

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Capacitors for high-voltage alternating current circuit-breakers –  
Part 2: TRV capacitors**

**Condensateurs pour disjoncteurs à courant alternatif haute tension –  
Partie 2: Condensateurs TTR**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## CAPACITORS FOR HIGH-VOLTAGE ALTERNATING CURRENT CIRCUIT-BREAKERS –

### Part 2: TRV capacitors

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IEC 62146-2 has been prepared by IEC technical committee 33: Power capacitors and their applications. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
33/685/FDIS	33/686/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

This International Standard is to be used in conjunction with IEC 62146-1:2013 and IEC 62146-1:2013/AMD1:2016.

A list of all parts in the IEC 62146 series, published under the general title *Capacitors for high-voltage alternating current circuit-breakers*, can be found on the IEC website. The title of the series was changed in 2022 by decision of TC 33, and the title of IEC 62146-1 will be modified accordingly in its next edition.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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# CAPACITORS FOR HIGH-VOLTAGE ALTERNATING CURRENT CIRCUIT-BREAKERS –

## Part 2: TRV capacitors

### 1 Scope

This part of IEC 62146 is applicable to TRV capacitors used on high-voltage alternating current circuit-breakers with rated voltages above 100 kV with 50 Hz or 60 Hz.

TRV capacitors are installed phase to earth, either in parallel to the bushing on dead tank circuit-breakers, or immersed inside the circuit-breaker, or freestanding close to the circuit-breaker. Their function is to limit the transient recovery voltage (TRV) and the rate of rise of recovery voltage (RRRV) on the circuit-breaker. Capacitors in compliance with this document can be used as TRV capacitor.

This document applies to TRV capacitors falling into one or both of the following categories for:

- mounting on or close to air insulated switchgear (AIS) dead tank and live tank circuit-breakers, or
- mounting on gas insulated switchgear (GIS) circuit-breakers.

The testing for each of the above applications is in some cases different.

This document does not apply to grading capacitors installed in parallel to the chambers of the circuit-breaker, which are specified in IEC 62146-1.

This document does not apply to capacitors not directly associated with high-voltage alternating current circuit-breakers.

The object of this document is:

- to define uniform rules regarding performances, testing and rating
- to define specific safety rules
- to provide a guidance for installation and operation

The TRV capacitor is a sub-component for the circuit-breaker and is specified in accordance with the circuit-breaker specifications according to IEC 62271-1, IEC 62271-100, and if applicable to IEC 62271-203.

TRV capacitors are commonly built with composite or ceramic housings (insulators). Those insulators follow IEC 61462 or IEC 62155. Other housings can be used if they can sustain applicable type tests according to IEC 61462 and IEC 62155.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*



IEC 60358-1:2012, *Coupling capacitors and capacitor dividers – Part 1: General rules*

IEC 60815 (all parts), *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions*

IEC 60871-1:2014, *Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V – Part 1: General*

IEC 61462:2007, *Composite hollow insulators – Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods, acceptance criteria and design recommendations*

IEC 62146-1:2013, *Grading capacitors for high-voltage alternating current circuit-breakers – Part 1: General*

IEC 62146-1:2013/AMD1:2016

IEC 62155:2003, *Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V*

IEC 62271-1:2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

IEC 62271-1:2017/AMD1:2021

IEC 62271-100:2021, *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-203, *High-voltage switchgear and controlgear – Part 203: AC gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

IEC GUIDE 109, *Environmental aspects – Inclusion in electrotechnical product standards*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62146-1:2013 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **capacitor**

two-terminal device characterized essentially by its capacitance

[SOURCE: IEC 60050-151:2001, 151-13-28]

#### 3.2

##### **TRV capacitor**

capacitor for installation on high-voltage circuit-breakers phase to earth, either on circuit-breaker bushings or freestanding close to the circuit-breaker to limit TRV or RRRV

Note 1 to entry: The TRV capacitors alone are accessories of the circuit-breaker.