



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS T 1022 : 2018

(IEIEJ/JSA)

Safety requirements of electrical installations for medically used rooms in hospitals and clinics

ICS 11.140

Reference number : JIS T 1022 : 2018 (E)

PROTECTED BY COPYRIGHT

 **Documents**
Document Sharing Hub

13 S

T 1022 : 2018

Date of Establishment: 1982-11-01

Date of Revision: 2018-01-22

Date of Public Notice in Official Gazette: 2018-01-22

Investigated by: Japanese Industrial Standards Committee

Standards Board for IEC area

Technical Committee on Electricity

JIS T 1022 : 2018, First English edition published in 2018-05

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2018

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Installation of medical earthing system, non-earthed wiring system and emergency power supply	3
4.1 Medical earthing system	3
4.2 Non-earthed wiring system	8
4.3 Emergency power supply	10
5 Power supply circuit in medical room	14
6 Inspection and maintenance	15
Annex A (informative) Calculation of earth resistance of building structures	17

Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Institute of Electrical Installation Engineers of Japan (IEIEJ)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS T 1022:2007** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

Safety requirements of electrical installations for medically used rooms in hospitals and clinics

1 Scope

This Japanese Industrial Standard specifies the safety requirements and installation method of the medical earthing system, non-earthed wiring system and emergency power supply among the electrical installations provided in hospitals, clinics, etc. for the purpose of ensuring safety in use of medical electrical equipment.

This Standard also specifies installation, inspection and maintenance of power supply circuit for medical rooms.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

- JIS C 2808 *Hospital grade earth centerbodies and terminals*
- JIS C 3307 *600 V Polyvinyl chloride insulated wires*
- JIS C 3612 *600V Flame retardant polyethylene insulated wires*
- JIS C 4411-1 *Uninterruptible power systems (UPS) — Part 1 : General and safety requirements for UPS*
- JIS C 4411-2 *Uninterruptible power systems (UPS) — Part 2 : Electromagnetic compatibility (EMC) requirements*
- JIS C 4411-3 *Uninterruptible power systems (UPS) — Part 3 : Method of specifying the performance and test requirements*
- JIS C 8201-2-2 *Low-voltage switchgear and controlgear — Part 2-2 : Circuit-breakers incorporating residual current protection*
- JIS T 0601-1 *Medical electrical equipment — Part 1 : General requirements for basic safety and essential performance*
- JIS T 1021 *“Hospital grade” outlet-sockets and plugs*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1 medical room

room to provide medical care such as medical consultation, examination, medical treatment, observation, etc.

3.2 medical electrical equipment

electrical apparatus which has applied parts, transfers energy to or from the patient, gives energy to the patient, or detects energy from the patient

3.3 hospital grade outlet-socket

plug receptacle in a pair of hospital grade outlet-sockets and plugs which consists of a blade receiver, terminals for wiring connection, an enclosure of insulating material, etc. and can be fixed on a structural material

3.4 medical earthing system

earthing equipment to provide protective earth or earth for potential equalization, and earthing system improved in reliability especially for medical use

3.5 medical earth

earth based on medical earthing system

3.6 protective earth

earth provided for exposed conductive part to prevent electric shock

3.7 earth for potential equalization

earth electrically connected to one point to make exposed conductive part or extraneous conductive part equipotential

3.8 exposed conductive part

conductive part of electrical apparatus which is not live part, but has a possibility to become live part in case of failure, and is accessible by a person

3.9 extraneous conductive part

conductive part which does not constitute part of electrical installations and has a possibility of transmitting the earth potential, etc.

NOTE : Extraneous conductive parts include metal sash of building, water supply pipe, and metal frame of bed.

3.10 earth electrode

conductor in close contact to the earth to make an electric connection with the earth

3.11 earth trunk line

earth conductor from earth electrode up to the branch terminal board (also called branch bar) of medical earth centre

3.12 earth branch line

earth conductor connecting lead wires of hospital grade outlet-socket or of medical earth terminal, exposed conductive part, or extraneous conductive part to medical earth centre

3.13 lead wire

electric wire for providing medical electrical equipment with protective earth or earth for potential equalization

3.14 medical earth centre body

article to be connected to earth trunk line by collecting earth branch lines that is constituted of branch terminal board, lead wires, test terminal, plates, etc.

3.15 medical earth centre

article consisting of medical earth centre body and enclosure

3.16 medical earth terminal

earth terminal consisting of an earth terminal board, earth terminals for connecting hook-type crimp style terminals, crimp style terminals with swaged lead wires and the like

3.17 non-earthed wiring system

wiring system in which the neutral point of the secondary side circuit of the insulating transformer or one end of the circuit is not earthed

3.18 commercial power supply

power to be supplied by an electric power company, among power supply permanently installed, in order to supply power to equipment other than medical electrical equipment

3.19 emergency power supply

generic name of power supply which automatically supplies power when commercial power supply stops

3.20 general emergency power supply

emergency power supply capable of supplying power to the load within 40 s after commercial power supply stops

3.21 special emergency power supply

emergency power supply capable of supplying power to the load within 10 s after commercial power supply stops

3.22 uninterruptible emergency power supply

emergency power supply capable of supplying power without interruption (i.e. continuous a.c. power supply is secured) after commercial power supply stops

4 Installation of medical earthing system, non-earthed wiring system and emergency power supply

4.1 Medical earthing system

Protective earth, earth for potential equalization, earth trunk line and earth electrode which constitute medical earthing system shall be as follows.

