



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 38189-2019

**Safety of equipment electrically connected to a
telecommunication network**

Issued on: October 14, 2019

Implemented on: November 1, 2020

Issued by: SAMR; SAC

Table of Contents

1 Scope	1
1.1 Applicable equipment	1
1.2 Additional requirements	1
1.3 Not applicable	1
1.4 Basic Safety Publication	1
2 Normative references	1
3 Terms and definitions	2
3.1 Basic concepts	2
3.2 Insulation	3
3.3 Equipment electrical ratings	3
3.4 Accessibility	3
3.5 Circuit and circuit characteristics	4
3.6 Grounding	5
3.7 Clearance and creepage distance	5
4 TNV circuit	5
4.1 TNV-0 circuit	5
4.2 TNV-1 circuit, TNV-2 circuit and TNV-3 circuit	7
5 Protection against equipment hazards for maintenance personnel of communication networks and users of equipment connected to communication networks	11
5.1 General requirements	11
5.2 Use of protective grounding	11
5.3 Isolation of communication network and ground	11
5.4 Limitation of the contact current connected to the communication network	12
6 Protection of equipment users from over-voltage on the communication network	13
6.1 Isolation requirements	13
6.2 Dielectric strength test procedure	14
7 Overheating protection of communication wiring system	15
Appendix A (Normative Appendix) Telephone Ringing Signal Guidelines (see 4.2.1.1)	17
A.1 Overview	17
A.2 Method A	17
A.3 Method B	19
Appendix B (Normative Appendix) Pulse Test Generator (see 6.2.1)	21

Appendix C (informative appendix) Pulse test procedure (see 6.2.3)	22
C.1 Test equipment	22
C.2 Test procedure	22
C.3 Example of waveform during pulse test	22
References	24
Figure 1 The highest voltage allowed after a single fault	7
Figure 2 Test voltage generator	9
Figure 3 Test probe	10
Figure 4 Isolation test between communication network and ground	12
Figure 5 Contact current test circuit for single-phase equipment connected to star TN or TT distribution system	13
Figure 6 Contact current test circuit for three-phase equipment connected to star TN or TT distribution system	13
Figure 7 Application point of test voltage	14
Figure A.1 Definition of ringing period and rhythm period	18
Figure A.2 ITS1 limit curve of the rhythmic ringing signal	18
Figure A.3 Peak and peak-to-peak current	19
Figure A.4 Ringing voltage disconnect criterion	20
Figure B.1 Pulse generating circuit	21
Figure C.1 Waveform without a surge suppressor and no insulation breakdown	22
Figure C.2 Waveform during insulation breakdown without surge suppressor	22
Figure C.3 Waveform of sound insulation when the surge suppressor operates	23
Figure C.4 Waveform of surge suppressor and insulation short circuit	23
Table 1 Voltage range of TNV circuit	4
Table 2 Isolation of TNV circuit	8

Preface

All technical content of this standard is mandatory.

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this standard is equivalent to IEC 62151.2000 "Safety of Electronic Equipment Electrically Connected to Communication Networks".

The Chinese documents that have consistent correspondence with the normatively cited international documents in this standard are as follows.

---GB/T 2900.73-2008 Electrical terminology grounding and protection against electric

shock (IEC 60050-195.1998, MOD)

---GB/T 11918 (all parts) Industrial plug sockets and couplers [IEC 60309 (all parts)]

---GB/T 16499-2017 Compilation of electrical and electronic safety publications, basic safety publications and multi-disciplinary shared safety publications

Guidelines for the application of objects (IEC Guide104.2010, NEQ)

This standard has made the following editorial changes.

--- Incorporate the errata of the original standard into this standard, and indicate with a vertical double line (||) in the blank position outside the corresponding clause;

---IEC 62151.2000 AC peak limit appeared 71V and 70.7V, this standard is unified to 71V;

---Edited the Ipp label in Figure A.3.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard was proposed and managed by the Ministry of Industry and Information Technology of the People's Republic of China.

Drafting organizations of this standard. The Fifth Institute of Electronics of the Ministry of Industry and Information Technology, China Electronics Standardization Institute, Shenzhen Saixi Information Technology

Technology Co., Ltd., Beijing Saixi Technology Development Co., Ltd., China National Accreditation Center for Conformity Assessment, Shenzhen Skyworth Digital Technology Co., Ltd.

Company, Inspur (Suzhou) Financial Technology Service Co., Ltd.

1.1 Applicable equipment

This standard applies to equipment designed and scheduled to be directly connected to the communication network, regardless of the power supply.

This standard aims to strengthen product safety standards in order to cover all the dangers caused only by connecting to the communication network.

The safety requirements and compliance criteria contained in this standard have the following three aspects.

a) Maintenance personnel of the communication network and other users of the communication network suffer from the dangers caused by the connected equipment on the communication network

Risk protection;

b) Protection of equipment users and maintenance personnel from dangers caused by voltage on the communication network;

c) Protection against the danger of overheating the communication wiring system.

It is assumed that sufficient measures have been taken in accordance with ITU-T Recommendation K.11 to reduce the peak overvoltage of the equipment exceeding 1.5kV.

may. When the equipment is likely to have an overvoltage exceeding 1.5kV peak, additional protective measures may be required in the building facilities, such as

Surge suppression measures.

1.2 Additional requirements

For the following equipment, it may be necessary to add some requirements to those safety requirements specified in this standard.

---It is scheduled to be in special conditions such as extremely high or low temperature, excessive dust, high humidity or severe vibration, flammable gas, corrosion or explosive

Equipment working under environmental conditions;

---Medical electronic equipment directly connected to the patient's body.

1.3 Not applicable

This standard does not apply to.

---Protection of equipment users and equipment maintenance personnel from the dangers caused by the equipment itself. If the device itself meets the corresponding

According to safety standards, it is believed that equipment users and equipment maintenance personnel have been protected from the dangers caused by the equipment itself.

---Performance reliability of equipment and communication network.

---Use of communication network equipment exceeding the TNV circuit voltage limit.

1.4 Basic safety publications

The main purpose of this basic safety publication is to provide technical committees in accordance with the principles of IEC Guide104 and ISO /IEC Guide51.

It is used when drafting standards. This standard is not intended to be used by manufacturers and certification bodies.

One of the duties of the technical committee is to use basic safety publications during the drafting of publications, as long as applicable. Unless specifically mentioned or