

## Company Directive

### ENGINEERING SPECIFICATION EE SPEC: 79/2

#### Specification for SCADA Multipair Light Current Control Cables

Author: Richard Summers

Implementation Date: February 2018

Approved by



Policy Manager

Date:

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## **IMPLEMENTATION PLAN**

### **Introduction**

This EE document contains the specification for SCADA / Scada cables purchased in WPD.

### **Main Changes**

The sheath material has been changed from low-density polyethylene to PVC.

### **Impact of Changes**

None, this change provides Purchasing the ability to procure relevant SCADA / Scada cable that is fit for purpose.

### **Implementation Actions**

No actions required.

No formal training will be required.

### **Implementation Timetable**

This Standard Technique can be implemented with immediate effect.

## REVISION HISTORY

Document Revision & Review Table		
Date	Comments	Author
February 2018	<ul style="list-style-type: none"><li>The sheath material has been changed from low-density polyethylene to PVC</li></ul>	Richard Summers
March 2015	<ul style="list-style-type: none"><li>Additional shrinkage test added to the specification.</li></ul>	Peter White
December 2014	<ul style="list-style-type: none"><li>The document has been modified to reflect the rebranding of the company.</li></ul>	Peter White

## **1.0 SCOPE**

This specification deals with Western Power Distribution's (WPD) requirement for polythene insulated and sheathed multipair light current control cables with a collective screen, which are intended primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus, and are suitable for use on circuits where the working voltage does not normally exceed 150V d.c. or 110V a.c.

The finished cable shall generally meet the requirements of Electricity Association Technical Specification (EATS) 09-6 (1988) section 4, (or equivalent standard), or except where modified by this Specification.

## **2.0 CONDUCTORS**

The conductors shall comply with BS 6360 (class 1), (or equivalent standard), in so far as applicable for plain annealed copper wires.

The size of conductor shall be 1/0.8mm.

## **3.0 STANDARD DESIGNS**

The standard designs required by WPD are as follows: -

5 pair, 10 pair and 20 pair.

## **4.0 INSULATION**

PVC insulation shall be Type TI1 compound in accordance with BS 6746 (or equivalent standard).

The thickness of insulation, determined by taking the average of a number of measurements as described in BS EN 60811.1.1 Clause 8.1, shall not be less than 0.3mm and the smallest of the measured values shall not fall below the minimum value of 0.25mm.

## **5.0 IDENTIFICATION AND TWINNING OF CORES**

The cores of the cables shall be clearly identified by colours, which shall be a reasonable match to BS 6746 C, (or equivalent standard).

Two insulated cores of appropriate colours shall be uniformly twisted together to form a pair. The length of lay shall not exceed 125mm.

The colour identification scheme shall as given in EATS 09-6 section 4 clause 4.5.

## **6.0 LAYING-UP**

The laying-up of the cables shall be as given in EATS 09-6 section 4 clause 4.6.

## **7.0 RIP CORD**

A suitable ripcord shall be included to facilitate stripping.

## **8.0 COLLECTIVE SCREEN**

The cables shall have a collective aluminium screen with a backing, which will ensure adhesion to the bedding. The laminated screen tape shall be applied longitudinally over the ripcord and drain wire and be in electrical contact with the drain wire. The drain wire shall be a 1/0.8 tinned copper wire. The thickness of the aluminium shall be not less than 0.15mm.

## **9.0 INNER SHEATH (BEDDING)**

The inner sheath shall consist of an extruded covering of black polythene, which shall be type 03C compound in accordance with BS 6234. The thickness of insulation shall not be less than 1.0mm.

The minimum thickness of the inner polythene sheath, when measured in accordance with BS EN 60811.1.1 clause 8.1 shall not fall below the minimum value of 0.75mm.

The points at which measurements are made shall not coincide with the position of the ripcord or drain wire.

## **10.0 ARMOURING**

The armour shall consist of a single layer of galvanised steel wires of the size indicated in EATS 09-6 section 4 table 4.2 and 4.3.

The galvanised steel wires shall comply with BS 6346, (or equivalent standard).

## **11.0 OUTER SHEATH**

The outer sheath shall consist of an extruded covering of PVC. The minimum thickness of the inner polythene sheath, when measured in accordance with BS EN 60811.1.1 clause 8.1 shall not fall below the minimum value of 2mm.

## **12.0 CABLE MARKINGS**

The cable markings shall comply with EATS 09-6 section 4 clause 4.13.1 and 4.13.2. In addition to this the cable shall be metre marked.

## **13.0 SEALING AND DRUMMING**

Shall be as defined in EATS 09-6 section 4 clause 4.14.

## **14.0 TECHNICAL CHARACTERISTICS**

Shall be as defined in EATS 09-6 section 4 clause 4.15.

## **15.0 TESTS AT WORKS**

Shall be as defined in EATS 09-6 section 4 clause 4.16.1, 4.16.2 and 4.16.3.

## **16.0 INSULATION SHRINKAGE**

In addition to all the testing detailed in ENA TS 09-06 1988, WPD require that all batches of Scada cable are subjected to additional shrinkage testing, this additional testing shall follow the form of BS EN 60811 but in addition to the 130°C test there shall be additional tests at the following temperatures 40°C, 60°C and 80°C  $\pm$  2°C. These additional tests shall follow the same format as detailed in BS EN 60811 for the 130°C test.

BS EN 60811 only calls for 200mm  $\pm$  5mm samples, WPD also require an additional lengths of 800mm  $\pm$  5mm to be tested using the same test regime as the 200mm samples. All the results data of the shrinkage tests shall be logged and if requested by the WPD Cable Policy Engineer shall be made available to them.

All the results of these additional tests shall comply with the shrinkage requirements given in ENA TS 09-06 1988. That is shrinkage for the 130°C test and all the additional temperature levels detailed by WPD shall be less than 2%.

### **SCHEDULE 1**

#### **SPECIFICATION FOR SCADA MULTIPAIR UNDERGROUND CABLES.**

ITEM NO.	SHOPS CODE	DESCRIPTION	ESTIMATED QUANTITY PER ANNUM	PRICE PER UNIT £	PRICE FOR ESTIMATED QUANTITY	MAKERS REF. NO.
1	36979	5 Pair SCADA multipair armoured cable	1000m			
2	36980	10 Pair SCADA multipair armoured cable	1000m			
3	36981	20 Pair SCADA multipair armoured cable	1000m			

## **APPENDIX A**

### **SUPERSEDED DOCUMENTATION**

This document supersedes EE SPEC: 79/1 dated December 2014 which has now been withdrawn.

## **APPENDIX B**

### **KEY WORDS**

None