

# IP Bell - SIP door entry phone station

*IP Bell – 01*

*IP Bell – 02*

*IP Bell – 01C*

*IP Bell – 02C*

*Bell – 8 (under development)*



User and installation guide



# Welcome

Congratulations to the purchase of VoIP video/audio door entry phone station **IP Bell**. This doorphone can meet your requirements for communications with visitors at the door entrance of your house, company or building. The meaning of VoIP is “**Voice over Internet Protocol**” – this doorphone can be connected to the computer network enabling calls in mode P2P (peer to peer) – that means it calls to the IP address of other VoIP equipment directly or it can register to the SIP server, then it can call to phone numbers. Each pushbutton can store two 25 digit numbers including characters star “\*” and hash “#”.

The basic module of the doorphone is supplied with one or two pushbuttons, in audio version or video version with a colour camera.

The IP Bell doorphone can be powered either by 12V power supply which can be used for powering the electrical lock of the door, or the IP Bell doorphone can be powered by PoE (Power over Ethernet). Features are similar to a hands-free telephone. Among the basic features you can find possibility of opening two door via electrical locks and easy configuration via WEB based interface.



The producer improves the programming tool continuously (firmware). The IP Bell doorphone can be upgraded by the latest version of firmware which you can obtain on email request. For contact details, please check [www.alphatechtechnologies.cz](http://www.alphatechtechnologies.cz).

Necessary steps for the firmware upgrade can be found in chapter 3.1.10 on page 35. We suggest you to use the latest firmware version in order to exploit new features and patches.



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Tech

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## ***1Basic description***

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### **1.1 Features**

- two 25 digit numbers stored at each pushbutton (including \* and #)
- commands for doorphone can be two or one digit (command 55 can be shortened to one digit 5 by storing \*5 replacing the original two digit command 55)
- the basic module (1 or 2 pushbuttons) can be expanded by add-on 8 pushbutton module up to maximum capacity of 58 pushbuttons
- day/night switching – automatically or manually
- prolongation of call duration by entering \* or #
- possibility to connect two independent locks for door opening
- 5 modes of switches (e.g. camera, illumination, sequential opening)
- two codes for hang-up of the doorphone via the telephone
- two codes for door opening via the telephone
- six access codes (passwords entered via pushbuttons of the doorphone)
- optional number of rings before you answer the incoming call
- optional time period between individual presses of pushbuttons when entering access code via pushbuttons of the doorphone
- optional time period of hang-up during repeating of the dialling
- optional time period before start of the dialling
- powered either by 12V or PoE (both norms)
- integrated heating of the circuit board
- permanent illumination of visit cards
- automatic illumination for camera (white LEDs)
- integrated colour camera with autofocus
- Ethernet – 10/100Mb with standard 10BaseT and 100BaseTx
- Web server for remote programming – BOA
- Linux 2.6 operating system
- USB connection of the internal camera – USB guest 1.1, software GSPCA software for video transmission to a web browser on the PC – W3CAM (J-PEG, RTSP Stream) and video stream H.263 / H.264
- SIP connection in P2P mode or SIP Proxy (PBX network system)
- WEB based firmware upgrades
- WEB web programming tool for set-up of doorphone parameters

## 1.2 Used terminology

- **Ethernet** is a family of frame-based computer networking technologies for local area networks (LANs)
- **LAN** - a local area network (LAN) is a computer network covering a small physical area, like a home, office, or small groups of buildings, such as a school, or an airport.
- **10Base-T** – 10 Mbit/s , it uses 8 position modular connectors, usually called RJ45 in the context of Ethernet over twisted pair. The cables usually used are four-pair twisted pair cable (though 10BASE-T and 100BASE-TX only actually require two of the pairs). Each of the standards support both full-duplex and half-duplex communication. According to the standards, they all operate over distances of up to 100 meters.
- **100Base-TX** – so called **Fast Ethernet**, two pairs of UTP or STP cable, category 5.
- **Twisted pair cabling** is a type of wiring in which two conductors (the forward and return conductors of a single circuit) are twisted together for the purposes of canceling out electromagnetic interference (EMI) from external sources; for instance, electromagnetic radiation from unshielded twisted pair (UTP) cables, and crosstalk between neighboring pairs.
- **UTP**, Unshielded Twisted Pair
- **STP**, Shielded Twisted Pair – the cabling includes metal shielding over each individual pair of copper wires. This type of shielding protects cable from external EMI (electromagnetic interferences).
- **WEB** - World Wide Web (WWW, or **web**) – a world-wide application of HTTP internet protocol
- **HTTP** (Hypertext Transfer Protocol) is an internet protocol used originally for exchanging hypertext documents in HTML format.
- **USB** (Universal Serial Bus) – modern way of connecting external devices to the computer.
- **Video codek** („**coder** and **decoder**“) - compression **H.263** is derived from MPEG-4, **H.264** is a coder for MPEG-4 AVC format. **MPEG-4** is a type of video compression – decreasing of data stream video sequence
- **JPEG** is a standard method of loss compression used for saving digital images
- **Voice over Internet Protocol (VoIP)** is a technology enabling transmission of digitalized voice inside the packej of protocols family **UDP/TCP/IP** via computer network. It is used for making phone calls via Internet, Intranet or any other kind of data connection
- **TCP/IP** contains a set of protocols for communication in the computer network and it is the main protocol of Internet

- **IP address** is a number, which clearly identifies a network interface in the computer network, which uses IP protocol
- **DHCP** (Dynamic Host Configuration Protocol) is an application protocol from the family of TCP/IP. It is used for automatic assigning of IP addresses to individual personal computers in the PC networks, thus simplifying their administration
- **Internet** is a world-wide system of mutually connected computer networks
- **Intranet** is a computer network similar to Internet, but it is a private one. That means it is just used for small user groups (e.g. employees of a company).
- **PoE** (Power over Ethernet) is powering via data network cable, with no need of bringing the power supply via a separate cable
- **NTP** (*Network Time Protocol*) is a protocol for synchronization of internal computer clock

### 1.3 Modules arrangement

The basic modules of the IP Bell doorphone are supplied in the following variants – video version IP Bell-01C with a camera and one pushbutton, video version IP Bell-02C with a camera and two pushbuttons, audio version IP Bell-01 with one pushbutton, audio version IP Bell-02 with two pushbuttons. Bell-8 expansion module enables expansion by additional eight pushbuttons. This module contains 8 pushbuttons and it is possible to connect up to 7 expansion modules in a sequence, that means up to 56 pushbbutons. Together with the basic one or two pushbutton module you can build a configuration with maximum 57/58 pushbuttons.



IP Bell-01



IP Bell-02



IP Bell-01C



IP Bell-02C



Bell-8 expansion module (under development)



## 1.4 Features of modules

### 1.4.1 IP Bell basic module

IP Bell basic module consists of a doorphone board and a VoIP module board, connectors connection and set-up elements are shown on picture 1 (fig. 1).

IP Bell should be powered either by PoE technology or min.11VAC - max.15VAC or min.12VDC - max.18VDC which you connect to the "12V" clamp. IP Bell power consumption is max.300mA. This power supply can be also used for powering electrical lock(s), then you need to add the power consumptions of lock(s). Usually you can use a power supply 12VAC/1A ÷ 2A or 12VDC/1A ÷ 2A.

