, control cables, data communications, electric vehicle (EV) cables, coaxial and security cables, as well as a variety of cable accessories.

Doncaster Cables supply their products to a network of Electrical Wholesalers throughout the UK, in addition to exporting products to countries overseas. High quality products are of the upmost importance to the business and are integral to driving the brand forward. Aaron Walstow company director comments:

"We pride ourselves on manufacturing cables in Great Britain, to meet high levels of quality and safety. Our experienced staff and comprehensive facilities, combined with third party approvals, provides us with a competitive advantage proving expertise and verification in the market."

Having worked with BASEC as their preferred cable testing and certification provider for over 30 years, during this period Doncaster Cables has gained accreditations for a variety of product and systems approvals. Over 40 construction products regulation, CPR certificates have also been awarded to evidence quality and compliance. This is the most comprehensive range of BASEC approvals of any UK cable manufacturer.

An innovative combination

The upturn in the use of electric vehicles and the need for widespread charging infrastructure, led Doncaster Cables to notice a gap in the market for a cable product that combines both power and data supply, to support smart charging technology. Named EV-Ultra®, the cable is available in a wide range of variants, of which the 3 core and 5 core are the most popular. The data cable element of the product is either a 2 core or category 5 enhanced cable, both with superior construction qualities including twisted pairs and 'super-screens'. Availability includes high quality heat resistant, thermally stable and impact resistant polyvinyl chloride, and steel wire armoured (SWA) alternatives.

Aaron Walstow comments "The positive feedback from the BASEC Data Laboratory manager where they explained that 'the data properties of the cable had exceeded all expectations' is a true credit to the hard work of our Research and Development team, demonstrating that the BASEC accreditation process has added value to the product for the installer to demonstrate quality and conformity."

BASEC
BRITISH APPROVALS SERVICE FOR CABLES

This innovative product, which was in development for an 18 month period, provides a neater, quicker install, saving valuable time for the installer. Doncaster Cables has received high levels of interest in the product from the electric vehicle and energy industry, with collaboration with the likes of Hypervolt, Myenergi and SYNC EV already in progress, indicating high product demand.

Collaboration with other leading innovative companies allowed the development of CarbonTek® technology to be born. The CarbonTek® compounds developed by Doncaster Cables now give a level of impact protection, abrasion resistance, toughness and durability that surpasses the requirements of typical British Standard compounds. With the key benefit to end users being that these compounds offer a higher level of flexibility and ease of handling. Aaron Walstow explains that "The success of the CarbonTek® compound development was highlighted during review meetings with one of our most innovative development partners, and when their review includes the phrase "this is a game changer", you just know that you're developing something special that will help the installer".

Certificate of Assessed Design

An initial challenge that Doncaster Cables faced when developing and launching the product was the lack of an existing standard that the cable could be qualified against, due to its unique combination of delivering both EV charging power and data within the construction. Therefore, installers would have been unable to evidence cable compliance once installed. This factor drove the decision to engage BASEC for a Certificate of Assessed Design, CAD, an ideal solution to ensuring the product's specification meets necessary safety and performance requirements aligned with the cable industry level quality could be achieved.

CADs are suitable for unique variant products, where no specific national or international standards exist to verify a cable's design. BASEC works closely with manufacturers to undertake an appropriate testing programme, with both initial and ongoing routine testing, to evidence the product's characteristics. The assessed design approval also incorporates ongoing surveillance testing to ensure consistent levels of quality and safety are maintained over the longer term.

Providing peace of mind

Gaining BASEC approval for the EV-Ultra® product provides installers, as well as other stakeholders within the supply chain, with peace of mind that cable quality has been verified by a specialist third party approval. As part of the process to gaining approval, samples are selected independently by an expert and tested within an external laboratory, separate to the manufacturer's facilities. Product approval permits the use of the BASEC mark to be printed on the cable as a visual statement of compliance.

Aaron Walstow comments, "As a company, providing our customers with the highest levels of conformity to support the safe installation of cabling into their projects is a top priority. Gaining the CAD product approval from BASEC helps to provide an easier sign off process for installers and end users of the EV-Ultra® cabling, as it enables them to prove that the cable has been thoroughly performance tested. To demonstrate compliance customers can also reference a BA specific number in relation to the CAD."

To view the live certifications that Doncaster Cables has been issued with approval by BASEC, or to enquire about gaining a Certificate of Assessed Design, please visit www.basec.org.uk

When quality matters.

