

Australian/New Zealand Standard™

**Connecting devices for low-voltage  
circuits for household and similar  
purposes**

**Part 2.1: Particular requirements for  
connecting devices as separate entities  
with screw-type clamping units**



## **AS/NZS IEC 60998.2.1:2012**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-004, Electrical Accessories. It was approved on behalf of the Council of Standards Australia on 27 September 2012 and on behalf of the Council of Standards New Zealand on 21 September 2012.  
This Standard was published on 17 October 2012.

---

The following are represented on Committee EL-004:

Australian Industry Group  
Consumer Electronics Suppliers Association  
Consumers Federation of Australia  
Electrical Compliance Testing Association  
Electrical Regulatory Authorities Council  
Engineers Australia  
International Accreditation New Zealand  
Ministry of Economic Development, New Zealand  
New Zealand Manufacturers and Exporters Association  
NSW Office of Fair Trading  
Office of the Technical Regulator, SA  
Plastics Industry Pipe Association of Australia

---

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

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at [www.saiglobal.com.au](http://www.saiglobal.com.au) or Standards New Zealand website at [www.standards.co.nz](http://www.standards.co.nz) and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

---

*This Standard was issued in draft form for comment as DR AS/NZS IEC 60998.2.1.*

---

Australian/New Zealand Standard™

**Connecting devices for low voltage  
circuits for household and similar  
purposes**

**Part 2.1: Particular requirements for  
connecting devices as separate entities  
with screw-type clamping units**

Originally as AS/NZS 60998.2.1:1998.  
Jointly revised and designated as AS/NZS IEC 60998.2.1:2012.

**COPYRIGHT**

© Standards Australia Limited/Standards New Zealand

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 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-004, Electrical Accessories, to supersede AS/NZS 60998.2.1:1998, *Connecting devices for low-voltage circuits for household and similar purposes, Part 2.1: Particular requirements for connecting devices as separate entities with screw-type clamping units*.

The objective of this Standard is to provide Australian and New Zealand electrical industries with requirements for connecting devices with screw-type clamping units primarily suitable for connecting unprepared conductors.

This Standard is identical with, and has been reproduced from IEC 60998-2-1, Ed.2.0 (2002), *Connecting devices for low-voltage circuits for household and similar purposes—Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*. See the Foreword for guidance on how to use this Standard. Note that IEC 60998-1 has been adopted as AS/NZS IEC 60998.1.

This Standard is structured in the following layout:

- (a) An Australian/New Zealand Preface.
- (b) IEC 60998-2-1, Ed 2.0 (2002) unedited (apart from the deletion of the IEC Foreword of irrelevant IEC procedural details) from the contents page to the final Clause of the source document.

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

- (i) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (ii) A full point substitutes for a comma when referring to a decimal marker.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex to which they apply. A 'normative' annex is an integral part of a Standard, whereas an 'informative' annex is only for information and guidance.

## CONTENTS

1	Scope .....	È...Á
2	Normative references .....	È...Á
3	Definitions .....	È...Á
4	General .....	È...ÁG
5	General notes on tests .....	È...ÁG
6	Main characteristics .....	È...ÁC
7	Classification .....	È...ÁG
8	Marking .....	È...ÁI
9	Protection against electric shock .....	ÁH
10	Connection of conductors .....	È...ÁH
11	Construction .....	È...Á
12	Resistance to ageing, to humidity conditions, to ingress of solid foreign objects and to harmful ingress of water .....	È...ÁJ
13	Insulation resistance and electric strength .....	È...ÁJ
14	Mechanical strength .....	È...ÁJ
15	Temperature rise .....	È...ÁJ
16	Resistance to heat .....	È...ÁJ
17	Clearances and creepage distances .....	È...ÁJ
18	Resistance of insulating material to abnormal heat and fire .....	È...ÁJ
19	Resistance of insulating material to tracking .....	F€
20	EMC requirements .....	F€
	Annex AA (normative) Cross-sectional area of conductors and gauges to be used for the tests .....	FÍ
	Annex BB (normative) Number of sets of three samples to be used for the tests and sequences listed for each set .....	FÌ
	Annex CC (informative) Number of conductors to be used for the tests .....	FJ
	Annex DD (informative) Relationship between conductors of cross-sectional areas in mm <sup>2</sup> and the sizes as used in North America .....	G€
	Annex EE (informative) Examples for temperature-rise test according to 15.4 .....	GG
	Bibliography .....	G
	Figure 101 – Examples of pillar clamping units .....	F1
	Figure 102 – Examples of screw- and stud-clamping units .....	FG
	Figure 103 – Examples of saddle-clamping units .....	FH
	Figure 104 – Examples of mantle-clamping units .....	FH
	Figure 105 – Test apparatus according to 10.104 .....	FI
	Figure AA.1 – Gauges for checking clamping units .....	FÌ
	Figure EE.1 – Examples for temperature-rise test according to 15.4 .....	GH

