



Technical Specification 41-37

Issue 1 2015

Switchgear for use on 66 kV to 132 kV
distribution systems

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

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**Operations Directorate
Energy Networks Association
6th Floor, Dean Bradley House
52 Horseferry Rd
London
SW1P 2AF**

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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 5".

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 earth 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 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 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. Annexes B to E detail additional requirements for instrument transformers.

1 General

The common clauses (Part 1) of this specification, and the requirements of International Standard IEC 61869, Parts 1 to 5 apply except where modified by the following clauses.

Sub-clause 1.1 of ENA TS 41-37 Part 1 [N1] [N1] and IEC 61869-1 shall apply.

1.1 Scope

This specification defines technical requirements for switchgear rated at voltages within the range 72.5 kV to 145 kV and applies to alternating current switchgear, 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.

Functional safety of electrical/electronic/programmable electronic safety-related system is not covered by this specification. If these are offered then the principles of IEC 61508 should be considered.

This specification only includes the additional clauses that apply to instrument transformers specified by ENA Member Companies, which are in addition to the requirements of IEC 61869, Parts 1.

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 61869-1, *Instrument transformers. Part 1 – General requirements*

IEC 61869-2, *Instrument transformers. Part 2 – Additional requirements for current transformers*

IEC 61869-3, *Instrument transformers. Part 3 – Additional requirements for inductive voltage transformers*

IEC 61869-4, *Instrument transformers. Part 4 – Additional requirements for combined transformers*

IEC 61869-5, *Instrument transformers. Part 5 – Additional requirements for capacitor voltage transformers*

Other publications

[N1] ENA TS 41-37 Part 1 [N1], *Switchgear for use on 66 kV to 132 kV distribution systems – Common clauses*

2 Normal and special service conditions

Clauses 2 to 2.1.100 inclusive of ENA TS 41-37 Part 1 [N1] [N1] and Clause 4 to 4.4 inclusive of IEC 61869-1 and shall apply with the following additions

2.2.1 Ambient air temperature

The temperature category shall be -25/40 °C.

3 Terms and definitions

Clauses 3 to 3.7. inclusive of IEC 61869-1 shall apply

4 Ratings

Clause 5.1 to 5.6 inclusive of IEC 61869-1 and shall apply with the following limitations

4.1 Rated voltage (U_r)

Clause 4.1 to 4.7 inclusive of ENA TS 41-37 Part 1 [N1] and 5.2 to 5.3.5 of IEC 6189-1 inclusive shall apply

4.2 Rated insulation level (U_p)

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

Table 1 — 4.2 Rated insulation levels Rated insulation levels

Highest voltage for equipment U_m (r.m.s.) kV	Rated power-frequency withstand voltage (r.m.s.) kV	Rated lightning impulse withstand voltage (peak) kV	Rated switching withstand voltage (peak) kV
72.5	140	325	N/A
145	275	650	N/A

4.1 Rated frequency

Clause 4.3 of ENA TS 41-37 Part 1 [N1] shall apply

4.2 Rated normal current and temperature rise

Clause 4.4 of ENA TS 41-37 Part 1 [N1] shall apply

4.3 Rated short-time withstand current (I_k)

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

4.4 Rated peak withstand current (I_p)

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

4.5 Rated duration of short-circuit (t_k)

Clause 4.7 of ENA TS 41-37 Part 1 [N1] [N1] shall apply

4.6 Rated output

Clause 5.5 of IEC 61869-1 shall apply

4.7 Rated accuracy class

Clause 5.6 of IEC 61869-1 shall apply