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INTERNATIONAL STANDARD

Building intercom systems -
Part 1-1: System requirements - General

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Building intercom systems - Part 1-1: System requirements - General

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IEC 62820-1-1 has been prepared by IEC technical committee 79: Alarm and electronic security systems. It is an International Standard.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) addition of IEC 61000-6-8 and IEC 62368-1:2023 as normative references;
b) update of ISO 12233 to the latest version and addition of this reference as a normative reference;
c) modification of the light source colour temperature from 3 100 K ± 100 K to 6 500 K ± 100 K;
d) addition of TE84 test chart and update of the focus test chart.

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

Draft	Report on voting
79/738/FDIS	79/741/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 in the IEC 62820 series, published under the general title *Building intercom systems*, 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– withdrawn, or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.

INTRODUCTION

IEC 62820-1-1 specifies the technical requirements for building intercom systems and equipment used for building entry. Building intercom systems can function independently and can be extended to support building security management functions, e.g. extendable with security management unit (SMU) operated by security staff (door-man, concierge, security-guard, porter, etc.), or in conjunction with other systems as per the security requirements of the building. It can consist of: Visitor call unit (VCU), User receiver unit (URU), SMU, power supply, auxiliary device, as well as interface-unit to other security-systems.

The IEC 62820 series of standards sets out the technical requirements for the composition, functions, performance, test methods of building intercom systems for building entry and application guidelines and consists of five parts:

Part 1-1: *System requirements - General*

Part 1-2: *System requirements - Building intercom systems using the internet protocol (IP)*

Part 2: *Requirements for advanced security building intercom systems*

Part 3-1: *Application guidelines - General*

Part 3-2: *Application guidelines - Advanced security building intercom systems*

IEC 62820-1-1 is based on Chinese standard GB/T 31070.1-2014 and European standard EN 50486:2008.

1 Scope

IEC 62820-1-1 specifies the technical requirements for the composition, functions, performance, and test methods of general building intercom systems.

This document is applicable to the general intercom systems for building entry in residential or commercial buildings.

Door-Entry-System (DES) is a simple kind of convenient Building-Intercom-System (BIS) mainly for user's comfort. This document has classified the general building intercom systems into two grades in IEC 62820-1-1. Grade 1 adopts lower requirements to cover DES not used for relevant security applications while grade 2 adopts higher requirements for building intercom systems for security applications. Each grade can adopt different functional and performance requirements, test methods and normative references.

NOTE The different requirements between grade 1 and grade 2 are summarized in Table C.1 of Annex C.

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 60065:2014, *Audio, video and similar electronic apparatus - Safety requirements*[1]

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60950-1:2005, *Information technology equipment - Safety - Part 1: General requirements*[2]

IEC 61000-6-1, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments*

IEC 61000-6-8, *Electromagnetic compatibility (EMC) - Part 6-8: Generic standards - Emission standard for professional equipment in commercial and light-industrial locations*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62368-1:2023, *Audio/video, information and communication technology equipment - Part 1: Safety requirements*

IEC 62599-1, *Alarm systems - Part 1: Environmental test methods*

IEC 62599-2, *Alarm systems - Part 2: Electromagnetic compatibility - Immunity requirements for components of fire and security alarm systems*

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1 This publication was withdrawn.

2 This publication was withdrawn.

ISO 12233:2024, *Digital camera - Resolution and spatial frequency responses*

ITU-T P.50, *Artificial voices*

ITU-T P.79-2007, *Calculation of loudness ratings for telephone sets*

ITU-T P.501, *Test signals for use in telephony and other speech-based applications*

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
2-way speech
speech between any two units (VCU, URU or SMU) in each direction which can be simultaneous or non-simultaneous

3.1.2
acoustic distortion
distortion of signals at the receiving terminal of the system as a result of system transmission non-linearity and ground noise, expressed as a ratio percentage of the harmonic signal and ground noise at the receiving terminal in proportion to the overall sound pressure

