



National Differences For

UL 60079-17

Explosive Atmospheres – Part 17: Electrical Installations Inspection and Maintenance

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

National Differences For

UL 60079-17

Explosive Atmospheres – Part 17: Electrical Installations Inspection and Maintenance

Fifth Edition

Edition Date: MAY 12, 2017

Adoption of IEC 60079-17, Explosive Atmospheres – Part 17: Electrical Installations Inspection and Maintenance (fifth edition issued by IEC November 2013) as a new IEC-based UL standard, UL 60079-17 (IEC 60079-17:2013) with US Differences.

This document provides a single listing of the National Differences included in the UL adoption of the corresponding IEC standard.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this standards document "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this standards document, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this standards document, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

Copyright © 2017 Underwriters Laboratories Inc.

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

Preface

This document provides a single listing of the technical National Differences included in the UL adoption of the corresponding IEC standard.

In its IEC-based standards, UL uses the notations indicated below to identify national difference type, and these types are additionally noted in this document. The standard may not use all types of these deviations.

D1 - These are deviations which are based on basic safety principles and requirements, elimination of which would compromise safety for U.S. consumers and users of products.

D2 - These are deviations based on safety practices. These are deviations for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC - These are deviations based on the component standards and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE - These are deviations based on editorial comments or corrections.

DR - These are deviations based on the national regulatory requirements.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

National Differences

1DV DR Modification of Clause 1 to replace with the following:

This ~~part of the IEC 60079 standard~~ series applies to users and covers factors directly related to the inspection and maintenance of electrical installations within hazardous areas only, where the hazard may be caused by flammable gases, vapours, mists, dusts, fibres or flyings.

It does not include:

- other fundamental installation and inspection requirements for electrical installations;
- the verification of electrical equipment;
- the repair and reclamation of explosion protected equipment (see IEC 60079-19).

This standard supplements the requirements of ~~IEC 60364-6~~ NFPA 70B.

In the case of dusts, fibres or flyings the level of housekeeping may influence the inspection and maintenance requirements.

This standard is intended to be applied where there can be a risk due to the presence of explosive gas or dust mixtures with air or combustible dust layers under normal atmospheric conditions. It does not apply to:

- underground mining areas,
- dusts of explosives that do not require atmospheric oxygen for combustion,
- pyrophoric substances.

Where references are made to other IEC 60079 standards, the reference requirements found in these standards apply as modified by any applicable U.S. National Differences.

2DV DR Modification of Clause 2 references to replace with the following:

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

~~IEC 60079-1, Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"~~

~~IEC 60079-2, Explosive atmospheres — Part 2: Equipment protection by pressurized enclosures "p"~~

~~IEC 60079-7, Explosive atmospheres — Part 7: Equipment protection by increased safety "e"~~

~~IEC 60079-10-1, Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres~~

~~IEC 60079-10-2, Explosive atmospheres – Part 10-2: Classification of areas – Combustible dust atmospheres~~

~~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~~

~~IEC 60079-15, Explosive atmospheres – Part 15: Equipment protection by type of protection "n"~~

~~IEC 60079-19, Explosive atmospheres – Part 19: Equipment repair, overhaul and reclamation~~

~~IEC 60079-31, Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"~~

~~IEC 60364-6, Low-voltage electrical installations – Part 6: Verification~~

~~IEC 61241-4, Electrical apparatus for combustible dust atmospheres – Part 4: Type of protection "pD"~~

ISA 60079-10-1, Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres

ISA 60079-10-2, Explosive atmospheres – Part 10-2: Classification of areas – Combustible dust atmospheres

ISA 60079-29-1 (12.13.01), Explosive atmospheres – Part 29-1: Gas Detectors – Performance Requirements for Detectors for Flammable Gases

NFPA 70, National Electrical Code

NFPA 70B, Recommended Practice for Electrical Equipment Maintenance

NFPA 70E, Standard for Electrical Safety in the Workplace

UL 121203 Portable Electronic products suitable for use in Class I and II, Division 2, Class I, Zone 2 and Class III, Division 1 and 2 hazardous (classified) locations

UL 60079-0 Explosive atmospheres – Part 0: Equipment – General requirements

UL 60079-1 Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"

UL 60079-2 Explosive atmospheres – Part 2: Equipment protection by pressurized enclosures "p"

UL 60079-7 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

UL 60079-11 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"

UL 60079-15 Explosive atmospheres – Part 15: Equipment protection by type of protection "n"

UL 60079-31 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

3DV DR Modification of the first paragraph and NOTE, to replace with the following:

For the purposes of this document, the terms and definitions given in ~~IEC 60079-0~~ UL 60079-0 and the following apply.

