

Australian Standard[®]

**Safety of machinery—Electrical
equipment of machines**

**Part 1: General requirements
(IEC 60204-1, Ed. 5 (FDIS) MOD)**

STANDARDS
Australia



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 - Electrical Regulatory Authorities Council
 - Federal Chamber of Automotive Industries
 - Victorian WorkCover Authority
-

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**Part 1: General requirements
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Originally as AS 1543—1985.
Revised and redesignated AS 60204.1—2005.
Revised incorporating Amendment No.1 (August 2006).

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-017, Electrical Equipment of Industrial Machinery to supersede AS 1543—1985.

This Standard incorporates Amendment No. 1 (August 2006). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide requirements and recommendations for the electrical equipment of industrial machines with regard to safety of persons and property, consistency of control response, and ease of maintenance. This Standard includes provisions for two-hand control as a safety feature (not previously dealt with in AS 1543).

The need for this Standard was raised during the preparation of revisions to AS 4024.1—1996, *Safeguarding of machinery*, where the Standards Australia Committee SF-041 has adapted a number of International Standards (ISO, IEC, EN Standards) to replace the current AS 4024.1—1996 and include other safety requirements (in addition to safeguarding) associated with safety of industrial machines. These Standards provide guidance in risk control methods following the risk assessment process required in the relevant State and Commonwealth (State) Regulations. *Guidance in safety of machinery—Principles of risk assessment* is included in the new AS 4024.1—2004 (draft) and AS/NZS 4360:2004, *Risk management*. Since AS 1543—1985 is now obsolete, an up to date version is required. AS 1543—1985 was adapted from IEC 204-1 at the time and since that period, IEC 204-1 has been updated to IEC 60204.1.

This Standard is an adoption with national modifications and has been reproduced from the draft IEC 60204-1, Ed. 5 (FDIS), *Safety of machinery—Electrical equipment of machines – Part 1: General requirements*, and has been varied as indicated to take account of Australian/New Zealand conditions.

Variations to IEC 60204-1, Ed. 5 (FDIS) are indicated at the appropriate places throughout this standard. Strikethrough (~~example~~) identifies IEC text, tables and figures which, for the purposes of this Australian Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (~~example~~). Added figures are not themselves shaded, but are identified by a shaded border.

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

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'IEC 60204-1' should read 'AS 60204.1'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.
- (d) Any French text on figures should be ignored.
- (e) The recommended colour coding (see Clause 13.2) for neutral and live insulated conductors conflicts with the colour coding given in AS/NZS 3000 for fixed wiring.

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.

CONTENTS

	<i>Page</i>
1 Scope	1
2 Normative references	2
3 Definitions	6
4 General requirements	13
4.1 General considerations	13
4.2 Selection of equipment	14
4.3 Electrical supply	14
4.4 Physical environment and operating conditions	15
4.5 Transportation and storage	17
4.6 Provisions for handling	18
4.7 Installation	18
5 Incoming supply conductor terminations and devices for disconnecting and switching off	18
5.1 Incoming supply conductor terminations	18
5.2 Terminal for connection to the external protective earthing system	18
5.3 Supply disconnecting (isolating) device	19
5.4 Devices for switching off for prevention of unexpected start-up	21
5.5 Devices for disconnecting electrical equipment	22
5.6 Protection against unauthorized, inadvertent, and/or mistaken connection	23
6 Protection against electric shock	23
6.1 General	23
6.2 Protection against direct contact	23
6.3 Protection against indirect contact	25
6.4 Protection by the use of PEB	27
7 Protection of equipment	28
7.1 General	28
7.2 Overcurrent protection	28
7.3 Protection of motors against overheating	30
7.4 Abnormal temperature protection	32
7.5 Protection against supply interruption or voltage reduction and subsequent restoration	32
7.6 Motor overspeed protection	32
7.7 Earth fault/residual current protection (equipment)	32
7.8 Phase sequence protection	32
7.9 Protection against overvoltages due to lightning and to switching surges	32
8 Equipotential bonding	33
8.1 General	33
8.2 Protective bonding circuit	35
8.3 Functional bonding	38
9 Control circuits and control functions	38
9.1 Control circuits	38
9.2 Control functions	39
9.3 Protective interlocks	44
9.4 Control functions in the event of failure	45

