PD CLC IEC/TS 60079-39:2019

BSI Standards Publication

Explosive atmospheres

Part 39: Intrinsically safe systems with electronically controlled spark duration limitation

bsi.

National foreword

This Published Document is the UK implementation of CLC/TS IEC 60079-39:2019. It is identical to IEC TS 60079-39:2015. It supersedes PD IEC/TS 60079-39:2015, which is withdrawn.

BSI, as a member of CENELEC, is obliged to publish CLC/TS IEC 60079-39:2019 as a Published Document. However, attention is drawn to the fact that during the development of this Technical Specification, the UK committee voted against its approval.

The UK committee voted negatively against this Technical Specification based on reservations it has about the level of safety that can be achieved in its application. The UK committee's principal areas of concern are the reliability of the complex energy controlling circuits and the possible adverse effects of RF interference.

The UK participation in its preparation was entrusted to Technical Committee EXL/31/2, Intrinsically safe apparatus.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 June 2015.

Amendments/corrigenda issued since publication

Date	Text affected
30 June 2019	This corrigendum renumbers PD IEC/TS 60079-39:2015 as PD CLC IEC/TS 60079-39:2019

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

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CLC IEC/TS 60079-39

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English Version

Explosive atmospheres - Part 39: Intrinsically safe systems with electronically controlled spark duration limitation (IEC/TS 60079-39:2015)

Atmosphères explosives - Partie 39 : Systèmes de sécurité intrinsèque à limite de la durée d'étincelle contrôlée électroniquement
(IEC/TS 60079-39:2015)

Explosionsgefährdete Bereiche - Teil 39: Eigensichere Systeme mit elektronisch gesteuerter Begrenzung der Funkendauer
(IEC/TS 60079-39:2015)

This Technical Specification was approved by CENELEC on 2017-12-25.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

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

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (*CLC IEC/TS 60079-39:2019*) consists of the text of the IEC/TS 60079-39:2015 prepared by IEC/TC 31 "Equipment for explosive atmospheres".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC/TS 60079-39:2019 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)
Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60079-0	-	Explosive atmospheres -- Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-11	-	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	-
IEC 60079-14	-	Explosive atmospheres - Part 14: Electrical installations design, selection and erection	EN 60079-14	-
IEC 60079-25	-	Explosive atmospheres - Part 25: Intrinsically safe electrical systems	EN 60079-25	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

Part 39: Intrinsically safe systems with electronically controlled spark duration limitation

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 60079-39, which is a technical specification, has been prepared by subcommittee 31G: Intrinsically safe apparatus, of IEC technical committee 31: Equipment for explosive atmospheres.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
31G/236A/DTS	31G/242/RVC

Full information on the voting for the approval of this technical specification 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 in the IEC 60079 series, published under the general title *Explosive atmospheres*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 60079, which is a Technical Specification, is being issued as a “prospective standard for provisional application” in the field of *Explosive Atmospheres – Intrinsically safe systems with electronically controlled spark duration limitation* because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

Intrinsically safe systems with electronically controlled spark duration can provide more power available in intrinsically safe circuits while maintaining the level of protection “ib” or “ic”. In addition to limiting the voltage and current (similar to conventional intrinsically safe circuits), the duration of the spark is limited, which also restricts the amount of energy available for ignition.

The general requirements for the installation of IS equipment are applicable to Power-i circuits.

This new technology allows an expansion in the field of industrial applications using the type of protection Intrinsic Safety ‘i.

This technology, however, requires a new and more extensive approach of the type of protection Intrinsic Safety “i”.

EXPLOSIVE ATMOSPHERES –

Part 39: Intrinsically safe systems with electronically controlled spark duration limitation

1 Scope

This Technical Specification specifies the construction, testing, installation and maintenance of Power-i apparatus and systems which utilise electronically controlled spark duration limitation to maintain an adequate level of intrinsic safety.

This Technical Specification contains requirements for intrinsically safe apparatus and wiring intended for use in explosive atmospheres and for associated apparatus intended for connection to intrinsically safe circuits entering such atmospheres.

This Technical Specification excludes the level of protection “ia” and the use of software-controlled circuits.

This Technical Specification applies to electrical equipment utilising voltages not higher than 40 V d.c. and a safety factor 1,5 for Groups IIB, IIA, I and III. It is also applicable to Group IIC “ic” apparatus with a safety factor 1,0. Group IIC “ib” apparatus with a safety factor 1,5 are restricted to voltages up to 32 V d.c.

This type of protection is applicable to electrical equipment in which the electrical circuits themselves are incapable of causing an explosion of the surrounding explosive atmospheres.

This Technical Specification is applicable to intrinsically safe apparatus and systems which utilise electronically controlled spark duration limitation with the aim of providing more electrical power while maintaining an adequate level of safety.

This Technical Specification is also applicable to electrical equipment or parts of electrical equipment located outside hazardous areas or protected by another type of protection listed in the IEC 60079 series, where the intrinsic safety of the electrical circuits in explosive atmospheres depends on the design and construction of such electrical equipment or parts of such electrical equipment. The electrical circuits located in the hazardous area are evaluated for use in such locations by applying this Technical Specification.

This Technical Specification supplements and modifies the requirements of IEC 60079-0, IEC 60079-11, IEC 60079-14, IEC 60079-17 and IEC 60079-25.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-11, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

IEC 60079-14, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*