Australian Standard®

Safety of machinery—Electrical equipment of machines

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

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The following are represented on Committee EL-017:

- Australian Chamber of Commerce and Industry
- Department of Consumer and Employment Protection, WorkSafe Division (WA)
- Department of Mineral Resources NSW
- Electrical Regulatory Authorities Council
- Federal Chamber of Automotive Industries
- Victorian WorkCover Authority

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

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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 (Giant) 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.

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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/fixturing, 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.

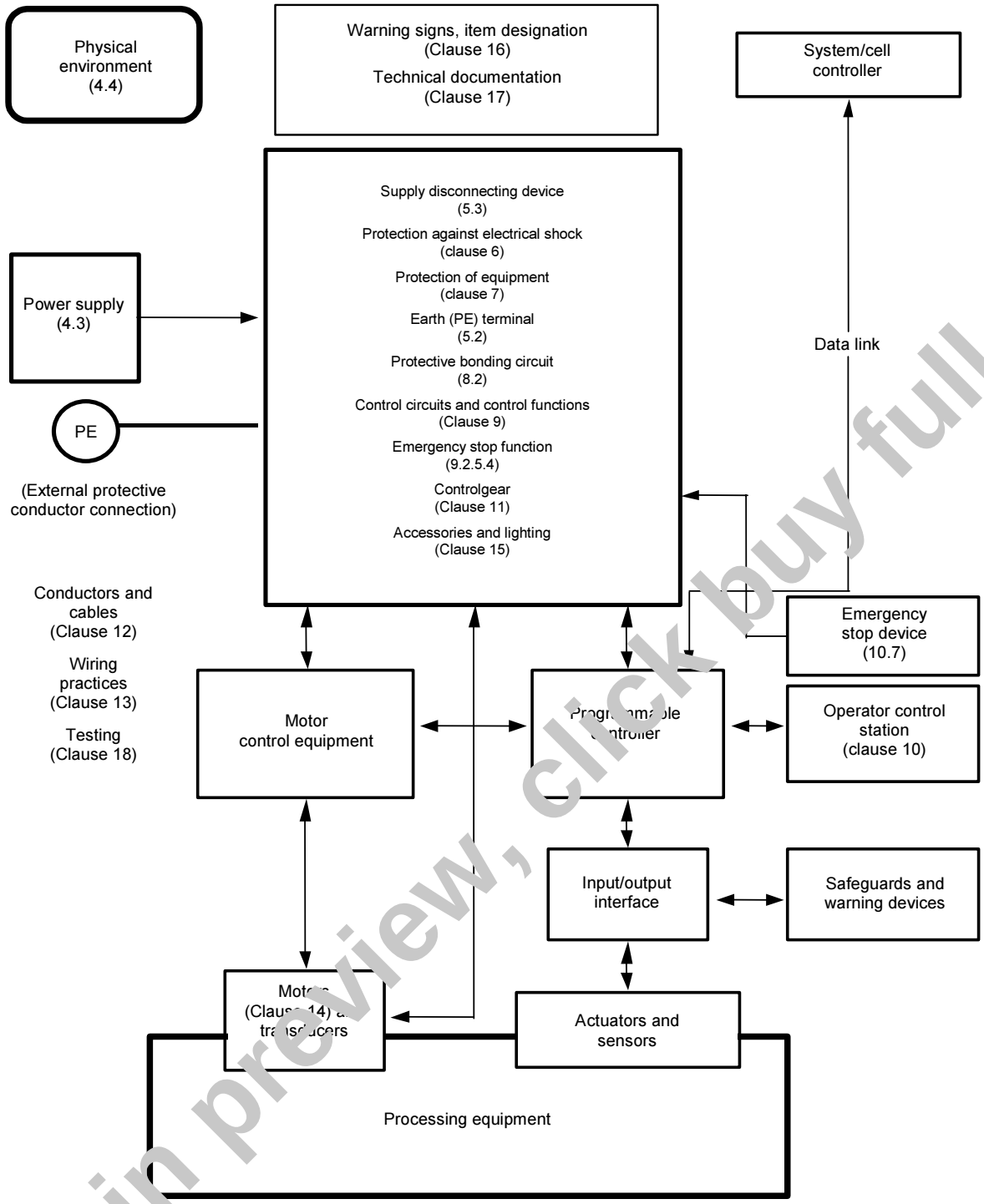

Figure 1 – Block diagram of a typical machine

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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;