3.1.3
acoustic pressure level
measurement of the acoustic pressure level generated by the equipment under test (EUT) in normal conditions

3.1.4
artificial ear
device used to calibrate the receiver and containing an acoustic coupler and a calibrated microphone used to measure sound pressure

Note 1 to entry: Its overall acoustic impedance within a given frequency band is similar to that of the average human ear, and its characteristics comply with the requirements of type 1 provided by Clause 6.1 of ITU-T P.57-2021 or type 3.2 provided by Clause 6.3.2 of ITU-T P.57-2021.

3.1.5
artificial mouth
analogue device the sound characteristics of which are similar to the directivity and radiation pattern of the average human mouth

Note 1 to entry: It conforms to the requirements set forth in Clause 5 of ITU-T P.51-1996.

3.1.6
auxiliary device
device which extends or facilitates additional functions and interfaces of a building intercom system, such as communications, remote control, 3rd party devices interfaces

3.1.7
building intercom system
BIS
system designed for entry communication in residential or commercial buildings which provides addressing calls, speech and optional video function and is equipped with an electronic unlocking device

3.1.8
channel S/N
sound pressure ratio between signal and ground noise at the receiving terminal under excitation of the nominal sound pressure at the transmitting terminal, expressed in dB

3.1.9
handset unit
device typically coupled to the ear by hand as can be a handset URU or handset SMU

3.1.10
hands-free unit
device that does not need to use the hand during the communication as can be a VCU, hands-free URU or hands-free SMU

3.1.11
idle channel noise
noise expressed in dB(A) which is received in the terminal after the channel connection is established when no signal is transferred

3.1.12
loudness rating guard-ring position
LRGP
fixed position in which the handset of the URU or SMU is used to measure the rating of system loudness

[SOURCE: adapted from ITU-T P.64:2022, Annex C]

3.1.13
overall loudness rating
OLR
measurement of the loudness in the entire channel from the reference point of the mouth at the transmitting terminal to the ear reference point (ERP) at the receiving terminal, expressed in dB

Note 1 to entry: The source definition is adapted to align with the test methods.

[SOURCE: adapted from ITU-T P.10:2017, definition 6.191]

3.1.14
overall sensitivity
gain of the sound pressure at the reference point of the ear at the reception terminal relative to the excitation sound pressure at the mouth reference point (MRP) at the transmitting terminal, expressed in dB

Note 1 to entry: It is a function of frequency.

3.1.15
security management unit
SMU
device which can be addressed from the call unit (VCU, URU or SMU), provides the means of addressing the calling signal to the desired receiver unit(s) which can be URU or SMU, 2-way

speech, the activation of the audio or video connection with the VCU and the means to initiate remote unlocking of the controlled entrance

3.1.16
sidetone masking rating
STMR
measurement of sidetone loudness after factoring in the masking effects of the human head on sidetone, expressed in dB

Note 1 to entry: The source definition is adapted to align with the test methods.

[SOURCE: adapted from ITU-T P.10:2017, definition 6.240]

3.1.17
user receiver unit
URU
addressable user device which provides 2-way speech with optional video, and a means to initiate remote unlocking of the controlled entrance

3.1.18
visitor call unit
VCU
device installed outside a controlled entrance which provides the means of addressing the calling signal to the desired URU or SMU and 2-way speech with optional video capture

Note 1 to entry: The device can also provide the means of unlocking the controlled entrance and other function(s) or these function(s) can be contained within a separate associated device normally located within the controlled premises and which can also contain the system power supply.

3.2 Abbreviated terms

BIS building intercom system
DES door entry system
ERP ear reference point
EUT equipment under test
LRGP loudness rating guard-ring position
MRP mouth reference point
OLR overall loudness rating
PIN personal identification number
SMU security management unit
STMR sidetone masking rating
TVL television lines
URU user receiver unit
VCU visitor call unit