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(istoveten EN 62395-1:2006)

Electrical resistance trace heating systems for industrial and commercial applications - Part 1: General and testing requirements (IEC 62395-1:2006)

ICS 25.180.10

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English version

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

(IEC 62395-1:2006)

Systèmes de traçage par résistance électrique pour applications industrielles et commerciales
Partie 1: Exigences générales et d'essai
(CEI 62395-1:2006)

Elektrische Begleitheizungen
Trace-Widerstandsheizungen
für industrielle und gewerbliche Zwecke
Teil 1: Allgemeine Anforderungen
und Prüfanforderungen
(IEC 62395-1:2006)

This European Standard was approved by CENELEC on 2006-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 62395-1:2006 E

Foreword

The text of document 27/533/FDIS, future edition 1 of IEC 62395-1, prepared by IEC TC 27, Industrial electroheating equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62395-1 on 2006-09-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-06-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62395-1:2006 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62086-1 NOTE Harmonized as EN 62086-1:2005 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-841	2004	International Electrotechnical Vocabulary (IEV) Part 841: Industrial electroheat	-	-
IEC 60068-2-9	-[1)]	Environmental testing Part 2: Tests - Guidance for solar radiation testing	EN 60068-2-9	1999[2)]
IEC 60519-1	2003	Safety in electroheat installations Part 1: General requirements	EN 60519-1	2003
IEC 60519-10	2005	Safety in electroheat installations Part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications	-	-

[1)] Undated reference.

[2)] Valid edition at date of issue.

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Partie 1: Exigences générales et d'essai

Electrical resistance trace heating systems for industrial and commercial applications –

Part 1: General and testing requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL RESISTANCE TRACE HEATING SYSTEMS FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS –

Part 1: General and testing requirements

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 62395-1 has been prepared by IEC technical committee 27: Industrial electroheating equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
27/533/FDIS	27/547/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

IEC 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 standard has collated much of this existing work and added considerably to it.

IEC/TS 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 IEC 62395 that, when in normal use, electrical trace heating systems should operate safely under their defined conditions of use, by

a) employing heaters of the appropriate construction and meeting the test criteria detailed in Part 1. The construction should include a metallic sheath, braid, screen or equivalent electrically conductive covering;

b) operating at safe temperatures when designed, installed, and maintained in accordance with Part 2;

c) having at least the minimum levels of overcurrent and ground fault protection recommended in Part 2.

Some tests of Part 1 differ from similar tests developed by TC 20 and are to be reviewed in the future. These and other tests are almost identical to the tests given in IEC 62086-1:2001[1] and are duplicated in Part 1 for completeness (see notes in the text).

[1] Permission to reproduce the text of several tests from IEC 62086-1:2001 that are not specific to explosive gas atmospheres has been granted by TC 31.

ELECTRICAL RESISTANCE TRACE HEATING SYSTEMS FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS –

Part 1: General and testing requirements

1 Scope and object

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

This standard pertains to trace heating systems that may comprise either factory-fabricated or field-assembled (work-site) units, and which may be series heater cables, parallel heater cables, heater pads or heater panels that have been assembled and/or terminated in accordance with the manufacturer's instructions for connection to voltage supplies up to and including 450-750 V.

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

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

This standard does not cover induction, impedance or skin effect heating.

Trace heating systems can be 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 certified for a specific type of installation or application. Typical applications for the different types of installation include, but are not limited to:

a) installations of trace heating for surface heating on pipes, vessels and associated equipment – applications include:
   - freeze protection and temperature maintenance;
   - hot water lines;
   - oil and chemical lines;
   - sprinkler system mains and supply piping;

b) outdoor exposed area installations of trace heating – applications include:
   - roof de-icing;
   - gutter and down-spout de-icing;
   - catch basins and drains;
   - rail heating[2];

c) installation with embedded trace heating – applications include:
   - snow melting;
   - frost heave protection;
   - floor warming;

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2 Further evaluation may be required to address application specific conditions such as fluctuations in impressed voltage and voltage spikes.