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Technical Specification 37-1

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400 V a.c. switchgear, controlgear and fusegear assemblies

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Issue 2 published, December, 1977.

Amendments since publication

Issue	Date	Amendment
Issue 3	December 2014	Major revision of Issue 2 to align the structure with the BS EN 61439 series of Standards for low-voltage switchgear and controlgear assemblies. These cover the system and application details that need to be specified by the purchaser to enable a manufacturer to produce an assembly that meets the needs and expectations of the purchaser. To unify the interpretation of the BS EN 61439 series, general characteristics of all types of assemblies are considered in Technical Report PD IEC/TR 61439-0, which identifies those functions and characteristics that should be defined when specifying assemblies. Therefore, to provide a template to specify the requirements, the structure of the document has been revised to have the same numbering format as PD IEC/TR 61439-0. This issue includes the following principal technical changes. Document title amended from “415 volt….” to “400 V….”. Foreword: Completely revised to reflect the role of ENA TS 37-1 to identify those functions and characteristics that should be defined when specifying assemblies to meet the requirements of the purchaser. Clause 1: Scope revised to reflect the role of ENA TS 37-1 to define the requirements to be specified for 400 V a.c. assemblies that conform to BS EN 61439-2. Clause 2: References updated, deleted or added as relevant. Clause 3: Clause added with relevant terms and definitions included. Clause 3 and sections 1 to 6 of Issue 2 deleted. Replaced by clauses 4 to 14, which contain the information required to satisfy the requirements of the corresponding clauses in PD IEC/TR 61439-0, with the following exception:

		The temperature rise limit of 70 K for terminals for external insulated conductors, as specified in Table 6 of BS EN 61439-1, shall not apply and the temperature rise limit of terminals for the connection to external conductors by screws or bolts shall be 50 K for bare terminals or 65 K for silver, nickel or tin-coated terminals, as given in BS EN 62271-1 Clause 4.4.2 Table 3. Clause 15: Additional Clause to highlight optional requirements that the purchaser may define to customise a manufacturer's standard design to meet application specific requirements of an assembly designed to conform to BS EN 61439-2, as outlined in Annex C.2 of PD IEC/TR 61439-0. Figures 1 to 3 of Issue 2 deleted. Annex A: Schedule of Requirements added. - Annex A.1 lists items subject to agreement between the assembly manufacturer and the purchaser. - Annex A.2 lists optional items to provide application specific assemblies. Annex B: Check sheet of 'Self Certification Conformance Declaration' added. Annex C: Example of a completed Schedule of Requirements added for LVAC board assemblies for grid substations. Bibliography: Clause added. No informative references identified. 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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Contents

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 37-1".

This document replaces and supersedes ENA TS 37-1 Issue 2 1977 (published by the ENA in 2003).

This Specification has been based on the BS EN 61439 series of Standards for low-voltage switchgear and controlgear assemblies, which cover the system and application details that need to be specified by the purchaser to enable a manufacturer to produce an assembly that meets the needs and expectations of the purchaser. The BS EN 61439 series provides uniformity of requirements, consistency in the verification and avoids the need for verification to other Standards. The switchgear and controlgear assemblies covered by this Specification shall comply with BS EN 61439-2. This Specification amplifies and/or clarifies the requirements of those parts of BS EN 61439-2, where alternative arrangements are permitted and where additional information is required to be supplied by the purchaser.

To unify the interpretation of the BS EN 61439 series, general characteristics of all types of assemblies are considered in Technical Report PD IEC/TR 61439-0. This identifies, from the purchaser's perspective, those functions and characteristics that should be defined when specifying assemblies. Therefore, to provide a template to specify the requirements, this Specification has the same clause numbering and titles as PD IEC/TR 61439-0. Cross-referencing of the relevant clauses of BS EN 61439-2 is included within this Specification.

This Specification should be read in conjunction with both PD IEC/TR 61439-0 and BS EN 61439-2.

The BS EN 61439 series does not apply to individual devices and self-contained components, such as motor starters, fuse-switches, electronic equipment, etc. which are covered by relevant product Standards. Clauses additional to PD IEC/TR 61439-0 are included in this Specification to cover the purchaser requirements for those items. Additional clauses are also included to identify optional requirements that are not identified in the Standard but may be specified by the purchaser to identify preferences and/or application specific requirements.