IP Bell is equipped by a circuit for powering via UTP cable – PoE. If you have a PoE switch or you have a PoE adapter, then you do not need to use 12V power supply for powering the doorphone. If you use an electrical lock , you need to use an external power supply (only for circuit with relay contacts ), or you need to use a low-consumption lock and then power this lock by a yellow cable with white connector, which you insert on 2 pins of a connector situated between clamps for connection of 1<sup>st</sup> and 2<sup>nd</sup> switch. When using PoE, here is 12V/350mA available. (fig. 5)

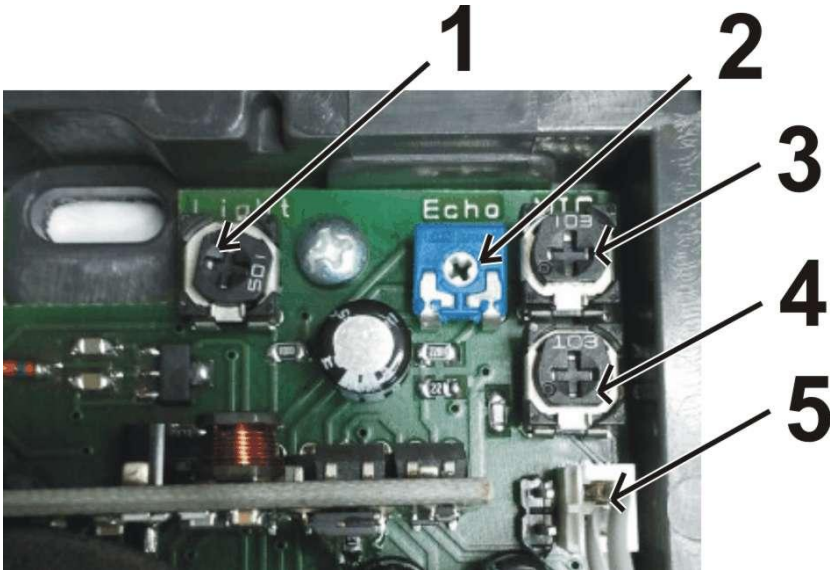
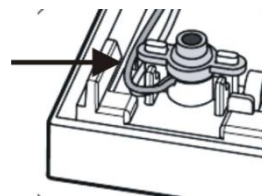
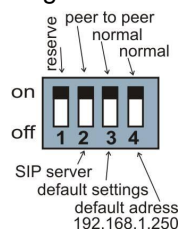
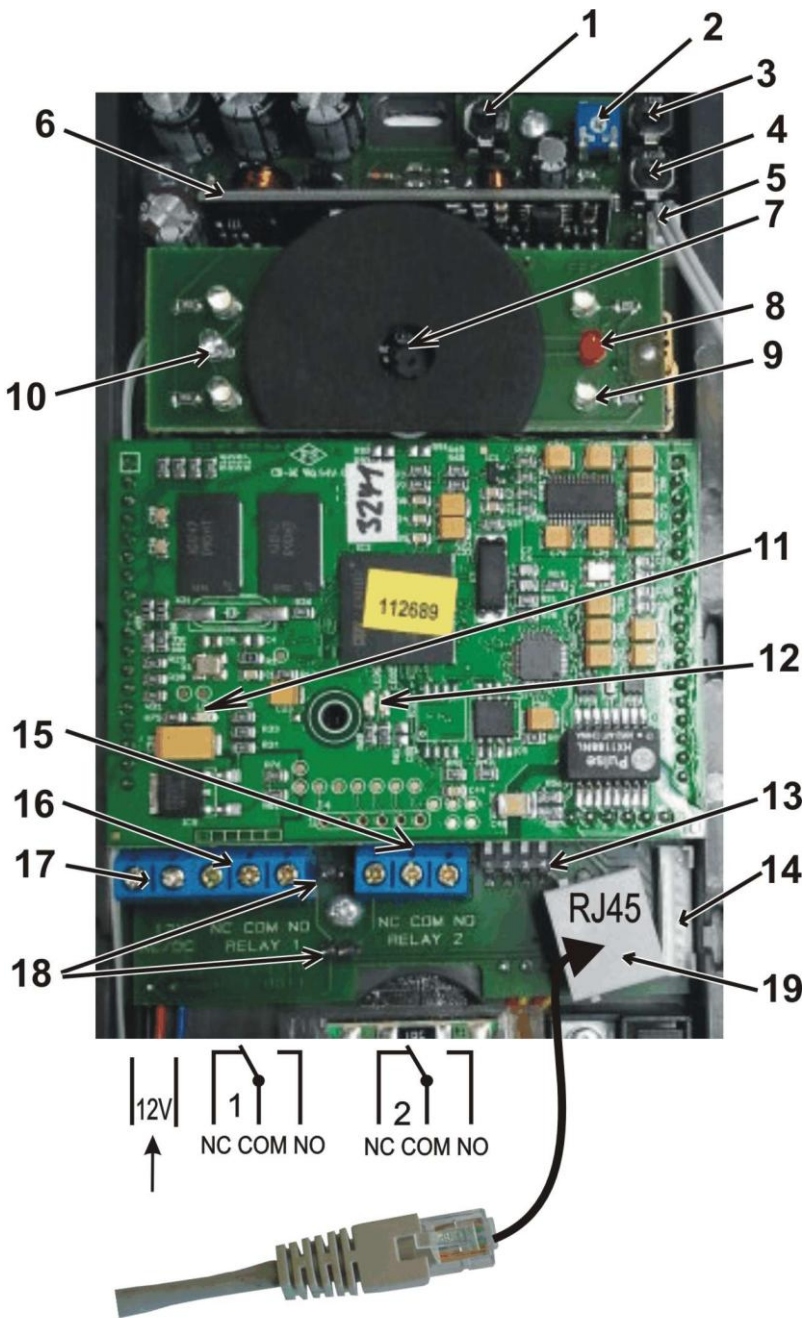


Fig. 1 Trimmers on the main board

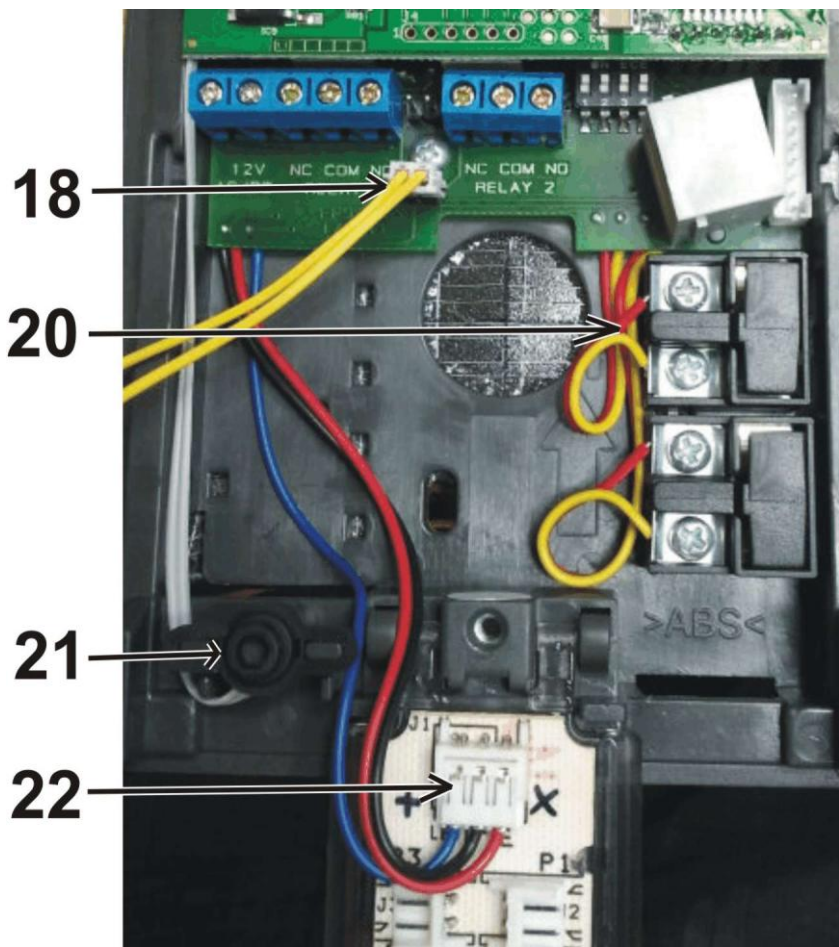
## 1.4.2 Description of the main board

1. trimmer for setting level of surrounding illumination (sensor – 10). During the call, at the set level, camera illumination will be switched on (white LEDs - 9) – **applies to camera models only**
2. echo cancellation trimmer. The IP Bell doorphone is a hands-free telephone. Any sound coming to the speaker is received by the microphone and sent back with a delay (echo). To compensate this, the IP Bell uses a circuit for reducing the amplification path of the microphone depending on the level of incoming signal. This level can be set by the Echo cancellation trimmer (2).
3. trimmer for setting sensitivity of the microphone
4. trimmer for setting volume of the speaker
5. connector for connection of the speaker (glued on in the front case of the housing)
6. PoE power supply module
7. camera (Microsoft LifeCam VX700) – **applies to camera models only**
8. signal LED of the IP Bell doorphone status – **applies to camera models only**
9. LED for camera illumination when surrounding light is insufficient - 4x white LED, active during a call only, they can be switched off by SW setting – **applies to camera models only**
10. sensor of surrounding light level – **applies to camera models only**
11. VoIP module - green LED – power supply of VoIP module
12. VoIP module – green LED – LAN connection, yellow LED – data transmission over LAN
13. DIP switch – selection of mode and basic settings
14. connector for connection the expansion module Bell-8
15. terminal of the 2<sup>nd</sup> switch (switching contact)
16. terminal of the 1<sup>st</sup> switch (switching contact)
17. connection of 12V. When PoE is not used, then this is the **input** of 12V AC/DC
18. connectors for powering the low-consumption electrical lock when PoE power supply is used. For easy installation you can use yellow cable with connector (fig. 5). **This is 12V DC output only! Do not connect to the power supply!**
19. connection to LAN, it is connected by UTP cable CAT5. This connection is compatible with 10/100/1G network and PoE according to norm IEEE802.3af mode A and mode B. Data connection 10Base-T and 100Base-TX supported
20. connection of pushbuttons to the main board
21. microphone
22. connection of visit cards illumination to the main board



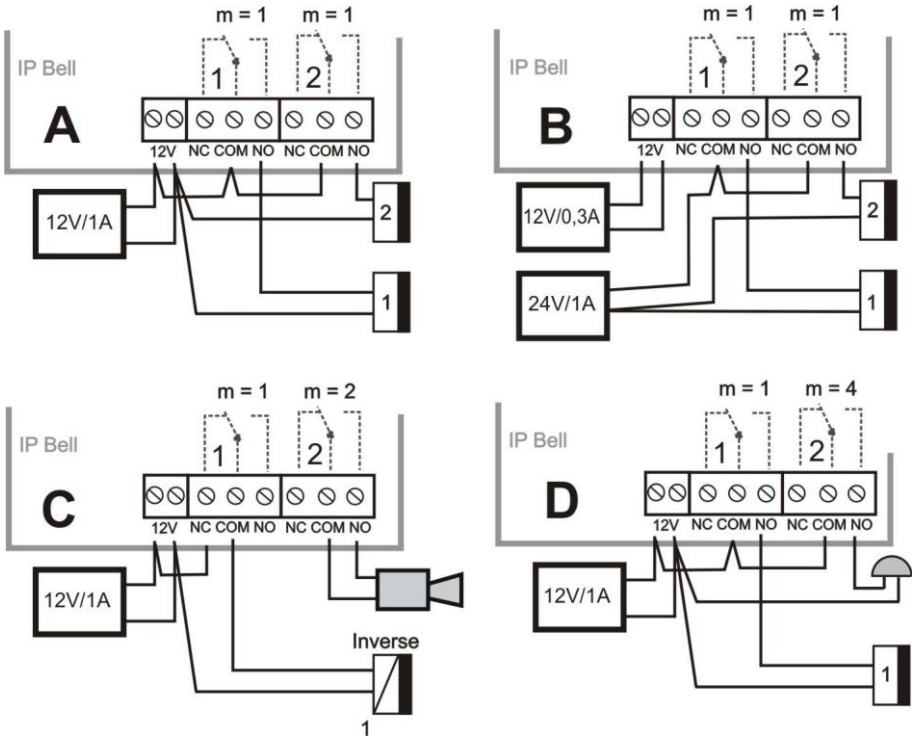


**Fig. 2** The main board of the IP Bell doorphone

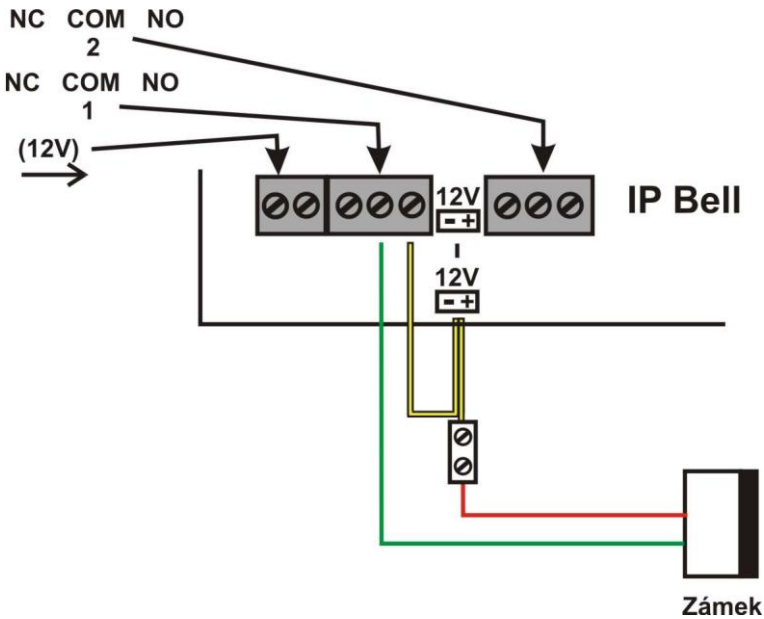


**Fig. 3 Connection of the pushbuttons and visit cards illumination**

Connection of switching contacts terminal is shown on fig. 2. Label "NO" means normally open contact, "COM" means common outlet (middle) and "NC" means normally closed contact. Contacts of both switches are isolated galvanically from each other and also from other circuits of the IP Bell doorphone. Variants of switches connection are shown on fig. 4 and 5.



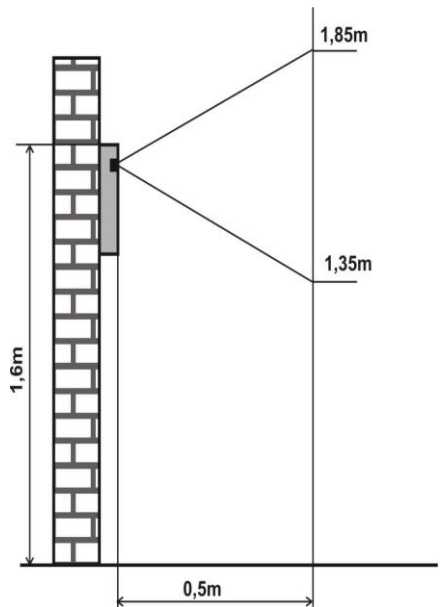
**Fig. 4** Examples of switching contacts connection without PoE power supply



**Fig. 5 Example of switching contacts connection when using PoE power supply**

**Attention – the electrical lock is low-consumption, max. 350mA**

**Camera** ([Microsoft LifeCam VX700](#)) is mounted on a standalone module which you can find in camera versions only. The camera view angle can't be changed in any way. Therefore we suggest to follow the installation height of the IP Bell as shown on the figure.



**Voice communication set-up** – the default trimmer positions are factory set as shown on the fig. 2. Change of settings can be done as needed. The meaning of turning works in a standard way, that means by turning to the right the set value increases. As the IP Bell doorphone is a hands-free telephone, during the call the signal from the speaker is returning to the microphone and the calling party receives it with a delay (it is caused by digital processing and signal transmission). Therefore IP Bell is equipped with a circuit for ech oancellation and you need to pay more attention during settings of this trimmer. The required level means at what level of sound the microphone in the IP Bell doorphone is turning off to avoid returning the sound with a delay.

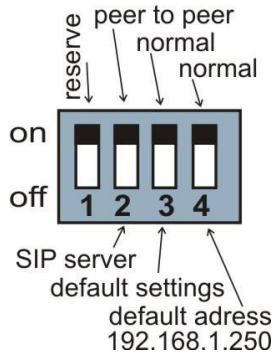
Trimmer for setting the sensitivity level of surrounding illumination. During the call, at the set sensitivity level, camera illumination will be switched on (white LEDs). It is active during active call only. If the LED illumination is turned on then it will be switched off only after the call is finished. That prevents LED flickering during the call.

**DIP switch** setting of default values and IP Bell mode with the DIP switch – fig. 6.

- 1-reserve
- 2-switching to P2P / SIP server mode
- 3-factory settings – deletes all values to the factory settings except for the momory of numbers
- 4-sets the default IP address to 192.168.1.250

All changes always appear after turning off and turning on the power supply (restart).

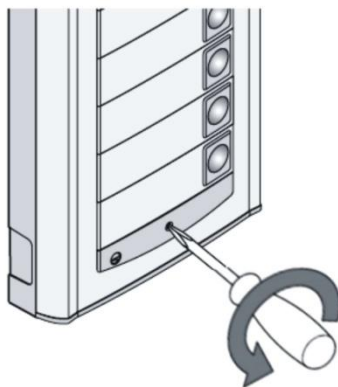
After the VoIP module has been activated, the DIP switch 3 and 4 must be switched back to "on" position. Otherwise the newly set parameters and the new IP address will be set back to the default values after the restart.



