

User Manual



Door Access Control with Analog Telephony Interface

Release 1.17

August 2014



NOTICE

This document refers to the Nista Devices GmbH Door Access Control devices with analog telephony interface.

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Declaration of Conformity

Nista Devices GmbH. hereby declares that the Nista Devices GmbH Door Phone products SD-30X and SD-40X series models complies with the essential requirements specified in the directive 1999/05/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

The technical documentation as required by the conformity Assessment procedure is kept at the following address:

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1 Cautions

Please read this User Manual carefully before using the product. Follow all instructions and recommendations included in manual.

Any use of the product that is in contradiction with the instructions provided in manual may result in malfunction, damage or destruction of the product.

The manufacturer shall not be responsible for any product damage incurred as a result of a use of the product other than that included in manual and disobedience of the recommendations and warnings mentioned in manual.

Any use or connection of the product other than those included in manual shall be considered undue and the manufacturer shall not be responsible for any consequences arisen as a result of such product usage.

Moreover, the manufacturer shall not be liable for any damage or destruction of the product incurred as a result of incompetent installation and/or undue operation and use of the product in contradiction with instructions described in manual.

The manufacturer assumes no responsibility for any malfunction, damage or destruction of the product caused by incompetent replacement of parts or due to the use of reproduction parts or components.

The manufacturer shall not be liable and responsible for any loss or damage incurred because of a natural disaster or any other unfavorable natural condition.

The manufacturer shall not be responsible for any damage of the product arising during the shipping thereof.

The manufacturer shall not make any warrant with regard to customer data loss or damage.

All applicable legal regulations concerning the product's installation and use as well as provisions of technical standards on electric installations have to be obeyed. The manufacturer shall not be liable and responsible for damage or destruction of the product or damage incurred by the consumer in case the product is used and handled contrary to the said regulations and provisions.

The consumer shall immediately change the default access password for the product after installation. The manufacturer shall not be responsible for any damage incurred by the consumer in connection with the use of the default product password.

The manufacturer also assumes no responsibility for additional costs incurred by the consumer as a result of making calls using a public or another telephony line with an increased tariff.

2 Product Overview

This manual provides installation and programming instructions for the following products models:

- Analog Door phone with the Touch or Piezo 16-buttons **Keypads**: SD-40A ,SD-40P, SD-40AC, SD-40PC
- Analog Door phone with the Touch or Piezo **Single Button**: SD-41AC, SD-41PC
- Analog Door phone with the Touch **Single Button Mini** housing edition: SD-30A, SD-30P

Model	Front Panel Description
SD-30A	Plastic Panel with Touch Sensitive Single Button
SD-30P	Aluminum Panel with Piezo Single Button
SD-40A	Plastic Panel with Touch Sensitive Keypad
SD-40P	Aluminum Panel with Piezo Keypad
SD-40AC	Plastic Panel with Touch Sensitive Keypad+Video
SD-40PC	Aluminum Panel with Piezo Keypad+Video
SD-41AC	Plastic Panel with Touch Sensitive Single Button+Video
SD-41PC	Aluminum Panel with Piezo Single Button+Video

Basic Features

- PBX extension (SLT) analog line interface
- Full telephony Keypad and Single Button configuration
- Piezo outdoor and Touch indoor keypad housing
- The Single button mini housing edition
- Door Access Code protection
- Day and Night calling to different pre-defined operators
- Speed dialing memories
- Direct call to a local and remote destinations
- Door opening from remote extension during conversation
- Telephony connection control:
 - Busy tone detection
 - Telephony line Loop disconnection detection
 - Continuous tone detection and disconnection
- High quality video control
- Local and Remote maintenance
- Administrator Login password protection
- Digital volume control
- The electrical door lock powering support
- Anti-vandal housing
- Reliable and stylish design
- Indoor unit backlit keypad
- Easy to install and support

3 The Door Phone kit content

The contents of the analog door phone are as follows:

- The Door phone unit
- External ~12V AC / 1.6 A power supply
- Installation bracket
- Installation kit which includes wall installation dowels and screws
- Installation drill template
- Enclosure opening secret screw with a key

Note:

1. Device is optionally available for orders with the internal color video camera.
The door phone unit with the installed internal video camera must be purchased separately.
2. Device with MINI housing supports the external video camera only

4 The Door Phone Man Machine Interface (MMI)

The Door Phone front panel contains a built-in speaker, a microphone, Piezo or Touch-keypad and internal video camera window (optional)



Figure 4-1 The Analog Door Phone Front Panel (Touch and Piezo Keypads editions)

The Analog Door Phone can be supplied in **KEYPAD** or **SINGLE BUTTON** editions.

The Analog Door phone Keypad edition equipped with the Touch or Piezo keypad 4x4: 16 buttons, where 12 buttons are standard telephone keypad: 0-9, * and # and additional row of 4 buttons are special functional buttons:

- M1,M2 and M3: banks of speed dial memories
- 'Ring' button which shown on the keypad as 'Bell' icon purposed for the dialing and call cancellation operations



Figure 4-2 Analog Door phone Keypad edition

The Analog Door phone Single Button edition equipped with the Single button keypad with button marked with the 'Bell' icon. This button is purposed for the call initialization and cancellation.

The Analog Door phone Single Button edition available in regular and mini housing. The unit's physical dimensions see in Chapter 9.



Figure 4-3 Analog Door Phone Single button edition with regular and mini housing

5 The Analog Door Phone Schematic setup

- The Door Analog unit can be integrated with the office PBX (PABX) as simple analog extension/telephone (SLT).
- The unit powers the door lock, provided it is powered by an external supply
- The unit powers the door lock, provided it is powered by its internal relay's pins (See Figure 6-4)
- The unit dials to predefined 'Day' and 'Night' operators via PBX
- The unit dials directly to local PBX extensions or external destination numbers via PBX
- The unit dials to pre-programmed Speed Dial destination numbers via PBX
- The unit opens doors by using the Bypass Switch button
- The unit provides analog video stream directly to video monitor

Figure 5-1 details the unit schematic setup.

