

Australian/New Zealand Standard™

**Remote control systems for mining
equipment**

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



AS/NZS 4240.1:2009

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.
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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
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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.

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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.