

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

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

**Systèmes d'interphone de bâtiment –**  
**Partie 1-2: Exigences du système – Systèmes d'interphone de bâtiment utilisant**  
**le protocole internet (IP)**



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 13.320

ISBN 978-2-8322-4548-4

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Building intercom systems using the internet protocol (IP)****FOREWORD**

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

FDIS	Report on voting
79/577/FDIS	79/589/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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## 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;

Part 3-1: Application guidelines – General;

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

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## BUILDING INTERCOM SYSTEMS –

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

## 1 Scope

This part of IEC 62820 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, *Building intercom systems – Part 1-1: System requirements – General*  
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ITU-T P.501, *Test signals for use in telephony*

## 3 Terms, definitions and abbreviated terms

### 3.1 Terms and definitions

For the purposes of this document, the definitions given in IEC 62820-1-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://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**

devices that are able to establish an audio connection or an audio and video connection between each other (SMU, VCU and URU) and are 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 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
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

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## 4 Functional requirements

### 4.1 Basic functional requirements

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Basic functional requirements of IP BIS shall comply with the requirements specified in IEC 62820-1-1:2016, 4.1.

### 4.2 Additional functional requirements

In addition to the additional functional requirements specified in IEC 62820-1-1:2016, 4.2, an IP building intercom system may comply with the following requirements:

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

- a) Automatic detection of device status  
The SMU may detect the status of other devices in the system.

b) Remote configuration and update

The SMU may 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 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, 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 Audio delay

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

#### 5.2.2 Echo return loss

This requirement may be evaluated in two ways.

1) 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.

2) Subjective evaluation

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

#### 5.2.3 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, 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 inch (10,16 cm), not be less than 240 TVL for the visible area equal or larger than 4,0 inch (10,16 cm) and smaller than 7,0 inch (17,78 cm), and not be less than 320 TVL for the visible area of 7,0 inch (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 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 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 be used provided that they protect the system from unauthorized access.

### 5.4.2 Data integrity protection IEC 62820-1-2:2017

The IP BIS may detect the integrity of the users' alarm and unlocking control data. It also may 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 meet the requirements to realize the system functions.

### 6.2 Function test

The EUT shall be operated according to the product instruction manual. The functions of the system shall be checked item by item and shall comply with the requirements specified in Clause 4.