	<i>Page</i>
10 Operator interface and machine-mounted control devices	48
10.1 General.....	48
10.2 Push-buttons	49
10.3 Indicator lights and displays.....	51
10.4 Illuminated push-buttons.....	52
10.5 Rotary control devices	52
10.6 Start devices.....	52
10.7 Emergency stop devices	52
10.8 Emergency switching off devices	53
10.9 Enabling control device.....	54
11 Controlgear: location, mounting, and enclosures	54
11.1 General requirements	54
11.2 Location and mounting.....	54
11.3 Degrees of protection.....	55
11.4 Enclosures, doors and openings	56
11.5 Access to controlgear	57
12 Conductors and cables.....	57
12.1 General requirements	57
12.2 Conductors	58
12.3 Insulation.....	58
12.4 Current-carrying capacity in normal service	59
12.5 Conductor and cable voltage drop.....	60
12.6 Flexible cables.....	61
12.7 Conductor wires, conductor bars and slipring assemblies	62
13 Wiring practices	64
13.1 Connections and routing	64
13.2 Identification of conductors	65
13.3 Wiring inside enclosures	67
13.4 Wiring outside enclosures	67
13.5 Ducts, connection boxes and other boxes	70
14 Electric motors and associated equipment	72
14.1 General requirements	72
14.2 Motor enclosures	72
14.3 Motor dimensions.....	72
14.4 Motor mounting and compartments	72
14.5 Criteria for motor selection.....	72
14.6 Protective devices for mechanical brakes.....	73
15 Accessories and lighting	73
15.1 Accessories	73
15.2 Local lighting of the machine and equipment.....	73
16 Marking, warning signs and reference designations	74
16.1 General.....	74
16.2 Warning signs.....	74
16.3 Functional identification	75
16.4 Marking of equipment.....	75
16.5 Reference designations	76

	<i>Page</i>
17 Technical documentation	76
17.1 General.....	76
17.2 Information to be provided	76
17.3 Requirements applicable to all documentation	77
17.4 Installation documents	77
17.5 Overview diagrams and function diagrams	78
17.6 Circuit diagrams.....	78
17.7 Operating manual	78
17.8 Maintenance manual.....	79
17.9 Parts list	79
18 Verification.....	79
18.1 General.....	79
18.2 Verification of conditions for protection by automatic disconnection of supply	80
18.3 Insulation resistance tests.....	82
18.4 Voltage tests.....	83
18.5 Protection against residual voltages.....	83
18.6 Functional tests	83
18.7 Retesting	83
Annex A (normative) Protection against indirect contact in TN-systems.....	84
Annex B (informative) Enquiry form for the electrical equipment or machines	88
Annex C (informative) Examples of machines covered by this part of IEC 60204	91
Annex D (informative) Current-carrying capacity and over-current protection of conductors and cables in the electrical equipment or machines.....	93
Annex E (informative) Explanation of emergency operation functions	99
Annex F (informative) Guide for the use of this part of IEC 60204	100
Annex G (informative) Comparison of typical conductor cross-sectional areas.....	102
Bibliography	104
Figure 1 – Block diagram of a typical machine.....	viii
Figure 2 – Example of equipotential bonding for electrical equipment of a machine	34
Figure 3 – Method a).....	47
Figure 4 – Method b).....	48
Figure A.1 – Typical arrangement for fault loop impedance measurement	87
Figure D.1 – Methods of conductor and cable installation independent of number of conductors/cables	94
Figure D.2 – Parameters of conductors and protective devices.....	96
Table 1 – Minimum cross-sectional area of the external protective copper conductor	19
Table 2 – Colour-coding for push-button actuators and their meanings.....	50
Table 3 – Symbols for push-buttons	51
Table 4 – Colours for indicator lights and their meanings with respect to the condition of the machine.....	51
Table 5 – Minimum cross-sectional areas of copper conductors	58