Contact us

British Approvals Service for Cables
Presley House
Presley Way
Crownhill
Milton Keynes
MK8 0ES, UK

+44 (0)1908 267300
mail@basec.org.uk

www.basec.org.uk

BASEC
BRITISH APPROVALS SERVICE FOR CABLES

Certificate No:
CAD 045
Issue No:1

Certificate of Assessed Design

Granted to:

Doncaster Cables
Millfields Industrial Estate
Arksey Lane, Bentley
Doncaster
Yorkshire
DN5 0SJ
United Kingdom

hereinafter called the Holder

This is to certify that the design of the product known as:

EV-Ultra 600/1000V Cable

Range:
3, 4 & 5 Core - 4 sqmm to 16 sqmm

Insulation GP8

As defined by:
Doncaster Cables specification for EV-Ultra Cable Issue 1

In the opinion of the British Approvals Service for Cables, is capable of affording a degree of safety not less than that obtained by compliance with the IET Wiring Regulations (BS 7671:2018), if selected and installed in accordance with the conditions contained in the Schedule attached hereto, which forms an integral part of the certificate.

Original issue date:	07/10/2021
Current issue date:	07/10/2021

Signed for and on behalf of the British Approvals Service for Cables

Tony Lioveri Date: 07/10/2021

Contact BASEC to verify validity.

BASEC, Presley House, Presley Way, Milton Keynes, MK8 0ES
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Email: mail@basec.org.uk, Web: www.basec.org.uk

Expiry date:
05/02/2023

TESTIMONIALS

Don't just take our word for it, hear what our customers have to say about EV-Ultra®...

Never used anything else in the last 18 months, would struggle to do our job without it.

Essex Vehicle Charging

EV-Ultra® cable makes installations much neater than running a separate cat5e cable, very innovative solution indeed. And being from a trusted brand like Doncaster Cables, you can't go wrong at all.

Cablesmith Electrical Services

The best cable around for EV charger installations. Not just neater as an all in one cable, but more efficient with time saved on installs.

NSN Electrical

I have used this cable a few times now and it's a gamechanger! Makes the job 100% neater! Saves you running 2 separate cables. It's easy to work with as it's Doncaster Cables which in my opinion is the best cable brand out there!

Infinity Electrical Wales

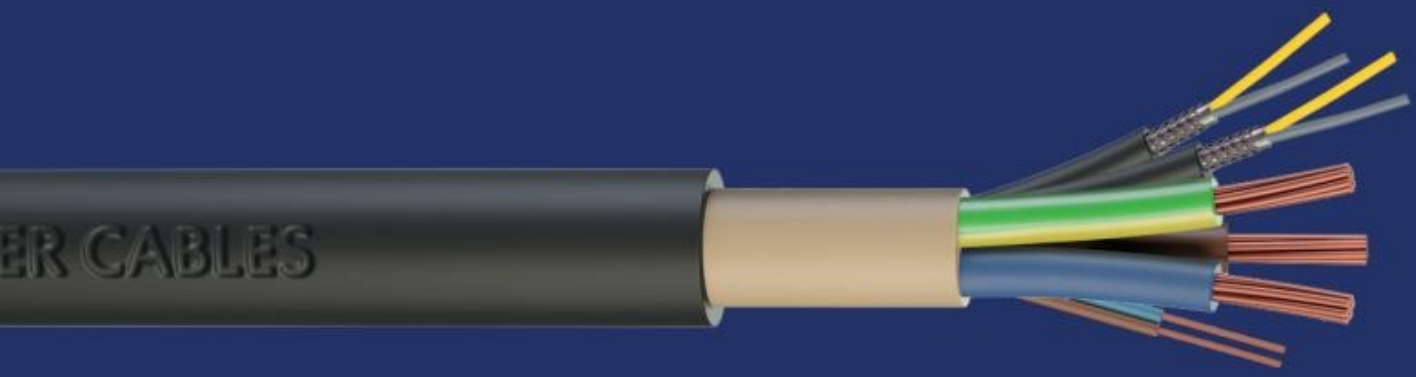
Always use EV-Ultra® on my EVCP installs, great product, easy to use and looks fantastic. Nice one.

Ev-olved Electrical

It's much easier to use and install. Looks much tidier on the finished job.