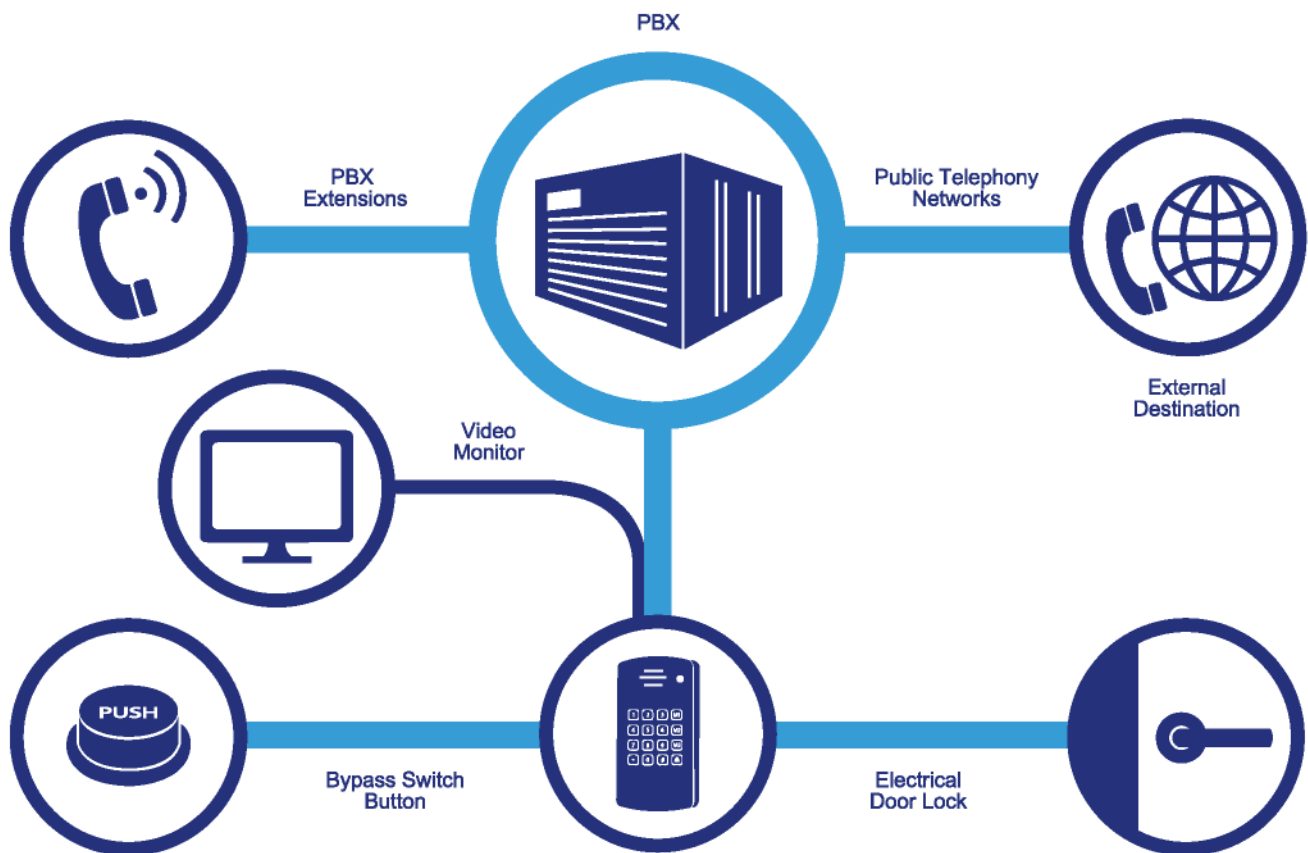


Figure 5-1 The Analog Door Phone schematic setup

6 Installation

6.1 Physical installation

The Door phone can be mounted on the installation bracket provided with the unit.

To install the Door Phone Touch keypad on the wall:

Open the Door Phone case by rotating the secret screw on the bottom of the unit.

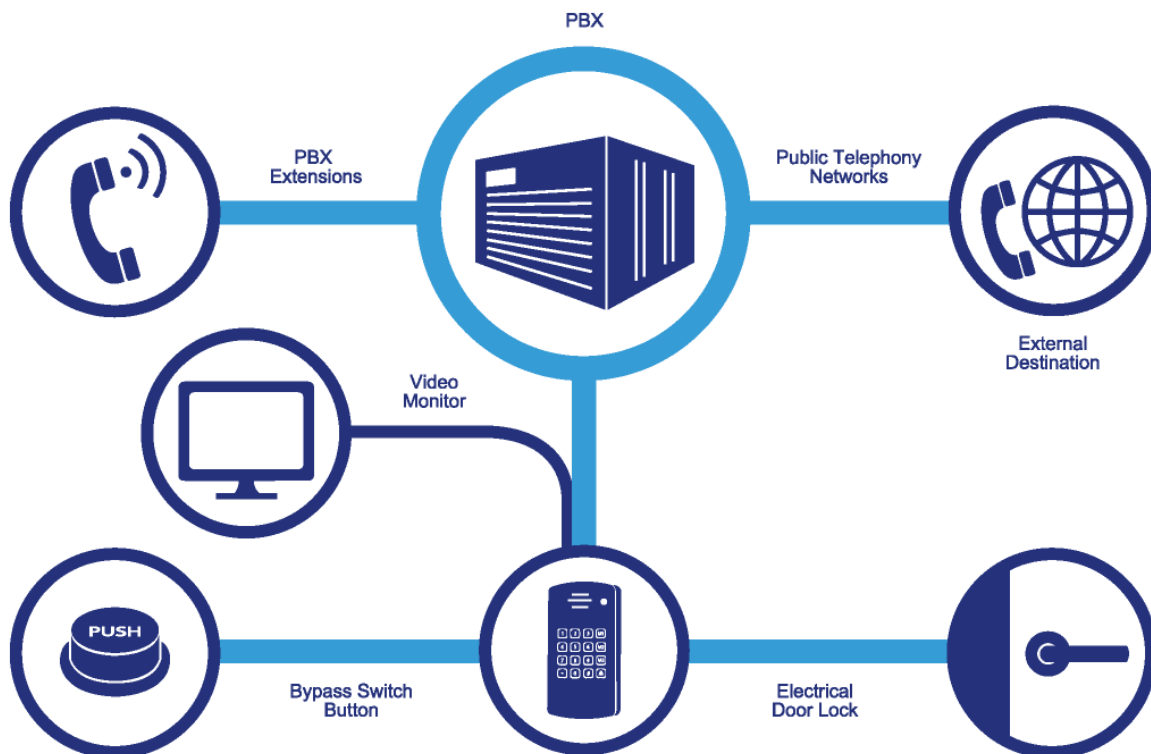


Figure 6-1 Door Phone wall installation

To install wall bracket:

