UL 60079-25

STANDARD FOR SAFETY

Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems

UL Standard for Safety for Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems, UL 60079-25

Second Edition, Dated December 2, 2011

Summary of Topics

This revision of ANSI/UL 60079-25 dated June 12, 2020 is being issued to update the title page to reflect the reaffirmation of its ANSI approval. No changes in requirements have been made.

This is an Adoption of ANSI/ISA 60079-25, Standard for Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems as ANSI/UL 60079-25.

These requirements are substantially in accordance with Proposal(s) on this subject dated January 24, 2020.

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ISA – International Society of Automation
ANSI/ISA 60079-25-2011 (R2020)
Second Edition

Underwriters Laboratories Inc.
ANSI/UL 60079-25
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Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems

December 2, 2011

(Title Page Reprinted: June 12, 2020)

Commitment for Amendments

This standard is issued jointly by ISA and Underwriters Laboratories Incorporated (UL). Comments or proposals for revisions on any part of the standard may be submitted to UL at any time.

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This ANSI/UL Standard for Safety consists of the Second Edition including revisions through June 12, 2020.

The most recent designation of ANSI/UL 60079-25 as a Reaffirmed American National Standard (ANS) occurred on June 12, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), General Notes, and Preface (ISA). The IEC Foreword is also excluded from the ANSI approval of IEC-based standards.

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General Notes

This UL Standard is based on IEC Publication IEC 60079-25: Second edition, Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems, and is copyrighted by the IEC.

Efforts have been made to synchronize the UL edition number with that of the corresponding IEC standard with which this standard is harmonized. As a result, one or more UL edition numbers have been skipped to match that of the IEC edition number.

This is the common ISA and UL standard for Explosive Atmospheres – Part 25: Intrinsically Safe Electrical Systems. It is the Second edition of ANSI/ISA-60079-25 (superseding ANSI/ISA-12.02.05)-2011 and the Second edition of ANSI/UL 60079-25. The document is a modification of the IEC document and includes U.S. national differences encompassing both additions and deletions of information.

Efforts have been made to synchronize the UL edition number with that of the corresponding IEC standard with which this standard is harmonized. As a result, one or more UL edition numbers have been skipped to match that of the IEC edition number.

As the publication of this standard by UL is being done as a result of a simple reaffirmation of ISA's currently published standard, National Differences are shown using ISA's format. All future publications of this standard will show National Differences using UL's format.

This common standard was prepared by the (ISA) – The International Society of Automation on November 23, 2011 but is now being maintained by Underwriters Laboratories Inc. (UL).

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard adopts the IEC text with national differences.

The requirements in this Standard are not presented in different formats by UL and ISA as this is a simple reaffirmation of an existing ISA standard. Therefore, the UL version of the standard is being published as the ISA version of the standard which illustrates the national differences from the IEC text through the use of legislative text (strike-out and underline).

Interpretations

The interpretation by the SDO of an identical or equivalent standard shall be based on the literal text to determine compliance with the standard in accordance with the procedural rules of the SDO. If more than one interpretation of the literal text has been identified, a revision shall be proposed as soon as possible to each of the SDOs to more accurately reflect the intent.

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Preface (ISA)

The preface, as well as all footnotes and annexes, is included for information purposes and is not part of ANSI/ISA-60079-25-2011(R2015).

This document has been prepared as part of the service of ISA toward a goal of uniformity in the field of instrumentation. To be of real value, this document should not be static but should be subject to periodic review.

The ISA Standards and Practices Department is aware of the growing need for attention to the metric system of units in general, and the International System of Units (SI) in particular, in the preparation of instrumentation standards. The Department is further aware of the benefits to USA users of ISA standards of incorporating suitable references to the SI (and the metric system) in their business and professional dealings with other countries. Toward this end, this Department will endeavour to introduce SI-acceptable metric units in all new and revised standards, recommended practices, and technical reports to the greatest extent possible. *Standard for Use of the International System of Units (SI): The Modern Metric System*, published by the American Society for Testing & Materials as IEEE/ASTM SI 10-97, and future revisions, will be the reference guide for definitions, symbols, abbreviations, and conversion factors.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES – Part 25: Intrinsically Safe Electrical Systems

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International Standard IEC 60079-25 has been prepared by subcommittee 31G: Intrinsically safe apparatus, of IEC technical committee 31: Equipment for explosive atmospheres.

