AS 61204.1—2003
IEC 61204:1993
IEC 61204:1993/Amd 1:2001



Australian Standard™

# Low-voltage power supply devices, d.c. output

# Part 1: Performance characteristics

Standards Australia

This Australian Standard was prepared by Committee EL-027, Power Electronics. It was approved on behalf of the Council of Standards Australia on 5 September 2003 and published on 29 October 2003.

---

The following are represented on Committee EL-027:

Australian Communications Authority
Australian Electrical and Electronic Manufacturers Association
Bureau of Steel Manufacturers of Australia
Electricity Supply Association of Australia
Monash University
University of Wollongong

---

**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 Standards may also be withdrawn.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 Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

---

*This Standard was issued in draft form for comment as DR 03085.*

Australian Standard™

# Low-voltage power supply devices, d.c. output

# Part 1: Performance characteristics

First published as AS 61204.1—2003.

**COPYRIGHT**

© Standards Australia International

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.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5514 3

# PREFACE

This Standard was prepared by the Standards Australia Committee EL-027, Power Electronics.

The objective of this Standard is to provide users and manufacturers with an agreed method of specifying the performance characteristics of low voltage power supply devices with d.c. outputs.

This Standard is technically equivalent to, and has been reproduced from, IEC 61204:1993, *Low-voltage power supply devices, d.c output—Performance characteristics,* including Amendment 1:2001.

During the committee's consideration of this Standard, errors were identified in the following locations—

(a) Clause 1.1; and

(b) Table 1, rows 3.10, 3.13, 3.14 and 3.17.

Following consultation with the IEC, these errors have been corrected, with the error marked by strikeout (~~example~~) and the correct data marked by shading (example).

Additionally, editorial changes have been made in Clause 1.1 to clarify the scope and purpose of this Standard.

The terms 'normative' and 'informative' are used 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.

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

(i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(ii) In the source text 'this international standard' should read 'this Australian Standard'.

(iii) A full point should be substituted for a comma when referring to a decimal marker.

# CONTENTS

*Page*


1 General ..... 1
1.1 Scope and object ..... 1
1.2 Normative references ..... 1
1.3 Definitions ..... 3
2 Presentation of performance characteristics ..... 3
3 Performance ..... 3
3.1 Rated outputs and total output power ..... 3
3.2 Ambient operating temperature range ..... 5
3.3 Ambient storage and transit temperature range ..... 6
3.4 Source voltage and frequency ..... 6
3.5 Source current ..... 7
3.6 Source effect (source regulation) ..... 7
3.7 Load effect (load regulation) ..... 7
3.8 Output voltage tolerance (intrinsic error) – fixed outputs ..... 8
3.9 Adjustability of output voltage ..... 8
3.10 Periodic and random deviation ..... 8
3.11 Interaction effects (cross regulation) ..... 9
3.12 Temperature coefficient ..... 9
3.13 Hold-up time (turn-off decay time) ..... 9
3.14 Start-up time (turn-on delay time) ..... 10
3.15 Turn-on (turn-off) overshoot ..... 10
3.16 Transient response to load current changes ..... 10
3.17 Output overvoltage protection ..... 11
3.18 Output overcurrent protection ..... 12
3.19 Mean time between failures (MTBF) ..... 12
4 Requirements for protective devices ..... 12
4.1 Thermal protection ..... 12
4.2 Input overcurrent protection ..... 12
5 Acoustic noise requirements ..... 13
6 Additional requirements ..... 13
6.1 Remote programming (remote control) ..... 13
6.2 Remote sensing ..... 13
6.3 Mechanical characteristics ..... 13
6.4 Series operation ..... 13
6.5 Parallel operation ..... 14
6.6 Monitoring and control signals ..... 14
7 Test requirements ..... 14
7.1 General ..... 14
7.2 Environmental tests ..... 14
8 Miscellaneous requirements ..... 15
8.1 Markings and instructions ..... 15

*Page*

Annexes

Annex A (normative) Periodic and random deviation test methods ..... 16
Annex B (normative) Output overvoltage protection ..... 19
Annex C (normative) Overcurrent protection characteristics ..... 20
Annex D (normative) Parallel operation ..... 21

Tables

Table 1 – Performance characteristics presentation ..... 4
Table 2 – Preferred transient response ..... 11

Figures

Figure 1 – Resistive load applied at the output terminals ..... 11
Figure 2 – Resistive load removed at the output terminals ..... 11
Figure A.1 – Differential test probe ..... 17
Figure A.2 – Differential test arrangement ..... 17
Figure A.3 – Current probe test arrangement ..... 18
Figure C.1 – Overcurrent protection characteristics ..... 20

STANDARDS AUSTRALIA

# Australian Standard

# Low-voltage power supply devices, d.c. output
# Part 1: Performance characteristics

Any IEC table, figure or passage of text that is struck-through is not part of this Standard. Any Australian table, figure or passage of text that is added (and identified by shading) is part of this Standard.

## 1 General

### 1.1 Scope and object

This international Standard describes a method for specifying requirements for low-voltage power supply devices (including switching types) providing d.c. output(s) up to 200 V d.c. at a power level of up to 30 kW, operating from a.c. or d.c. source voltages of up to 600 V. The devices are for use within class I equipment or for free-standing operation when used with adequate electrical and mechanical protection.

This standard is intended to be used for all types of a.c. or d.c. ~~driver~~ driven power supplies with any number of outputs mainly for general applications.~~, specially produced for an unknown final application~~.

In the case where power supplies are developed as a component of equipment covered by specific product standards, these standards apply; the additional application of IEC 61204 may be useful as an option, especially if the performance characteristics are not sufficiently covered by the product standard.

It ~~permits~~ may be used to specify a power unit to meet a particular application (ie non-general applications) by the specification of parameters at required performance levels, to establish the essential definitions related to this type of equipment, and to establish a selection of levels of performance. These levels are carefully graded to enable manufacturers and users to select and specify a range of power supply devices suitable for their application.

### 1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently International Standards.

References to International Standards that are struck through in this Clause are replaced by references to equivalent Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is appropriately identified.

~~IEC 60038:1983, *IEC standard voltages*~~

AS 60038 *Standard voltages*

IEC 60068: *Environmental testing*


© Standards Australia