1. Measure and mark the location of the holes on the wall, where holes will be drilled.
2. Drill the holes and insert the wall dowels into the holes.
3. Attach rubber mat on the wall and then metal installation wall bracket using the provided wall screws. (See Figure 6-1). The rubber mat shall be directed to a wall with the rugged side.
4. Connect all required wired connections
5. Put the Door Phone's front panel into the latch, then close the case and lock the secret screw

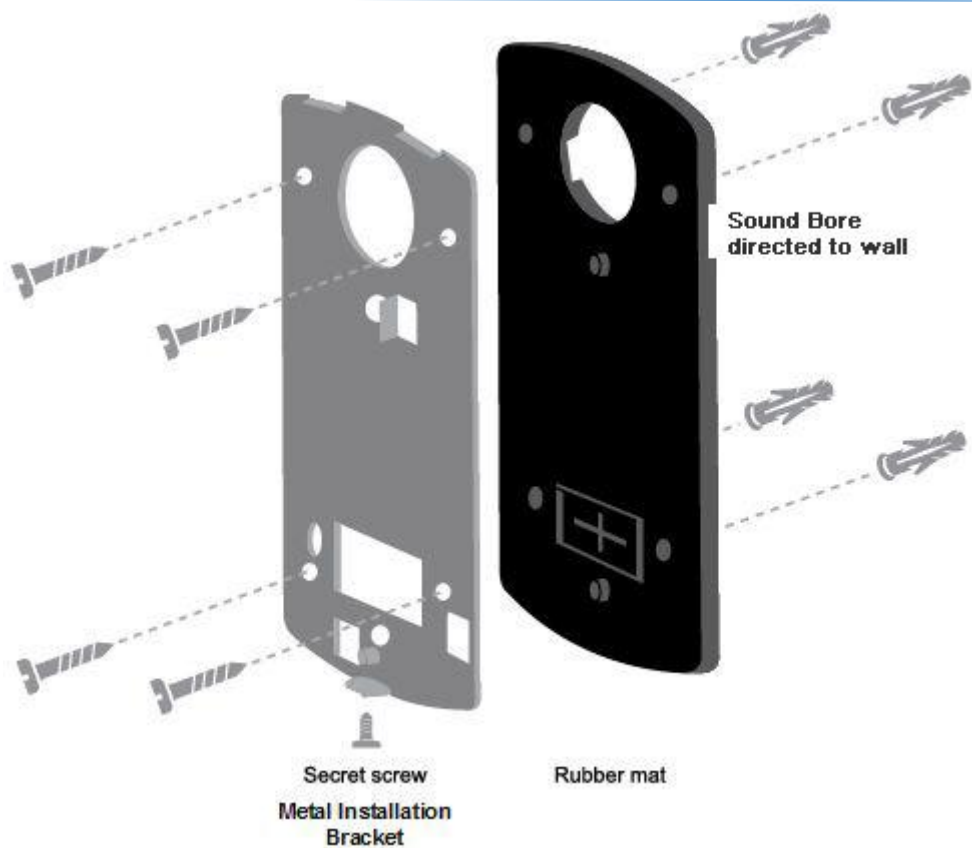


Figure 6-2 Installation bracket



Figure 6-3 Closing the Door Phone house

6.2 Electrical connections

Note:

The connector PIN's outputs placement is the same for the regular and mini housing devices.

The wiring connector is a screw connector type. In order to attach a wire, you must insert the stripped end of the wire into the appropriate wire connector's pin and tighten the terminal screw. This will bring together the wire connection.



To avoid damage to the Door Phone, the external power supply should be disconnected from mains prior to connecting wires to the Door Phone unit.

1. Remove the keypad panel cover from the Door Phone unit and find wire connectors at the PCB module. (See Figure 6-4)
2. Connect the two 12V lead wires from the 12V AC power adapter, one to each of the “~12V” pins.
3. Connect the two PBX analog extension wires, one to each of the “LINE” pins.
4. Connect the door-lock relay wires to the “DLR” and “~DLR” terminals if the electrical door-lock relay is a powered-locked-state type lock, or otherwise connect the door-lock relay wires to the “/DLR” and “~DLR” terminals.
5. If a bypass switch button is used, connect the button wires to the “SW” and the “/SW” terminals.
6. Plug the wire connectors to the Door Phone PCB module.
7. Attach the Door phone onto the installation bracket.
8. Switch On the external power supply.