Annex A of this Specification document provides a template of the 'Schedule of Requirements' for those items subject to agreement between the assembly manufacturer and the purchaser to facilitate the specifying of an assembly. Annex B includes 'Self Certification Conformance Declaration' sheets to enable manufacturers to declare conformance or otherwise, clause by clause, with the relevant parts of this Specification.

The assemblies covered by this Specification are subject to the requirements of The Electricity at Work Regulations 1989 wherever manufactured, purchased or installed. Appendix 2 of the Memorandum of Guidance on the Regulations [N1] lists Standards, Codes of Practice and publications that contain guidance to the Regulations and electrical safety.

Where the term "shall" or "must" is used in this document it means the requirement is mandatory. The term "should" is used to express a recommendation. The term "may" is used to express permission.

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

1 Scope

This Specification covers the technical requirements for 400 V a.c. switchgear, controlgear and fusegear assemblies for use by ENA Member Companies and identifies those functions and characteristics that should be defined when specifying such assemblies. The switchgear and controlgear assemblies covered by this Specification shall comply with BS EN 61439-2.

NOTE: This Specification does not cover switchgear and controlgear for use in distribution substations. The requirements for switchgear and controlgear for use in distribution substations are covered in ENA Technical Standard 37-2 [N3].

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

Standards publications listed in Clause 2 of BS EN 61439-1 and BS EN 61439-2 are applicable, with the following additions:

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

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*

BS EN 60947-2:2006+A2:2013, *Low-voltage switchgear and controlgear. Circuit-breakers*

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

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

BS EN 60947-4-2:2012, *Low-voltage switchgear and controlgear. Contactors and motor-starters. AC semiconductor motor controllers and starters*

BS EN 60947-4-3:2014, *Low-voltage switchgear and controlgear. Contactors and motor-starters. AC semiconductor controllers and contactors for non-motor loads*

BS EN 61439-1:2011, *Low-voltage switchgear and controlgear assemblies. Part 1: General rules*

BS EN 61439-2:2011, *Low-voltage switchgear and controlgear assemblies. Part 2: Power switchgear and controlgear assemblies*

PD IEC/TR 61439-0:2013, *Low-voltage switchgear and controlgear assemblies. Part 0: Guidance to specifying assemblies*

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

Other publications

[N1] Memorandum of guidance on the Electricity at Work Regulations 1989. Guidance on Regulations, 2007. ISBN: 9780717662289

[N2] ENA TS 12-08, *The application of fuse-links to 11 kV/400 V and 6.6 kV/400 V underground distribution networks*

[N3] ENA TS 37-2, *Public electricity network distribution assemblies*

[N4] ENA TS 50-19, *Standard numbering for small wiring (for switchgear and transformers together with their associated relay panels)*

[N5] ENA TS 98-1, *Surface preparation and coating systems for new plant and equipment*

[N6] ENA EREC G79 Part 1, *Procedure for the conformity assessment of plant & products for use by the Energy Networks Association Member Companies*

[N7] ENA EREP 127, *Application of electrical, electronic, and programmable electronic systems in safety-related systems in the electricity industry*

3 Terms and definitions

For the purposes of this document, Clause 3 of BS EN 61439-1 and BS EN 61439-2 shall apply as supplemented with the following terms and definitions.

3.1
assembly
low-voltage switchgear and controlgear assembly used to distribute and control energy for all types of loads, intended for industrial, commercial and similar applications where operation by ordinary persons is not intended

NOTE: Identical to the definition of PSC-ASSEMBLY in BS EN 61439-2.

3.2
authorised person
skilled or instructed person, who is empowered to execute defined work

NOTE: Identical to the description of authorized person in PD IEC/TR 61439-0.

3.3
circuit-breaker
mechanical switching device, capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time and breaking currents under specified abnormal circuit conditions such as those of short-circuit

3.4
contactor
switching device having only one position of rest, operated otherwise than by hand, capable of making, carrying and breaking currents under normal circuit conditions including operating overload conditions

3.5
disconnector
mechanical switching device which, in the open position, complies with the requirements specified for the isolating function

3.6
fuse-combination unit
combination of a mechanical switching device and one or more fuses in a composite unit, assembled by the manufacturer or in accordance with his instructions