~~NOTE Additional definitions applicable to explosive atmospheres can be found in IEC 60050-426.~~

3.4DV DR Modification of Clause 3.4 to add the following Note 2 after Note 1:

Note 2 to entry: The National Electrical Code defines hazardous areas as hazardous (classified) locations.

3.9DV DR Modification of Clause 3.9 to add the following Note:

Note to entry: The National Electrical Code refers to non-hazardous areas as unclassified locations.

3.15ADV D1 Addition of Clause 3.15:

gas free work permit (GFWP)

permit, resulting from approval by an authorized person under the application of a defined documented management work process, stating that work involving potential ignition sources may be performed in a hazardous (classified) location by ensuring that the atmosphere is free of ignitable concentrations of flammable gases or vapors

4.1DV DE Modification of Clause 4.1 to replace with the following:

For the purposes of inspection and maintenance, up-to-date documentation (verification dossier) including any modification records, of the following items shall be available:

a) zone classification of areas and, if included, the equipment protection level (EPL) required for each location (see IEC ISA 60079-10-1 and IEC ISA 60079-10-2),

b) for gases: equipment group (IIA, IIB or IIC) and temperature class requirements,

c) EPL (equipment protection level), when provided,

e d) for dusts: equipment group (IIIA, IIIB or IIIC) and maximum surface temperature requirements,

d e) equipment characteristics e.g. temperature ratings, type of protection, IP rating, corrosion resistance,

e f) records sufficient to enable the explosion protected equipment to be maintained in accordance with its type of protection (see ~~IEC 60079-14~~ NEPA 70), (for example list and location of equipment, spares, certificates, technical information),

f g) copies of previous inspection records,

g h) copy of the additional initial inspection records ~~as detailed in IEC 60079-14.~~

NOTE The EPL (or Equipment Protection Level) may appear in the product marking and documentation. EPLs are designated as G for gas, D for dust, or M for mining and are then followed by a letter (a, b, or c) to give the user a better understanding as to whether the equipment provides either (a) a "very high," (b) a "high," or (c) an

UL COPYRIGHTED MATERIAL -
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents
Document Sharing Hub

"enhanced" level of protection against ignition of an explosive atmosphere. For example, an Class I, Zone 1 AEx d IIC T3 luminaire (which is suitable by protection concept for an application in Zone 1) may additionally be marked with an EPL or "Gb" to indicate that it was provided with a high level of protection, such as Class I, Zone 1 AEx d IIC T3 Gb.

~~Requirements for other documentation that may be necessary are provided in IEC 60079-14 and IEC 60079-19.~~

4.2DV D2 Modification of Clause 4.2 to replace with the following:

The inspection and maintenance of installations covered by this standard ~~shall~~ should be carried out only by experienced personnel, whose training has included instruction on the various types of protection and installation practices, the requirements of this standard, the relevant national regulations/company rules applicable to the installation and on the general principles of area classification (see Annex B). Appropriate continuing education or training ~~shall~~ should be undertaken by personnel on a regular basis. Evidence of the relevant experience and training claimed ~~shall~~ should be documented and available.

4.3.1.1DV.1 DE Modification of Clause 4.3.1.1, first paragraph to replace with the following:

4.3.1.1DV.1.1 ~~Before a plant also referred to as "facility" or equipment is brought into service, it shall be given an initial inspection. As part of the plant commissioning and start up procedures, initial inspection and other additional requirements are provided in IEC 60079-14.~~

4.3.1.2DV.1 D2 Modification of Clause 4.3.1.2, second paragraph to replace with the following:

4.3.1.2DV.1.1 The inventory and identification tagging method used for managing explosion protected equipment ~~shall~~ should be capable of tracking the replacement of equipment with replacement or repaired equipment, which may have different certification markings and details to the original equipment.

4.3.1.3DV DR Modification of Clause 4.3.1.3, NOTE to replace with the following:

NOTE This assessment is intended to apply to items in an installation that predate any requirement for the use of ~~certified~~ identified (see NFPA 70) electrical equipment in hazardous areas.

