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# NPS/002/013 – Technical Specification for Telephone and Pilot Cable Joints

## 1. Purpose

The purpose of this document is to detail the technical requirements for telephone and pilot cable joints for use on CE Electric UK distribution network.

This document supersedes the following documents, all copies of which should be destroyed.

Ref.	Version	Title
NPS/002/013	1 (June 2006)	Technical Specification for Telephone and Pilot Cable Joints

## 2. Scope

This document specifies the requirements for joints intended for use on multipair and multicore auxiliary cables manufactured generally in accordance with ENATS 09-6. It is recognised, however that it may be also necessary to joint similar cables with specifications which are now superseded, including paper insulated lead sheathed wire armoured (PILSWA ) pilot and telephone cables.

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## 3. Technical Requirements

### 3.1 Test Criteria

Polythene insulated multipair cables are designed for either 5kV or 15kV induced voltage levels, it is intended that that joints supplied against this specification shall be meet the voltage tests requirements for 15kV systems as detailed in ENATS C64 issue 2 – 2000.

### 3.2 Earth Connection

Earth connections and conductors will be suitable for carrying fault current and will be compatible with paper lead tape and wired armoured cables as well as P.V.C. wired armoured cables.

### 3.3 Joints

Joints will be required to connect together a range of cables types including:-

- XLPE insulated gel filled or unfilled
- PVC insulated
- Paper lead

### 3.4 Connectors

Connectors for multipair cables will be type that does not require the removal of the core insulation and shall be self insulating. They shall provide reliable connection across the range of insulation thickness expected to be encountered on 5/15kV cables with PVC, Polythene or XLPE insulation.

Connectors for multicore cables shall provided reliable connections. Insulation piercing or similar connectors are not acceptable if there is a risk of damage to the conductors.

### 3.5 Filling Medium

The joint when filled with filling medium i.e. resin, shall still match the 15kV induced withstand voltage of the cable.

### 3.6 Kits

Joints kits shall contain all of the required components and including: -

Connectors

Joint shell

Resin

Earth braid

Assembly instructions.

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## 4 References

### 4.1 External Documentation

The products described within this specification shall comply with all current versions of the relevant International Standards, British Standard Specifications and all relevant Energy Networks Association Technical Specifications (ENATS) current at the time of supply, except where varied by this standard. In respect the following documents are particularly relevant.

<b>Energy Network Association Technical Specification</b>	
<b>Reference</b>	<b>Title</b>
ENATS 09-6	Auxiliary Multicore and Multipair Cables
<b>Engineering Recommendation</b>	
C64 issue 2 - 2000	Testing procedure for approval of joints for auxiliary cables

### 4.2 Internal Documentation

<b>Reference</b>	<b>Title</b>
NPS/002/018	Pilot, Control and Telephone Cables

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## 4.3 Amendments from Previous Version

Clause	Subject	Amendments
1	Purpose	Previous versions table amended.
2	Scope	Amended to refer to PILSWA cables
2.1	Contents	Table of contents added.
3	Technical Requirements	Minor revisions / rewording to parts 3.1, 3.3 & 3.4.
4.1	External Docs	Reference to ENATS 09-6 added.
4.2	Internal Docs	Reference to NPS/002/018 – Pilot, Control and Telephone Cables and ENATS 09-6 added.
6	Authority for Issue	Amended to reflect new business structure.
Appdx 1	Joint Requirements	Tables amended to reflect typical multicore and multi-pair cable types.
Appdx 2	Addendum to Supplier Requirements	Minor amendments made to wording.
Appdx 3	Logistical Requirements	Original logistical requirements appendix replaced by current standard template documents.
Appdx 4	Self Certification Conformance Declaration	Tables Added.

## 5 Definitions

Term	Definition
NIL	

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## 6 Authority for issue

### 6.1 Author

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

		Sign	Date
V Gorny	Standards Engineer	V Gorny	10/12/2010

### 6.2 Technical Assurance

I sign to confirm that I am satisfied with all aspects of the content and preparation of this document and submit it for approval and authorisation.

		Sign	Date
R McMahon	Standards Engineer	R McMahon	14/12/2010

### 6.3 DBD Assurance

I sign to confirm that this document has been assured for issue on to the DBD system

		Sign	Date
S Johnson	DBD Administrator	S Johnson	24/01/2011

### 6.4 Authorisation

Authorisation is granted for publication of this document

		Sign	Date
C Holdsworth	Standards and Assessment Manager	C Holdsworth	23/12/2010

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## Appendix 1 – Joint Requirements

MultiPair Joint Type					
Number of Pairs	Polythene to Polythene	Polythene to Impregnated Paper	Polythene to PVC	PVC to PVC	Polythene To Dry Paper
19	✓	✓	✓	✓	X
37	✓	✓	✓	✓	X
61	✓	✓	✓	✓	X

Multicore Joint Type					
Number of cores	Polythene to Polythene	Polythene to Impregnated Paper	Polythene to PVC	PVC to PVC	Polythene To Dry Paper
4	✓	✓	✓	✓	X
7	✓	✓	✓	✓	X
12	✓	✓	✓	✓	X
19	✓	✓	✓	✓	X

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## Appendix 2 – Addendum to Supplier Requirements

To enable CE Electric UK to install the product(s) in accordance with the manufacturer's recommendations the supplier shall provide a single copy of drawings, descriptive leaflets and instruction manuals appropriate to the goods being offered, which shall incorporate details of an approved installation procedure / work instruction required in order to provide optimal performance of the goods during their operational life.

