

INTERNATIONAL STANDARD

IEC 60950-21

First edition
2002-12

Information technology equipment – Safety –

Part 21: Remote power feeding

iTech Standards
(<https://standards.iteh.ai>)
Document Preview

IEC 60950-21:2002

<https://standards.iteh.ai/catalog/standards/iec/50657acf-513f-4f2b-a851-7011b5f57b31/iec-60950-21-2002>

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*



Reference number
IEC 60950-21:2002(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch

Tel: +41 22 919 02 11

Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

IEC 60950-21

First edition
2002-12

Information technology equipment – Safety –

Part 21: Remote power feeding

iTek Standards
(<https://standards.iteh.ai>)
Document Preview

IEC 60950-21:2002

<https://standards.iteh.ai/standards/iec/58657acf-513f-4f2b-a851-7011b5f57b31/iec-60950-21-2002>

© IEC 2002 Copyright - all rights reserved

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.

International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CONTENTS

FOREWORD	5
INTRODUCTION	9
1 Scope	11
2 Normative references.....	11
3 Definitions	11
4 General requirements	13
4.1 Power from a telecommunication network (see also 1.4.11 of IEC 60950-1).....	13
4.2 Access to energized parts (see also 2.1.1.1 of IEC 60950-1)	13
4.3 Protection in service access areas (see also 2.1.2 of IEC 60950-1).....	13
4.4 Protection in restricted access locations (see also 2.1.3 of IEC 60950-1).....	13
4.5 Interconnection of equipment.....	15
4.5.1 General requirements (see also 3.5.1 of IEC 60950-1).....	15
4.5.2 Interconnection between RFT circuits (see also 3.5.2 of IEC 60950-1).....	15
5 Connection to telecommunication networks.....	15
6 Remote power feeding	15
6.1 RFT-C circuit limits	15
6.1.1 Limits under normal operating conditions.....	17
6.1.2 Limits under single fault conditions	17
6.1.3 Limits with one conductor earthed.....	19
6.2 RFT-V circuit limits.....	19
6.2.1 Limits under normal operating conditions.....	19
6.2.2 Limits under single fault conditions	21
6.2.3 Limits with one conductor earthed.....	21
6.3 Separation from other circuits and parts	21
6.4 Installation instructions	23
Annex A (informative) Remote power feeding.....	27
Bibliography.....	37
Figure 1 – Maximum current after a single fault.....	19
Figure 2 – Limits for capacitance values of RFT CIRCUITS or the total system	25
Figure A.1 – Example of a remote power feeding RFT-C system	31
Figure A.2 – Example of a remote power feeding RFT-V system	33

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INFORMATION TECHNOLOGY EQUIPMENT –
SAFETY –**
Part 21: Remote power feeding

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

<https://www.intelstandards.org/standards/iec/60950-21/2002>
International Standard IEC 60950-21 has been prepared by IEC technical committee 108: 2002
Safety of electronic equipment within the field of audio/video, information technology and
communication technology

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

FDIS	Report on voting
108/22/FDIS	108/42/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.

In this standard, the following print types are used:

- requirements proper and normative annexes: in roman type;
- *compliance statements and test specifications: in italic type;*
- notes and other informative matter: in smaller roman type;
- normative conditions within tables: in smaller roman type;
- Terms that are defined in Clause 2 and in IEC 60950-1: SMALL CAPITALS.

The committee has decided that the contents of this publication will remain unchanged until 2005-11. At this date, the publication will be

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

Withdrawing

iTech Standards
(<https://standards.iteh.ai>)
Document Preview

[IEC 60950-21:2002](https://standards.iteh.ai/standards/iec/50657acf-513f-4f2b-a851-7011b5f57b31/iec-60950-21-2002)

<https://standards.iteh.ai/standards/iec/50657acf-513f-4f2b-a851-7011b5f57b31/iec-60950-21-2002>

INTRODUCTION

This Part 21 of IEC 60950 is intended to be used with IEC 60950-1, hereafter referred to as “Part 1”. The subclauses of IEC 60950-1 apply as far as reasonable. Where safety aspects are similar to those of Part 1, the relevant clause or subclause of IEC 60950-1 is shown for reference in parentheses after the clause or subclause title in this Part 21. Where a requirement in this Part 21 refers to a requirement or criterion of Part 1, a specific reference to IEC 60950-1 is made.

Withhold

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

IEC 60950-21:2002
<https://standards.iteh.ai/catalog/standards/iec/50657acf-513f-4f2b-a851-7011b5f57b31/iec-60950-21-2002>

INFORMATION TECHNOLOGY EQUIPMENT – SAFETY –

Part 21: Remote power feeding

1 Scope

This part of IEC 60950 applies to information technology equipment intended to supply and receive operating power via a TELECOMMUNICATION NETWORK, where the voltage exceeds the limits for TNV CIRCUITS.

2 Normative references

The following referenced documents are indispensable for the application 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 60950-1:2001, *Information technology equipment – Safety – Part 1: General requirements*

3 Definitions

For the purposes of this International Standard, the terms and definitions given in IEC 60950-1 and the following apply.

