



SLOVENSKI STANDARD
oSIST prEN IEC 60079-42:2024
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Eksplzivne atmosfere - 42. del: Električne varnostne naprave za nadzor potencialnih virov vžiga ex- opreme

Explosive atmospheres - Part 42: Electrical safety devices for the control of potential ignition sources for ex-equipment

Atmosphères explosive - Partie 42: Dispositifs électriques de sécurité pour la commande des sources potentielles d'inflammation des appareils ex

Ta slovenski standard je istoveten z: prEN IEC 60079-42:2024

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TITLE:

Explosive atmospheres - Part 42: Electrical safety devices for the control of potential ignition sources for Ex-Equipment

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES

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**Part 42: Electrical safety devices for the control of potential ignition
sources from Ex Equipment, Type of Protection "f"**

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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.

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Users of this document are advised that interpretation sheets clarifying the interpretation of this document can be published. Interpretation sheets are available from the IEC webstore and can be found in the "history" tab of the page for each document.

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

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

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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.

113

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

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

- 117 • reconfirmed,
- 118 • withdrawn,
- 119 • replaced by a revised edition, or
- 120 • amended.

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

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125

INTRODUCTION

126 Generally, the probability of potential ignition sources becoming effective is mitigated by
127 applying the protection measures according to the IEC 60079 and the ISO 80079 series. If the
128 probability of an ignition source becoming effective and none of the aforementioned protection
129 measures can be applied, this probability could be reduced by using a suitable safety device.
130 The combination of the safety device and the Ex Equipment could then comply with the relevant
131 standards of the IEC 60079 series and the ISO 80079 series with respect to the Equipment
132 Protection Level.

133 Safety devices, which are used as part of the protection of Ex Equipment for control of potential
134 ignition sources, should consider reliability for the intended purpose to recognise the principles
135 for the classification of hazardous areas and explosion protection techniques. This document
136 provides requirements for the application of safety functions to provide a reduction of ignition
137 risk for Ex Equipment as part of the IEC 60079 series and ISO 80079 series. It relies on relevant
138 IEC and ISO standards for safety related control systems. However, some of the Functional
139 Safety concepts can't be related directly to the Hazardous Area classification.

140 This document does not specify the standard that will be used for the assessment of the integrity
141 of the safety function (for example, IEC 61508, IEC 61511, IEC 62061 or ISO 13849-1/2) to
142 give the manufacturer of the equipment and the safety device the opportunity to choose the
143 relevant standard. The main requirements are based on risk reduction factors. This addresses
144 the plurality of safety functions and different types of reaction to different situations (energize
145 to trip, de-energize to trip, immediate reaction, delayed reaction, ...).

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EXPLOSIVE ATMOSPHERES

Part 42: Electrical safety devices for the control of potential ignition sources from Ex Equipment, Type of Protection "f"

1 Scope

This part of IEC 60079 specifies the construction and testing of electrical safety devices to reduce the likelihood of potential ignition sources becoming effective in Ex Equipment located in Explosive Atmospheres. In the context of this document electrical safety devices perform a safety function to control potential ignition sources from both, electrical or non-electrical Ex Equipment in explosive atmospheres.

In the context of this document, a safety device could be an element of a safety function, for example, sensor, logic or final element, or a combination of elements performing a complete safety function.

A safety function can be a manual or an automatic action.

This document 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 Equipment Protection Level (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. 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;
- safety devices to prevent the occurrence of explosive atmospheres, for example inerting systems, pressurization systems and ventilation systems; or
- mitigation of an explosion.

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

For 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 could be installed either as part of or separate to the Ex Equipment under control (ExEUC) and could be located inside or outside the hazardous area.

This document is not applicable where another Type of Protection requires a Specific Condition of Use for a safety device but does not reference this document. For example an overload protective device for and Ex "e" motor.

185 2 Normative references

186 The following documents are referred to in the text in such a way that some or all of their content
187 constitutes requirements of this document. For dated references, only the edition cited applies.
188 For undated references, the latest edition of the referenced document (including any
189 amendments) applies.

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

191 IEC 61508-4, *Functional safety of electrical/electronic/programmable electronic safety-related*
192 *systems – Part 4: Definitions and abbreviations (see <http://www.iec.ch/functionalsafety>)*

193 IEC 61511-1, *Functional safety - Safety instrumented systems for the process industry sector -*
194 *Part 1: Framework, definitions, system, hardware and application programming requirements*

195 ISO 80079-37, *Non Electrical Equipment for Explosive Atmospheres – Non electrical Type of*
196 *Protection constructional safety 'c', control of ignition Source 'b', liquid immersion 'k'*

197 3 Terms and definitions

198 For the purposes of this document, the terms and definitions given in IEC 60079-0, IEC 61508-4,
199 IEC 61511-1, ISO 80079-37 and the following apply.

200 ISO and IEC maintain terminological databases for use in standardization at the following
201 addresses:

- 202 • IEC Electropedia: available at <http://www.electropedia.org/>
- 203 • ISO Online browsing platform: available at <http://www.iso.org/obp>

204 3.1

205 control of potential ignition source “f”

206 Type of Protection whereby the potential ignition source of an ExEUC needs to be controlled
207 by a safety device

208 3.2

209 safety device

210 device intended for use inside or outside explosive atmospheres but required for or
211 contributing to the safe functioning of Ex Equipment and protective systems with respect to
212 the risks of explosion

213 Note 1 to entry: For the context of this document safety devices differ from the term devices used in the IEC
214 61508 and IEC 61511 series. Safety devices can be compared to the terms like “safety-related system (IEC
215 61508)” or “safety instrumented system (IEC 61511)”.

216 [SOURCE: IEC 60079-0:202X with Note 1 to entry added.]

217 3.3

218 Ex Equipment under control

219 ExEUC

220 equipment which contains a potential ignition source and requires a safety device

221 3.4

222 risk reduction factor

223 RRF

224 factor by which the probability of the occurrence of a hazardous condition is reduced by the
225 safety device