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Technical Specification 50-18

Issue 4 2013

Application of ancillary electrical equipment

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PUBLISHING AND COPYRIGHT INFORMATION

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Amendments since publication

Issue	Date	Amendment
Issue 4	December, 2013	Minor revisions of Issue 3 to reflect changes in the British Standards referenced and amendment of affected clauses. This issue includes the following principal technical changes. Clause 2: Normative references. Added new reference, BS 7870-3.50:2011. Clause 5.5: D.C. voltage limits. Added the requirement for 'standing/quiescent current(s)' to be provided by the supplier to allow the purchaser to correctly size the battery. Clause 6: Construction requirements: 6.1 a) Added the requirement that equipment be "*tested at the manufacturer's*, supplier's or contractor's works". 6.1 k) Added "or least 300 mm, where the purchaser requires flood resilience" to the mounting height requirements for equipment. 6.2.2 a) Amended the degree of protection for indoor enclosures from "IP3X as specified in BS EN 60529, with additional protection against falling dust" to "IP31 and preferably IP41 but, in any case, protected against the ingress of dust falling vertically" and removed the associated footnote. 6.2.2 e) Added "to IPXXD" with respect to shrouding of terminals terminals exceeding 110 V. 6.2.2 g) Replaced the sentence commencing "However …" with "The equipment shall be supplied equipped with provision for the plug and the socket to each have a minimum of IP54 protection when disconnected" to define the minimum degree of protection required. Clause 7: Small wiring. 7.1 d) Added wording to cover colours for 230 V wiring.

		7.1 k) Added requirement for small wiring cables to have no exposure of conductors due to shrink back of insulation at terminations of ancillary equipment. Clause 7.3 Plug and socket connectors: Para 2, 2nd sentence reworded to allow the plug body for CT circuits to be coloured other than yellow when specified by the purchaser. Details of all other technical, general and editorial amendments are included in the associated Document Amendment Summary for this Issue (available on request from the Operations Directorate of ENA).

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Foreword

This Technical Specification (TS) is published by the Energy Networks Association (ENA) and comes into effect from the date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is “ENA TS 50-18”.

This document replaces and supersedes ENA Technical Specification 50-18 Issue 3 2008. At the time of drafting Issue 3 of this Specification, IEC 62271-1 had not been published but was used as the principal reference document. BS EN 62271-1:2008+A1:2011[1] has since been published and is the principal reference document used in Issue 4 of this Specification.

The Energy Networks Association has prepared this issue of the ENA TS 50-18 document to define the requirements for ancillary electrical equipment. Requirements for particular equipments are covered in the subsequent clauses of the document.

Annex A of the document includes “Self certification conformance declaration” sheets, Annex B includes “Type test conformance declaration” to enable suppliers to declare conformance or otherwise, clause by clause, with the relevant parts of the document.

The intention is this Specification is read in conjunction with other relevant standards, referenced in Clause 3, which may contain additional requirements.

The Electricity at Work Regulations 1989 [N1] made under the Health and Safety at Work Act etc 1974 [1], apply to equipment used within substations, whenever manufactured, purchased or installed. Appendix 2 of the Memorandum of guidance on the Electricity at Work Regulations 1989 [N2] lists Standards, Codes of Practice and other publications which contain guidance relevant to the Regulations and electrical safety.

Where the term “shall” is used in this document it expresses a requirement. The term “may” is used to express permission.

Commentary, explanation and general informative material is presented in smaller type, and does not constitute a normative element.

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[1] Identical to IEC 62271-1:2007 incorporating amendment 1:2011.

1 Scope

This Specification defines the technical requirements for the following ancillary equipment for use in Transmission & Distribution substations including ancillary equipment associated with primary plant (e.g. switchgear & transformers).

a) Control and auxiliary switches.
b) Instruments and indicators.
c) Enclosures (cubicles, boxes and kiosks).
d) Terminal blocks, terminations and small wiring.
e) Fuses and links.
f) Low voltage circuit breakers.
g) Relays.
h) Testing facilities.

2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS 2782-0:2011, *Methods of testing plastic. Introduction*

BS 3693, *Recommendations for design of scales and indexes on analogue indicating instruments*

BS 5499-10, *Safety signs, including fire safety signs. Code of practice for the use of safety signs, including fire safety signs*

NOTE: BS 5499 has been retained as ISO 7010 only specifies symbols (restricted list) whereas BS 5499 specifies how accompanying text is to be presented.