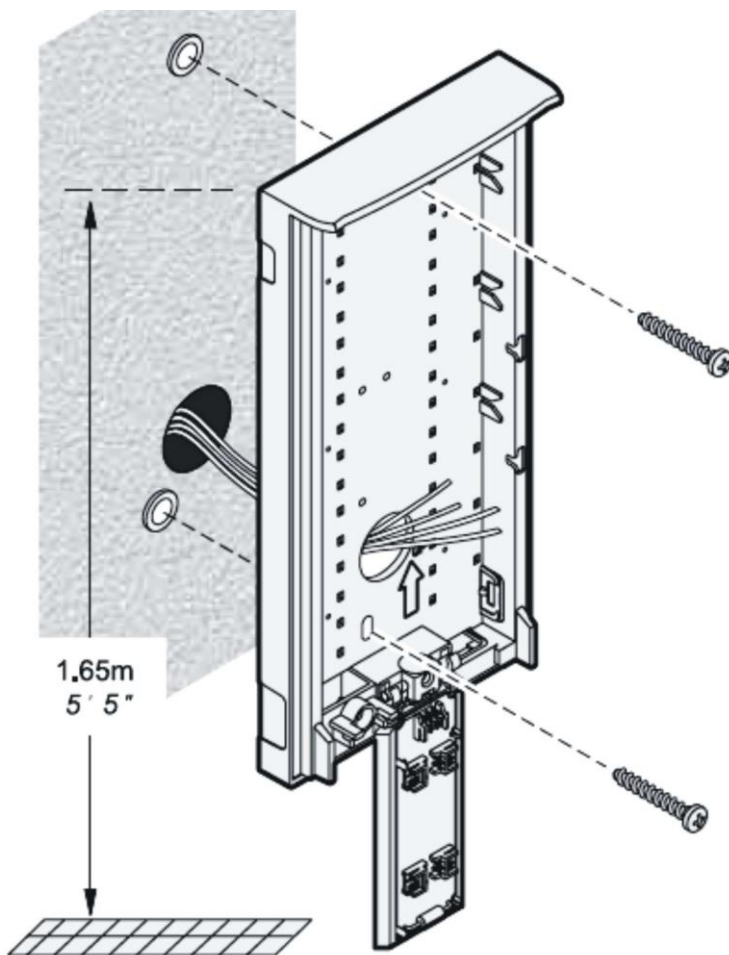
**Fig. 6 DIP switch setting**

## 1.5 Assembly of the IP Bell doorphone

### 1.5.1 Dismounting of the front cover



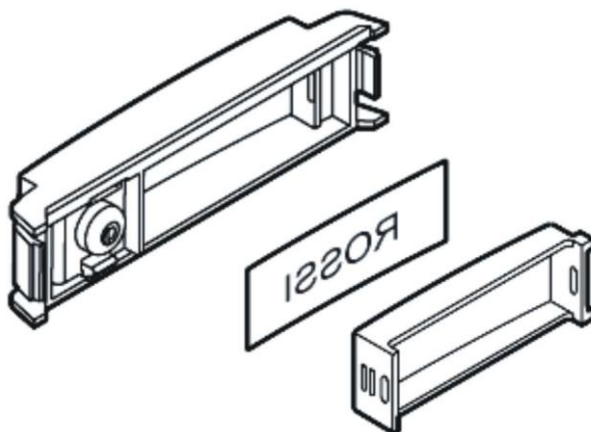
### 1.5.2 IP Bell mounting on the wall



Mounting is done with wall plugs and screws. We suggest wall plugs with **5mm** in diameter, the screw with half-round head, diameter **4mm**, length **35mm**

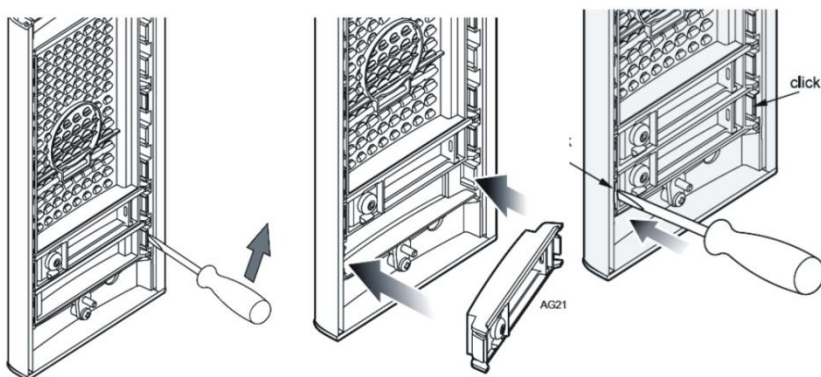


### 1.5.3 Replacement of visit cards

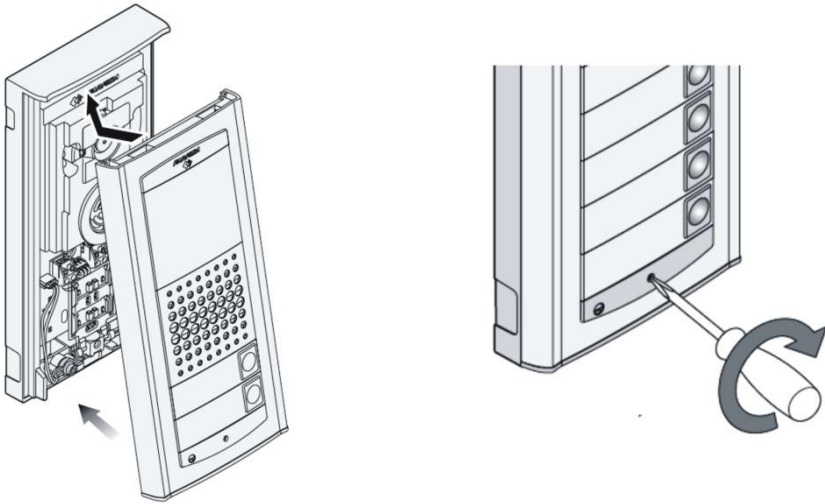


Each pushbutton has got its own label held with the white plastic cup (see the figure above). Demounting and inserting of the cap can be done with two fingers along the longer side of the cap by a soft pull / push.

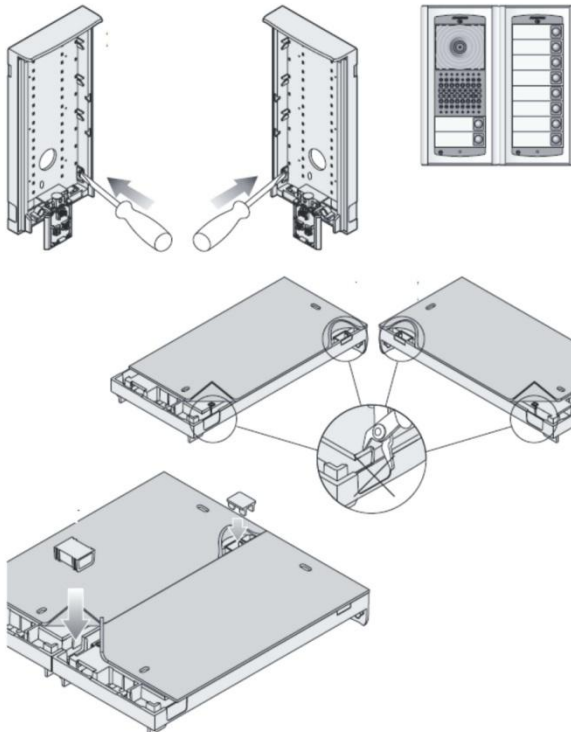
### 1.5.4 Demounting and mounting of the pushbutton on the front panel



### 1.5.5 Closing the front cover of IP Bell



### 1.6 Interconnection of two modules (under development)





for the IP Bell doorphone. In the automatic Day/Night switching you can make use of temporary manual switching, which is cancelled by going through the first nearest automatic switching interval.

- mode **2 groups** of numbers = first pressing – always dials the number set in the 1<sup>st</sup> column, by repeated pressing of the same pushbutton or when busy tone is detected, or after elapsing the set number of rings “time period before the call after selection for 'repeat dialling'”, the doorphone dials the 2<sup>nd</sup> number of the second group (2<sup>nd</sup> column). When you press the same pushbutton once again, it will dial the number of the 1<sup>st</sup> group, etc. (if busy tone is detected after dialing the number of the 2<sup>nd</sup> group, the repeated dialling is finished).

If the visitor presses a pushbutton after the doorphone picked up the line, the doorphone first hangs up for a set time period “Time of hang up before repeated dialling” and then it picks up the line and dials a new number.

