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BSI Standards Publication

Explosive atmospheres

Part 42: Electrical Safety Devices for the control of potential ignition sources from Ex-Equipment

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National foreword

This Published Document is the UK implementation of IEC TS 60079-42:2019.

The UK participation in its preparation was entrusted to Technical Committee EXL/31, Equipment for explosive atmospheres.

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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colour inside

Explosive atmospheres
Part 42: Electrical Safety Devices for the control of potential ignition sources from Ex-Equipment

Atmospheres explosive
Partie 42: Dispositifs électriques de sécurité pour la commande des sources potentielles d'inflammation des appareils Ex

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FOREWORD

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International Technical Specification IEC 60079-42 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

The text of this Technical Specification is based on the following documents:

FDIS	Report on voting
31/1418/DTS	31/1441/RVDTS

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.

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

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- withdrawn,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

This International Technical Specification is to be read in conjunction with the International Standards for the specific types of protection listed in the ISO 80079-37 and the IEC 60079 series.

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

Generally, the probability of potential ignition sources becoming effective is mitigated by applying the protection measures according to the IEC 60079 and the ISO 80079 series. If the probability of an ignition source becoming effective cannot be mitigated by these measures, it could be controlled by using a suitable safety device. The combination of the safety device and the Ex Equipment may then comply with the relevant standards of the IEC 60079 series and the ISO 80079 series with respect to the Equipment Protection Level.

Safety devices, which are used as part of the protection of equipment for explosive atmospheres for control of potential ignition sources, should consider reliability for the intended purpose to recognise the principles for the classification of hazardous areas and explosion protection techniques. This document provides guidance for the application of safety functions to provide a reduction of ignition risk for equipment as part of the IEC 60079 series and ISO 80079 series. It relies on relevant IEC and ISO standards for safety related control systems.

EXPLOSIVE ATMOSPHERES

Part 42: Electrical Safety Devices for the control of potential ignition sources from Ex-Equipment

1 Scope

This part of IEC 60079, which is a Technical Specification, provides guidance for equipment manufacturers where electrical safety devices are used to reduce the likelihood of potential ignition sources becoming effective in Ex Equipment located in Explosive Atmospheres. Electrical safety devices perform a safety function to control potential ignition sources from both, electrical or non-electrical Ex Equipment in explosive atmospheres.

This document may also be applied to a combination of elements performing a safety function. For example:

- Sensor
- Logic system
- Final element

This Technical Specification can also be used for assessing the safety device independently, without being designed for a specific Ex Equipment.

A safety device can be a measure to achieve a required EPL of the Ex Equipment with respect to a potential ignition source. The combination of the safety device and the Ex Equipment could then comply with the relevant standards of the IEC 60079 series and the ISO 80079 series with respect to the Equipment Protection Level. However, increasing the EPL of Ex Equipment by the simple addition of a safety device is not within the scope of this document.

This document does not apply to:

- mechanical control equipment such as pressure relief valves, mechanical governors and other mechanical safety devices
- the use of gas detection
- control equipment to prevent the occurrence of explosive atmospheres, e.g. inerting systems and ventilation systems
- mitigation of an explosion

NOTE Some potential ignition sources might not be practicably controlled by safety devices.

Electrical safety devices, where the level of safety integrity is identified under other parts of the IEC 60079 series, this document can be used as a reference for the realization of the level of safety integrity.

Electrical safety devices may be installed either as part of or separate to the Ex Equipment under control (EEUC) and may be located inside or outside the hazardous area.