B&R Electrics

POWERWALL CONNECT



POWERWALL
CONNECT

Powerwall Connect – AC-AC Battery Cable

Designed and tested with TESLA Engineers to provide an easy solution for Powerwall installations.

Cable Construction

Power Conductors

Conductor: Plain Annealed Copper Class 2 Stranded to BS EN 60228

Insulation: Thermosetting XLPE Type GP8 to BS 7655-1.3

12V Supply

Conductor: Plain Annealed Copper Class 1 Solid to BS EN 60228

Insulation: Specially formulated PVC

Powerwall Communication Port Data Cables

Conductor: Annealed Copper Class 5 to BS EN 60228

Insulation: Specially formulated PVC

Core Colours: Yellow and Grey

Drain Wire: Tinned Copper

Screen: High coverage Tinned Copper 'Super Screen'

Sheath: Specially formulated PVC

Inner Protective Bedding

Material: Specially developed 'CarbonTek® S' Material

Outer Jacket

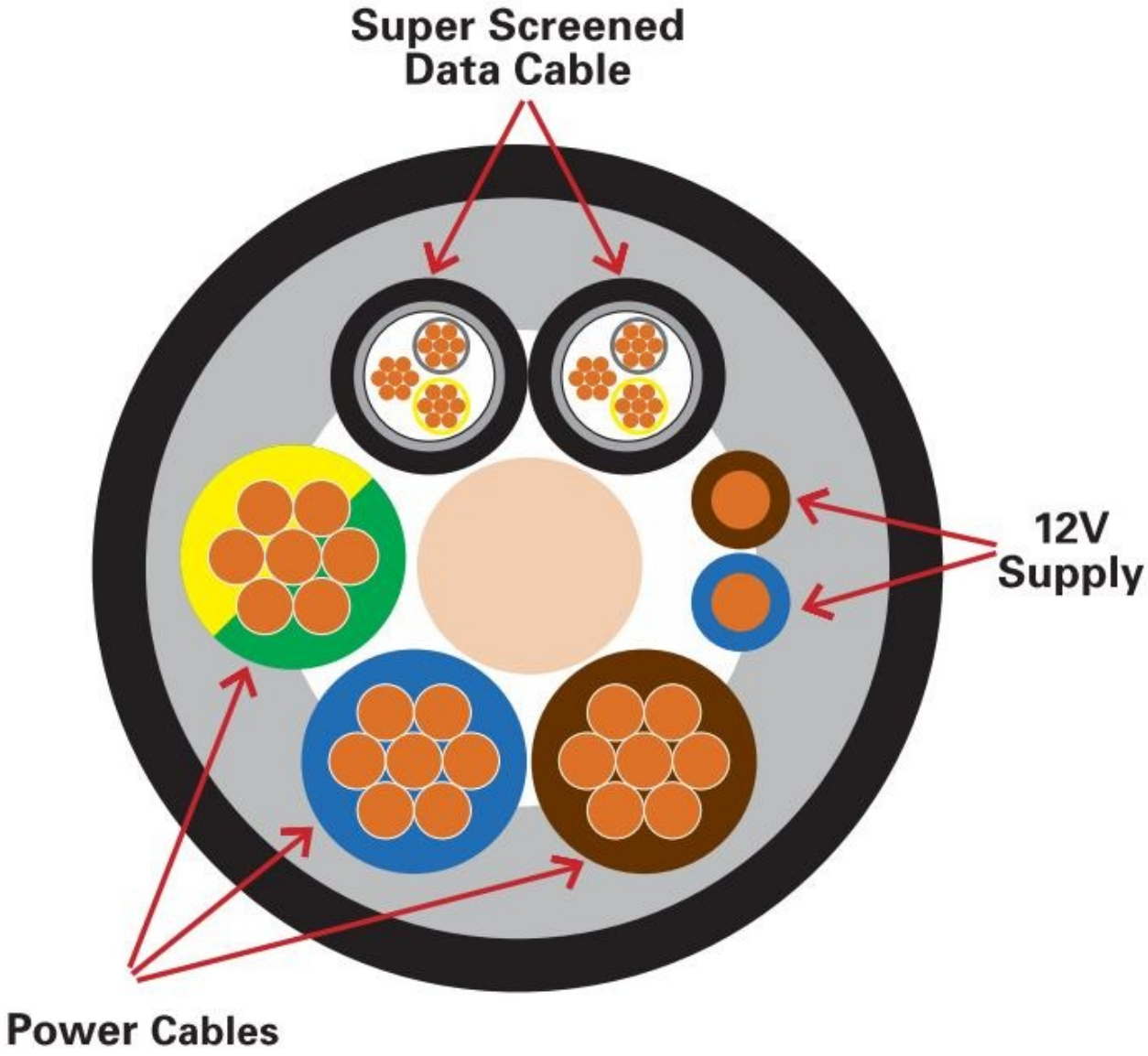
Material: Specially developed CarbonTek® Sheathing Compound
Impact resistant / Abrasion Resistant / Temperature Resistant / UV Stable

