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ISO 7240-17:2009

AS ISO 7240.17:2015

Fire detection and fire alarm systems

Part 17: Short-circuit isolators

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- Association of Hydraulic Services Consultants Australia
- Australasian Fire and Emergency Service Authorities Council
- Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Institute of Building Surveyors
- CSIRO
- Deafness Forum of Australia
- Department of Human Services, VIC
- Engineers Australia
- Fire Protection Association Australia
- National Electrical and Communications Association
- National Fire Industry Association
- Property Council of Australia
- Society of Fire Safety

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Australian Standard®

Fire detection and fire alarm systems

Part 17: Short-circuit isolators

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PREFACE

This Standard was prepared by the Standards Australia Committee FP-002, Fire Detection, Warning, Control and Intercom Systems.

The objective of this Standard is to specify requirements, test methods and performance criteria for short-circuit isolators, for use in fire detection and alarm systems.

This Standard is identical with, and has been reproduced from ISO 7240-17:2009, *Fire detection and fire alarm systems*, Part 17: *Short-circuit isolators*.

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of ISO 7240' should read 'this Australian Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
7240	Fire detection and alarm systems	7240	Fire detection and alarm systems
7240-1	Part 1: General and definitions	7240.1	Part 1: General and definitions
IEC		AS	
60068	Environmental testing	60068	Environmental testing
60068-1	Part 1: General and guidance	60068.1	Part 1: General and guidance
60068-2-1	Part 2-1: Tests—Test A: Cold	60068.2.1	Part 2.1: Tests—Test A: Cold
60068-2-2	Part 2-2: Tests—Test B: Dry heat	60068.2.2	Part 2.2: Tests—Test B: Dry heat
60068-2-6	Part 2-6: Tests—Test Fc: Vibration (sinusoidal)	60068.2.6	Part 2.6: Tests—Test Fc: Vibration (sinusoidal)
60068-2-27	Part 2-27: Tests—Test Ea and guidance: Shock	60068.2.27	Part 2.27: Tests—Test Ea and guidance: Shock
60068-2-30	Part 2-30: Tests—Test Db: Damp heat, cyclic (12 h + 12 h cycle)	60068.2.30	Part 2.30: Tests—Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)
60068-2-42	Part 2-42: Tests—Test Kc: Sulphur dioxide test for contacts and connections	60068.2.42	Part 2.42: Tests—Test Kc: Sulphur dioxide test for contacts and connections
60068-2-78	Part 2-78: Tests—Test Cab: Damp heat, steady state	60068.2.78	Part 2.78: Tests—Test Cab: Damp heat, steady state

Only normative references that have been adopted as Australian Standards have been listed.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

CONTENTS

INTRODUCTION

This part of ISO 7240 is based on a European standard EN 54-17, prepared by the European Committee for Standardization CEN/TC 72 *"Fire detection and fire alarm systems"*.

The purpose of short-circuit isolators is to limit the consequences of low-parallel-resistance faults between the lines of a transmission path of a fire detection and alarm system. This is normally achieved by connecting the transmission path in a loop configuration, separating sections of the loop with short-circuit isolators and introducing a means of detecting the presence of a fault, if its consequences (e.g. reduction in the line voltage) jeopardizes the correct operation of components on the transmission path. The faulty section of the loop can then be switched out, between a pair of short-circuit isolators, allowing the rest of the loop to continue to function correctly.

It is recognized that it is not possible for this part of ISO 7240 to specify all of the requirements for the function of a short-circuit isolator in a system. The requirements for the functioning of a short-circuit isolator are dependent on the system operation, the other components associated with the transmission path (e.g. the control and indicating equipment and detectors) and the transmission path parameters (e.g. line impedance and line loads) and it is necessary that they be verified in a system test.

However, this part of ISO 7240 includes the following:

— a requirement for the manufacturer to provide all of the specifications for the short-circuit isolator required by system designers to use the device correctly, in accordance with the system requirements;

NOTE It is the responsibility of the system designer to ensure that only those short-circuit isolators having the necessary performance are chosen to meet the system design requirements.

— tests to verify that the short-circuit isolator functions in accordance with the manufacturer's specifications; and

— tests to verify the performance of the short-circuit isolator in environmental and electromagnetic compatibility (EMC) conditions.

Due to the many different concepts that can be used for the operation of short-circuit isolators, it is not possible to define a precise functional test procedure applicable to all types. Instead, this part of ISO 7240 requires that a functional test procedure be developed to verify the manufacturer's specification and lists the most important points that it is necessary to verify. To assist in developing such test procedures, some example procedures are given in Annex A.

With respect to the foregoing, it is important that, in addition to meeting the requirements of this part of ISO 7240, short-circuit isolators are shown to operate correctly within the types of systems with which they are intended for use.

AUSTRALIAN STANDARD

Fire detection and fire alarm systems

Part 17: Short-circuit isolators

1 Scope

This part of ISO 7240 specifies requirements, test methods and performance criteria for short-circuit isolators, for use in fire detection and alarm systems for buildings; see ISO 7240-1.

Means of isolation or protection incorporated within control and indicating equipment in ISO 7240-1:2005, Figure 1, item B, are not covered by this part of ISO 7240.

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.

ISO 209, *Aluminium and aluminium alloys — Chemical composition*

ISO 7240-1:2005, *Fire detection and alarm systems — Part 1: General and definitions*

IEC 60068-1, *Environmental testing — Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing — Part 2-1: Tests — Test A: Cold*

IEC 60068-2-2, *Environmental testing — Part 2-2: Tests — Test B: Dry heat*

IEC 60068-2-6, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27, *Environmental testing — Part 2-27: Tests — Test Ea and guidance: Shock*

IEC 60068-2-30, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-42, *Environmental testing — Part 2-42: Tests — Test Kc: Sulphur dioxide test for contacts and connections*

IEC 60068-2-78, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state*

EN 50130-4:1995, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems*