AS 5230:2021

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STANDARDS Australia

Safety of machinery — Electrical equipment of machines

Part 32: Requirements for hoisting machines (IEC 60204-32:2008 (ED.2.0) MOD)

AS 5230:2021

This Australian Standard® was prepared by ME-005, Cranes. It was approved on behalf of the Council of Standards Australia on 19 January 2021.

This Standard was published on 29 January 2021.

The following are represented on Committee ME-005:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute for Non-Destructive Testing
Better Regulation Division (Fair Trading, Safework NSW, Testsafe)
Bureau of Steel Manufacturers of Australia
Crane Industry Council of Australia
Department of Regional NSW
Elevating Work Platform Association of Australia
Engineers Australia
National Heavy Vehicle Regulator
Office of Industrial Relations, Qld
Transport for NSW
WorkSafe Division — Department of Mines, Industry Regulation and Safety (DMIRS) WA
Victorian WorkCover Authority (WorkSafe Victoria)

This Standard was issued in draft form for comment as DR AS 5230:202

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ISBN 978 1 76113 166 0

Safety of machinery — Electrical equipment of machines

Part 32: Requirements for hoisting machines (IEC 60204-32:2008 (ED.2.0), MOD)

First published as AS 5230:2021

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-005, Cranes. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide requirements for electrical and electronic equipment and systems to hoisting machines and related equipment.

NOTE 1 In this Standard, the term "electrical" includes both electrical and electronic matters (i.e., "electrical equipment" means both the electrical and the electronic equipment).

NOTE 2 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 user's agent(s) in the use and care of the hoisting machine in question.

The equipment covered by this Standard commences at the point of connection of the supply to the electrical equipment of the hoisting machine (crane-supply-switch) including systems for power supply and control feeders situated outside of the hoisting machine, for example, flexible cables or conductor wires or conductor bars.

NOTE 3 For the requirements for the electrical supply installation in buildings, refer to IEC 60364.

This Standard is applicable to equipment or parts of equipment not exceeding 1 000 V a.c. or 1 500 V d.c. between lines and with nominal frequencies not exceeding 200 Hz.

NOTE 4 For higher voltages, refer to IEC 60204-11 and AS 2067.

Additional and special requirements can apply to the electrical equipment of hoisting machines including those that —

(a) are intended for use in open air (i.e., outside buildings or other protective structures);

(b) handle or transport potentially explosive material (for example, paint or sawdust);

(c) are intended for use in potentially explosive and/or flammable atmospheres; and

(d) are intended for use in mines.

For the purposes of this Standard, hoisting machines include cranes of all types, winches of all types, and storage and retrieval machines. The following product groups are included:

(i) Overhead travelling cranes.

(ii) Mobile cranes.

(iii) Tower cranes.

(iv) Slewing luffing cranes.

(v) Gantry cranes.

(vi) Offshore cranes.

(vii) Floating cranes.

(viii) Winches of all types.

(ix) Hoists and accessories.

(x) Loader cranes.

(xi) Cable cranes.

(xii) Load holding devices.

(xiii) Storage and retrieval machines.

(xiv) Monorail hoists.

(xv) Straddle carriers.

(xvi) Rubber tyred gantry cranes (RTGs).

This Standard does not cover individual items of electrical equipment other than their selection for use and their erection.

This Standard is an adoption with national modifications and has been reproduced from IEC 60204-32, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to IEC 60204-32, for the application of this Standard in Australia.

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

(A) In the source text "this International Standard" should read "this Australian Standard".

(B) A full point substitutes for a comma when referring to a decimal marker.

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.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF MACHINERY – ELECTRICAL EQUIPMENT OF MACHINES –

Part 32: Requirements for hoisting machines

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC 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.
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9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60204-32 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

This second edition cancels and replaces the first edition published in 1998 and constitutes a technical revision.

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

a) Changes to IEC 60204-1, 5th edition (2005), have been incorporated, especially:
   - deletion of Clause 11 of the previous edition;
   - modification of the structure of equipotential bonding (Clause 8);
   - separation of control functions (Clause 9) and devices (Clause 10);
   - structure of technical documentation (Clause 17);
   - verification of protection by automatic disconnection of supply (18.2).

b) Subclause 9.2.7 on cableless controls has been modified.

The text of this standard is based on the following documents:

FDIS	Report on voting
44/574/FDIS	44/579/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

The following differences exist in some countries:

– 4.3.1: The voltage characteristics of electricity supplied by public distribution systems are given in EN 50160:1999, *Voltage characteristics of electricity supplied by public distribution systems* (Europe);

– 7.2.3: Disconnection of the neutral conductor is mandatory in a TN-S system (France);

– 12.2, Table 5: Cross-sectional area is specified according to American Wire Gauge (AWG) (USA);

– 13.2.2: For the protective conductor, the colour identification GREEN (with or without YELLOW stripes) is used as equivalent to the bicolour combination GREEN-AND-YELLOW (USA and Canada);

– 13.2.3: The colour identification WHITE or NATURAL GREY is used for earthed neutral conductors instead of the colour identification LIGHT BLUE (USA and Canada);

– 13.2.4: The colour YELLOW is used instead of ORANGE for that purpose (USA).

