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# Fire detection and fire alarm systems

## Part 17: Transmission path isolators

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AS ISO 7240.17:2021

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- Australasian Fire and Emergency Service Authorities Council
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# Fire detection and fire alarm systems

## Part 17: Transmission path isolators

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## Preface

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS ISO 7240.17:2015, *Fire detection and fire alarm systems, Part 17: Short-circuit isolators*.

The objective of this document is to specify the requirements, test methods and performance criteria for transmission path isolators for use in fire detection and fire alarm systems for buildings. For general requirements and definitions, refer to AS ISO 7240.1.

Means of isolation or protection incorporated within control and indicating equipment are not covered by this document.

This document is identical with, and has been reproduced from, ISO 7240-17:2020, *Fire detection and fire alarm systems — Part 17: Transmission path isolators*.

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 3, *Fire detection and alarm systems*.

The second edition cancels and replaces the first edition (ISO 7240-17:2009), which has been technically revised. The main changes compared to the previous edition are as follows:

- the title of the document has been changed to “Transmission path isolators” which better reflects the functionality of the product;
- the whole document has been updated to the latest ISO standard template;
- IEC 62599-2 has been included and replaces the reference to EN 50130-4;
- a new [Clause 6](#) on test report, [Clause 7](#) on marking and [Clause 8](#) on data have been included.

A list of all parts in the ISO 7240 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

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

It is recognised that it is not possible for this component standard to specify all of the requirements for the function of a transmission path isolator in a system. The requirements for the functioning of a transmission path 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 they will have to be verified in a system test.

However, this document includes:

- a requirement that the manufacturer gives all of the specifications for the transmission path isolator, needed by system designers to use the device correctly, in accordance with the system requirements;

**NOTE** It is recognized that the system designer needs to ensure that only those transmission path isolators having the necessary performance are chosen to meet the specific requirements of a given system design.

- the tests to verify that the transmission path isolator functions in accordance with these manufacturer's specifications;
- the tests to verify the stability of the transmission path isolator with respect to environmental and electromagnetic compatibility (EMC) conditions.

Due to the many different concepts that can be used for the operation of transmission path isolators, it is not possible to define a precise functional test procedure applicable to all types. Instead, this document requires that a functional test procedure is developed to verify the manufacturer's specification and lists the most important points that have to be verified. To assist in developing such test procedures, some example procedures are given in an informative annex ([Annex A](#)).

In view of the above, it is important that, in addition to meeting the requirements of this document, transmission path isolators are shown to operate correctly within the types of systems with which they are intended to be used.

# Australian Standard®

## Fire detection and fire alarm systems

### Part 17: Transmission path isolators

#### 1 Scope

This document specifies the requirements, test methods and performance criteria for transmission path isolators for use in fire detection and fire alarm systems for buildings (for general requirements and definitions, see ISO 7240-1).

Means of isolation or protection incorporated within control and indicating equipment are not covered by this document.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *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 60068-2-6, *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 and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

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

IEC 62599-2, *Alarm systems — Part 2: Electromagnetic compatibility — Immunity requirements for components of fire and security alarm systems*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7240-1 and the following apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

##### 3.1

##### **transmission path isolator**

device, which may be inserted into a transmission path of a fire detection and fire alarm system, to limit the consequences of low parallel resistance faults between the lines of this transmission path

Note 1 to entry: A transmission path isolator may be a physically separate device or it may be incorporated into another device (e.g. integrated into a smoke detector or detector base).