



**Information technology — Generic  
cabling for customer premises**

**Part 4: Single-tenant homes (ISO/IEC  
11801-4:2017, MOD)**

STANDARDS  
Australia



AS 11801.4:2019

This Australian Standard® was prepared by CT-001, Communications Cabling. It was approved on behalf of the Council of Standards Australia on 3 May 2019.

This Standard was published on 24 May 2019.

The following are represented on Committee CT-001:

- Australian Chamber of Commerce and Industry
- Australian Council of Trade Unions
- Australian Digital and Telecommunications Industry Association
- Australian Industry Group
- Australian Information Industry Association
- BICSI South Pacific (Australia)
- Energy Networks Australia
- Engineers Australia
- KNX National Group
- National Electrical and Communications Association
- Telstra Corporation

This Standard was issued in draft form for comment as DR AS 11801.4:2018.

#### **Keeping Standards up-to-date**

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

[www.standards.org.au](http://www.standards.org.au)

ISBN 978 1 76072 411 5



## **Information technology — Generic cabling for customer premises**

### **Part 4: Single-tenant homes (ISO/IEC 11801-4:2017, MOD)**

Originates as AS/NZS ISO/IEC 15018:2005.  
Revised and redesignated as AS 11801.4:2019.

#### **COPYRIGHT**

© ISO/IEC 2019 — All rights reserved  
© Standards Australia Limited 2019

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

## Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee CT-001, Communications Cabling. AS/NZS 11801.1 in conjunction with AS 11801.4, supersedes AS/NZS ISO/IEC 15018:2005, *Information technology — Generic cabling for homes*.

The objective of this Standard is to specify generic cabling for single-tenant homes. A home can contain one or more buildings or can be within a building that contains more than one home. It covers balanced cabling, optical fibre cabling and coaxial cabling.

This Standard specifies a generic cabling for two groups of applications—

- (a) information and communications technologies (ICT); and
- (b) broadcast and communications technologies (BCT).

This Standard specifies directly or via reference to AS/NZS ISO/IEC 11801.1—

- (i) the structure and minimum configuration for generic cabling within homes;
- (ii) the interfaces at the telecommunications outlet (TO) and broadcast outlet (BO);
- (iii) the performance requirements for cabling links and channels;
- (iv) the implementation requirements and options;
- (v) the performance requirements for cabling components; and
- (vi) the conformance requirements and verification procedures.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this Standard, and are covered by other Standards and by regulations. However, information given by this Standard can be of assistance.

This Standard is intended to be read in conjunction with AS/NZS 11801.1, *Information Technology — Generic cabling for customer premises, Part 1: General requirements (ISO/IEC 11801-1:2017, MOD)*.

This Standard is one of a series of customer cabling Standards addressing design, minimum specification and performance of links and channels, cable/cabling accommodation and installation, conformance testing and administration

This Standard is part of a series of standards which are associated with other Australian standards, Australia/New Zealand Standards and International Standards

Standards which are part of the series and standards that are associated with this standard are as follows:

AS/NZS 11801.1, *Information technology—Generic cabling for customer premises, Part 1: General requirements (ISO/IEC 11801-1:2017, MOD)*

AS 11801.2, *Information technology—Generic cabling for customer premises, Part 2: Office premises (ISO/IEC 11801-2:2017, MOD)*

AS 11801.3, *Information technology—Generic cabling for customer premises, Part 3: Industrial premises (ISO/IEC 11801-3:2017, MOD)*

AS 11801.4, *Information technology—Generic cabling for customer premises, Part 4: Single-tenant homes (ISO/IEC 11801-4:2017, MOD)* (this Standard)

AS 11801.5, *Information technology—Generic cabling for customer premises, Part 5: Data centres (ISO/IEC 11801-5:2017, MOD)*

AS 11801.6, *Information technology—Generic cabling for customer premises, Part 6: Distributed building services (ISO/IEC 11801-6:2017, MOD)*

