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INTERNATIONAL STANDARD



**Electrical resistance trace heating systems for industrial and commercial applications –
Part 1: General and testing requirements**



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Part 1: General and testing requirements**

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ELECTRICAL RESISTANCE TRACE HEATING SYSTEMS FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS –

Part 1: General and testing requirements

FOREWORD

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IEC/IEEE 62395-1 has been prepared by IEC technical committee 27: Industrial electroheating and electromagnetic processing, in cooperation with Petroleum & Chemical Industry Committee of the IEEE Industrial Applications Society, under the IEC/IEEE Dual Logo Agreement between IEC and IEEE. It is an International Standard.

This document is published as an IEC/IEEE Dual Logo standard.

This first edition cancels and replaces the second edition published in 2013. This edition constitutes a technical revision.

This edition includes the following significant technical changes, apart from general revisions of IEC 62395-1 and harmonization with IEEE 515 [1]¹ and IEEE 515.1 [2], with respect to the previous edition:

- a) Added control and monitoring requirements for fire sprinkler systems and safety shelve.
- b) Provided a supplemental ice bath method for verification of rated output.
- c) Provided constructional and type test requirements for glands used to terminate heating devices to an exposed enclosure.

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

Draft	Report on voting
27/1182A/FDIS	27/1186/RV

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 the rules given in the ISO/IEC Directives, Part 2, available at www.iec.ch/members_experts_events. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

A list of all parts in the IEC 62395 series, published under the general title *Electrical resistance trace heating systems for industrial and commercial applications*, can be found on the IEC website.

The IEC Technical Committee and IEEE Technical Committee have decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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¹ Numbers in square brackets refer to the Bibliography.

INTRODUCTION

IEC/IEEE 62395-1 provides the essential requirements and testing appropriate to electrical resistance trace heating equipment used in industrial and commercial applications. While some of this work already exists in national or international standards, this document has collated much of this existing work and added considerably to it.

IEC/IEEE 62395-2 provides detailed recommendations for the system design, installation and maintenance of electric trace heating systems in industrial and commercial applications.

It is the objective of the IEC/IEEE 62395 series that, when in normal use, electrical trace heating systems operate safely under their defined conditions of use, by

- a) employing heaters of the appropriate construction and meeting the test criteria detailed in IEC/IEEE 62395-1. The construction includes a metallic sheath, braid, screen or equivalent electrically conductive covering;
- b) operating at safe temperatures when designed, installed, and maintained in accordance with IEC/IEEE 62395-2.
- c) having at least the minimum levels of overcurrent and earth-fault protection required in IEC/IEEE 62395-1 and IEC/IEEE 62395-2.

ELECTRICAL RESISTANCE TRACE HEATING SYSTEMS FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS –

Part 1: General and testing requirements

1 Scope

This part of IEC/IEEE 62395 specifies requirements for electrical resistance trace heating systems and includes general test requirements.

This document pertains to trace heating systems that can comprise either factory fabricated or field-assembled (work-site) units, and which can be series and parallel trace heaters or surface heaters (heater pads and heater panels) that have been assembled and/or terminated in accordance with the manufacturer's instructions.

This document also includes requirements for termination assemblies and control methods used with trace heating systems.

This document provides the essential requirements and testing appropriate to electrical resistance trace heating equipment used in industrial and commercial applications. The products complying with this document are intended to be installed by persons who are suitably trained in the techniques required and that only trained personnel carry out especially critical work, such as the installation of connections and terminations. Installations are intended to be carried out under the supervision of a qualified person who has undergone supplementary training in electric trace heating systems.

This document does not include or provide for any applications in potentially explosive atmospheres.

This document does not cover induction impedance or skin effect heating.

Trace heating systems are grouped into different types of applications and the different conditions found during and after installation necessitate different requirements for testing. Trace heating systems are usually for a specific type of installation or application. The product type grouping, application and product attributes are indicated in Table 1.

NOTE Trace heating systems intended for use in explosive atmospheres are the subject of IEC/IEEE 60079-30-1 [3] and IEC/IEEE 60079-30-2 [4].

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute 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 60519-1, *Safety in installations for electroheating and electromagnetic processing – Part 1: General requirements*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60695-11-3:2012, *Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods*