



Technical Specification 41-37

Issue 2 2015

Switchgear for use on 66 kV to 132 kV
distribution systems

Part 3 Alternating current circuit-breakers

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Foreword

This Technical Specification (TS) is published by the Energy Networks Association (ENA) and comes into effect from 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 41-37 Part 3".

This document replaces and supersedes Technical Specification 41-37 Issue 1 2004.

This Technical Specification has been prepared by the Energy Networks Association.

ENA TS 41-37 is a suite of engineering documents that sets out ENA Member Company requirements for specification of switchgear for use on 66 kV to 132 kV distribution systems. ENA TS 41-37 is a multi-part document comprising of the following parts.

- Part 1 Common clauses
- Part 2 Gas-insulated metal-enclosed switchgear
- Part 3 Alternating current circuit-breakers
- Part 4 Disconnectors and earthing switches
- Part 5 Inductive voltage transformers, capacitor voltage transformers, combined unit transformers and current transformers for use on 72.5 kV to 145 kV distribution systems
- Part 6 – Disconnecting circuit breaker with an integral earthing switch for use at 72.5 kV and 145 kV distribution systems

Switchgear covered by this Technical Specification shall conform to the latest issues of the relevant International and British Standards listed. This Technical Specification amplifies and/or clarifies the requirements of those Standards, where alternative arrangements are permitted and where additional information is required.

This specification should be read in conjunction with the relevant International and British Standards, and to assist in cross-reference, the document follows the format of the major International Standards. Where possible, the International Standards' clause numbers have been used preceded with the number of the relevant part of this specification.

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

Part 1 of the document covers all common clause requirements of switchgear, as defined. This document covers all the additional clauses required by the ENA in order to fulfil the requirements of ENA conformance.

Annex A, of the document is the 'Self Certification Conformance Declaration' sheets, Annex B is a summary of range, technical requirements and ratings for each type of equipment for completion by the Purchaser

1 General

The common clauses (ENA TS 41-37part1), and the requirements of International Standard IEC 62271-100 apply except where modified by the following clauses.

1.1 Scope

This specification defines technical requirements for circuit-breakers rated at voltages within the range 72.5 kV to 145 kV and supersedes Electricity Networks Association Technical Specification, ENA TS 41-37 issue 1, "Switchgear for use on 66,132 kV systems" and applies to alternating current circuit-breakers, designed for indoor or outdoor installation, cable or overhead conductor connected, and for operation at service frequency of 50 Hz on systems having voltages at 66 kV and up to and including 132 kV.

Equipment covered by this specification is for use on systems with the neutral point earthed solidly, or effectively earthed through a resistor or reactor.

This specification only includes the additional clauses that apply to circuit-breakers specified by ENA Member Companies, which are in addition to the requirements of IEC 62271-100

1.2 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

- IEC 60050-441, *International electrotechnical vocabulary. Switchgear, controlgear and fuses*
- IEC 60815, *Guide for the selection and dimensioning of high-voltage insulators for polluted conditions*
- IEC 62271-1, *High-voltage switchgear and controlgear – Part 1: Common specifications*
- IEC 62271-100, *High-voltage switchgear and controlgear – Part 100: Alternating current circuit-breakers*
- BS EN 7354, *Design of high-voltage open-terminal substations*

Other publications

- [N1] ENA TS 41-37 Part 1, *Switchgear for use on 66 kV to 132 kV distribution systems – Common clauses*
- [N2] ENA TS 98-1, *Environmental classification and corrosion protection of structures, plant and equipment*

2 Normal and special service conditions

2.2.1 Pollution level

Sub-clause 2.2.2 of IEC 62271-1 shall apply

2.2.100 Flood resilience

Clause 2.2.100 of ENA TS 41-37 Part 1 [N1] shall apply.

3 Terms and definitions

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

Clauses 3 to 3.7.158 inclusive of IEC 62271-100 and Clauses 3.100 to 3.106 inclusive of ENA TS 41-37 Part 1 [N1]. Shall apply

4 Ratings

Clause 4 of IEC 62271-100 shall apply

4.1 Rated voltage (U_r)

Clauses 4.1 to 4.12 inclusive of ENA TS 41-37 Part 1 [N1] shall apply.

4.2 Rated insulation level

Clause 4.2 of ENA TS 41-37 Part 1 [N1] shall apply.

4.3 Rated frequency (f_r)

The rated frequency shall be 50 Hz.

4.4 Rated normal current (I_n) and temperature rise

Clauses 4.4 to 4.4.2 inclusive of ENA TS 41-37 Part 1 [N1] and clause 4.4 of IEC 62271-100 amendment 2 shall apply.

4.5 Rated short-time withstand current (I_k)

Clause 4.5 of ENA TS 41-37 Part 1 [N1] shall apply.

4.6 Rated peak withstand current (I_p)

Clause 4.6 of ENA TS 41-37 Part 1 [N1] shall apply

4.7 Rated duration of short time withstand circuit (t)

The value of rated duration of short-circuit shall be 3 s.

4.8 Rated supply voltage of closing and opening devices and of auxiliary and control circuits (U_a)

Clauses 4.8 to 4.8.4 inclusive of ENA TS 41-37 Part 1 [N1] shall apply.

4.9 Rated supply frequency of closing and opening devices and of auxiliary circuits

Clauses 4.9 of ENA TS 41-37 Part 1 [N1] shall apply

4.10 Rated pressure of compressed gas supply for controlled pressure systems

Clause 4.10 of ENA TS 41-37 Part 1 [N1] shall apply.

4.101 Rated short-circuit breaking current (I_{sc})

Clause 4.101 to 4.101.2 inclusive of IEC 62271-100 shall apply with the following limitations.

The rated short-circuit breaking current values are equal to the rated short-time withstand current values listed in Table 2 of ENA TS 41-37 Part 1 [N1].

4.102 Transient recovery voltage related to the rated short-circuit breaking current

Clause 4.102 to 4.102.4 inclusive of IEC 62271-100 shall apply

4.103 Rated short-circuit making current