AS 30129, *Information technology—Telecommunications bonding networks for buildings and other structures (ISO/IEC 30129:2015 MOD)*

AS/NZS 2967, *Optical fibre communication cabling systems safety*

AS/NZS 3084, *Telecommunications installations—Telecommunications pathways and spaces for commercial buildings*

AS/NZS 3085.1, *Telecommunications installations—Administration of communications cabling systems, Part 1: Basic requirements*

AS/NZS ISO/IEC 14763.2, *Information technology—Implementation and operation of customer premises cabling, Part 2: Planning and installation*

AS/NZS 14763.3, *Information technology—Implementation and operation of customer premises cabling, Part 3: Testing of optical fibre cabling (ISO/IEC 14763-3:2014, MOD)*

IEC 61935.1, *Specification for the testing of balanced and coaxial information technology cabling — Part 1: Installed balance cabling as specified in ISO/IEC 11801 and related standards*

IEC 61935.2, *Specification for the testing of balanced and coaxial information technology cabling — Part 2: Cords as specified in ISO/IEC 11801 and related standards*

This Standard is an adoption with national modifications and has been reproduced from, ISO/IEC 11801-4:2017, *Information technology — Generic cabling for customer premises — Part 4: Single-tenant homes* and its Corrigendum No. 1 (2018). The modifications in Appendix ZZ are additional requirements, which have been added at the end of the source text.

Appendix ZZ lists the variations to ISO/IEC 11801-4:2017 for the application of this Standard in Australia.

This Standard is structured as follows:

- (A) Preface.
- (B) ISO/IEC 11801-4:2017 (unedited from the contents page to the final clause of the source document) and its Corrigendum No. 1 (2018).
- (C) Appendix ZZ lists the variations to ISO/IEC 11801-4:2017 for the application of this Standard in Australia.

As this document has been reproduced from an International Standard, the following applies:

- (1) In the source text “this part of ISO/IEC 11801” should read “this Australian Standard”.
- (2) 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.

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	9
2 Normative references .....	9
3 Terms, definitions and abbreviated terms .....	9
3.1 Terms and definitions.....	9
3.2 Abbreviated terms.....	10
4 Conformance.....	11
5 Structure of the generic cabling system .....	11
5.1 General.....	11
5.2 Functional elements.....	12
5.3 Cabling subsystems for ICT and BCT.....	12
5.3.1 General .....	12
5.3.2 Primary home cabling subsystem.....	14
5.3.3 Secondary home cabling subsystem .....	14
5.4 Cabling structure .....	14
5.5 Interfaces.....	15
5.5.1 Equipment interfaces and test interfaces .....	15
5.5.2 Channel and permanent link .....	16
5.5.3 Network access cabling .....	17
5.5.4 External network interface .....	18
5.6 Accommodation of functional elements .....	18
5.6.1 General .....	18
5.6.2 Coverage areas.....	19
5.6.3 Dimensioning and configuration .....	20
5.6.4 Connecting hardware .....	21
5.6.5 Application outlets.....	21
5.6.6 Equipment core.....	21
6 Channel performance requirements .....	22
6.1 General.....	22
6.2 Environmental performance .....	22
6.3 Transmission performance .....	22
6.3.1 Channel construction .....	22
6.3.2 Balanced cabling .....	22
6.3.3 Coaxial cabling .....	23
6.3.4 Optical fibre cabling.....	23
7 Link performance requirements .....	23
7.1 General.....	23
7.2 Balanced cabling .....	23
7.3 Coaxial cabling .....	23
7.4 Optical fibre cabling .....	23
8 Reference implementations .....	23
8.1 General.....	23
8.2 Channel construction .....	24
8.3 Balanced cabling .....	24
8.3.1 General .....	24