The switching contact can be controlled with pushbuttons of the doorphone (**code lock**). If the visitor at the door entrance presses pushbuttons in a combination matching the pre-set code and the time period between individual presses is not longer than the set time period, then the doorphone switches the relevant switching contact (if it is set in mode m=1 or m=5) for a time period defined by “Time period of switching”.

## 2.3 Person inside the building

The person inside the building is the person which is in telephone connection with the IP Bell doorphone.

### 2.3.1 Outgoing call

The outgoing call is the call of the doorphone (initiated by the visitor). After the doorphone has dialled a number, a telephone inside the building is ringing. When the call is answered, you can talk to the visitor at the door entrance. By dialling a code you can switch on a switching contact, if it is set to mode m=1 or m=5, you can change the Day/Night mode and hang up. 10 sec. before the end of the call the doorphone sends an alert tone about the call ending. By dialling a character star or hash (\* / #) you can extend the call. By hanging up the telephone the call is finished.



***There are two possible ways of transmitting information on pressed pushbutton (a command for opening the lock, day/night switching, extending the call, a command for call hang up) – either in “RTP channel” or in “SIP info”. “inband DTMF” option is not decoded in the IP Bell doorphone.***

### 2.3.2 Incoming call

The incoming call is a call to the doorphone (initiated by the person inside the building). After dialling an extension number or IP address, to which the IP Bell

doorphone is connected, the doorphone rings (LED is blinking) and after a set number of rings the doorphone answers the call and it is possible to talk. Possibilities are the same as with the outgoing call (chapter 2.3.1).

## 3 Programming of parameters

### 3.1 Basic VoIP settings

#### 3.1.1 Choice of mode and login

Firstly it is important to choose IP Bell network mode, either P2P (peer to peer) or the doorphone will login to a SIP server. This is done with DIP **switch 2** – figure 7. Change of mode can't be done via WEB based interface. Changed position of the switch will always appear after restart of the system. Other switches are set in „on“ position (normal). Turn on the IP Bell doorphone and wait approx. 1 minute for the system start up.

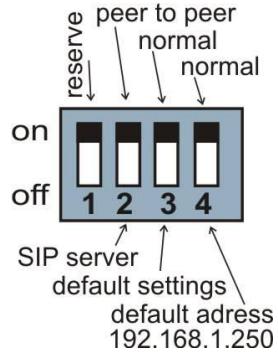


Fig. 7 DIP switch setting

Deleting all set values in the doorphone and setting into the default factory settings is done with DIP **switch 3** by switching it to „off“ position and restarting the doorphone. After the system start up it is necessary to move back this switch to „on“ position.

Setting the default IP address 192.168.1.250 is done by switching the DIP **switch 4** to „off“ position and restarting the doorphone. After the system start up it is necessary to move back this switch to „on“ position.

Restarting the doorphone can be done in two ways – either by disconnecting and connecting the power supply or by clicking on „Restart“ button in the service manu in the WEB based interface.

IP address of the doorphone is set by the producer (by default) to 192.168.1.250. In case you are using a different numbering of the network during installation (= IT DOES NOT BEGIN WITH 192.168.1.xxx), then in the protocol TCP/IP features on your PC it is necessary to set the IP address temporarily or as an alternative configuration to e.g. 192.168.1.245. Then it is possible to set parameters of the doorphone including the IP address. After restarting the VoIP module you can already connect the WEB page of the doorphone on the new IP address.

**ATTENTION:** The DIP switches 3 and 4 must always be in "on" position. Otherwise the new IP address will be rewritten back to the default IP address = 192.168.1.250 after restarting.

In your WEB browser write an IP address of the IP Bell doorphone, By default it is **192.168.1.250**. as you can see on the fig. 8 below.



**Fig. 8 First page – video from the camera**

Enter the user name and password. The user name is always „admin“ and password is „1234“ (it can be changed in the settings), as you can see on fig. 9 below.



**Fig. 9 Login to setup**

### 3.1.2 Language setting

The language can be set in the lower part of the menu in the left panel. Languages can be edited and added – see chapter 3.1.12 on page 33.

**LOGO**

Day mode

**Menu:**

- Network setting
- Basic parameters
- SIP parameters
- Setting audio
- Setting video
- Relays
- Time parameters
- Memory numbers
- Day Intervals
- User interface
- Service
- Video
- Help

**Language:**

english  ✓

—

Francais

Italiano

english

german

čeština

**Network setting:**

Hostname:

Setup via DHCP:

DHCP client ID:

IP address:

Network mask:

Default gateway:

Primary DNS server:

Secondary DNS server:



### 3.1.3 Network settings

The network settings can be found in the menu „Network setting“. You can either use a fixed IP address or a dynamic allocated by using DHCP service.

#### Fixed IP address configuration:

The screenshot shows the 'Network setting' configuration page. On the left, a menu lists various settings, with 'Network setting' selected and marked with a red checkmark. Below the menu is a language dropdown set to 'english' and a 'Set' button. The main area on the right is titled 'Network setting:' and contains several configuration fields: 'Hostname' (IPDP), 'Setup via DHCP' (checkbox), 'DHCP client ID', 'IP address' (192.168.1.250), 'Network mask' (255.255.255.0), 'Default gateway' (192.168.1.200), 'Primary DNS server' (78.41.19.2), and 'Secondary DNS server' (78.41.19.3). At the bottom of this section are two buttons: 'default values' and 'save and restart'. Red annotations (circles and arrows) point to these elements: (1) Hostname field, (2) Setup via DHCP checkbox, (3) DHCP client ID field, (4) Day mode indicator, (5) Network setting menu item, (6) Help menu item, and (7) save and restart button.

To enable changes, please do not forget to click on button „save and restart“.

1. Hostname – name of doorphone for differentiation in the network (e.g. in case you use more doorphone – more door entrances)
2. enable / disable using DHCP assigning of IP addresses
3. setting of IP address, mask, possibly other network parameters. In case anything is unclear, please contact your network administrator.
4. displaying actual mode of IP Bell – Day / Night
5. return to the initial page with displayed video stream of the IP Bell camera.
6. shortened help guide for quick help when setting parameters
7. factory default values – makes settings of the default values. After making changes, please click on button „save and restart“. You will see a screen with system restarting – see chapter 3.1.11 on page 35.

## DHCP configuration:

LOGO

Day mode

**Menu:**

- Network setting ✓
- Basic parameters
- SIP parameters
- Setting audio
- Setting video
- Relays
- Time parameters
- Memory numbers
- Day Intervals
- User interface
- Service
- Video
- Help

**Language:**

english

**Network setting:**

Hostname:  ①

Setup via DHCP:  ②

DHCP client ID:  ③

IP address:

Network mask:

Default gateway:  ④

Primary DNS server:

Secondary DNS server:

⑤

To enable changes, please do not forget to click on button „save and restart“.

1. Hostname – name of doorphone for differentiation in the network (e.g. in case you use more doorphone – more door entrances)
2. enable / disable using DHCP allocation of IP addresses
3. DHCP client ID is a name used for assigning two IP addresses to one MAC address (this is useful after implementation of a SIP server to the IP Bell doorphone)
4. displaying parameters automatically assigned by DHCP - IP address and other settings
5. factory default values – makes settings of the default values. After making changes, please click on button „save and restart“. You will see a screen with system restarting – see chapter 3.1.11 on page 35.

***Important:*** if you use DHCP setting, then the address of IP Bell is assigned automatically. The network administrator will find out your current IP address, so you can watch video of the doorphone’s camera in the web browser. Dynamically assigned IP address may change e.g. after a power failure in the building. Therefore we suggest setting the IP Bell doorphone with a static IP address.

### 3.1.4 Peer to peer or SIP server connection

The IP Bell doorphone can be set to **peer to peer** (P2P) mode or to SIP server mode with a DIP switch (see chapter 3.1.1 on page 22). In P2P mode IP Bell calls to an IP address stored in memory numbers (see chapter 3.2.5 on page 42).

The screenshot displays the web interface for configuring SIP parameters. On the left, there is a 'Menu' with a list of settings: Network setting, Basic parameters, SIP parameters (checked with a red checkmark), Setting audio, Setting video, Relays, Time parameters, Memory numbers, Day Intervals, User interface, Service, Video, and Help. Below the menu is a 'Language:' section with a dropdown menu set to 'english' and a 'Set' button. The main area is titled 'SIP parameters:' and contains four settings, each with a radio button and a circled number: 'Use (180 Ringing):' with a selected radio button and a circled '1'; 'Use (183 Session progress):' with an unselected radio button and a circled '2'; 'Enable Symmetric RTP:' with an unselected checkbox and a circled '2'; and 'Send DTMF as SIP INFO:' with a selected radio button and a circled '3'. Below these settings is a circled '4' and two buttons: 'default values' and 'save changes'.

