

INTERNATIONAL STANDARD

REDLINE VERSION

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62820-1-2:2017. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 62820-1-2 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 2017. This edition constitutes a technical revision.

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

- a) addition of the requirement for overall loudness rating (OLR) when the screen size of the hands-free intercom unit is larger than 10 inches at the test distance of 30 cm;
- b) addition of the requirement for test conditions when the test distance is 30 cm or longer;
- c) addition of the method of testing overall loudness rating (OLR) when the screen size of the hands-free intercom unit is larger than 10 inches.

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

Draft	Report on voting
79/721/CDV	79/729A/RVC

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

The IEC 62820 series of standards set out the technical requirements for the composition, functions, performance, and test methods of building intercom systems for building entry and application guidelines and consist 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 (ASBIS)*

Part 3-1: *Application guidelines - General*

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

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1 Scope

IEC 62820-1-2 specifies the technical requirements for the composition, functions, performance and test methods of building intercom systems using the Internet protocol (IP), and it is a supplement to IEC 62820-1-1.

This document is applicable to the IP building intercom systems for both residential and commercial buildings.

NOTE A BIS that has a mixture of IP and non-IP connections is not covered by IEC 62820-1-2 but covered by IEC 62820-1-1.

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 62820-1-1:2016/2026, *Building intercom systems - Part 1-1: System requirements - General*

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 terms and definitions given in IEC 62820-1-1 and the following 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

audio delay

audio latency

one way delay (OWD) time of the transmitted audio signal from the microphone of one intercom unit through other components in the system to the loudspeaker of other intercom unit

3.1.2

audio switching time

time, from one transmission direction to the other, measured from the removal of the signal in the first direction until the level in the second direction reaches 3 dB below its final value

3.1.3

echo return loss

ability of the local intercom unit to avoid retransmitting the audio signal received from the far intercom unit back again to it

3.1.4**intercom unit**

device that is able to establish an audio connection or an audio and video connection between each other (SMU, VCU and URU) and is specifically designed to be a component of a BIS

Note 1 to entry: Devices which can be connected to IP transmission network such as smartphones or tablets are not considered as intercom units.

3.1.5**Internet protocol****IP**

network layer-3 protocol in the OSI model containing addressing and control information to enable data packets to be routed in a network and primary network layer protocol in the TCP/IP protocol suite according to IETF RFC 791 and IETF RFC 2460 and any subsequent evolution

3.1.6**IP transmission network**

communication network used to achieve the relevant functions of IP BIS, such as data transmission and control

3.1.7**lip sync**

temporal relationship between transmitted audio signal and video signal

Note 1 to entry: Lip sync value is used to demonstrate the relationship between audio and video signal synchronization.

3.1.8**single talk**

type of non simultaneous 2 way speech in which two parties communicate by alternating speech spurts without interrupting each other

3.1.9**double talk**

type of non simultaneous 2 way speech in which two parties communicate by alternating speech spurts in which both parties ~~may~~ can interrupt each other

3.1.10**subjective image quality assessment**

method where people, as observers, evaluate the image quality

Note 1 to entry: Test environment, observer and evaluation method shall comply with certain standards, in the same way the methodology for the subjective assessment of the quality of the television pictures adopted ITU-R BT.500-13 (01/2012).

3.1.11**video delay**

one way delay (OWD) time of the transmitted video signal from the camera of one intercom unit through other components to the display on the other intercom unit

3.2 Abbreviated terms

ACR	absolute category rating
BIS	building intercom system
CSS	composite source signal
DCR	degradation category rating
EUT	equipment under test
FPS	frames per second
FR	frame rate
IP	Internet protocol
LED	light-emitting diode

LIG	LED image generator
LRGP	loudness rating guard-ring position
MRP	mouth reference point
OLR	overall loudness rating
OSI	open systems interconnection
OWD	one way delay
PSG	programmable signal generator
QoS	quality of service
SMU	security management unit
TVL	television lines
URU	user receiver unit
VCD	video capture device
VCU	visitor call unit
VRD	video receiver device

4 Functional requirements

4.1 Basic functional requirements

Basic functional requirements of IP BIS shall comply with the requirements specified in IEC 62820-1-1:20162026, 4.1.

4.2 Additional functional requirements

In addition to the additional functional requirements specified in IEC 62820-1-1:20162026, 4.2, an IP building intercom system ~~may~~ can comply with the following requirements:

- a) Intercom unit to intercom unit speech
URU ~~may~~ can be able to make addressing calls to other URU and conduct two-way speech.
- b) Voice message function
IP building intercom system ~~may~~ can allow the caller to leave voice messages from the VCU.
- c) Intercom unit to intercom unit video and speech
URU ~~may~~ can be able to conduct two-way video and audio communication with other URU.
- d) Video and voice messages function
IP building intercom system ~~may~~ can allow the caller to leave video and voice messages from the VCU.

4.3 IP building intercom systems with SMU

In addition to the functional requirements specified in 4.1 and 4.2, IP building intercom systems with SMU ~~may~~ can comply with the following requirements:

- a) Automatic detection of device status
The SMU ~~may~~ can detect the status of other devices in the system.
- b) Remote configuration and update
The SMU ~~may~~ can remotely configure the operating mode of the devices and update the firmware and software of the devices.
- c) Image storing and replaying function
When the URU with video function is communicating with an SMU equipped with a camera, it ~~may~~ can be able to store and replay the images captured by the SMU.

5 Performance requirements

5.1 General

The performance requirements of IP BIS shall comply with the requirements specified in IEC 62820-1-1:2016/2026, Clause 5.

The following requirements shall be fulfilled when the intercom devices are linked in a local network, wired or wireless. In case some devices are linked through a public network (i.e. Internet), where it is not possible to guarantee QoS, the requirements do not apply.

5.2 Audio characteristics

5.2.1 Overall loudness rating (OLR)

When the screen size of the hands-free unit is greater than 10 inches, the test distance can be adjusted to 30 cm. In this case, the overall loudness rating (OLR) shall comply with the following requirements:

- a) at the VCU: 25^{+10}_{-5} dB;
- b) at the hands-free URU and hands-free SMU: 28^{+10}_{-5} dB.

NOTE This document does not limit the maximum size of the intercom terminal screen. In theory, the user can choose 30 cm test distance according to the size of the screen, but this document only gives the OLR value based on 30 cm test.

5.2.2 Audio delay

Audio delay between two intercom units shall not be more than 300 ms.

5.2.3 Echo return loss

This requirement ~~may~~ can be evaluated in two ways.

a) Objective evaluation

Hands-free units: the echo return loss shall not be less than 45 dB.

Handset unit: the echo return loss shall not be less than 46 dB.

NOTE Non-simultaneous systems are evaluated by subjective test.

b) Subjective evaluation

The subjective evaluation of echo return loss shall be not less than 3 points.

5.2.4 Audio switching time

The audio switching time shall not be more than 200 ms.

NOTE This requirement does not apply to simultaneous talk and single talk BIS.

5.3 Video characteristics

5.3.1 General

Video characteristics of IP BIS shall comply with the requirements specified in IEC 62820-1-1:2016/2026, 5.2.2 to 5.2.5 and the following.

5.3.2 Image resolution

Image resolution (measured at the centre of the image) of IP BIS shall not be less than 130 TVL for the visible area smaller than 4,0 inches (10,16 cm), not be less than 240 TVL for the visible area equal or larger than 4,0 inches (10,16 cm) and smaller than 7,0 inches (17,78 cm), and not be less than 320 TVL for the visible area of 7,0 inches (17,78 cm) or larger.

5.3.3 Frame rate

Frame rate of digital video signals shall not be less than 15 FPS.

5.3.4 Video delay

~~The unit-to-unit~~ Video delay **between two intercom units** shall not be more than 300 ms.

5.3.5 Lip sync

Relative time difference of video and audio signal concurrent transmission should be between – 185 ms and +90 ms.

NOTE This only applies to audio-video systems and not to audio only systems.

5.3.6 Image quality

Images shall not present obvious phenomenon such as image blur, mosaic effect or image fracture. The average subjective image quality assessment shall not be less than 3 points.

5.4 Network and information security

5.4.1 Network access control

When a user or device accesses the network of IP BIS or manages the system, the system shall identify the user or device, determine if access is granted as well as the access right. Identification ways can vary, measures other than identification ~~may~~ **can** be used provided that they protect the system from unauthorized access.

5.4.2 Data integrity protection

The IP BIS ~~may~~ **can** detect the integrity of the users' alarm and unlocking control data. It also ~~may~~ **can** offer protection for the integrity of the users' data by encryption or other ways.

6 Test methods

6.1 Test conditions

6.1.1 Environmental conditions

Temperature: 15 °C to 35 °C.

Relative humidity: 25 % to 75 %.

Atmospheric pressure: 86 kPa to 106 kPa.

6.1.2 Electrical connection

The EUT shall be connected according to the manufacturer's recommendations for the basic configuration of the test. The EUT configuration ~~should~~ **shall** meet the requirements to realize the system functions.