8.3.2	ICT channels .....	25
8.3.3	BCT channels .....	25
8.4	Coaxial cabling .....	26
8.5	Optical fibre cabling .....	26
8.5.1	General .....	26
8.5.2	Component selection .....	26
8.5.3	Dimensions .....	26
9	Cable requirements .....	26
9.1	General .....	26
9.2	Balanced cables .....	27
9.2.1	ICT cabling .....	27
9.2.2	BCT cabling .....	27
9.3	Coaxial cables .....	27
9.4	Optical fibre cables .....	27
10	Connecting hardware requirements .....	27
10.1	General requirements .....	27
10.2	Connecting hardware for balanced cabling .....	27
10.2.1	General requirements .....	27
10.2.2	Electrical, mechanical and environmental performance .....	27
10.3	Connecting hardware for coaxial cabling .....	28
10.3.1	General requirements .....	28
10.3.2	Electrical, mechanical and environmental performance .....	28
10.4	Connecting hardware for optical fibre cabling .....	28
10.4.1	General requirements .....	28
10.4.2	Optical, mechanical and environmental performance .....	28
11	Cords .....	28
11.1	Jumpers .....	28
11.2	Balanced cords .....	28
11.3	Coaxial cords .....	28
11.4	Optical fibre cords .....	28
Annex A (informative)	Reference implementation of TV and radio applications – use of baluns .....	29
A.1	Types and locations of baluns .....	29
A.1.1	General .....	29
A.1.2	Baluns at the ENI and baluns at the equipment interface toward the PHD .....	29
A.1.3	Baluns near or in the BO .....	30
A.1.4	Baluns in the cord between BO and the terminal equipment .....	31
A.2	Home network interface .....	31
	Bibliography .....	33
	Figure 1 – Relationships between the generic cabling documents produced by ISO/IEC JTC 1/SC 25 .....	7
	Figure 2 – Structure of the generic cabling system .....	12
	Figure 3 – Interconnect and cross-connect models .....	13
	Figure 4 – Interconnect and cross-connects at the PHD .....	13
	Figure 5 – Hierarchical structure of a generic cabling system in support of ICT and BCT applications .....	14

Figure 6 – Equipment and test interfaces in support of ICT and BCT applications .....	16
Figure 7 – Channels and permanent links within the home .....	17
Figure 8 – Examples of interconnection of home and network access cabling .....	18
Figure 9 – Overview of a generic cabling for home .....	19
Figure 10 – Interconnection of home cabling subsystems .....	20
Figure 11 – Reference implementations for ICT and BCT channels (PHD/SHD to TO/BO) .....	24
Figure A.1 – Balun at the ENI .....	29
Figure A.2 – Baluns in the PHD .....	30
Figure A.3 – Balun built into the system outlet .....	30
Figure A.4 – Balun in the cord between BO and the TE .....	31
Figure A.5 – Types of HNI .....	32
Table 1 – Maximum channel lengths for reference implementations of ICT/BCT channels .....	21
Table 2 – Link length equations .....	25
Table A.1 – Insertion loss and total sectional slope .....	32

Currently in preview, click buy full version

# INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES

## Part 4: Single-tenant homes

### FOREWORD

- 1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established within the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.
- 2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees and ISO member bodies.
- 3) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC National Committees and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO, IEC or ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.
- 5) ISO and IEC do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. ISO or IEC are not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees or IEC National Committees or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this ISO/IEC publication may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 11801-4 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This first edition cancels and replaces ISO/IEC 15018:2004 and Amendment 1:2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) standard re-structured to contain only those requirements that are specific for generic cabling systems installed in homes;
- b) the channel performance Class CCCB and related reference implementations have been deleted and are now addressed as distributed building services in ISO/IEC 11801-6;
- c) implementation options now include optical fibre in addition to balanced and coaxial media.

ISO/IEC 11801-4 is to be read in conjunction with ISO/IEC 11801-1.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the ISO/IEC 11801 series, published under the general title *Information technology – Generic cabling for customer premises*, can be found on the IEC website.

Currently in preview, click buy full version

## INTRODUCTION

The importance of cabling infrastructure is similar to that of other fundamental utilities such as water and energy supply and interruptions to the services provided over that infrastructure can have a serious impact. A lack of design foresight, the use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten quality of service and have commercial consequence for all types of users.

