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中华人民共和国国家标准

GB 3836.4－2010
Replace GB 3836.4－2000

Explosive Atmospheres—
Part 4: Equipment Protection by Intrinsic Safety "i"

爆炸性环境　第4部分：由本质安全型"i"保护的设备

(IEC 60079-11:2006, MOD)

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Contents

allowed to use earth wire as loop in general, excluding those needing ground protection;

——Delete b) in 10.1.5.2 and combine a) into 10.1.5.2.

This part replaces GB 3836.4–2000 "Electrical Apparatus for Explosive Gas Atmospheres-Part 4: Intrinsic Safety".

This part contains the following main changes with regard to GB 3836.4–2000:

——Change the standard name;

——Add the ic protection level (nL in n type);

——Add Appendix F (Normative) Alternative Separation Distances for Assembled Printed Circuit Boards and Separation of Components;

——Add constructional requirements for large current spark test device;

——Add Appendix E Transient Energy Test;

——Modify temperature classification table of track of printed circuit board;

——Add technical requirements for the use of resistance limited capacity discharge;

——Introduce the method to treat large-current low-voltage cell ignition energy;

——Introduce the method to measure the maximum pressure of sealed cell box;

——Introduce the treatment method of possible voltage rise in IC under fault condition;

——Specify the method of SMD infallible connection;

——Introduce the treatment method of spark ignition energy of the combination circuit of inductance and capacitance;

——Add voltage test for transformer;

——Introduce the assessment method for the reduction of capacitance r.m.s. of series resistance protective capacitor;

——Add permitted short-circuit current and capacitance value of Group I circuit in the critical ignition data sheet (Table A.1).

Appendixes A, B, D and F in this part are normative, and Appendixes C and E are informative.

This part is proposed by China Electrical Equipment Industrial Association.

This part is under the jurisdiction of National Technical Committee on Explosion Protected Electrical Apparatus of Standardization Administration of China (SAC/TC9).

Chief drafting organizations of this part: Nanyang Explosion Protected Electrical Apparatus Research Institute, Shanghai Institute of Process Automation Instrumentation, China National Quality Supervision and Test Centre for Explosion Protected Electrical Products, Shenzhen ExSaf Electronics Co., Ltd., Beijing Windbell Technology Co., Ltd., Shenzhen Ocean King Lighting Technology Co., Ltd., Gulf Security Technology Co., Ltd., Henan Hanwei Electronics Co., Ltd., Xi'an System Sensor Electronics, Ltd., Fuhshun Branch Institute of Coal Science Study Institute, Nanjing NewPwr Electronics Co., Ltd., etc..

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This part was issued in August 1983 for the first time, revised in October 2000 for the first time and this is revised for the second time.

Explosive Atmospheres—

Part 4: Equipment Protection by Intrinsic Safety "i"

1 Scope

This part of GB 3836 specifies the terms, construction, testing and marking requirements of intrinsically safe apparatus intended for use in an explosive gas atmosphere and for associated apparatus, which is intended for connection to intrinsically safe circuits which enter such atmospheres.

This type of protection is applicable to electrical apparatus in which the electrical circuits themselves are incapable of causing an explosion in the surrounding explosive atmospheres.

This part is also applicable to electrical apparatus or parts of electrical apparatus located outside the explosive gas atmosphere or protected by another type of protection listed in GB 3836.1–2010, where the intrinsic safety of the electrical circuits in the explosive gas atmosphere may depend upon the design and construction of such electrical apparatus or parts of such electrical apparatus. The electrical circuits exposed to the explosive gas atmosphere are evaluated for use in such an atmosphere by applying this part.

The requirements for intrinsically safe systems are provided in GB 3836.18. The requirements for intrinsically safe concepts for fieldbus are provided in GB 3836.19.

This part supplements and modifies the general requirements of GB 3836.1–2010, except as indicated in Table 1. Where a requirement of this standard conflicts with a requirement of GB 3836.1–2010, the requirements of this part shall take precedence.

If associated apparatus is placed in the explosive gas atmosphere, it must be protected by an appropriate type of protection listed in GB 3836.1–2010, and then the requirements of that method of protection together with the relevant parts of GB 3836.1–2010 also apply to the associated apparatus.

Table 1 Exclusion of Specific Chapters of GB 3836.1–2010

Chapter or subChapter of GB 3836.1–2010		Intrinsically safe apparatus	Associated apparatus
5.3	Maximum surface temperature	Applies	Excluded
6.3	Opening times	Excluded	Excluded
7.1.1	Applicability	Applies	Excluded
7.1.2	Specification of materials	Applies	Excluded
7.1.3[a]	Plastic materials	Excluded	Excluded
7.2[a]	Thermal endurance	Excluded	Excluded
7.3[a]	Light resistance	Excluded	Excluded
7.4	Electrostatic charges on external non-metallic materials of enclosures	Applies	Excluded
7.6	Threaded holes	Excluded	Excluded
8.1	Material composition	Applies	Excluded
8.2	Threaded holes	Excluded	Excluded
9	Fasteners	Excluded	Excluded

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