	<i>Page</i>
Table 101 – Rated connecting capacity and connectable conductors.....	E..Á
Table 102 – Nominal diameter of thread .....	E..Á
Table 103 – Relationship between mass, height and cross-sectional area of conductors .....	E..Á
Table 104 – Relationship between pull force and cross-sectional area.....	E..Á
Table AA.1 – Cross-sectional area of conductors and corresponding gauges .....	FÍ
Table BB.1 – Sample sets .....	Fi
Table CC.1 – Number of strands and diameters for cross-section areas.....	FJ
Table DD.1 – Wire size, mm <sup>2</sup> versus AWG .....	G€
Table DD.2 – Rated connecting capacity and connectable conductors.....	G1

## FOREWORD

This standard constitutes Part 2-1 of the IEC 60998 series, published under the general title *Connecting devices for low voltage circuits for household and similar purposes*. This series consists of Part 1, devoted to general requirements, and various Parts 2, devoted to particular requirements.

This Part 2-1 is intended to be used in conjunction with IEC 60998-1. It was established on the basis of the second edition (2002) of that standard.

It supplements or modifies the corresponding clauses in IEC 60998-1, so as to convert that publication into the IEC standard: Particular requirements for connecting devices as separate entities with screw-type clamping units.

Where a particular subclause of Part 1 is not mentioned in this Part 2-1, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant requirements, test specification or explanatory matter in Part 1 should be adapted accordingly.

In this standard

- a) the following print types are used:
  - requirements proper: in roman type;
  - *test specifications: in italic type;*
  - explanatory matter: in smaller roman type.
- b) Subclauses and figures which are additional to those in Part 1 are numbered starting from 101; additional annexes are lettered 1A, 1B, etc.

## AUSTRALIAN/NEW ZEALAND STANDARD

**Connecting devices for low-voltage circuits for household and similar purposes**

## Part 2.1:

Particular requirements for connecting devices as separate entities with screw-type clamping units

**1 Scope**

This clause of Part 1 is applicable except as follows:

*Addition:*

This standard applies to connecting devices with screw-type clamping units primarily suitable for connecting unprepared conductors.

**2 Normative references**

This clause of Part 1 is applicable.

**3 Definitions**

This clause of Part 1 is applicable except as follows.

*Additional definitions:***3.101****screw-type terminal**

terminal for the connection of two or more conductors by means of screw-type clamping units

**3.101.1****pillar terminal**

terminal in which the conductors are inserted into a hole or cavity, where they are clamped under the shank of a screw or screws. The clamping pressure may be applied directly by the shank of the screw or through an intermediate part to which pressure is applied by the shank of the screw

NOTE Examples of pillar terminals are given in Figure 101.

**3.101.2****screw terminal**

terminal in which the conductors are clamped under the head of one or more screws. The clamping pressure may be applied directly by the head of a screw or through an intermediate part, such as a washer, a clamping plate or an anti-spread device

NOTE Examples of screw terminals are given in Figure 102.