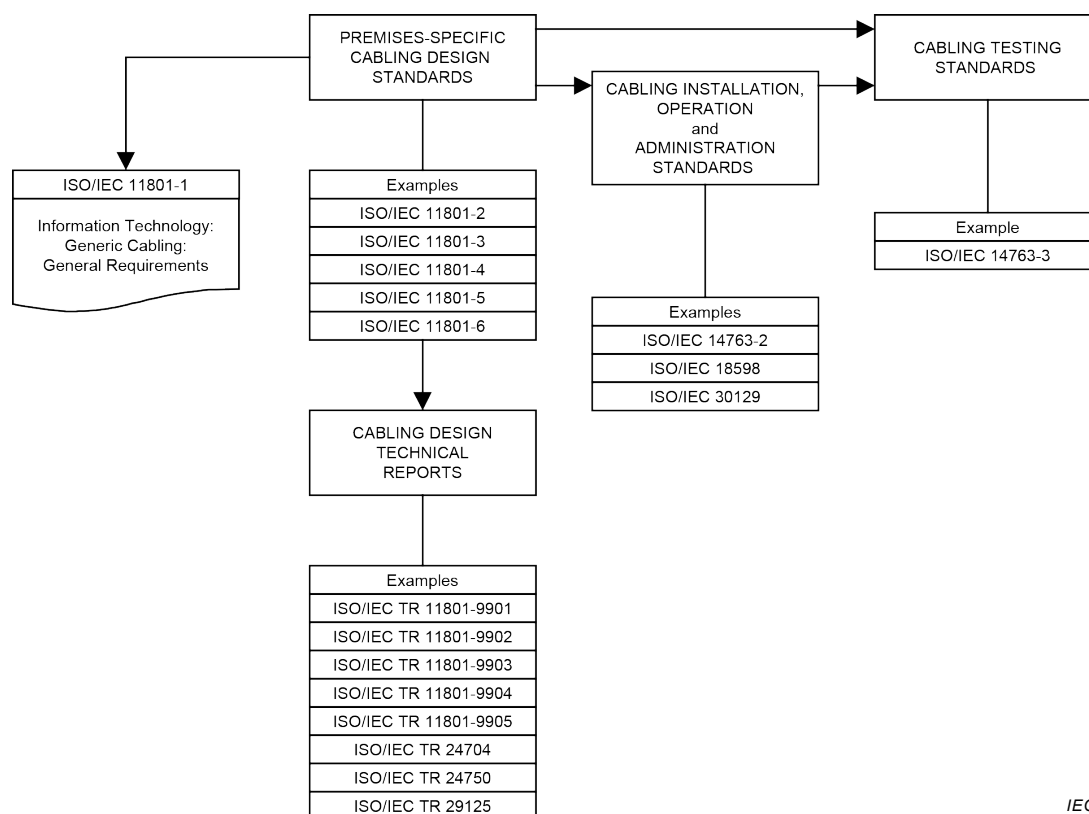
This document specifies generic cabling within a home.

The home can contain one or more buildings (e.g. farm) or be within a building which contains more than one home (e.g. one home in a multi-tenant building).

The campus or backbone cabling connecting individual homes within multi-tenant premises is specified according to the relevant standard (for instance ISO/IEC 11801-1 or IEC 60728).

Generic cabling for distributed building services in homes is specified in ISO/IEC 11801-6, which addresses all of the above premises and spaces within them.

Figure 1 shows the schematic and contextual relationships between the standards relating to information technology cabling produced by ISO/IEC JTC 1/SC 25, namely the ISO/IEC 11801 series of standards for generic cabling design, standards for the installation, operation and administration of generic cabling and for testing of installed generic cabling.



**Figure 1 – Relationships between the generic cabling documents produced by ISO/IEC JTC 1/SC 25**

The generic cabling specified by this document provides users with

- an application independent system capable of supporting a wide range of applications in a range of installation and operating environments,
- a flexible scheme such that modifications are both easy and economical,
- a multi-vendor supply chain within an open market for cabling components.