	<i>Page</i>
Table 6 – Examples of current-carrying capacity (I_z) of PVC insulated copper conductors or cables under steady-state conditions in an ambient air temperature of +40 °C for different methods of installation	60
Table 7 – Derating factors for cables wound on drums	62
Table 8 – Minimum permitted bending radii for the forced guiding of flexible cables	68
Table 9 – Application of the test methods for TN-systems	81
Table 10 – Examples of maximum cable length from each protective device to its load	82
Table A.1 – Maximum disconnecting times for TN systems	84
Table D.1 – Correction factors	93
Table D.2 – Derating factors from I_z for grouping	95
Table D.3 – Derating factors from I_z for multicore cables up to 10 mm ²	95
Table D.4 – Classification of conductors	96
Table D.5 – Maximum allowable conductor temperatures under normal and short-circuit conditions	97
Table F.1 – Application options	101
Table G.1 - Comparison of conductor sizes	102

INTRODUCTION

This part of IEC 60204 provides requirements and recommendations relating to the electrical equipment of machines so as to promote:

- safety of persons and property;
- consistency of control response;
- ease of maintenance.

More guidance on the use of this part of IEC 60204 is given in informative Annex F.

Figure 1 has been provided as an aid to the understanding of the inter-relationship of the various elements of a machine and its associated equipment. Figure 1 is a block diagram of a typical machine and associated equipment showing the various elements of the electrical equipment addressed in this document. Numbers in parentheses () refer to Clauses and Subclauses in this document. It is understood in Figure 1 that all of the elements taken together including the safeguards, tooling/fixtures, software, and the documentation, constitute the machine, and that one or more machines working together with usually at least one level of supervisory control constitute a manufacturing cell or system.