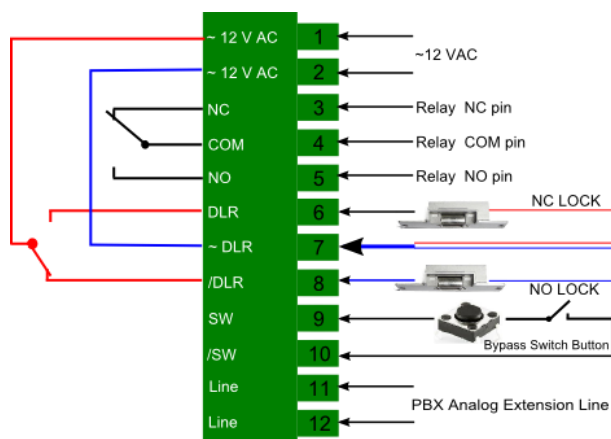


Figure 6-4 The SD-40X Model Door Phone wires connector

Note:

1. ~DLR/DLR/(DLR) pins provide voltage to electrical door lock. The maximum supported electrical current is 2A

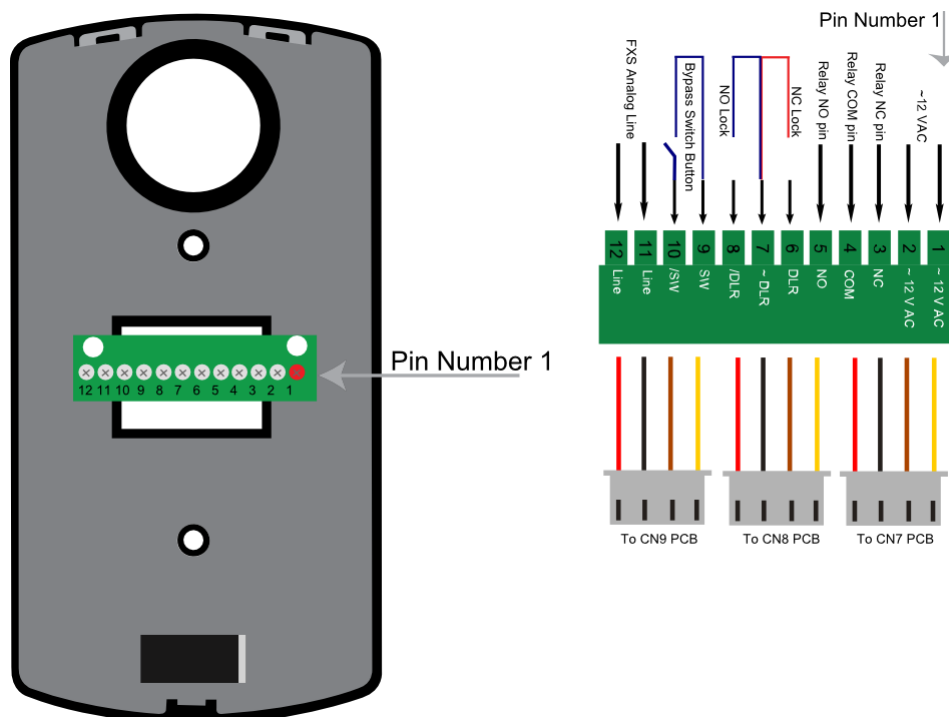


Figure 6-5 SD-30X Model External interfaces connector

SD-30X family devices connector is due-sides connector and includes 2 set of connections:

- Connections to peripheral interfaces See Figure 6-5
- Connections to SD-30X PCB on-board sockets CN7, CN8 and CN9.

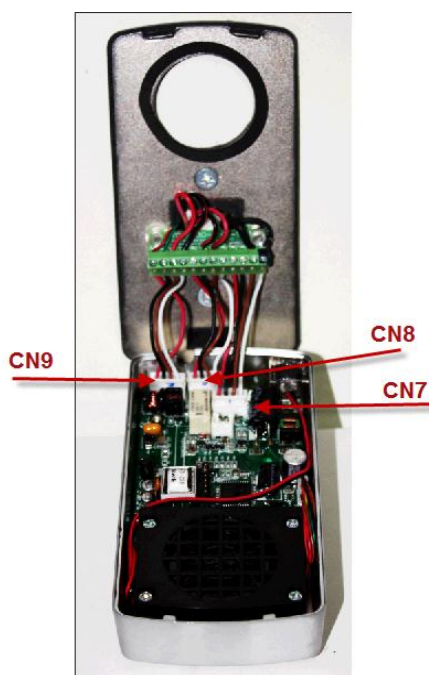
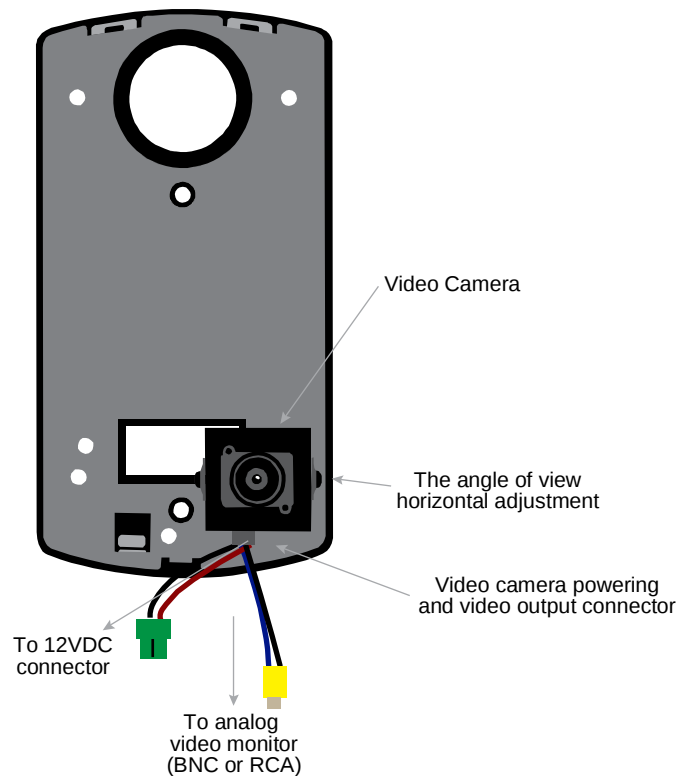


Figure 6-6 SD-30X Connector PCB Connections

6.3 Video Camera Installation

The SD-40X models can be optionally supplied with integrated internal analog video camera. The SD-30X models supports the external video cameras only

Video camera installs on the SD-40X metal installation bracket (See Figure 6-1)



The video camera angle of view can be adjusted by manually changing the angle of horizontal position.