The concept of the medical earthing system is shown in Figure 1.

Go to upper floors

Go to upper floors

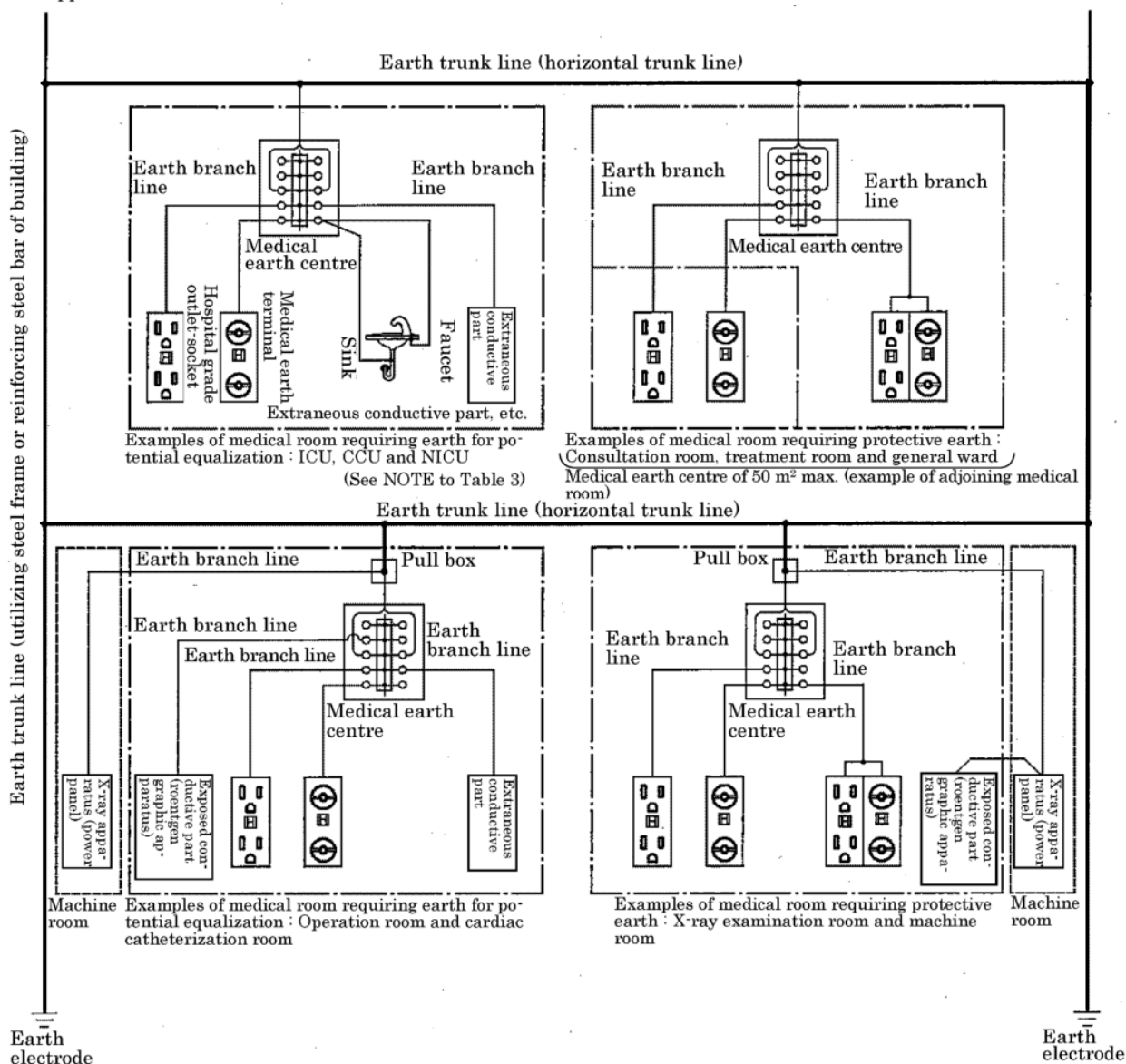


Figure 1 Schematic of medical earthing system (informative)

a) **Protective earth** The protective earth to be installed in a medical room shall be as follows.

- 1) For the medical room where medical electrical equipment is used, protective earth shall be provided based on the category of the medical room in accordance with Table 2.

Examples of classifying the medical room into categories are indicated in Table 3.

- 2) The medical earth centre, hospital grade outlet-socket and medical earth terminal for protective earth shall be installed in each medical room. However, when total floor area with the adjoining medical room is 50 m² or less, medical earth centre may be shared.