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Standards

Irish Standard  
I.S. EN 60079-27:2008

# Explosive atmospheres -- Part 27: Fieldbus intrinsically safe concept (FISCO) (IEC 60079-27:2008 (EQV))

## I.S. EN 60079-27:2008

*Incorporating amendments/corrigenda issued since publication:*

|  |   |   |                         |
|--|---|---|-------------------------|
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English version

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

Atmosphères explosives -  
Partie 27: Concept de réseau de terrain  
de sécurité intrinsèque (FISCO)  
(CEI 60079-27:2008)

Explosionsfähige Atmosphäre -  
Teil 27: Konzept für eigensichere  
Feldbussysteme (FISCO)  
(IEC 60079-27:2008)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## I.S. EN 60079-27:2008

EN 60079-27:2008

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### Foreword

The text of document 31G/169/CDV, future edition 2 of IEC 60079-27, prepared by SC 31G, Intrinsically-safe apparatus, of IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC Parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60079-27 on 2008-04-01.

This European Standard supersedes EN 60079-27:2006.

The significant change with respect to EN 60079-27:2006 is that EN 60079-27:2008 replaces the FNICO requirements with the requirements of an "ic" FISCO system.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-04-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive (94/9/EC). See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 60079-27:2008 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

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

| <u>Publication</u> | <u>Year</u>     | <u>Title</u>   | <u>EN/HD</u>                 | <u>Year</u>                |
|--------------------|-----------------|--|------------------------------|----------------------------|
| IEC 60079-0 (mod)  | - <sup>1)</sup> | Explosive atmospheres -<br>Part 0: Equipment - General requirements  | EN 60079-0                   | 2006 <sup>2)</sup>         |
| IEC 60079-11       | - <sup>1)</sup> | Explosive atmospheres -<br>Part 11: Equipment protection by intrinsic<br>safety "i"  | EN 60079-11                  | 2007 <sup>2)</sup>         |
| IEC 60079-14       | - <sup>1)</sup> | Electrical apparatus for explosive gas<br>atmospheres -<br>Part 14: Electrical installations in hazardous<br>areas (other than mines)                | EN 60079-14                  | 2003 <sup>2)</sup>         |
| IEC 60079-15       | - <sup>1)</sup> | Electrical apparatus for explosive gas<br>atmospheres -<br>Part 15: Construction, test and marking of<br>type of protection "n" electrical apparatus | EN 60079-15                  | 2005 <sup>2)</sup>         |
| IEC 60079-25       | - <sup>1)</sup> | Electrical apparatus for explosive gas<br>atmospheres -<br>Part 25: Intrinsically safe systems   | EN 60079-25<br>+ corr. April | 2004 <sup>2)</sup><br>2006 |
| IEC 61158-2        | - <sup>1)</sup> | Industrial communication networks -<br>Fieldbus specifications -<br>Part 2: Physical layer specification and service<br>definition                   | EN 61158-2                   | 2008 <sup>2)</sup>         |

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

**Annex ZZ**  
(informative)

**Coverage of Essential Requirements of EC Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in Annex II of the EC Directive 94/9/EC:

- ER 1.0.1, ER 1.0.2, ER 1.0.3, ER 1.0.4, ER 1.0.5 (partly)
- ER 1.1
- ER 1.2.1, ER 1.2.2, ER 1.2.4 (partly), ER 1.2.6, ER 1.2.7 (partly)
- ER 1.3.1, ER 1.3.2
- ER 1.4.1
- ER 2.0.1, ER 2.0.2
- ER 2.1.1, ER 2.2.1

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

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# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

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**Explosive atmospheres –  
Part 27: Fieldbus intrinsically safe concept (FISCO)**

**Atmosphères explosives –  
Partie 27: Concept de réseau de terrain de sécurité intrinsèque (FISCO)**





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# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

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**Explosive atmospheres –  
Part 27: Fieldbus intrinsically safe concept (FISCO)**

**Atmosphères explosives –  
Partie 27: Concept de réseau de terrain de sécurité intrinsèque (FISCO)**

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**M**

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**EXPLOSIVE ATMOSPHERES –****Part 27: Fieldbus intrinsically safe concept (FISCO)**

## FOREWORD

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International Standard IEC 60079-27 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 issued in 2005. It constitutes a technical revision.

The significant change with respect to the first edition is that this standard replaces the FNICO requirements with the requirements of an "ic" FISCO system.

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

|             |                  |
|-------------|------------------|
| CDV         | Report on voting |
| 31G/169/CDV | 31G/176A/RVC     |

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 the IEC 60079 series, under the general title: *Explosives 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.

## EXPLOSIVE ATMOSPHERES –

### Part 27: Fieldbus intrinsically safe concept (FISCO)

#### 1 Scope

This part of IEC 60079 contains the details of apparatus, systems and installation practice for use with the Fieldbus Intrinsically Safe Concept (FISCO). It is based on the concepts of Manchester encoded, bus powered systems designed in accordance with IEC 61158-2 which is the physical layer standard for Fieldbus installations.

The constructional and installation requirements of FISCO apparatus and systems are determined by IEC 60079-11, IEC 60079-14, and IEC 60079-25, except as modified by this standard. Part of a Fieldbus device may be protected by any of the methods of explosion protection listed in IEC 60079-0, appropriate to the zone of intended use. In these circumstances, the requirements of this standard apply only to that part of the apparatus directly connected to the intrinsically safe trunk or spurs.

NOTE 1 Certification to the FISCO requirements does not prevent apparatus also being certified and marked to IEC 60079-11 in the conventional manner so that they may be used in other systems. Some apparatus certified before this standard was published but not necessarily complying with the electrical parameters of this standard may be marked "Suitable for FISCO systems". This apparatus may be accepted in a FISCO system, if the comparison of the electrical parameters  $U_0$ ,  $I_0$ ,  $P_0$ , with  $U_i$ ,  $I_i$ ,  $P_i$ , demonstrate compatibility with the remainder of the system, and all the other requirements of this standard are met.

NOTE 2 A typical system is illustrated in Annex A.

NOTE 3 Generally, "ic" FISCO systems are intended for use in zone 2 locations. FISCO systems are predominantly intended for use in zone 1 and 2 locations, but may enter zone 0 locations if specifically permitted to do so by the documentation.

NOTE 4 Edition 1 of this standard introduced the FNICO concept to cover the use of Fieldbus concepts in zone 2 utilizing the energy-limited [nL] concept. This standard substitutes the "ic" concept for the energy-limited concept, but permits the continued use of FNICO and nL apparatus.

#### 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 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, *Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)*

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

IEC 60079-25, *Electrical apparatus for explosive gas atmospheres – Part 25: Intrinsically safe systems*

IEC 61158-2, *Digital data communications for measurement and control – Fieldbus for use in industrial control systems – Part 2: Physical layer specification and service definition*

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