BS 6231, *Electric cables. Single core PVC insulated flexible cables of rated voltage 600/1 000 V for switchgear and controlgear wiring*

BS 7671, *Requirements for Electrical Installations. (IET Wiring Regulations. Seventeenth Edition)*

BS EN 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories. Definitions and general requirements common to all parts*

BS EN 60073, *Basic and safety principles for man-machine interface, marking and identification. Coding principles for indicators and actuators*

BS EN 60085:2009, *Electrical insulation. Thermal evaluation and designation*

BS EN 60269-1:2007+A1:2009, BS 88-1:2007, *Low-voltage fuses. General requirements*

BS EN 60352-2, *Solderless connections. Solderless crimped connections. General requirements, test methods and practical guidance*

BS EN 60529, *Specification for degrees of protection provided by enclosures (IP code)*

BS EN 60688:2013, *Electrical measuring transducers for converting A.C. and D.C. electrical quantities to analogue or digital signals*

BS EN 60695-1-11:2011, *Fire hazard testing. Guidance for assessing the fire hazard of electrotechnical products*

BS EN 60695-4:2012, *Fire hazard testing. Terminology concerning fire tests for electrotechnical products*

BS EN 60898-1:2003+A13:2012, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations. Part 1: Circuit-breakers for a.c. operation*

BS EN 60898-2:2006, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations. Part 2: Circuit-breakers for a.c and d.c. operation*

BS EN 60947-1:2007+A1:2011, *Low-voltage switchgear and controlgear. General rules*

BS EN 60947-3:2009+A1:2012, *Low-voltage switchgear and controlgear. Switches, disconnectors, switch-disconnectors and fuse-combination units* (Corrigendum January 2013)

BS EN 60947-4-1:2010+A1:2012, *Low-voltage switchgear and controlgear. Contactors and motor-starters. Electromechanical contactors and motor-starters*

BS EN 60947-5-1:2004+A1:2009, *Low-voltage switchgear and controlgear. Control/circuit devices and switching elements. Electromechanical control circuit devices*

BS EN 60947-7-1:2009, *Low-voltage switchgear and controlgear. Ancillary equipment. Terminal blocks for copper conductors*

BS EN 61810-1:2008, *Electromechanical elementary relays. General requirements*

BS EN 61810-2:2011, *Electromechanical elementary relays. Reliability*

BS EN 61810-7:2006, *Electromechanical elementary relays. Test and measurement procedures*

BS EN 61869-2:2012, *Instrument transformers. Additional requirements for current transformers*

BS EN 61869-3:2011, *Instrument transformers. Additional requirements for inductive voltage transformers*

BS EN 62271-1:2008+A1:2011, *High-voltage switchgear and controlgear - Part 1: Common specifications*

BS EN 62271-200:2012[2], *High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

BS HD 60269-2:2010, BS 88-2:2010 *Low-voltage fuses. Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application). Examples of standardized systems of fuses A to J*

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[2] Identical to IEC 62271-200:2011

BS EN ISO 8510-2:2010, *Adhesives. Peel test for a flexible-bonded-to-rigid test specimen assembly. 180 degree peel*

Other publications

[N1] The Electricity at Work Regulations 1989

[N2] Memorandum of guidance on the Electricity at Work Regulations 1989

[N3] ENA TS 41-36, *Switchgear for service up to 36 kV (cable and overhead conductor connected)*

[N4] ENA TS 41-37, *Switchgear for use on 66 kV to 132 kV distribution systems*

[N5] ENA TS 41-24*, Guidelines for the design, installation, testing and maintenance of main earthing systems in substations*

[N6] ENA TS 50-19*, Standard numbering for small wiring*

[N7] ENA TS 48-4*, D.C. Relays associated with a tripping function in protection systems*

[N8] ENA TS 48-5*, Environmental test requirements for protection relays and systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
ambient temperature
temperature of the atmosphere immediately surrounding the equipment

NOTE: The ambient temperature does not include heating effects arising from operation of the equipment.

3.2
apparatus
number of components

3.3
apparatus terminal
terminal on a piece of apparatus, which is an integral part of its design and construction

NOTE: For convenience it may comprise a terminal block or blocks. The terminal is used for the connection of that apparatus to the enclosure wiring.

3.4
approval/approved
approval by the purchaser of items covered by this Specification

3.5
box
enclosure housing ancillary electrical apparatus, which is not free-standing and which is fixed to some other structure or apparatus

3.6
connection interface
point at which the purchaser will be expected to make their connections to the ancillary equipment, and normally comprises terminal(s) accessible to, and for use by, the purchaser