

INTERNATIONAL STANDARD

**Mobile remotely controlled systems (MRCSS) for nuclear and radiological applications -
Part 1: Particular requirements for ground surveillance**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Mobile remotely controlled systems (MRCSS)
for nuclear and radiological applications -
Part 1: Particular requirements for ground surveillance**

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IEC 63048-1 has been prepared by IEC technical committee 45: Nuclear instrumentation. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
45/1055/FDIS	45/1065/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 63048 series of standards, published under the general title *Mobile remotely controlled systems (MRCSS) for nuclear and radiological applications*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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INTRODUCTION

IEC 63048 provides the general requirements for mobile remotely controlled systems (MRCSS) intended for various missions at nuclear facilities. Depending on the given missions, different types of MRCSS can be used, and the requirements of the MRCSS are applied in different level.

A nuclear power plant as a representative nuclear facility, operates under various conditions, such as normal operation, transient conditions, accident conditions and decommissioning; although different missions are required in each operating mode, surveillance missions are applicable to all operating modes.

Nuclear facilities are strictly regulated to prevent leakage of radioactive materials. Surveillance is an important mission for all nuclear facilities.

All types of MRCSS (i.e. ground, aerial, under- or surface-water MRCSS, etc.) are useful for surveillance of nuclear facilities; among them, ground MRCSS are widely used.

This document defines the requirements for ground surveillance.

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1 Scope

This part of IEC 63048 is applicable to MRCSs for ground surveillance of a nuclear facility or in a radiological environment. This document describes the mission, operating conditions, reliability requirements, functional requirements, operational requirements, and test requirements of MRCS for ground surveillance of nuclear facilities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-0, *Explosive atmospheres - Part 0: Equipment - General requirements*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 63048:2020, *Mobile remotely controlled systems for nuclear and radiological applications - General requirements*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1.1

mission

objective description of the fundamental task performed by a system

[SOURCE: IEC 63048:2020, 3.3]

3.1.2

mobile remotely controlled system

MRCS

robotics in nuclear instrumentation that are mobile, remotely controlled by an operator, and consisting of sub-systems, modules or assemblies

EXAMPLE Subsystems, modules or assemblies are, for example, mechanical and electrical/electronic controls, communications (between the operator and the robotic, and some robotic subsystems, modules or assemblies), lighting and possibly audio subsystems, modules or assemblies, sampling and monitoring subsystems, modules or assemblies, used for photographing the environment with video or still photos, sampling or monitoring the contacted air or surfaces for radioactive materials, noxious gases and particulates such as asbestos, and performing other designed activities, all controlled by the operator.

[SOURCE: IEC 63048:2020, 3.4]