Each kit will be supplied with all components necessary required to complete the joint.



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## Appendix 3 – Logistical Requirements

### Storage

To enable CE Electric UK to store the product(s) in accordance with the manufacturer's recommendations the Tenderer should provide details of the recommended storage environment, maximum stacking height with respect to each tendered product.

Details should be provided where relevant in respect to the minimum and maximum exposure levels, frequency of exposure and duration of exposure of the packaged item with respect to:

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| * | Ambient temperature | * | Atmospheric corrosion |
| * | Humidity            | * | impact                |
| * | Water               | * | Vibration             |
| * | Dust                | * | Solar radiation       |

### Packaging and labelling

The Tenderer shall ensure that each item is suitably packaged and protection to maintain the product and packaging as "fit for service" prior to installation taking account of the potential for an outdoor storage environment. All packaging shall be sufficiently durable giving regard to the function, reasonable use and contents of the packaging. Where product packages tendered are made up of sub packages all the sub packages shall unless varied by this specification, be supplied securely packaged together. Where items are provided in bagged/boxed form the material from which the bags are manufactured shall be capable of sustaining the package weight and resisting puncture by the materials within. Tenderer shall submit at the time of tendering the details of the proposed packaging (i.e. materials composition and structure) to be used for each product. Where the Tenderer is unable to provide packaging suitable for outdoor storage then this should be stated at the time of tender.

Palletised goods shall be supplied on standard 1200mm x 1000mm pallets.

Clearly legible, easily identifiable, durable and unambiguous labelling shall be applied to each individual and where relevant multiple package of like products. Where products packages tendered are made up of sub packages each sub packages shall be marked. As a minimum requirement the following shall be included:

- \* Manufacturer's trademark or name
- \* Supplier's trademark or name
- \* Description of item
- \* Date of packaging and/or batch number
- \* CE Electric UK product code
- \* Weight

Tenderer shall submit at the time of tendering a sample of the proposed labelling for each product package type.

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## Appendix 4 – SELF CERTIFICATION CONFORMANCE DECLARATION

Telephone and pilot cable joints are required to be supplied against this specification shall comply with the latest issues of the relevant ENATS, British and International Standards specified. The following tables are intended to amplify and/or clarify the requirements of elements of these Standards but do not preclude meeting all requirements of the standards. .

The manufacturer shall declare conformance or otherwise, clause by clause, using the following levels of conformance declaration codes.

### Conformance declaration codes

N/A = Clause is not applicable/ appropriate to the product

Cs1 = The product conforms fully with the requirements of this clause

Cs2 = The product conforms partially with the requirements of this clause

Cs3 = The product does not conform to the requirements of this clause

Cs4 = The product does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform.

### Instructions for completion

- When Cs1 code is entered no remark is necessary.
- When any other code is entered the reason for non-conformance shall be entered.
- Prefix each remark with the relevant 'BS EN' 'IEC' or 'ENATS' as appropriate.

**Manufacturer:**

**Product Reference:**

**Details of the Cable Joint Type (Type, Size etc)**

**Name:**

**Signature:**

**Date:**

**NOTE:** One sheet shall be completed for each type of cable offered.

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Technical Specification for Telephone and Pilot Cable Joints				
		Clause / Requirements	Conformance Code	Remarks / Comments
		<b>Engineering Recommendation C64 (Issue 2 ; 2000)</b>		
1.	Conductor Continuity	ER C64 Pt 4: Resistance $\leq$ 110% of equivalent length of cable.		
2.	Voltage Withstand	ER C64 Pt 5: DC / 1 min. Values as specified in Table 1.		
3.	Insulation Resistance	ER C64 Pt 6: 500v DC / 1 Min (min steady state values after 15 sec):- Polythene : $10^4$ M $\Omega$ Polythene / Paper : 500 M $\Omega$ Polythene / PVC : 50 M $\Omega$ PVC: 25 M $\Omega$		
4.	Tensile Test	ER C64 Pt 7: Values as specified in Table 3 (no measurable extension after 5 min).		
5.	Heating Cycle in Water	ER C64 Pt 8: 35 cycles.		
6.	Impact Test	ER C64 Pt 9: Superficial / moderate damage acceptable.		
7.	Heating Cycle in Water	ER C64 Pt 10: 65 cycles.		
8.	Conductor Continuity	ER C64 Pt 11: Resistance $\leq$ 110% of equivalent length of cable.		
9.	Voltage Withstand	ER C64 Pt 12: DC / 1 min. Values as specified in Table 1.		
10.	Insulation Resistance	ER C64 Pt 13: 500v DC / 1 Min (min steady state values after 15 sec):- Polythene : $10^4$ M $\Omega$ Polythene / Paper : 500 M $\Omega$ Polythene / PVC : 50 M $\Omega$ PVC: 25 M $\Omega$		