The video camera includes 2 wired connections:

Connector	Description
SD-40X 2 wired cable with 2-Pin's green powering connector	The Video Camera powering connector. Shall be connected to appropriate socket on the main PCB. See Chapter 6.4 Pin-outs colors: Black – GND; Red-12VDC
SD-30X 2 wired cable with 2-Pin's powering connector	The External Video Camera powering connector. Shall be connected to appropriate socket on the main PCB. See Figure 6-8. Pin-outs colors: Black – GND; Red-12VDC
BNC or RCA (optionally) analog video connector	The Video Camera analog output connector. Can be used for connection to analog video monitor. Pin-outs colors: Black – GND; Blue-Video out

Note:

The Video Camera functionality detailed described in Chapter 7.8
The SD-30X models supports 12VDC power for external video camera only

6.4 Internal / External Video Camera powering connector

The Door phone provides an option to power internal or external video camera with 12V DC voltage. The power supplies via 2-pin connector installed on PCB board.

Video camera powered in accordance with configuration rules and use cases (See DTMF programming code ***400** Chapter 8.4)

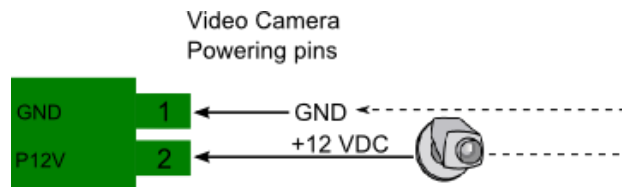


Figure 6-7 The SD-40X Video Camera powering connector



Figure 6-8 The SD-30X External Video Camera powering connector

7 User's Operations

Note:

1. The Single Button door phones provides limited functionality. The limitations depend on the Door phone's keypad usage.
2. Pressing the 'Ring' button a second time performs the "Call Cancellation" function.

7.1 Access by using the 'Door Access Code'

For the door opening:

- Dial the known 'Door Access Code' on the keypad
- Door shall be open and accompanied by 'Confirmation' tone (Product signaling tones described in Chapter 8.1)

Note:

1. The default door access code is '**4321**'. Read Chapter 8.4 in order to configure the 'Door Access Code'
2. Door phone supports up to **9** digits Door Access Code
3. This specific operation is available in Keypad units only

- Door will be opened during the 'Door Opening Time' interval.

Note:

1. The 'Door Opening Time' interval can be configured by using the Door Phone programming codes (See also Chapter 8.4)
2. The default Door opening time is **3** seconds

7.2 Door opening by using the Bypass Switch button

The Door phone supports a bypass switch installation. This allows the door opening with a hardwired switch button. A bypass switch button should be connected to the SW and /SW terminals. (See Figure 6-4)

The door will be opened, regardless of the Door Phone telephony connection status.

7.3 Call to the Day / Night Operator

Door phone can operate in 'Day' and 'Night' modes. The Operator destination number can be configured for each

mode separately. The number will be dialed when pressing  button.

To dial Operator:

- Press on the  button
- Door phone dials to a preconfigured Operator number, depending on the Operational mode: Day or Night

Note:

- Day and Night operational modes can be switched manually by System Operator by using incoming call to a unit, enter to programming mode and appropriate DTMF code (See Chapter 8.2)
- The default Operator destination numbers are empty and must be configured by using Door Phone programming codes (See also Chapter 8.4)

7.4 Direct Call to destination number

To dial directly to destination number:

- Dial required destination number by using the keypad buttons
- Press  button when finished or wait until the 'Inter Digits Timeout' interval
- Door phone dials destination number

Note:

- The first prefix digit of dialed number shall be allowed for dialing. See Door Phone programming codes (See Chapter 8.4) :
 - 'Programming 1-prefix-digit(s) for dialing outgoing calls'
 - Inter Digits Timeout
- The maximum destination number length is **20** digits
- Operation available for Keypad units only

7.5 Dialing by using Speed Dialing Memories

The Door Phone Keypad edition supports up to 36 Speed Dialing memories, where each memory can store up to 20 digit destination numbers.

Note:

The number of supported Speed Dial Memories depends on the Door Phone configuration. Contact your local distributor in order to check the unit configuration.

Each Speed dial memory can be specified by using Keypad buttons:



- $\boxed{M1} + \boxed{M2} + \boxed{M3} + \boxed{1} \sim \boxed{9} + \text{Time Delay} = \text{'INTER-DIGIT DELAY TIME (See Command *104)'}'$

Next table shows the codes of Speed dialing memories banks

Memory bank	Speed Dialing Codes
From 1 to 9	$\boxed{1} \sim \boxed{9} + \img alt="bell icon" data-bbox="398 158 438 188"/>$
From 11 to 19	$\boxed{M1} + \boxed{1} \sim \boxed{9} + \boxed{\text{Inter Digit Delay Time}}$
From 21 to 29	$\boxed{M2} + \boxed{1} \sim \boxed{9} + \boxed{\text{Inter Digit Delay Time}}$
From 31 to 39	$\boxed{M3} + \boxed{1} \sim \boxed{9} + \boxed{\text{Inter Digit Delay Time}}$

For Speed Dialing:

- Dial the required Speed Dialing memory code, where  button must be used as End Of Dialing sign for Memory Banks 1~9 and can be optionally used for Memory Banks M1,M2 and M3
- Door phone dials to pre-configured destination number

Note:

1. The Speed Dialing memory maximum destination number length is **20** digits
2. The Speed dialing memory destination number can be configured by using the Door Phone programming codes (See Chapter 8.4)
3. Operation is available for the Door Phone Keypad edition only

7.6 Door opening from PBX Extension by using the Extension's Door Opening Code

Called Destination can open the door for guests remotely by dialing the 'Extension's Door Opening Code' in conversation mode.

To open a door from Extension:

- Call to destination as described in Chapters: 7.2, 7.4, 7.5
- Wait till destination answers
- Destination extension can dial the 'Extension Door Opening code' during conversation in order to open a door
- The call will be disconnected after door opening procedure

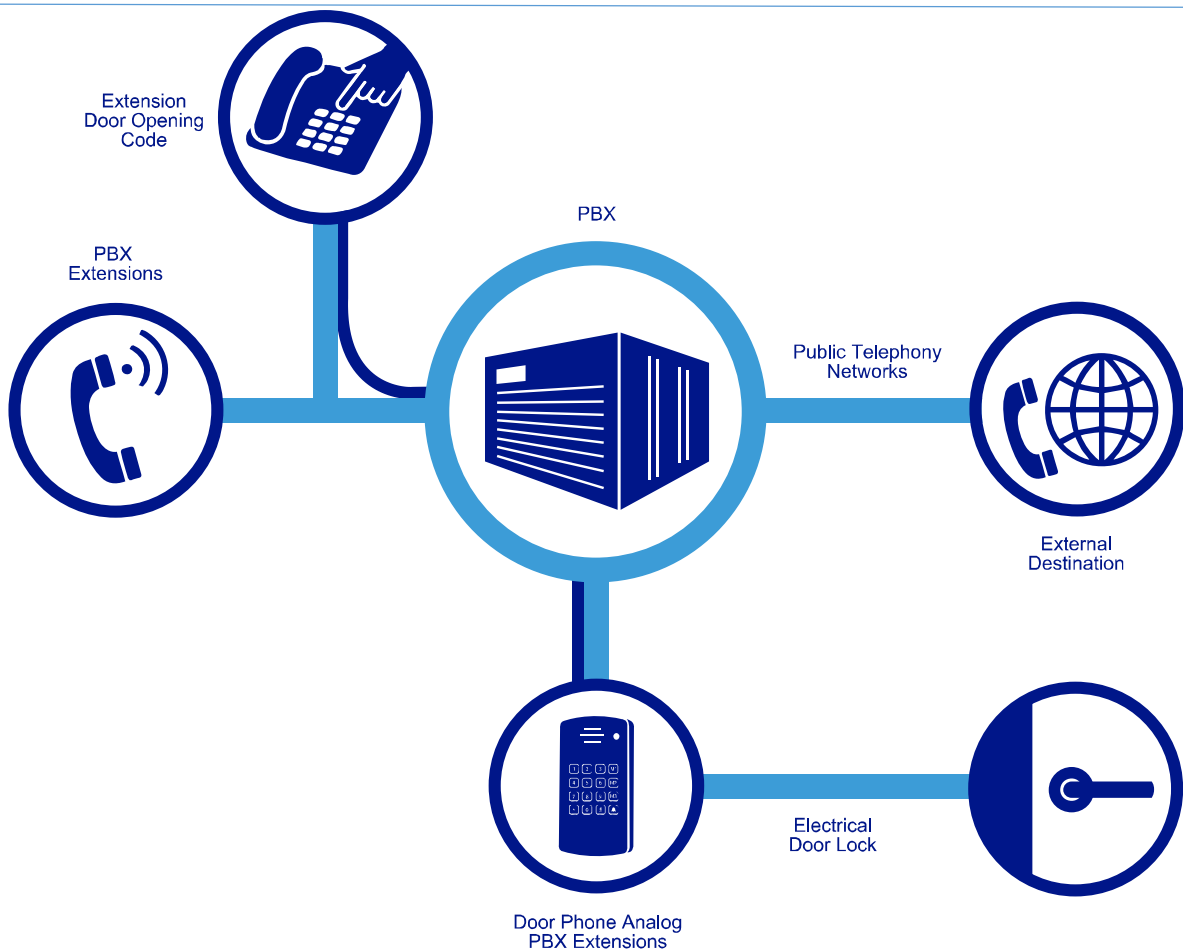


Figure 7-1 Door opening from remote Extension during conversation

Note:

1. The default Extension's Door opening code is '5'
2. The call will be disconnected automatically after door opening from extension
3. The 'Extension Door opening code' can be configured by using the Door phone programming codes

7.7 The maximum conversation time

The Door phone controls the conversation time duration. When preconfigured conversation time expired Door phone disconnects a call.

Note:

1. The default Maximum conversation duration time is 60 seconds
2. The Maximum conversation time interval can be configured by Door Phone programming codes in interval from 10 seconds to 99 seconds or with Unlimited value

7.8 Video Monitoring

Door phone can optionally be completed with the internal video camera.

Note:

The Door Phone Touch Single Button Mini housing edition provides an option to connect external video camera only.

Door phone provides the analog video stream, which can be direct to video monitor. Video stream can be provided in following optional modes:

- Always Off
- Always On
- When  button is pressed
- When any keypad key is pressed (For Keypad edition only)
- When the telephone line is hang off , but disable in a programming mode (*911)
- When the telephone line is hang off

The video functional mode can be configured by using the Door Phone Programming codes (See Chapter 8.4).

Note:

1. Door Phone with installed internal video camera includes the video BNC coaxial Output connector for physical connection with the external video monitor
2. The recommended video cable maximum length is **20** meters