3.1

RFT circuit

remote feeding telecommunication circuit

a SECONDARY CIRCUIT within the equipment, intended to supply or receive d.c. power via a TELECOMMUNICATION NETWORK at voltages exceeding the limits for TNV CIRCUITS, and on which overvoltages from TELECOMMUNICATION NETWORKS are possible

3.2

RFT-C circuit

an RFT CIRCUIT which is so designed and protected that under normal operating conditions and single fault conditions, the currents in the circuit do not exceed defined values

NOTE The limit values of current under normal operating and single fault conditions are specified in 6.1

3.3

RFT-V circuit

an RFT CIRCUIT which is so designed and protected that under normal operating conditions and single fault conditions, the voltages are limited and the accessible area of contact is limited

NOTE The limit values of voltage under normal operating and single fault conditions are specified in 6.2

4 General requirements

4.1 Power from a telecommunication network (see also 1.4.11 of IEC 60950-1)

RFT CIRCUITS normally exceed the limit in 2.3.1 b) of IEC 60950-1 and also exceed 15 VA. See 4.7.2 of IEC 60950-1 regarding the possible need for a FIRE ENCLOSURE.

4.2 Access to energized parts (see also 2.1.1.1 of IEC 60950-1)

The equipment shall be so constructed that, in OPERATOR ACCESS AREAS, there is adequate protection against contact with bare parts of RFT CIRCUITS.

These requirements apply for all positions of the equipment when it is wired and operated as in normal use.

Protection shall be achieved by insulation or by guarding or by the use of interlocks.

Compliance is checked as given in 2.1.1.1 of IEC 60950-1.

4.3 Protection in service access areas (see also 2.1.2 of IEC 60950-1)

In a SERVICE ACCESS AREA, bare parts of RFT CIRCUITS shall be located or guarded so that accidental shorting to SELV CIRCUITS or to TNV CIRCUITS, for example, by TOOLS or test probes used by SERVICE PERSONS, is unlikely.

Bare parts of RFT CIRCUITS that involve an energy hazard shall be located or guarded so that unintentional bridging by conductive materials that might be present is unlikely during service operations involving other parts of the equipment.

Any guards required for compliance with 4.3 shall be easily removable and replaceable if removal is necessary for servicing.

Compliance is checked by inspection and measurement. In deciding whether or not unintentional contact is likely, account is taken of the way a SERVICE PERSON needs to gain access past, or near to, the bare parts in order to service other parts.

4.4 Protection in restricted access locations (see also 2.1.3 of IEC 60950-1)

For equipment to be installed in a RESTRICTED ACCESS LOCATION, the requirements for OPERATOR ACCESS AREAS apply, except that contact is permitted with the bare parts of an RFT CIRCUIT by the test finger shown in Figure 2A of IEC 60950-1 (see 2.1.1.1 of IEC 60950-1); however, such parts shall be so located or guarded that unintentional contact is unlikely.

Bare parts that involve an energy hazard shall be located or guarded so that unintentional bridging by conductive materials that might be present is unlikely.

Compliance is checked by inspection and measurement. In deciding whether or not unintentional contact is likely, account is taken of the need to gain access past, or near to, the bare parts.

4.5 Interconnection of equipment

4.5.1 General requirements (see also 3.5.1 of IEC 60950-1)

Interconnection circuits shall be selected to provide continued conformance to the requirements of Clause 6 for RFT CIRCUITS, after making connections.

NOTE It is permitted for an INTERCONNECTING CABLE to contain more than one type of CIRCUIT (for example, SELV, LIMITED CURRENT, TNV, ELV, RFT, or HAZARDOUS VOLTAGE) provided that they are separated as required by IEC 60950-1 and this standard.

4.5.2 Interconnection between RFT circuits (see also 3.5.2 of IEC 60950-1)

RFT-C CIRCUITS in the supply equipment shall be connected only to RFT-C CIRCUITS in other equipment.

RFT-V CIRCUITS in the supply equipment shall be connected only to RFT-V CIRCUITS in other equipment.

For compliance, see 6.4 e).

5 Connection to telecommunication networks

An RFT CIRCUIT is permitted to be directly connected to a TELECOMMUNICATION NETWORK.

6 Remote power feeding

Access to the conductors of the REMOTE FEEDING TELECOMMUNICATION CIRCUIT is restricted to SERVICE PERSONS.

NOTE Clause 6 covers power feeding to remote equipment at voltages in excess of the voltage limits for TNV CIRCUITS. There are two types of circuits as follows:

- RFT-C CIRCUITS provide for safety by limiting the current to 60 mA d.c. and are presently used in Europe;
- RFT-V CIRCUITS provide for safety by limiting the voltage to 200 V d.c. and currents to the same limits as in 6.3 of IEC 60950-1, and are presently used in North America.

See Annex A.

6.1 RFT-C circuit limits

NOTE Unless the current limits in 6.1.1, 6.1.2 and 6.1.3 are inherently met, the RFT-C CIRCUIT should have a monitoring and control device (for example, a balance control), that operates in such a way as to maintain the required current limits.