Weights and Dimensions

Overall Diameter: Approximately 19mm

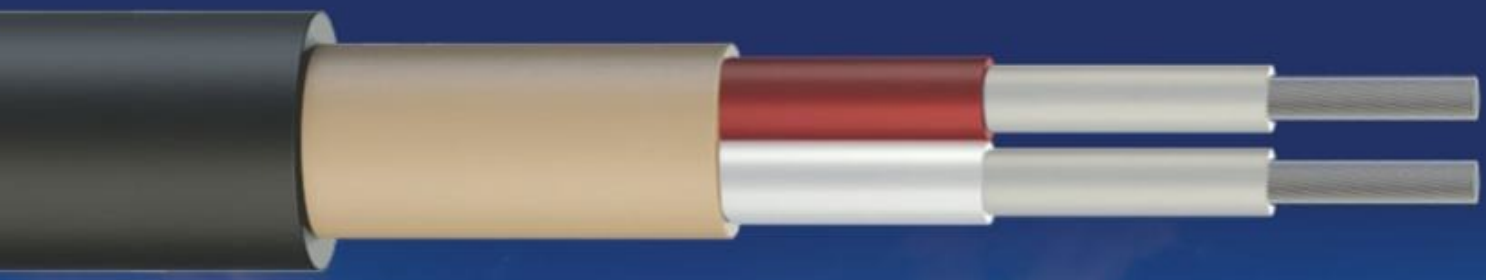
Weight: 530 kg/km

The cable incorporates the power conductors, the 12V supply and the data cables required to provide an all-in-one solution to Powerwall installations. Installed, approved and recommended by TESLA.



PATENT PENDING

PV-Ultra®



PATENT PENDING

PV-Ultra®

PV-Ultra® is specially developed to meet the requirements of DC installations on photovoltaic systems.

Cable Construction

Conductor: Tinned Annealed Copper Class 5 Flexible

Insulation: Double insulated cross-linked and fulfilling the requirements of BS EN 50618 Annex B.

Bedding: CarbonTek®

Sheathing: SolarTek®

Application

This cable is designed to meet the requirements of the DC interconnections between the solar panels and the other components of the photovoltaic system, such as the isolators and invertors.

PV-Ultra provides excellent mechanical properties, can be installed both internally and externally, and has been designed with high quality materials to achieve an anticipated lifespan of circa 25 years.

The cables are designed to operate at a normal maximum conductor temperature of 90°C, but for a maximum of 20,000 hours a max. conductor temperature of 120 °C at a max. ambient temperature of 90°C is permitted.

PV-Ultra has red and white core colours to comply with the latest requirements of BS7671 with regards to two-wire unearthed DC power circuits (BS7671 Table 51).

The double insulation of PV-Ultra ensures that the electrical equipment up to the DC connection of the PV inverter is Class II or equivalent insulation (as specified in BS7671 Clause 712.412.101).

PV Ultra is a multicore DC solution that previously was solved by a multicore armoured cable. These multicore armoured cables are no longer recommended for use on the DC side of the installation. PV Ultra can now serve as a direct replacement allowing for a compliant multicore solution.

The double insulated conductors are particularly suitable for use at the direct current (d.c.) side of the photovoltaic system, with a nominal d.c. voltage of 1.5kV between conductor and between conductor and earth. Due to the double insulation these cables are suitable to be used with Class II equipment (meeting the requirement of BS7671 Clause 712.412.101 which states that the electrical equipment up to the DC connection of the PV inverter shall be Class II or equivalent insulation)

The double insulated conductors are enclosed in a CarbonTek® bedding, to give even more electrical protection against the steel wire armour (where applicable), with a final outer sheathing of SolarTek® PVC being applied to all variants of the cable (steel wire armoured or not).

