

ICS 29.260.20

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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 3836.22-2023**

Replacing GB/T 3836.22-2017

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**Explosive atmospheres - Part 22: Protection of equipment and  
transmission system using optical radiation**

爆炸性环境 第22部分：光辐射设备和传输系统的保护措施

**(English Translation)**

**Issued on: December 28, 2023**

**Implemented on: July 1, 2024**

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**Issued by: State Administration for Market Regulation, China National  
Standardization Administration**

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## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document is Part 22 of GB (T) 3836 "Explosive Environments": GB (T)3836 has released the following parts:

---Part 1: General requirements for equipment;

---Part 2: Equipment protected by flameproof enclosure "d";

- Part 3: Equipment protected by increased safety type "e";
- Part 4: Equipment protected by intrinsically safe "i";
- Part 5: Equipment protected by positive pressure enclosure "p";
- Part 6: Equipment protected by liquid immersion type "o";
- Part 7: Equipment protected by sand-filled mold "q";
- Part 8: Equipment protected by type "n";
- Part 9: Equipment protected by casting type "m";
- Part 11: Test methods and data for classification of gas and vapor material properties;
- Part 12: Test methods for characteristics of combustible dust substances;
- Part 13: Repair, overhaul, restoration and modification of equipment;
- Part 14: Place classification for explosive gas environments;
- Part 15: Design, selection and installation of electrical devices;
- Part 16: Inspection and maintenance of electrical installations;
- Part 17: Equipment protected by positive pressure rooms "p" and artificial ventilation rooms "v";
- Part 18: Intrinsically safe electrical systems;
- Part 20: Equipment with an equipment protection level (EPL) of Ga level;
- Part 21: Application of production quality management system for explosion-proof products;
- Part 22: Protection measures for optical radiation equipment and transmission systems;
- Part 23: Class I EPLMa level equipment for use in gas and/or coal dust environments;
- Part 24: Equipment protected by special type "s";
- Part 25: Process sealing requirements between flammable process fluids and electrical systems;
- Part 26: Guidelines for Static Electricity Hazards;
- Part 27: Static electricity hazard test;
- Part 28: Basic methods and requirements for non-electrical equipment for explosive atmospheres;
- Part 29: Structural safety type "c" of non-electrical equipment for explosive atmospheres, controlled ignition source type "b", liquid immersion type "k";

- Part 30: Equipment and components for explosive environments in underground mines;
- Part 31: Equipment protected by dust ignition resistant enclosure "t";
- Part 32: Electronically controlled spark time limit intrinsically safe systems;
- Part 33: Equipment for severe working conditions;
- Part 34: Complete sets of equipment;
- Part 35: Classification of explosive dust environment locations;
- Part 36: Electrical safety devices to control potential ignition sources of explosion-proof equipment;

This document replaces GB/T 3836.22-2017 "Explosive environments Part 22: Protective measures for optical radiation equipment and transmission systems", Compared with GB/T 3836.22-2017, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- Changed the scope of the file (see Chapter 1, Chapter 1 of the:2017 edition);
- Changed the general requirements for optical radiation equipment (see Chapter 4, Chapter 4 of the:2017 edition);
- Changed the requirements for explosion-proof types of optical radiation equipment (see Chapter 5, Chapter 5 of the:2017 edition);
- Changed the requirements for type inspection and testing (see Chapter 6, Chapter 6 of the:2017 edition);
- Changed the marking requirements (see Chapter 7, Chapter 7 of the:2017 edition);
- Changed the ignition risk assessment (see Appendix C, Appendix C of the:2017 version):

This document is modified to adopt IEC 60079-28:2015 "Explosive atmospheres Part 28: Protective measures for optical radiation equipment and transmission systems" "Shi":

Compared with IEC 60079-28:2015, this document has made the following structural adjustments:

- Appendix B corresponds to Appendix D of IEC 60079-28:2015;
- Appendix D corresponds to Appendix B of IEC 60079-28:2015:

The technical differences between this document and IEC 60079-28:2015 and their reasons are as follows:

- The applicable and non-applicable scope of this document has been changed (see Chapter 1) to be consistent with the international standard interpretation sheet IEC 60079-28:2015/ISH1.2019 consistent;

---Added references to GB/T 2900.35 (see Chapter 3) and GB/T 14733.12 (see Chapter 3) to adapt to the specific conditions of our country Condition;

---Replaced IEC 60079-0 with normatively quoted GB/T 3836.1 (see Chapter 3, Chapter 4, 5:3:2, 6:1:1, Chapter 7), to adapt to my country's technical conditions and increase operability;

---Replaced IEC 60079-15 (see 5.3:2) with normatively quoted GB/T 3836.3 to adapt to my country's technical conditions and increase Operability;

---Replaced IEC 60079-11 (see 5.3:2) with normatively quoted GB/T 3836.4 to adapt to my country's technical conditions and increase Operability:

The following editorial changes have been made to this document:

---In order to be consistent with the existing standard series, the document name is changed to "Explosive Atmospheres Part 22: Optical Radiation Equipment and Transmission Systems protective measures";

---Added information about ISO and IEC terminology database addresses in terms and definitions;

---Replaced the unreferenced IEC 60050 (all parts) with GB/T 2900 (all parts) and moved it from Chapter 2 to Reference literature;

---3.12 Notes on typical optical cable structures have been added to the terms and definitions of "optical cable";

---Replaced the informatively cited international documents with Chinese documents, and revised the references:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

## Introduction

GB (T) 3836 "Explosive Environment" aims to establish the basic technical requirements for equipment and applications related to explosive environments, covering it covers all aspects of the design, manufacturing, inspection, selection, installation, inspection, maintenance, repair and site classification of equipment for explosive environments, using divisional Sub-standard form, including but not limited to the following parts:

---Part 1: General requirements for equipment;

---Part 2: Equipment protected by flameproof enclosure "d";

---Part 3: Equipment protected by increased safety type "e";

---Part 4: Equipment protected by intrinsically safe "i";