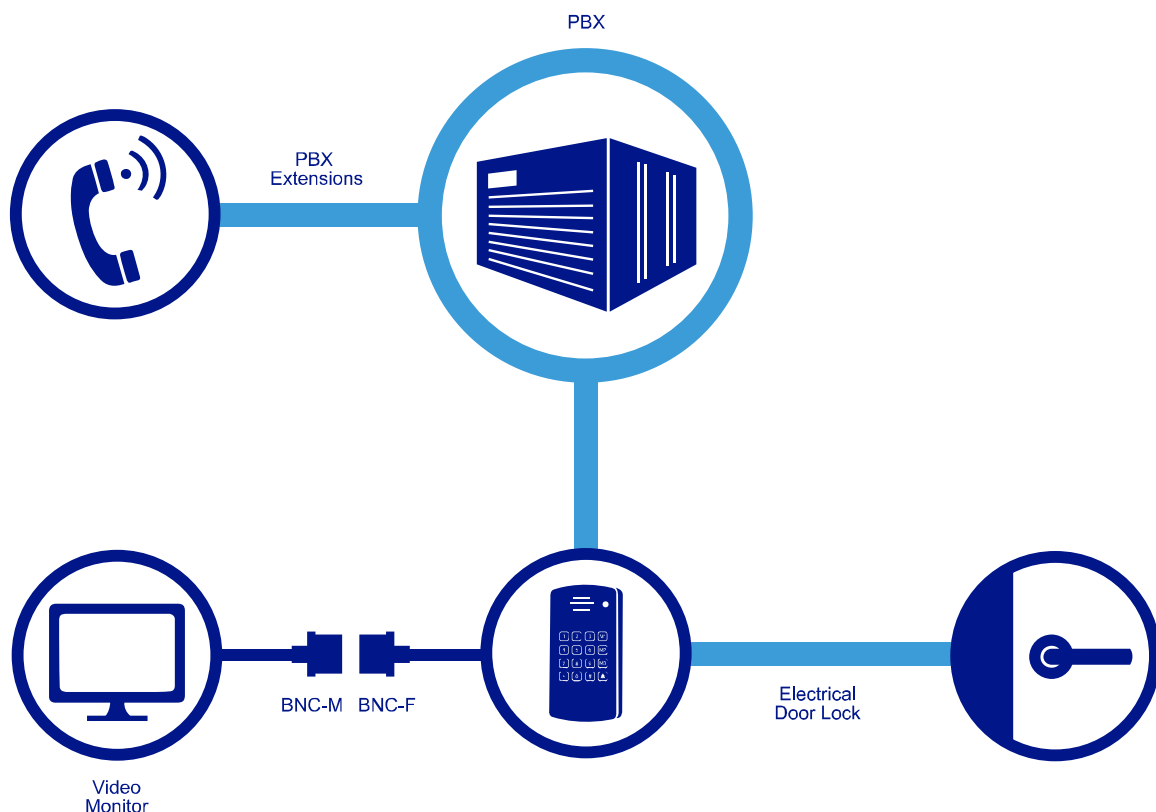


Figure 7-2 Video Monitoring Connections

8 Programming

8.1 Enter to programming mode

Programming can be released from any PBX extension telephone by calling to Door phone PBX extension number and using telephony keypad during conversation.

Note:

Door phone can be programmed by using DTMF tones during telephony conversation and programming session.

Entering Programming Mode

1. Dial the Door Phone's extension number from any touch-tone telephone.
2. Wait until the Door Phone answers and generates audio tone.
3. Dial  and wait for confirmation tone.
4. Enter the Administrator's Programming Access Password.

Note:

1. The default Administrator's password is **12345**
2. Upon typing incorrect password three consecutive times, Door phone disconnects
3. Will hear a double beep high tone confirmation tone every time when entering a correct programming parameter and command, or a low one-beep tone when entering an incorrect programming parameter / command.
4. The accompanied tone playback marked as '(tone)' in DTMF configuration codes table

To exit the programming mode

1. Dial  or programming login time limited by command  .

8.2 To change the Day/Night operational mode:

1. Dial the Door Phone's extension number from any touch-tone telephone.
2. Wait until the Door Phone answers and generates audio tone.
3. Dial and wait for confirmation tone.
4. Enter the Operator's Programming Access Password.
5. Enter to switch a Door Phone to the **Day** mode or Enter to switch a Door Phone to the **Night** mode

Note:

The default Operator's password is **54321**

8.3 To reset the unit to factory default:

1. Enter programming mode
2. Dial
3. A call disconnected and product restarts in it's default configuration

8.4 Door Phone Programming codes

Function	Command Code	Default value
Telephony Operations		
The Day/Night Operator destination number (DN) will be dialed when the 'Ring' button is pressed, respective to Day/Night operational mode.	* 1 0 0 + X (tone) + DN + # where: X = 1 Day X = 2 Night Destination number (DN) = Up to 20 digits, including *, #, Pause, and A-D characters. For special character input, see Chapter 8.5	Day – Empty Night - Empty
Delete a Day or Night Operator destination number (DN).	* 1 0 0 + X (tone) + # where: X = 1 Day X = 2 Night	
Programming 1-digit(s) prefix to allow dialing outgoing calls. When beginning with these digits, the door phone will process dialing.	* 1 0 1 + Prefixes + # Prefix: digits 0–9 only To cancel this operation, enter: * 1 0 1 + # Example: Command *101 259 #(tone) allows dialing to destination numbers with first digit 2,5 and 9 Note: Parameter doesn't take effect on Speed Dial memories destination numbers dialing.	
The Maximum Conversation time (sec)	* 1 0 2 + XX where: XX = Seconds (10-99) 00 = Unlimited	60 seconds
Time interval between DTMF digits during outgoing dialing	* 1 0 3 + X where: X = 1-9 (Each step is 200 msec)	=2 (400 msec)
Inter Digits dialing time out (in sec)	* 1 0 4 + X where: X = Seconds 1~9	3 sec
Number of busy tone cycles in order to detect the busy signal	* 1 0 5 + X where: X= 0 ~ 9 (0 – no busy detection, 1 – 2 cycles, 2 – 4 cycles, etc.)	3 (6 cycles)
Busy signal Cadence configuration for Busy detection	* 1 0 6 + X (tone)+Y(tone)+NNNN where: X = 1 – Busy cadence 1 X= 2 – Busy cadence 2 Y = 1 – On, Y=2 – Off NNNN – time in msec	1 – 500 On, 500-Off 2- 250 On, 250 Off
Pause time after pick up a line and before dialing	* 1 0 7 + X where: X – time in sec 1-9	1
The minimum time in seconds to detect continuous tone	* 1 0 9 + X where: X –time in seconds 1-9	3
Assigning a Speed-Dial Memory destination number.	* 1 1 0 + M(tone)+X (tone) + DN + # M-Memory bank: 0,1,2 or 3 X = a digit 1 through 9, DN = Destination number = Up to 20 digits, including *, #, Pause, and A-D characters.	Empty
Canceling a Speed-Dial destination	* 1 1 0 + M(tone)+X (tone) + # M-Memory bank: 0,1,2 or 3 X = a digit 1 through 9	