PV-Ultra is aesthetically similar to a mains power cable, as opposed to being similar in appearance to a coaxial cable. Which reduces the probability of homeowners/electricians/DIYers accidently cutting a live d.c. cable.

PV-Ultra also includes a yellow warning print that further highlights the hazard that these cables are live during daylight hours.

Comments for the installer

PV-Ultra provides a quicker, easier and neater install and can be installed using normal cable accessories, cleats and/or clips and gives additional protection without the need for conduit installations. The cable can also remove the need for d.c. junction boxes in certain installations.

We have incorporated a built-in high-tensile rip cord to aid the stripping of the inner bedding. This removes the risk of causing damage to the inner cores when using traditional stripping methods such as cable knives, utility knives, or other stripping tools. This construction of the cable, and the inclusion of this high-tensile rip cord, mean that exposing the cable conductors is an easy process regardless of what length you need to strip back.

Standard MC4 connectors can be applied to the cores meaning that the termination and connection to panels is the same as when using traditional single core PV cables.

PV-Ultra allows for direct connections from the solar panels to the DC isolator/invertor every time, without the need to assess the route for whether conduits will be required, and without the need for junction boxes.

Understanding the product codes

	Conductor Size	2 Core	4 Core
PV-ULTRA2C4.0	4.0mm²	✓	
PV-ULTRA2C6.0	6.0mm²	✓	
PV-ULTRA4C4.0	4.0mm²		✓
PV-ULTRA4C6.0	6.0mm²		✓

Dimensional Details:

Product Code	Number & nominal CSA of conductors	Nominal overall diameter of bedding	Approx. overall diameter	Approx. weight
PV-ULTRA2C4.0	2 x 4.0mm²	12.6mm	15.0mm	335kg/km
PV-ULTRA2C6.0	2 x 6.0mm²	14.0mm	16.5mm	405kg/km
PV-ULTRA4C4.0	4 x 4.0mm²	15.3mm	17.7mm	585kg/km
PV-ULTRA4C6.0	4 x 6.0mm²	17.0mm	19.4mm	715kg/km

Weight and dimensional information is provided as an approximate guide only.

Current carrying capacities based on ambient temperature of 60°C , for temperatures above 60°C temperature derating factors should be applied as follows 70°C=0.91, 80°C=0.82, 90°C=0.71. Refer to BS7671 fur further guidance.

Features and Benefits

- Easier to handle
- Saves installation costs
- Saves installation time
- Easy polarity identification
- Easier to route along/through buildings or walls
- Reduces the risk of accidental damage
- Gives a cleaner, neater installation
- Safer as it removes the need for junction boxes
- Safer as it looks like a power cable

MINIMUM OPERATING TEMPERATURE
-15°C

MAXIMUM OPERATING TEMPERATURE
90°C

STANDARD CORE COLOURS
2 core
4 core

Solarsure®

H1Z2Z2-K

Halogen free cable for photovoltaic equipment

Cable Construction

Type: EN50618:2014 H1Z2Z2-K 1x**mm2 DC 1500V

Product Standard: EN50618:2014

Insulation Material: Cross Linked Halogen Free compound, Black or White

Cover Material: Cross Linked Halogen Free compound, Black

Application

SolarSure is a double insulated cable designed for interconnections between the solar panels and the other components of the photovoltaic system. The cables are suitable for fixed installations, and for both internal and external applications within conduits or systems. SolarSure is also suitable for direct burial where appropriate mechanical protection is also applied. The cables are particularly suitable for installations where fire, smoke and toxic fumes would create risk to life and equipment due to their low smoke and none halogen design, and are also water resistant to AD8.

This range of cables meets the growing requirements of the renewable energy industry, with a particular focus on the solar energy sector which has achieved great success in capturing energy from our environment to supply sustainable energy to national and local energy networks.

SolarSure meets the requirements of BSEN50618 which is the standard that superseded the original PV1-F specification originally set by TÜV Rheinland Group. Our cables are TÜV approved and have been subjected to extensive testing to ensure they are resilient and durable, with an anticipated lifespan of approximately 25 years.