4.3.3DV.1 D1 Modification of Clause 4.3.3, first paragraph to replace with the following:

4.3.3DV.1.1 Types of inspections include:

a) Initial inspections used to check that the selected type of protection and its installation are appropriate based on detailed inspections. ~~The requirements are covered in IEC 60079-14. They are to be detailed inspections in accordance with Tables 1, 2, and 3 or modified tables in accordance with 5.7 as appropriate.~~

NOTE A full initial inspection is not required if an equivalent inspection has been performed by the manufacturer and it is unlikely that the installation process will have affected those items inspected by the manufacturer. For example, an initial detailed inspection of internal flamepaths of a flameproof motor or the internal joints of a Zone 21 AEx tb motor is not required; however, the terminal housing cover, which would have been removed to facilitate connection of the field wiring, should be inspected after as part of the installation process.

b) Periodic inspections which may be visual, close or detailed in accordance with Tables 1, 2 and 3, or modified tables in accordance with 5.7, as appropriate.

c) Sample inspections which may be visual, close or detailed in accordance with Tables 1, 2 and 3, or modified tables in accordance with 5.7, as appropriate. The size and composition of all samples shall be determined with regard to the purpose of the inspection.

Sample inspections should not be expected to reveal faults of a random nature, such as loose connections, but should be used to monitor the effects of environmental conditions, vibration, inherent design weakness, etc.

d) Continuous supervision utilizing the visual or close inspections in accordance with Tables 1, 2 and 3, or modified tables in accordance with 5.7, as appropriate and in accordance with 4.5. Where the installation falls outside the capability for continuous supervision it shall be subject to periodic inspection.

The results of all (a – d above) inspections shall be recorded and retained, and may lead to a need for further actions. The requirements for continuous supervision are detailed in 4.5.5.

4.5.3.1DV D1 Modification of Clause 4.5.3.1 to replace with the following:

A technical person with executive function shall be identified for each installation and shall should carry out the following tasks:

a) assess the viability of the continuous supervision concept in light of the competence, skills and availability of personnel and their experience in relation to the particular installation;

b) define the scope of equipment to be considered under continuous supervision taking account of environmental conditions, frequency of attendance, special knowledge, work flow and location of equipment;

c) determine the frequency of inspection, the grade of inspection and the content of reporting such as to enable meaningful analysis of equipment performance;

d) ensure that the documentation referred to in 4.1 and 4.5.5 is made available;

e) ensure that skilled personnel are familiar with:

- 1) the concept of continuous supervision together with the needs for any reporting or analysis function;
- 2) the installation they attend;
- 3) the inventory of explosion protected equipment within their area of responsibility;

f) arrange for verification that:

- 1) process of continuous supervision is being adhered to;
- 2) skilled personnel are being given adequate time to carry out their inspections;
- 3) skilled personnel are receiving appropriate training and refresher training;
- 4) documentation is being completed correctly;
- 5) there is adequate technical support readily available to the skilled personnel;
- 6) the state of the electrical installation is known.

4.5.6DV.1 DR Modification of Clause 4.5.6, third paragraph to replace with the following:

4.5.6DV.1.1 The knowledge requirements of the technical person with executive function shall ~~should~~ include a full understanding of the provisions of IEC ISA 60079-10-1, IEC ISA 60079-10-2 as applicable to the location, IEC 60079-14 and NFPA 70, and IEC 60079-19 in relation to area classification and/or EPLs and selection, erection, installation, repair and reclamation of equipment.

4.6.1DV.1 D2 Modification of Clause 4.6.1, second paragraph to replace with the following:

4.6.1DV.1.1 Replacement parts shall be in accordance with the applicable documentation. Alterations to equipment shall not be carried out without appropriate authorization where they adversely affect the safety explosion protection of the equipment as stated in the applicable documentation.

4.6.1DV.2 D2 Modification of Clause 4.6.1, third paragraph to delete. It does not apply.

~~Repairs and reclamation of equipment shall be carried out in accordance with IEC 60079-19.~~

4.6.2DV D2 Modification of Clause 4.6.2 title and paragraph to replace with the following:

Maintenance of flexible cords and cables

Flexible cords and cables, flexible conduits, and their terminations are particularly prone to damage. They shall be inspected at regular intervals and shall be replaced if found to be damaged or defective.

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM  **Documents**
Document Sharing Hub