AS/NZS 4240.1:2009

Australian/New Zealand Standard™

Remote control systems for mining equipment

Part 1: Design, construction, testing, installation and commissioning

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-023, Electrical Equipment in Mines and Quarries. It was approved on behalf of the Council of Standards Australia on 16 March 2009 and on behalf of the Council of Standards New Zealand on 20 March 2009.
This Standard was published on 6 April 2009.

The following are represented on Committee EL-023:

Australian Chamber of Commerce and Industry
Australian Coal Association
Australian Industry Group
Department of Mines and Energy (Qld)
Department of Primary Industries, Mine Safety (NSW)
Electrical Apparatus Service Association
Electrical Regulatory Authorities Council
Mining Electrical and Mining Mechanical Engineering Society
Ministry of Economic Development (New Zealand)
National Association of Testing Authorities Australia
New Zealand Hazardous Areas Electrical Coordinating Committee
Simtars (Department of Mines and Energy, Qld)
Solid Energy, New Zealand
The Aviation and Marine Engineers Association, New Zealand
University of Newcastle
WorkCover New South Wales

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 Standards may also be withdrawn.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.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. 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 06670.

Australian/New Zealand Standard™

Remote control systems for mining equipment

Part 1: Design, construction, testing, installation and commissioning

Originally as AS/NZS 4240:1994.
Revised in part and redesignated as AS/NZS 4240.1:2009.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 9064 X

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-023, Electrical Equipment in Mines and Quarries as a revision, in part, of AS/NZS 4240:1994, *Remote controls for mining equipment*. It is now Part 1 of a four Part series:

Part 1: Design, construction, testing, installation and commissioning (this Part)

Part 2: Operation and maintenance for underground metalliferous mining

Part 3: Operation and maintenance for underground coal mining

Part 4 Operation and maintenance for surface mining

The objective of this Standard is to provide requirements for designers, manufacturers, users and regulating authorities concerned with the safe use of remote controlled mining equipment in both the coal and metalliferous mining industries.

Each Section deals with specific aspects of design and safe use of remote control systems for mining equipment.

This Standard is based on the work instigated by a special working group comprising representatives from both the coal and metalliferous mining industries.

This Standard differs from the previous edition in the following significant ways:

(a) The introduction of the principles of AS 61508, *Functional safety of electrical/electronic programmable electronic safety-related systems,* and safety integrity levels.

(b) The addition of requirements for the creation of a safety file.

(c) The expansion of the commissioning and acceptance requirements.

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

CONTENTS

Page

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Remote control systems for mining equipment

Part 1: Design, construction, testing, installation and commissioning

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design, construction, testing, installation, commissioning and modification of remote control systems for mining equipment and machinery. It also recommends safeguarding practices and the provision for training of personnel associated with the operation and maintenance of such equipment and machinery.

It applies to systems where the remote controls are located with the operator who is expected to remain in visual contact (direct or teleremote) with the equipment or machine being controlled. Typical systems of remote control may incorporate, but are not limited to, radio or infra-red transmitters and receivers or direct electrical connection. This Standard recognizes that remote control equipment may be a subset of semi-automated and automated systems.

This Standard focuses on minimizing the risk to mine workers from unexpected movement of remote controlled machines or parts of machines. Risks from hazards such as chemicals, electricity (shocks and burns) and explosions are not intended to be covered by this Standard.

This Standard is focussed on the electrical interface but the design, risk assessment principles and some of the specific requirements are applicable to hydraulic and pneumatic systems.

1.2 APPLICATION

This Standard applies to remote controlled mobile machines and parts of mobile machines.

Examples include, but are not limited to, rubber tyred or tracked machines, breaker line supports, continuous miners, flexible conveyor trains, load-haul dumps, shearers, shovels, tyre handlers and shuttle cars.

It applies to coal and metalliferous mining machines used in both surface and underground mines but does not apply to the following:

(a) Automatic conveyor and shuttle systems.

(b) Gantry and monorail cranes.

(c) Shaft and drift winders.

(d) Machines that are isolated from personnel.

1.3 RELATIONSHIP TO REGULATIONS

The requirements of this Standard may be read in conjunction with, but do not take precedence over, regulations of a regulatory authority that may apply in a specific area.