The list of all the parts of the IEC 60204 series, under the general title *Safety of machinery – Electrical equipment of machines*, can be found on the IEC web site.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

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

– safety of persons and property;

– consistency of control response;

– ease of maintenance.

High performance is not to be obtained at the expense of the essential factors mentioned above.

Figures 1 and 2 have been provided as an aid to understanding the interrelationship of the various elements of a hoisting machine and its associated equipment. Figure 1 is an overall block diagram of a typical material handling system (a group of cranes working together in a coordinated manner) and Figure 2 is a block diagram of a typical crane and associated equipment showing the various elements of the electrical equipment addressed in this standard.

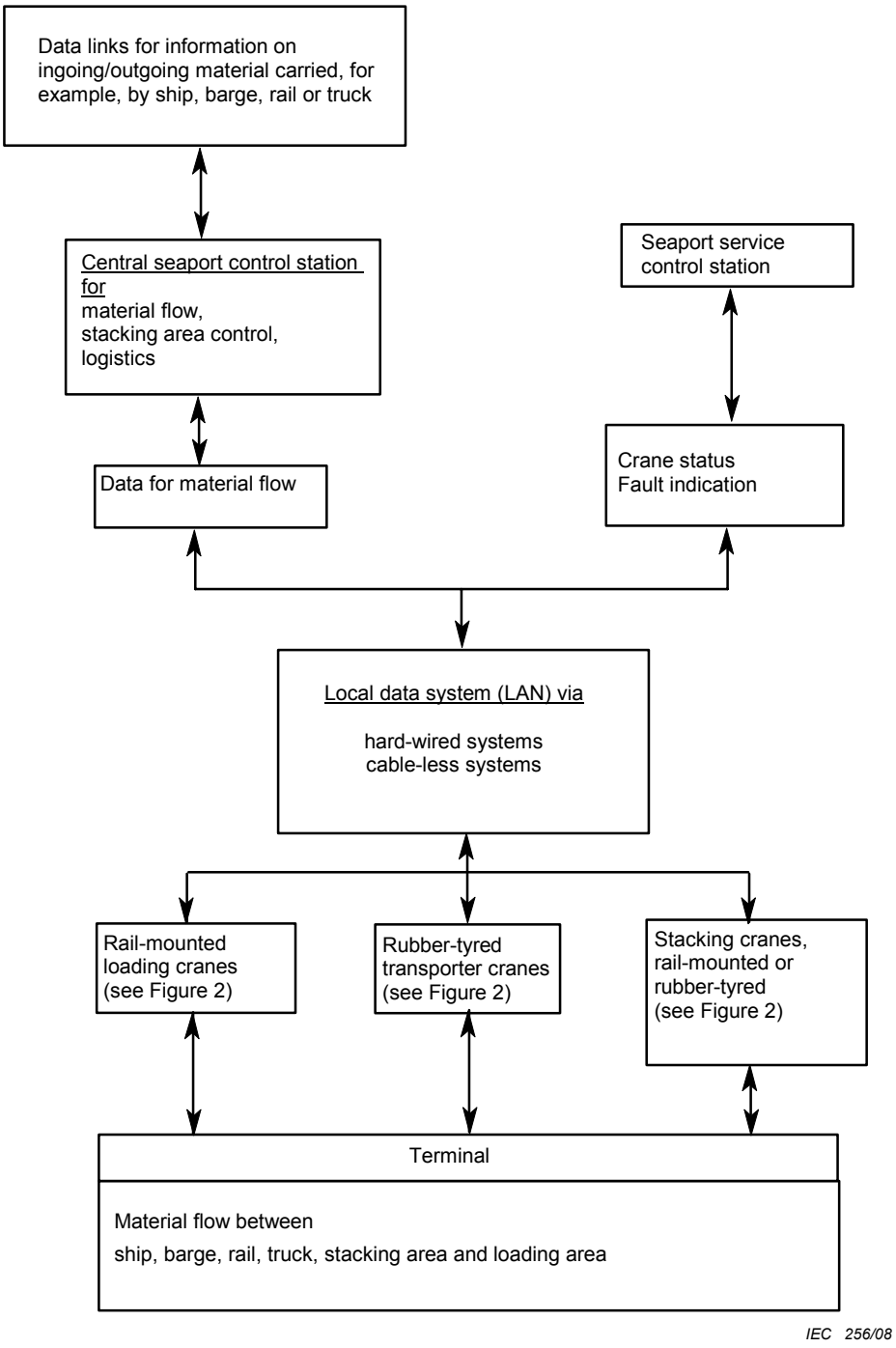

Figure 1 – Block diagram of combined working cranes in a typical material handling system in a seaport