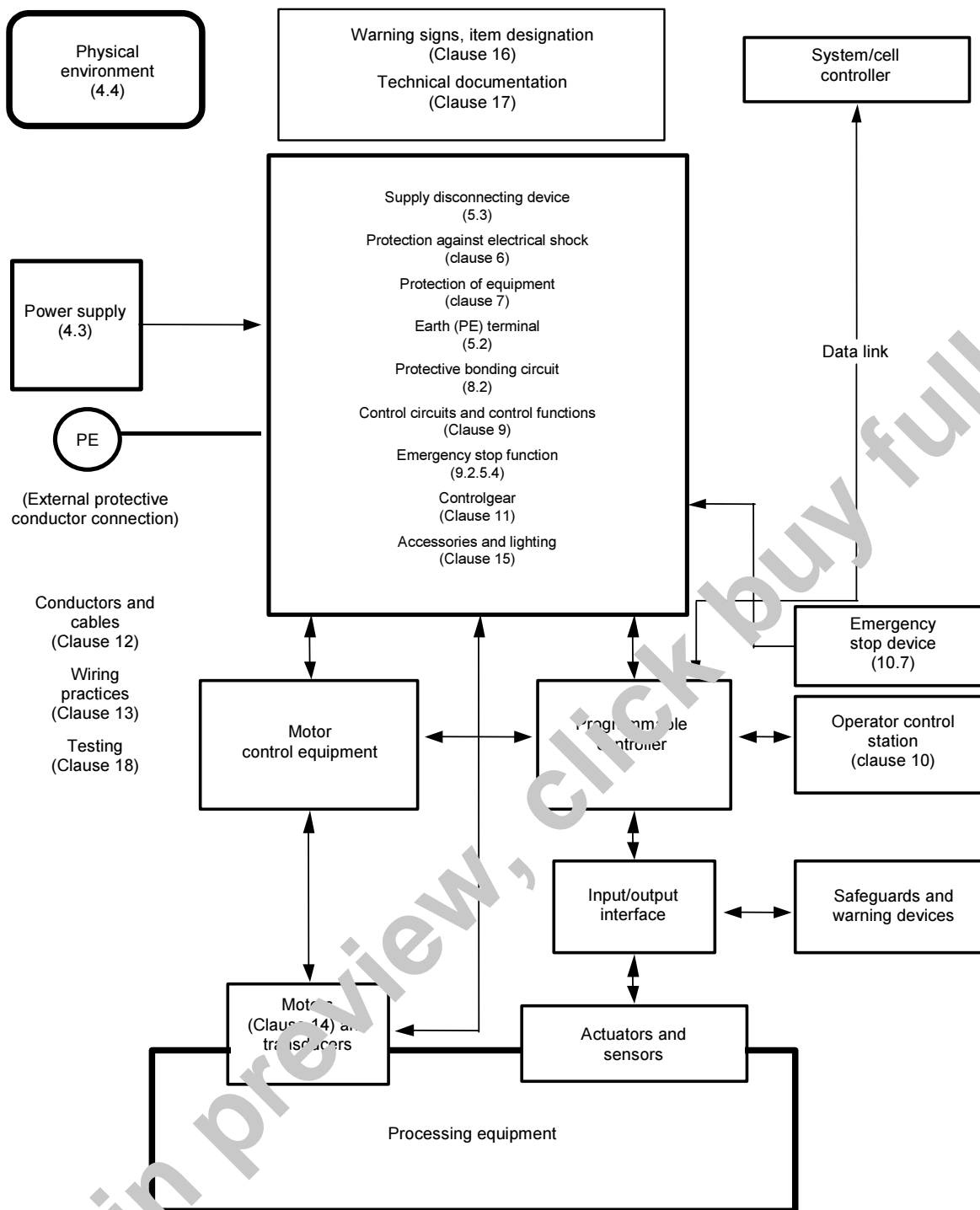


Figure 1 – Block diagram of a typical machine

STANDARDS AUSTRALIA

Australian Standard

**Safety of machinery—Electrical equipment of machines
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Any table, figure or text of the international standard that is struck through is not part of this standard. Any Australian/New Zealand table, figure or text that is added is part of this standard and is identified by shading.

1 Scope

This part of IEC 60204 applies to the application of electrical, electronic and programmable electronic equipment and systems to machines not portable by hand while working, including a group of machines working together in a co-ordinated manner.

NOTE 1 This part of IEC 60204 is an application standard and is not intended to limit or inhibit technological advancement.

NOTE 2 In this standard, the term *electrical* includes electrical, electronic and programmable electronic matters (i.e. *electrical equipment* means electrical, electronic and programmable electronic equipment).

NOTE 3 In the context of this standard, the term *person* refers to any individual and includes those persons who are assigned and instructed by the user or his agent(s) in the use and care of the machine in question.

The equipment covered by this standard commences at the point of connection of the supply to the electrical equipment of the machine (see 5.1).

NOTE 4 The requirements for the electrical supply installation in buildings, and surface mines, are given in AS/NZS 3000 and AS 3007 IEC 60364 series.

This part of IEC 60204 is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1 000 V for alternating current (AC) and not exceeding 1 500 V for direct current (DC), and with nominal supply frequencies not exceeding 200 Hz.

NOTE 5 For higher voltages, see IEC 60204-11.

This part of IEC 60204 does not cover all the requirements (for example guarding, interlocking, or control) that are needed or required by other standards or regulations in order to protect persons from hazards other than electrical hazards. Each type of machine has unique requirements to be accommodated to provide adequate safety.

This part specifically includes, but is not limited to, the electrical equipment of machines as defined in 3.35.

NOTE 6 Informative Annex C lists examples of machines whose electrical equipment can be covered by this standard.

NOTE 7 Fire protection for mobile and transportable machinery is covered by AS 5062.

This part of IEC 60204 does not specify additional and special requirements that can apply to the electrical equipment of machines that, for example:

- are intended for use in open air (i.e. outside buildings or other protective structures);
- use, process, or produce potentially explosive material (for example paint or sawdust) (which are covered by AS/NZS 60079 series);
- are intended for use in potentially explosive and/or flammable atmospheres;
- have special risks when producing or using certain materials;