This second edition cancels and replaces the first edition published in 2003 and constitutes a technical revision.

The significant changes with respect to the previous edition are listed below:

– extension of the scope from Group II to Groups I, II and III;

– introduction of level of protection "ic";

– addition of requirements for cables and multi-core cables;

– reference to IEC 60079-11 regarding the termination of intrinsically safe circuit;

– requirements for the assessment of an expanded and clarified intrinsically safe system regarding level of protection “ic”, simple apparatus and faults in multi-core cables;

– introduction of predefined systems and merging of the system requirements for FISCO from IEC 60079-27;

– addition of requirements for simple intrinsically safe systems containing both lumped inductance and lumped capacitance;

– addition of a method for testing the electrical parameters of cables;

– additional information for the use of simple apparatus in systems.

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

FDIS	Report on voting
31G/202/FDIS	31G/203/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 60079 series, 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 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.

FOREWORD

All text of IEC 60079-25:2010 (Edition 2) is included. U.S. National Deviations are shown by ~~strikeout~~ through text deleted and underline under text added. Tables, or portions of tables, that are to be deleted are shown as shaded; figures to be deleted are marked with the overlay "X." There are ten annexes in this standard. Annexes B, D, G, I and J are normative and are considered part of this standard. Annexes A, C, E, F, and H are informative and are not considered part of this standard.

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1 Scope

This ~~part of IEC 60079~~ standard contains the specific requirements for construction and assessment of intrinsically safe electrical systems, type of protection "i", intended for use, as a whole or in part, in Class I, Zone 0, 1, or 2, or Zone 20, 21, or 22 hazardous (classified) locations as defined by the National Electrical Code® (NEC), ANSI/NFPA 70® ~~in locations in which the use of Group I, II or III apparatus is required~~.

NOTE 1 This standard is intended for use by the designer of the system who may be a manufacturer, a specialist consultant or a member of the end-user's staff.

This standard supplements and modifies the general requirements of ANSI/ISA-60079-0 and ANSI/ISA-61241-0 ~~IEC 60079-0~~ and the intrinsic safety standard ANSI/ISA-60079-11 and ANSI/ISA-61241-11 ~~IEC 60079-11~~. Where a requirement of this standard conflicts with a requirement of ANSI/ISA-60079-0, ANSI/ISA-60079-11, ANSI/ISA-61241-0 ~~IEC 60079-0~~ or ANSI/ISA-61241-11 ~~IEC 60079-11~~, the requirement of this standard takes precedence.

~~This standard supplements IEC 60079-11, the requirements of which apply to electrical apparatus used in intrinsically safe electrical systems.~~

The installation requirements of Group II or Group III systems designed in accordance with this standard are specified in the National Electrical Code ANSI/NFPA 70 ~~IEC 60079-14~~.

~~NOTE 2 Group I installation requirements are presently not provided in IEC 60079-14.~~

2 ~~Normative~~ References

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.

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

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

ANSI/ISA-60079-0 (12.00.01)-2009, *Explosive atmospheres – Part 0: Equipment – General Requirements*

~~IEC 60079-11:2006, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*~~

ANSI/ISA-60079-11 (12.02.01), *Explosive Atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

~~IEC 60079-14:2007, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*~~

~~IEC 60079-15, *Electrical apparatus for explosive gas atmospheres – Part 15: Construction, test and marking of type of protection "n" electrical apparatus*~~

ANSI/ISA-60079-15 (12.12.02)-2009 *Electrical Apparatus for Use in Class I, Zone 2 Hazardous (Classified) Locations: Type of Protection "n"*

~~IEC 60079-27:2008, Explosive atmospheres – Part 27: Fieldbus intrinsically safe concept (FISCO)~~