Door Opening Codes		
Changing the Opening door Access Code	* 2 0 0 + CODE Door Access Code 'CODE' can be up to 9 numeric digits. Do not use the * or # keys.	4321
Digit(s) code to open the door from dialed destination number during conversation	* 2 0 1 + CODE where: CODE= Digits (0~9) Up to 4 digits.	5
Door opening time in seconds	* 2 0 3 + X where: X = Number of seconds (1~9)	3 sec
Telephony Line Configuration		
Loop disconnect detection	* 3 0 0 + X where: X = 0 off X = 1 on	1-On
Loop disconnect detection time (msec)	* 3 0 1 + XXXX Where X – time in msec	1200 msec
Speaker volume adjustment	* 3 0 2 + X Where X = 1-8	6
Microphone volume adjustment	* 3 0 3 + X Where X = 1-9	6
Continuous tone detection time	* 3 0 5 + X Where X – time in sec	3
Video Camera Functionality Configuration		
Video Camera functionality configuration codes	* 4 0 0 + X where X = 0 camera off X = 1 camera on X = 2 camera powered when 'Ring' button is pressed X = 3 camera powered when any key is pressed X = 4 camera powered when the telephone line is hang off , but disable in a programming mode (*911) X = 5 camera powered when the telephone line is hang off	0-Off
Administration		
Enter to programming mode	* 9 1 1	
Switch Door Phone to the Day/Night operational mode Note: Allowed for System Operator as well	* 9 0 1 - Day Mode * 9 0 2 - Night mode	Day
Programming login time	* 9 0 3 + XXX Where XXX time in seconds 000-999	300 – 5 minutes
Enable / disable M1/M2/M3 memories banks	* 9 0 4 + X + Y Where X=1 , Speed dialing Memories M1 group X=2 , Speed dialing Memories M2 group X=3 , Speed dialing Memories M3 group Y=1-Enable, Y=0 Disable	Disabled
Reset device to its factory default	* 9 2 0	
System operator's up to 9 digits password settings	* 9 3 0 + PASSWORD	54321
Changing the Administrator programming password	* 9 4 0 + PASSWORD Programming access password must be up to nine numeric digits 0~9. Do not use the * or # keys.	12345

8.5 Special DTMF Characters

Special character/s in destination numbers can be entered using the telephone keypad during programming procedure. The following table shows the corresponding keypad entries needed for creating special DTMF characters.

DTMF CHAR.	NUMBER TO DIAL
Digits 0-9	① ~ ⑨
*	① ②
Pause	① ③, configure a 1 second pause
#	① ④
A	① ⑤
B	① ⑥
C	① ⑦
D	① ⑧

9 Technical specification

Power Supply (External)	12V AC@ 1.6 A (supplied with unit)
Relay Switching Current	2A max
Supported Line Voltage	24-72V DC
DC Leakage	< 10 μ A
On-Hook Insulation (Resistance Between Line Terminal and Ground)	0-100V DC > 5M Ω 100-200 V DC > 30 K Ω 500V AC/50Hz > 20K Ω 100V AC/25Hz > 100K Ω
Ring Capacitor	0.1 μ F $\pm$ 10%
On-Hook Impedance	50V DC, 40V AC/25Hz>3000 Ω
Ring Detect	27-100 V AC/16-60 Hz
Ring Detection time	80 msec
DC Resistance (Off-Hook)	24-66V DC @ 20-100mA/350 Ω
Impedance (Off-Hook)	300-3400Hz 500-700 Ω
Imbalance Ratio	300-3400Hz > 46dB
Return Loss	300-3400Hz > 18dB
Current During Break	< 700 μ A
DTMF Transmission: Frequency Tolerance Frequency Level (High) Frequency Level (Low)	$\pm$ 1.5% -6 to -8dBm -8 to -10dBm
Inter-Digit Pause Time	70-80ms
Dimensions	Indoor Unit:182 L x 94 W x 36 H (mm) (with rubber pad) Indoor Unit Mini Housing: 130 L x 65.5 W x 33 H (mm) (with rubber pad) Outdoor Unit:182 L x 94 W x 36 H (mm)
Weight	Indoor Unit :550g (net) Indoor Unit Mini Housing: 282.4g (net) Outdoor Unit:.....700g (net)
Operating Temperature	Outdoor: -20°C to +50°C/4°F to 122°F Indoor: 0°C to +35°C/32°F to 95°F

10 Appendixes

10.1 The Speed dialing memories table

No.	Memory Code	Destination number
1	① + 	
2	② + 	
3	③ + 	
4	④ + 	
5	⑤ + 	
6	⑥ + 	
7	⑦ + 	
8	⑧ + 	
9	⑨ + 	
10	Ⓜ1 + ① + 	
11	Ⓜ1 + ② + 	
12	Ⓜ1 + ③ + 	
13	Ⓜ1 + ④ + 	
14	Ⓜ1 + ⑤ + 	
15	Ⓜ1 + ⑥ + 	
16	Ⓜ1 + ⑦ + 	
17	Ⓜ1 + ⑧ + 	
18	Ⓜ1 + ⑨ + 	
19	Ⓜ2 + ① + 	
20	Ⓜ2 + ② + 	
21	Ⓜ2 + ③ + 	
22	Ⓜ2 + ④ + 	
23	Ⓜ2 + ⑤ + 	
24	Ⓜ2 + ⑥ + 	
25	Ⓜ2 + ⑦ + 	
26	Ⓜ2 + ⑧ + 	
27	Ⓜ2 + ⑨ + 	
28	Ⓜ3 + ① + 	
29	Ⓜ3 + ② + 	
30	Ⓜ3 + ③ + 	
31	Ⓜ3 + ④ + 	
32	Ⓜ3 + ⑤ + 	
33	Ⓜ3 + ⑥ + 	
34	Ⓜ3 + ⑦ + 	
35	Ⓜ3 + ⑧ + 	
36	Ⓜ3 + ⑨ + 	