To enable changes, please do not forget to click on button „save changes“.

1. choice of signalling of the incoming call. Ringing as a standard, it can be changed to Session progress – it's been added for some SIP proxy servers which require it.
2. Symmetric RTP – it's been added for some SIP proxy servers which require it.
3. Possibility to change sending DTMF dialling from the doorphone (inband is not supported)
4. default values – makes settings of the default values. After making changes, please click on button „save changes“.

If you set the DIP switch to **SIP server** mode, then the contents of „SIP parameters“ settings menu change.

**SIP parameters:**

**SIP proxy server** Address: 192.168.1.80 Port: 5060

**SIP registrar server** Address: 192.168.1.80 Port: 5060

**Account module** Name: 229 Password: 229 Auth. Id: 229 Expiration [sec]: 600 Registration successful

**Use (180 Ringing):**  **Use (183 Session progress):**   
**Enable Simmetric RTP:**   
**Send DTMF as SIP INFO:**   
**Send DTMF according to RFC2833:**

default values save changes

To enable changes, please do not forget to click on button „save changes“.

1. SIP proxy server - IP address or SIP server name and port (usually 5060/5061) - the connection is made via this server
2. SIP registrar server - IP address or SIP server name and port (usually 5060/5061) – on this server the registration is made. If you do not fill it out, then registration is made on a SIP proxy server.
3. registration data for connection to a SIP proxy server (not compulsory)
4. user name, usually the telephone number of the doorphone (the line to which the doorphone is connected)
5. registration validity on the SIP server (interval of sending request for re-registration)
6. choice of signalling of the incoming call. Ringing as a standard, it can be changed to Session progress – it's been added for some SIP proxy servers which require it.
7. Symmetric RTP – it's been added for some SIP proxy servers which require it.
8. Possibility to change sending DTMF dialling from the doorphone (inband is not supported)
9. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.1.5 Audio codec setting

LOGO

Day mode

**Menu:**

- Network setting
- Basic parameters
- SIP parameters
- **Setting audio** ✓
- Setting video
- Relays
- Time parameters
- Memory numbers
- Day Intervals
- User interface
- Service
- Video
- Help

**Language:**

english

**Setting audio:**

Priority 1: G711µ

Priority 2: G711a ①

Priority 3: G726-32bit

Priority 4: GSM

②

To enable changes, please do not forget to click on button „save changes“.

1. here you are selecting priority of using audio codecs. Choice of codec for the voice connection is selected automatically. Both parties will agree on using a specific codec in the SIP protocol.
2. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.1.6 Video setting

**Setting video:**

Image size: 320 × 240 (1)

Numbers image per sec.: 2 (2)

Brightness: 50

Contrast: 50 (3)

Colour: 64

Hue: 0

Gamma: 25

Video codec priority 1: H263 (4)

Video codec priority 2: H264

default values (5) save changes

To enable changes, please do not forget to click on button „save changes“.

1. display resolution of video
2. number of displayed images per second
3. setting other camera parameters
4. priority choice of H.263 / H.264 codec. If you do not select any codec, then the video will not be sent during the call. This option is important for some VoIP telephony systems disabling voice connection when the video is present in the call.
5. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.1.7 Viewing the video (incl. the PopUp SW)

Video in the IP Bell doorphone is captured with [USB WEB camera](#). Images of the camera are sent to the WEB browser partly as series of JPEG pictures (the first web page on the IP address of the IP Bell doorphone). The IP Bell also sends the video stream in H.263 and H.264 codecs. This video stream can be displayed e.g. on Grandstream GXV3140 IP video telephone with a large LCD display.

Another interesting way of viewing the video of the IP Bell is via a Windows based PopUp SW called „UDVguard“. Please ask your local partner for the latest version. The UDVguard is still under development with the following features planned:

- During the call of the IP Bell doorphone it is activated automatically from the Windows system tray to foreground and it displays images

(video) of the IP Bell's camera. After the call has ended, it minimizes back to system tray (pop up function).

- switching of both IP Bell's switches – opening the door entrance
- acoustic connection to IP Bell – if the doorphone calls to the address of the PC with installed and activated UDVguard software, you can receive calls of the IP Bell doorphone via the PC's sound card. By clicking on the pushbutton „DoorPhone“ in the software you can call to the IP Bell doorphone station.
- Program can be installed to max. 100 computers on the network. In case there is an active connection to IP Bell, the UDVguard software pops up and displays video to all UDVguard users in the network. In the program there is set the IP address of the doorphone. Within the network you can then operate more IP Bell doorphones which are differentiated from each other with the „Hostname“ set as per chapter 3.1.3. The hostname is shown in the header of the UDVguard pop up software.

Parameters of video are described in chapter 4.3.

### 3.1.8 Day intervals

They are displayed only in case you tick on Day/Night automatic switching in the basic parameters menu (Switching between Day/Night – automatic).

**Day Intervals:** 12:30

	Interval 1	Interval 2	Interval 3
Sun:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mon:	08:00 – 15:00	<input type="text"/>	<input type="text"/>
Tue:	07:00 – 11:30	12:30 – 16:00	<input type="text"/>
Wed:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Thu:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fri:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sat:	<input type="text"/>	<input type="text"/>	<input type="text"/>

Empty day line is considered as full day.  
All outside entered intervals in one day is considered as night.

default values save changes

To enable changes, please do not forget to click on button „save changes“.

1. Displaying of current time of the internal clock – clock setting is done in the menu „Service – time server“.
2. Table of setting day intervals. The rest of the day is set as night. E.g. Interval 1 = 08:00-12:00hrs. and Interval 2 = 14:00-17:00hrs., then from midnight till 7:59 is set as night, from 8hrs. till 12hrs. is set as day, from 12:01 till 13:59 is set as night, from 14hrs. till 17hrs. is set as day and the rest of the day until midnight is set as night.
3. default values – makes settings of the default values. After making changes, please click on button „save changes“.



### 3.1.9 User interface

**User interface:**

Video on start page:  ①

Protect video by password:  ②

Video surveillance (H.264):  ③

Push video:  ④

Web interface tcp port:  ⑤

Enable telnet:  ⑥

default values ⑦ save and restart

To enable changes, please do not forget to click on button „save changes“.

1. Turning on/off of the video on the start page of the WEB interface. For security reasons if you turn off the video on the start page, it is accessible only after login with password.
2. Further security protection is a password protection of access to the web page <http://ipaddress/video.jpeg> ( images from the camera).  
**ATTENTION - if you enable this protection, then PopUp SW and video on SNOM telephones will stop functioning!**
3. Video surveillance (H.264) is video (H.264 only) provided by the doorphone (server) via RTSP protocol on 554 port. It can be played on good stream video players (IP TV), e.g. Grandstream, MPlayer, VLC and many others. This video is running independently on calls. We are planning IP multicast broadcasting for more receivers simultaneously.
4. Push video is an option for Snom telephones. The script sent to telephones provides displaying of video on the Snom telephone.
5. Usual TCP port 80 can be changed to other port.
6. Turning on/off of telnet access (name: root, pass: 8765)
7. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.1.10 Service setting

**Admin services:**

VoIP version: 1.39 UDV version: 5.8

② Download log file  ①

③ Show call log

④ Show VoIP log

**Time server:**

GMT+2  ⑤

**Syslog server:**

⑥

**Firmware upgrade:**

⑦

**Upload language:**

⑧

**Save configuration:**

⑨

**Upload configuration:**

⑩

**Service password:**

Retype password:   ⑪

⑫

1. Actual firmware version in the VoIP module and the basic UDV module of the doorphone. UDV stands for „Universal Door Video“ doorphone. The button „enhanced log“ switches between an option of saving log file history in the basic or enhanced format (more information available, but for a shorter time period) – the enhanced log file is necessary for troubleshooting. The button "basic log" or "enhanced log" displays to what status is set the LOG. If you see in the menu "enhanced log", then it is set to the basic LOG and vice versa. The LOG is switched to a status which you do not see written in the menu screen.
2. Click on "download log file" – the file is saved on your PC to a place of your choice. The file's extension is ".BIN", you need to rename it to ".TAR". For unpacking the "tar" archive it can be used e.g. "[PowerArchiver](#)" program. The file from the archive needs to have ".TXT" extension. The text file does

not have the standard ending of lines CR LF, but LF only. For correct viewing of the text file we recommend using e.g. "[PSPad](#)".