Dimensional Details:

Cross Section (mm^2)	Construction (No./ mm±0.008) Tinned copper wire	DIA. (mm)	Insulation Thickness (mm)		Insulation Od. (mm±0.15)	Jacket Thickness (mm)		Cable Od. (mm±0.2)
			Avg.	Min.		Avg.	Min.	
1x2.5	49/0.25	2.02	0.7	0.53	3.60	0.8	0.58	5.4
1x4	56/0.283	2.46	0.7	0.53	3.90	0.8	0.58	5.6
1x6	84/0.283	3.02	0.7	0.53	4.60	0.8	0.58	6.3
1x10	146/0.283	4.00	0.7	0.53	5.80	0.8	0.58	7.8
1x16	228/0.283	5.00	0.7	0.53	7.00	0.9	0.67	9.3

The class of the conductor shall be Class 5 in accordance with IEC 60228.

Electrical Properties:

Cross Section (mm^2)	1x2.5	1x4	1x6	1x10	1x16
Conductor Max. Resistance AT 20°C (Ω/km)	7.98	5.09	3.39	1.95	1.24
Insulation Min. Resistance AT 20°C (MΩ·km)	690	579	499	419	339
Insulation Min. Resistance AT 90°C (MΩ·km)	0.69	0.579	0.499	0.419	0.339

Current Rating Ambient Temperature - AMPS

Cross Section (mm^2)	Single Cable Free in Air	Single Cable Free on Surface	Two Loaded Cables Touching, on a Surface
1x4	55	52	44
1x6	70	67	57
1x10	98	93	79
1x16	132	125	107

Ambient Temperature	60°C
Max. Conductor Temperature	120°C

Electrical Performance

Test Items		Test Standard	Test Method
Elongation of insulation/sheath	Test are before ageing	125%↑	EN 60811-1-1
Tensile strength of insulation/sheath		8.0Mp↑	
Elongation of insulation/sheath	Test are after ageing	>70% Tensil Strength Before Ageing	EN 60811-1-2
Tensile strength of insulation/sheath		>70% Tensil Strength Before Ageing	
Shrinkage resistant		≤2%	EN 60811-503

Acid and alkali resistant	EN 60811-2-1
Ozone resistant	EN50396-8.1.3
UV resistant	EN 50289-4-17
Dynamic penetrate force	1
(40°C, 5h) Impact at low temperature	EN 60811-1-4
Fire performance	IEC60332-1-2
Cl and Br Content	EN 50618
Thermal endurance Test	EN60216-1, EN60216-2, TI120

Application

Application	Connection of Photovoltaic Systems such as solar panel arrays, Suitable for internal and external installations
Approval	EN 50618
Rating Voltage	DC1500V
Test Voltage	AC 6.5KV, 50Hz 5min
DC Voltage Test of Insulation	1800V, 240h (85°C, 3%Nacl) No break
Working Temperature	-40~90°C
Short Circuit Temperature	250°C 5S
Bending Radius	6xD
Life Period	≥25 years

RUNPOTEC
STRONGEST CABLE PULLING

Don't forget to order one of these cable pay off tools to help you dispense your cable!

RUNPOTEC
STRONGEST CABLE PULLING

X300
XBOARD CABLE ROLLER

- Can unwind 2 cable bundles simultaneously
- Compatible with other Runpotec items such as the Runposticks (RUN10016 & RUN10020)
- Excellent for damaged cable drums
- Compact - lightweight - 1.26kg net weight
- Loadable up to 300kg
- No cable clutter
- Non-slip and stable base

RUNPOTEC
STRONGEST CABLE PULLING

X500
XBOARD CABLE ROLLER

- Can unwind 2 cable bundles simultaneously
- Compatible with other Runpotec i tems such as the Runposticks (RUN10016 & RUN10020)
- Excellent for damaged cable drums
- Variable drum sizes
- Compact - lightweight - 1.26kg net weight
- Loadable up to 800kg
- Also suitable for loose cable bundles
- Unwinding of 2 cable bundles simultaneously
- Also suitable for empty conduits

EV-ULTRA®
CABLE STRIPPER

- Large handle diameter for optimum control
- Easy to operate adjusting screw
- Precise, quick and safe stripping
- Quick change of the inner blade with a bayonet fitting

Works perfectly with our EV-ULTRA® Tuff Sheath® cable range!

Suitable on cable with a diameter of 8-27mm

PATENT PENDING

PV-Ultra®

CABLE STRIPPER

- Large handle diameter for optimum control
- Easy to operate adjusting screw
- Precise, quick and safe stripping
- Quick change of the inner blade with a bayonet fitting

Works perfectly with our NEW PV-Ultra® cable range!

Doncaster Cables

The Electricians Cable of Choice

The British Cable Company You Can Trust

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