In addition, this document provides

- d) relevant industry professionals with guidance allowing the accommodation of cabling before specific requirements are known, i.e. in the initial planning either for construction or refurbishment and for further deployment as the requirements of areas are defined,
- e) industry and standardization bodies with a cabling system which supports current products and provides a basis for future product development and applications standardization,
- f) users, designers and manufacturers of application-specific cabling systems with advice on interfacing to this generic cabling,
- g) suppliers of cabling components and installers of cabling with relevant requirements,
- h) service providers with a distribution system for their services.

Applications addressed in this document include those developed by the technical committees of IEC (including the subcommittees of ISO/IEC JTC 1) and study groups of ITU-T as used to support the following services:

- information and communications technologies (ICT),
- broadcast and communications technologies (BCT).

This document also applies where cabling is designed to support only one of the services listed above.

Physical layer requirements for the applications listed in Annex E of ISO/IEC 11801-1:2017 have been analysed to determine their compatibility with the cabling performance specified in this document and, together with statistics concerning premises geography from different countries and the models described in Clause 6, have been used to develop the requirements for cabling components and to stipulate their arrangement into cabling systems.

As a result, this document

- 1) specifies a structure for generic cabling supporting a wide variety of applications including, but not restricted to, the applications in ISO/IEC 11801-1:2017, Annex E,
- 2) adopts balanced cabling channel and link Classes D, E, E<sub>A</sub>, F, F<sub>A</sub> and BCT-B specified in ISO/IEC 11801-1,
- 3) adopts coaxial cabling channel and link Classes BCT-C specified in ISO/IEC 11801-1,
- 4) adopts optical fibre cabling channel and link requirements specified in ISO/IEC 11801-1,
- 5) adopts component requirements, specified in ISO/IEC 11801-1, and specifies cabling implementations that ensure performance of permanent links and of channels that meet or exceed the requirements of a specified group (e.g. Class) of applications.

Life expectancy of generic cabling systems can vary depending on environmental conditions, supported applications, aging of materials used in cables, and other factors such as access to pathways (campus pathways are more difficult to access than building pathways). With appropriate choice of components, generic cabling systems meeting the requirements of this document are expected to have a life expectancy of at least ten years.

This document has taken into account requirements specified in application standards listed in ISO/IEC 11801-1:2017, Annex E. It refers to International Standards for components and test methods whenever appropriate International Standards are available.

# INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES

## Part 4: Single-tenant homes

### 1 Scope

This part of ISO/IEC 11801 specifies generic cabling for single-tenant homes. A home can contain one or more buildings or can be within a building that contains more than one home. It covers balanced cabling, optical fibre cabling and coaxial cabling.

This document specifies a generic cabling for two groups of applications:

- 1) information and communications technologies (ICT),
- 2) broadcast and communications technologies (BCT).

This document specifies directly or via reference to ISO/IEC 11801-1

- a) the structure and minimum configuration for generic cabling within homes,
- b) the interfaces at the telecommunications outlet (TO) and broadcast outlet (BO),
- c) the performance requirements for cabling links and channels,
- d) the implementation requirements and options,
- e) the performance requirements for cabling components,
- f) the conformance requirements and verification procedures.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this document, and are covered by other standards and by regulations. However, information given by this document can be of assistance.

### 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.

IEC 60728 (all parts), *Cable networks for television signals, sound signals and interactive services*

IEC 61754-20 (all parts), *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 20: Type LC connector family*

ISO/IEC 11801-1:2017, *Information technology – Generic cabling for customer premises – Part 1: General requirements*

ISO/IEC 14763-2, *Information technology – Implementation and operation of customer premises cabling – Part 2: Planning and installation*

ISO/IEC 30129, *Information technology – Telecommunications bonding networks for buildings and other structures*

### 3 Terms, definitions and abbreviated terms

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11801-1, ISO/IEC 14763-2 and the following apply.