3. Shows call log – commands only  
Shows records of registrations – it shows registration process and its result – successful/unsuccessful
4. Shows VoIP records – in the new window of the WEB browser a SIP monitor is displayed – actually it is a real time log file.
5. IP address of the NTP server – the server for setting correct time from the internet (clock for automatic day/night mode switching and for records to the log file – especially to the syslog server). If you do not know the address, please use \* (the star character) and the system itself will choose the appropriate one (write \* to the window and click on save).
6. Syslog server – IP address of the server, where the network events are stored (where the Syslog application is running).
7. Tool for overwriting by a newer firmware version of the VoIP and the basic module of the doorphone. There is an automatic detection according to the file header. This tool is also used for uploading graphical styles of the WEB interface – colours, fonts, logo, etc.
8. Adding a language file – uploads or rewrites a language support of the program. Two basic languages (English and Czech) can't be edited.
- 9. Saving all parameter settings of the IP Bell doorphone to a file.**
10. Restoring all parameter settings of the doorphone from a file.
11. Change of access password. The default is 1234.
12. VoIP module rebooting – it is necessary for rewriting the firmware.

### 3.1.11 Restart



### **3.1.12 Preparation of style and language mutation**

The style file contains three files packed to ".TAR" archive. For unpacking the ".tar" archive please use "[PowerArchiver](#)" program for example.

The first file "upload\_fw.sh" is the header of the style file. Please do not change it.

The second file is HTML style in HTML syntax. You can change the size of letters, fonts, colours of letters and lines, background colour. For correct displaying we recommend using e.g. "[PSPad](#)" program.

The third file is an image (logo of your company) in a size of up to 200x200px in GIF, JPG formats. We recommend GIF format with transparent background to eliminate the rectangle around your logo. Then rename the image to "logo.img".

To pack the archive, please use "[PowerArchiver](#)" program, set "tar" archive and selection "tarred".

As the basic file for translation to another language mutation is used either the English or Czech file. Translation contains also the Help text. Name of the file is the name of language in the menu. Therefore do not use dot and extension. For editing please use "[PSPad](#)" program for example. Translate only text in inverted commas, keep tags of HTML formatting. The font (charset) is set to [ISO8859-2](#).

## 3.2 Parameter settings of the IP Bell doorphone

### 3.2.1 Basic parameters

To enable changes, please do not forget to click on button „save changes“.

1. mode of choosing numbers – the numbers are either chosen according to **Day / Night** mode or they are selected from the first or second group – see more in chapter 2.2 on page 20.
2. Character star \* or hash # for call prolongation (10sec. before the end of the call the doorphone sends an alert, then you can extend the call).
3. Command for hanging up the doorphone from the telephone [1 or 2 digits]. It is useful to set the same command both for switching on the contact and hanging up the doorphone, see chapter 3.2.3. A command with one character is entered by replacing the first character by star \* character. For example a two digit code 55 can be shortened to a one digit code by entering \*5. The command is then initiated by one pressing the 5 key on the telephone.
4. Codes for switching **DAY / NIGHT** mode [1 or 2 digits].  
**Remark** switching to Day/Night mode stays set in the doorphone even after unplugging it from a power supply.  
One digit command is entered by replacing the first digit by the star character \*. E.g. a 2-digit code 11 is shortened to a one digit code by entering \*1. The command is then initiated by pressing the key 1 on the telephone.

5. Day/Night switching can be manual (codes for switching are used from the telephone) or automatic, then the table of day intervals is used. The condition is to set the time server in the „Service“ menu.
6. not used in this doorphone version
7. not used in this doorphone version
8. Switching off of the camera's night illumination LEDs
9. Attention, this option requires available inputs for sensors in the doorphone. Door sensors (contacts e.g. magnetic or part of the electrical lock), which inform about door opening / closing. By ticking on this option there will be displayed door status on the first page with video screen. This information is also sent to UDVguard program, where it is displayed as well.
10. default values – makes settings of the default values. After making changes, please click on button „save changes“.

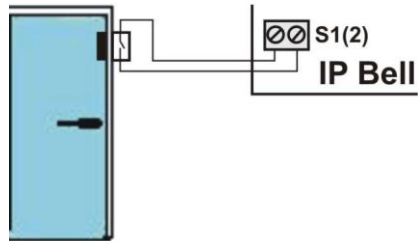
**ATTENTION!** settings of above parameters influence substantially the operation of the whole doorphone.

### 3.2.2 Sensors of open doors



1. In case you tick on sensor 1 and sensor 2 option (see chapter 3.2.1), then on the first page of the WEB interface there will appear information buttons showing the status of door open (open) or door closed (close).

**Attention:** this option is available only for doorphones equipped with inputs for these sensors. The sensor is a door contact (e.g. magnetic contact used for security purposes or a contact which is included in the electrical lock, etc.), which is switched on (closed) when the door is closed and switched off (open) when the door is opened.



### 3.2.3 All about relays

**Relays:**

**Relay 1:**

Relay mode: 1 (1)

External code day + night: 121 (2)

External code day:

External code night:

Internal code from phone: 55 (3)

Relay closing [sec]: 05 (4)

Control of incoming call:  (5)

**Relay 2:**

Relay mode: 1

External code day + night: 212

External code day:

External code night:

Internal code from phone: 66

Relay closing [sec]: 05

Control of incoming call:

Delay between 1 and 2 in mode 5: 10 (6)

(7) default values save changes

To enable changes, please do not forget to click on button „save changes“.

#### 1. Mode of relays:

- =1 **switch** mode – it is closed with a command or password for a time period “**time of closing**” (used for electrical locks, opening gates, etc.)
- =2 **camera** mode – it is closed with picking up the doorphone and open with hanging up the doorphone
- =3 **illumination** mode – it is closed with picking up the doorphone and keeps closed for a time period “**time of closing**” after the doorphone hung up.

- =4 bell mode** – it is closed when the pushbutton is pressed and it opens after a time period “**time of closing**” (used for connection of external bell or siren/horn)
- =5 gradual opening mode** – in this mode you can set relay 1 only and at the same time relay 2 is set to mode 1. A command or password activates relay 1 for a time period “**time of closing 1**”, then a time period runs “**idle time period**” before closing relay 2, then the relay 2 is activated for a time period “**time of closing 2**”, and then the doorphone hangs up.

***Remark:** only the relay 1 can be activated from the telephone and run the whole sequence. Pushbuttons can activate the relay 2 independently by a password.*

2. password for relay closing from pushbuttons [2 to 6 digits]. 6 passwords in total, follow settings Day/Night, the password combination is entered by pressing pushbuttons of the doorphone (1 or two pushbuttons). Relay closing is influenced by the set **mode** and **Day/Night** switching. When the mode is set to **2 groups of numbers** (chapter 3.2.1), the doorphone is set to **DAY** mode permanently.

When choosing a password several rules should be followed:

- the password should be chosen in a way that its combination can't be discovered easily when used on specific pushbuttons frequently which wear out after some time.
- select the first password button from the least used pushbutton of direct dialling (extends the time period of dialling)
- pay attention to equality of password numbers. If one password contains the second password, e.g. password for switch 1 is 1212 and password for switch 2 is 12121, then always after the second pressing of the pushbutton 2 the first switch opens and the switch 2 can never be opened. However if you choose password 212 for the 2<sup>nd</sup> switch, then after the second pressing of pushbutton 2, both switches 1 and 2 open at the same time.

3. command from telephone for closing the relay [2 digits]. You can set the same command for both relays. Then both relays are activated at the same time. It is useful to set the same command for closing the relay and for hanging up the doorphone (see chapter 3.2.1 on page 37). One digit command is set by replacing the first digit by the star character \*. For example, a two digit code 55 can be shortened to a one digit code by entering \*5. The command is initiated only by pressing the key 5 on the telephone.
4. time period for which the relay is closed [2 digits 01-99]
5. parameter enabling or disabling the control of the relay during an incoming call. Disabling the control during an incoming call is makes sense when e.g. relay 2 in mode 1 controls opening of the garage door and the electrician opens the garage door and after the car passes, the garage



door closes. Then controlling from the telephone might cause undesired permanent opening of the garage door (the garage door does not close – the vehicle has not passed)

6. time period between closed relay 1 and 2 when set in mode **m=5** (gradual opening) [2 digits 01-99]
7. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.2.4 Time parameters

**Time parameters:**

Maximum call duration [min]:	<input type="text" value="2"/>	①
Numbers of rings:	<input type="text" value="1"/>	②
Time between key presses [sec]:	<input type="text" value="2"/>	③
Time hang up before redial [sec]:	<input type="text" value="2"/>	④
Time before redial [sec]:	<input type="text" value="25"/>	⑤
Audio signaling - opening/closing:	<input checked="" type="checkbox"/>	⑥
Audio signaling - others tones:	<input checked="" type="checkbox"/>	⑦

⑧

default values    save changes

To enable changes, please do not forget to click on button „save changes“.