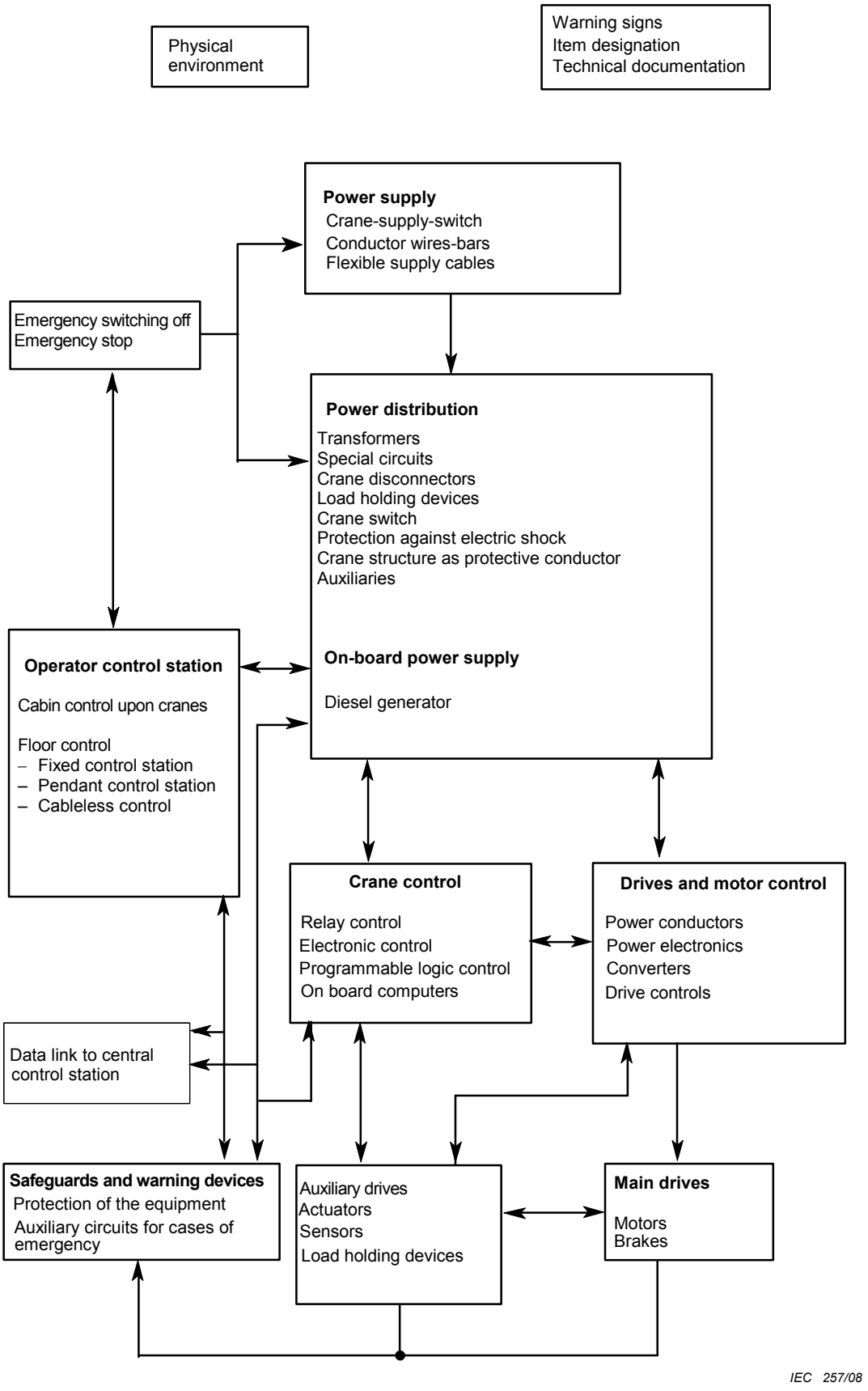

Figure 2 – Block diagram of a typical crane and its associated electrical equipment

SAFETY OF MACHINERY – ELECTRICAL EQUIPMENT OF MACHINES –

Part 32: Requirements for hoisting machines

1 Scope

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– mobile cranes;
– tower cranes;
– slewing luffing cranes;
– gantry cranes;
– offshore cranes;
– floating cranes;
– winches of all types;
– hoists and accessories;
– loader cranes;
– cable cranes;
– load holding devices;
– storage and retrieval machines;