1. maximum call duration, this time period can be extended during the call by dialling character start or hash from the telephone (\* or #) – see chapter 3.2.1 on page 37.
2. number of incoming call rings. The number can be set from 1 to 9. After detection of the first ring the LED starts blinking on the front panel of the doorphone. After set number of rings the doorphone answers the call automatically.
3. maximum time period [sec] between presses of pushbuttons [range 1-9]
  - **switch closing** – if the time period between pressing two consecutive pushbuttons is longer than this time period, then the code (password) is not interpreted correctly.
  - **dialling of number** – if the pressed pushbutton is selected as the first digit of the password, then dialling of a number will be delayed by this time period.
4. time period [sec] for which the doorphone hangs up before it picks up the line again to repeat dialling (pressing of a pushbutton during the call or dialling, busy tone detection) [range 1-5]

5. After the dialling is finished, it waits for this set time period. After the time period elapsed and there is no call established or there is a busy tone detected, then the IP Bell doorphone hangs up [range 04-99]. The dialling is repeated in case it is set to mode of dialling 2 groups of numbers.
6. By default the status of the doorphone is signalled acoustically. However this might cause some issues or the customer may not like this signalling. The signalling can be turned off, then all other tones are enabled (except for tones of picking up and hanging up the line)
7. By default the status of the doorphone is signalled acoustically. However this might cause some issues or the customer may not like this signalling. The signalling can be turned off, then only tones of picking up and hanging up the line are enabled (all other signalling tones are disabled)
8. default values – makes settings of the default values. After making changes, please click on button „save changes“.

### 3.2.5 Direct dialling – memory numbers

Day mode

**Menu:**

- Network setting
- Basic parameters
- SIP parameters
- Setting audio
- Setting video
- Relays
- Time parameters
- **Memory numbers** ✓
- Day Intervals
- User interface
- Service
- Video
- Help

Language: english

**Memory numbers:**

	① Group DAY	② Group NIGHT
Button 1:	192*168*1*231	192*168*1*230
Button 2:	192*168*1*232	192*168*1*230
Button 3:	150#192*168*1*220	
Button 4:		
Button 5:		
Button 6:		
Button 7:		
Button 8:		
Button 9:		
Button 10:		
Button 11:		
Button 12:		
Button 13:		
Button 14:		
Button 63:		
Button 64:		

③

To enable changes, please do not forget to click on button „save changes“.

1. number of the pushbutton (memory) – the telephone number of up to 25 digits, which we wish to save. The numbers saved in this column are numbers of **the first group**, or these numbers belong to **Day** mode. In case you use the P2P mode, then you save into the memory the IP address in the format 192\*168\*1\*231, where „\*“ means „.“. If you use the SIP server mode, then you save telephone numbers into the memory of the IP Bell’s pushbuttons, for example 117.

2. number of the pushbutton (memory) – the telephone number of up to 16 digits, which we wish to save. The numbers saved in this column are numbers of **the second group**, or these numbers belong to **Night** mode. In case you use the P2P mode, then you save into the memory the IP address in the format 192\*168\*1\*231, where „\*“ means „.“. If you use the SIP server mode, then you save telephone numbers into the memory of the IP Bell’s pushbuttons, for example 117.

**Remark** the telephone number in the P2P mode can be also saved in the format 123456#192\*168\*1\*231

**Remark** switching to Day/Night mode stays set in the doorphone even after the power supply has been disconnected.

9. default values – makes settings of the default values. After making changes, please click on button „save changes“.

## 4 **Technical parameters**

---

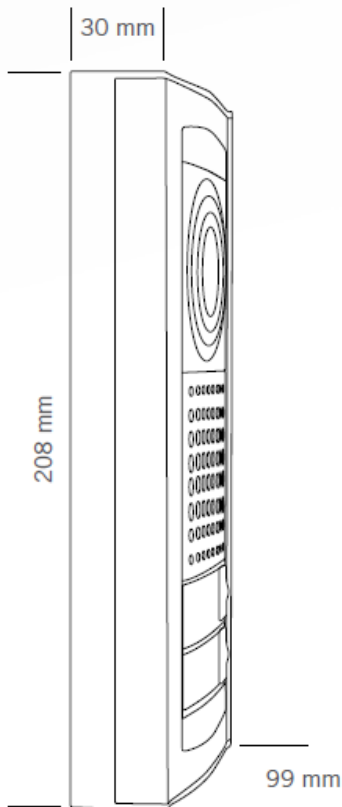
### 4.1 Electrical parameters

Parameter	Value	Conditions
Communication interface	Ethernet 10BaseT, 100BaseTx	
VoIP protocol supported	SIP	
Audio	G.711u, G.711a, G.726-32b, GSM	
Video	series JPEG, MJPG, stream H.263 (CIF), H.264	
Band width	300Hz – 3400 Hz	
Power supply - adapter	12VDC ± 2V , 12VAC ± 1V	
- or PoE	IEEE802,3af Altern. A+B	
Max. consumption	300mA	12VDC
Max. voltage of switch contact	48V	at I < 1A
Max. current of switch contact	2A	at U < 30 V
Operational temperature	-20°C to +70°C	

## 4.2 Mechanical dimensions

Type of IP Bell	Dimensions HxWxD [mm]
IP Bell-01	208 x 99 x 30
IP Bell-02	208 x 99 x 30
IP Bell-01C	208 x 99 x 30
IP Bell-02C	208 x 99 x 30
Bell - 8	208 x 99 x 30

IP protection level: IP44



## 4.3 Parameters of video

### Video pro WEB:

**Internet Explorer** - (series of JPEG images - Port 80). It is used infinitely repeated http request ADRESA/video.jpg

**Mozilla, Opera, Firefox, etc. and program PopUp** (UDVguard software) - (MJPEG stream - Port 80) – it is used http request ADRESA/video.mjpg (sometimes you need to reload the page before it starts). This video is more continuous and loads less the network.

### Stream video for IP telephones:

H.263 and H.264 is agreed between the IP Bell doorphone and the videophone over SIP/SDP protocol on the standard SIP port. The video and sound then run over RTP protocol on ports agreed over SIP (usually 9078).

### Parameters of video:

JPG images are created in the camera and they are the same for all transport protocols.

Size (resolution) of video can be selected in the menu "Setting video" in the WEB interface.

The maximum resolution is defined by the used type of the USB camera, usually it is 640x480.

Stream H.263 knows only CIF resolution (352x288), therefore larger JPEG is cut and smaller appears with a frame.

Number of JPG images (1-5 images/sec) can be chosen in "Setting video" menu in the WEB interface.

Number of MJPG and Stream H.263 / H.264 comes from the camera, every 2nd is used and the result is approx. 7-12 images/sec. on H.263 and up to 5 images/sec. on H.264.

### Ports:

Port **80** for http (WEB page and JPG (MJPEG) video)

Port **5060** for SIP

Ports RTP agree with the other party over SIP, usually Port **7078** is suggested for audio and Port **9078** for video

Port **554** video (right now H.264) enabled by the doorphone (server) via protocol RTSP

**Telnet:** name: root / password: 8765

**Setup:** Default IP address: 192.168.1.250

name: admin / password: 1234

**Warranty conditions:**

The product was shop-checked. The producer guarantees that this product will keep the features described in the operating instructions in the course of warranty provided the user handles the product as described in the manual. The warranty is extended by the period of possible warranty repair.

When claiming within the warranty period, kindly contact your dealer who sold you the product. The producer only makes warranty repairs. Please attach the description of the claim reason, the proof of purchase and your exact shipping/delivery address.

**The warranty does not include:**

- mechanical, thermal, chemical and other damages caused by user's activities
- defects caused by natural disasters
- defects caused by repair or changes carried out by the user or other unauthorized person
- willful damage of the product
- incorrect use of the product caused by other use than specified in the operating manual (e.g. wrong installation, wrong programming)
- damages caused during the product transport to the customer and during the transport from the supplier

Producer:
Dealer:
Date of purchase: