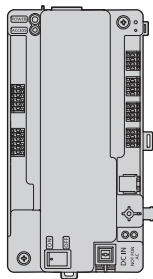


Installation and Operating Instructions

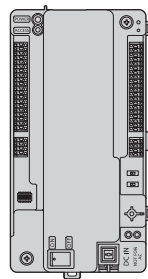
Video Intercom System for Apartment Complexes Model No. **VL-V900 and VL-V700 Series**



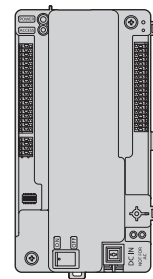
VL-V900



VL-V700



VL-V701



VL-V702

Thank you for purchasing a Panasonic product.

Please follow all instructions in this document and save it for future reference.

This system is an auxiliary system; it is not designed to provide complete protection from property loss.
Panasonic will not be held responsible in the event that property loss occurs while this system is in operation.

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1.1 System overview

This document explains how to install and configure a Video Intercom System for Apartment Complexes comprised of the following devices.

- VL-V900 Lobby Station
- VL-V700 Control Box
- VL-V701 Distribution Box
- VL-V702 Lift Controller

Additionally, general information is provided for connecting other devices to the system.

1.1.1 Main features

Large-capacity, expandable

- The system supports up to 560 room units (main monitors) and 3 lobby stations.
- Optional devices such as cameras, access controllers (door openers, key switches, card scanners, etc.), electric locks, and a TV monitor can be connected.
- The system can be integrated with a PBX system used by facility staff.

Easy to configure and maintain

- System settings can be configured in advance using a computer, and uploaded on-site via USB connection.
- System settings can be configured on-site using a lobby station, main monitor, and PBX extension telephone.
- System events can be logged on an optional SD card.

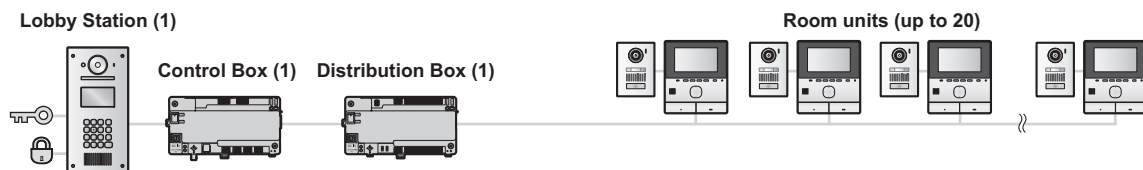
Convenient features for residents, visitors, and facility staff

- The system can be used in "room mode" (visitors can call rooms directly) or "reception mode" (visitors calls are routed through a receptionist).
- Visitors can use a lobby station to call residents or facility staff.
- Residents can use their room units (main monitors) to monitor lobby stations and optional cameras, and can allow visitors to enter the lobby and lift.
- Residents can use their main monitors to make emergency calls to facility staff. (VL-MVN511 or other compatible main monitor is required.)
- Facility staff can make and receive calls to and from residents and visitors.

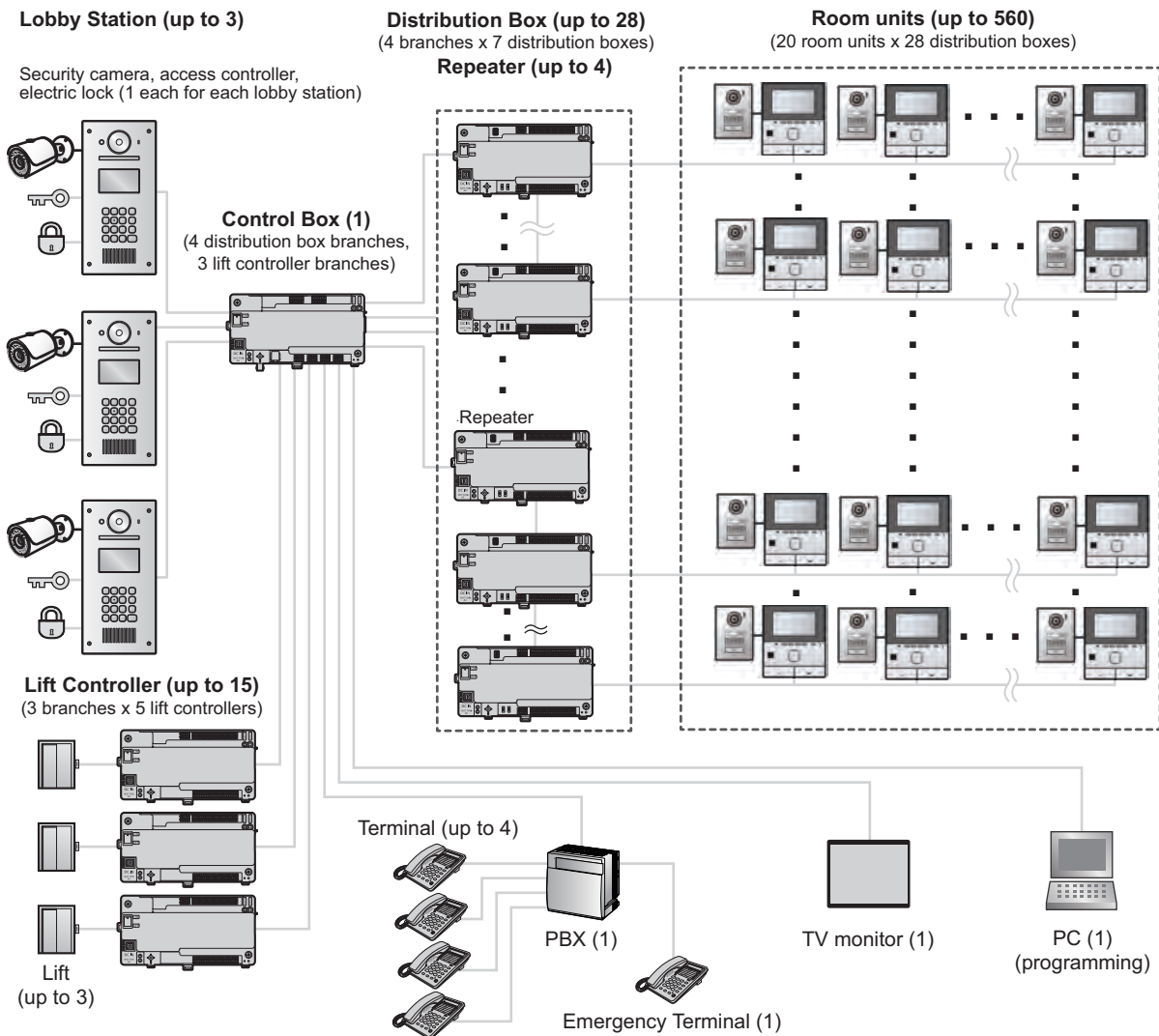
1. Introduction

1.1.2 System configuration

Basic system example (up to 20 room units)



Fully expanded system example



2.1 Important safety information

To prevent severe injury and loss of life/property, read this section carefully before using the product to ensure proper and safe operation of your product.



WARNING

Preventing fire and electric shock

- The product shall be installed by qualified service personnel.
- Use only the power supply unit VL-PS240.
- Do not place objects on the power cord. Install the product where no one can step or trip on the cord.
- Do not allow the power cord to be excessively pulled, bent or placed under heavy objects.
- Make sure all connections from the power source to the power supply unit are secure.
- Never touch the power supply unit with wet hands.
- Do not use the power supply unit for outdoor installations (it is for indoor use only).
- Do not disassemble this product. Refer servicing to an authorised service centre when service is required. Opening or removing covers may expose you to dangerous voltages or other risks.
- Do not touch the product and the power supply unit during an electrical storm. There may be a remote risk of electric shock from lightning.
- Never push any objects through slots in this product.
- Disconnect this product from the power source and refer servicing to an authorised service centre when the following conditions occur:
 - If it emits smoke, an abnormal smell or makes unusual noise.
 - If the power cord is damaged or frayed.
 - If metal objects have been dropped inside the product.

Preventing accidents

- SD cards may become a choking hazard. Keep SD cards out of reach of children. If you suspect a child has swallowed an SD card, seek medical advice immediately.



CAUTION

- Make sure you turn off the power at the breaker before performing any wiring work.
- Always connect AC or DC cables to the appropriate connection terminals. Incorrectly connecting the AC or DC cables may damage the power supply unit.
- To prevent the power cables from disconnecting and to prevent electric shock, secure the power cables using the cable binders (accessory) and attach the cable covers.

- Insert the power cables firmly all the way into the terminals. If the cables are not inserted all the way, heat may be generated.
- If the wiring is outdoors, use a protection tube and a surge protector.
- If the wiring is underground, use a protection tube and do not make any connections underground.
- Install the product securely adhering to the instructions in this manual to prevent it from falling off the wall. Avoid installing onto low-strength walls, such as gypsum board, ALC (autoclaved lightweight concrete), concrete block, or veneer (less than 18 mm thick) walls.
- The power supply unit is used as the main disconnect device. Ensure that the power source is installed near the product and is easily accessible.
- Do not put your ear(s) near the speaker, as loud sounds emitted from the speaker may cause hearing impairment.
- When using this product, basic safety precautions should always be followed to reduce the risk of fire, electric shock, or personal injury.
 1. Do not use this product (excluding the lobby station) near water. For example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
 2. Use only the power supply unit indicated in this document.

SAVE THESE INSTRUCTIONS

2.2 Privacy and rights of portrait

When installing or using the product, please take into consideration the rights of others with regard to privacy.

- It is generally said that "privacy" means the ability of an individual or group to stop information about themselves from becoming known to people other than those whom they choose to give the information. "Rights of portrait" means the right to be safe from having your own image taken and used indiscriminately without consent.

2.3 Data security

In order to use the system safely and correctly, the data security guidelines (listed below) must be observed. Failure to do so may result in the following.

- Loss, leakage, falsification or theft of user information.
- Unauthorised or illegal use of the system by a third party.
- Interference or suspension of service caused by a third party.

What is user information?

User information is defined as the following types of information.

1. Information stored on the SD memory card

2. Important Information

- System event information
- Doorphone camera images
- 2. Information stored in the control box and lobby station
 - Resident names and room numbers
 - System settings
- 3. Information stored on the computer that is used by the setup tool
 - Resident names and room numbers
 - System settings

Data security guidelines

- **Do not allow unauthorised access to the control box and its SD memory card.**

The control box should be installed in a restricted access location, where only authorised personnel may gain access through the use of a special tool, lock and key, or other means of security.

Note that the SD memory card, which contains a log of all system event information, can be removed by anyone with access to the control box.

- **Observe proper management of passwords, access codes, etc.**

Access codes can be used to program the system, open doors, etc. Select codes that are difficult to guess, change them regularly, and keep them secret.

- **Protect user information when sending the control box or lobby station to be repaired, or when handing them over to a third party.**

Remove the SD memory card from the control box. Keep it in a secure place until it is needed again.

Use the setup tool to download all data stored in the control box and lobby station. (This will back up all data and save it on your computer.) Then use the setup tool to upload blank configuration files (i.e., files that contain no user information) to the control box or lobby station.

- **Protect user information stored on the computer used to configure the system.**

When user information is sent stored on a computer, the confidentiality of that information becomes the responsibility of the customer. Before disposing of the computer, ensure that data cannot be retrieved from it by formatting the hard disk and/or rendering it physically unusable.

- **Protect user information when disposing of the control box or lobby station.**

Remove the SD memory card from the control box. Render it physically unusable and dispose of it.

Use the setup tool to upload blank configuration files (i.e., files that contain no user information) to the control box or lobby station.

- The recorded images may be lost when:
 - Mishandled
 - Electric shock or radio wave interference occurs.
 - The power is turned off during use.
- To the maximum extent permitted by law, Panasonic assumes no responsibility for injuries or property damage resulting from failures arising out of improper installation or operation inconsistent with this document.

Disposal of Old Equipment (Only for European Union and countries with recycling systems)



This symbol (①) on the products, packaging, and/or accompanying documents means that used electrical and electronic products must not be mixed with general household waste.

For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation. By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment. For more information about collection and recycling, please contact your local municipality.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

Information on Disposal in other Countries outside the European Union

This above symbol (①) is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

2.4 Other information

- If you stop using the product, remove it from the walls to prevent it from falling off.
- When power fails, this product cannot be used.
- Panasonic may not be liable for damages due to external factors such as power failures.

2.5 For Europe

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standard or other normative document following the provisions of Directive 2004/108/EC.

Ecodesign information

Ecodesign information under EU Regulation (EC) No. 1275/2008 amended by (EU) Regulation No. 801/2013. From 1 January 2015.

Please visit here: www.ptc.panasonic.eu

Click [Downloads] → [Energy related products information (Public)]

Power consumption in networked standby and guidance are mentioned in the web site above.

Authorised Representative in EU:





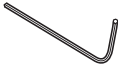
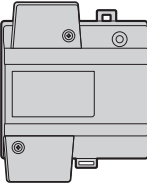


Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany

3. Preparation



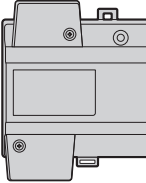


3.1 Included items

3.1.1 Lobby Station



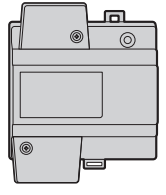


Additional items required for installation are noted on page 9.

Item	Quantity
Flush mount box 	1
Screw (for securing the lobby station to the flush mount box) 4 mm × 25 mm 	4
Hex wrench 	1
Power supply unit VL-PS240 	1
Screw (for mounting the power supply unit) 4 mm × 40 mm 	2
Cable binder (for securing the AC and DC cables) 	2



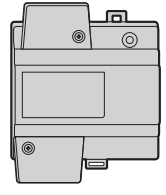


3.1.2 Control Box

Item	Quantity
Screw (for mounting the box) 3.8 mm × 20 mm 	2
Cable binder (for securing the connected wires) 	1
Power supply unit VL-PS240 	1
Screw (for mounting the power supply unit) 4 mm × 40 mm 	2
Cable binder (for securing the AC and DC cables) 	2

3.1.3 Distribution Box

Item	Quantity
Screw (for mounting the box) 3.8 mm × 20 mm 	2
Cable binder (for securing the connected wires) 	1
Power supply unit VL-PS240 	1
Screw (for mounting the power supply unit) 4 mm × 40 mm 	2
Cable binder (for securing the AC and DC cables) 	2

3.1.4 Lift Controller

Item	Quantity
Screw (for mounting the box) 3.8 mm × 20 mm 	2
Cable binder (for securing the connected wires) 	1
Power supply unit VL-PS240 	1
Screw (for mounting the power supply unit) 4 mm × 40 mm 	2
Cable binder (for securing the AC and DC cables) 	2

3.1.5 Additional items

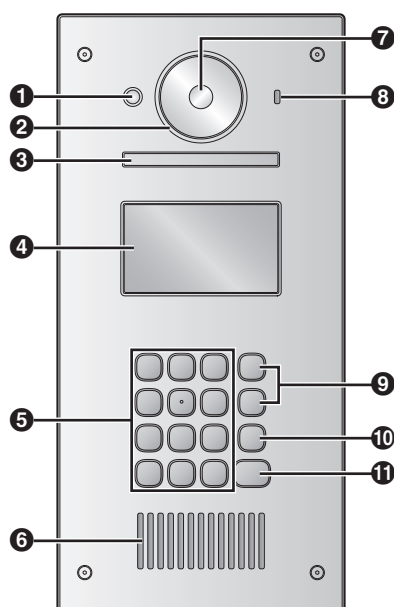
The following items are also required for installation and are not included.

- **Power cables**
Used to connect power supply units to lobby stations, the control box, distribution boxes, and lift controllers. For details, see page 28.
- **Signal wires**
Used to connect lobby stations, the control box, distribution boxes, lift controller, main monitors, and other devices. For details, see page 28.
- **SD card**
Used to log system event information. For details, see page 49.

3.2 Device diagrams

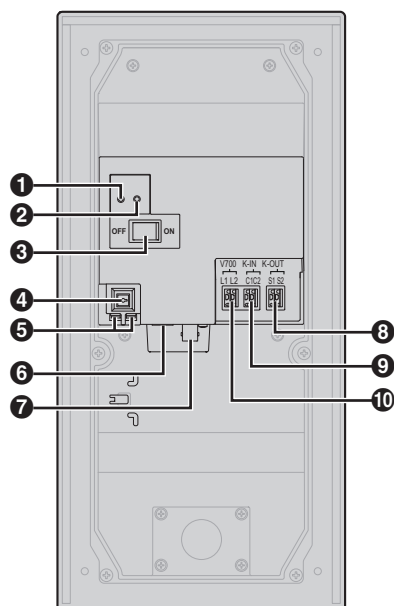
3.2.1 Lobby Station

Front view



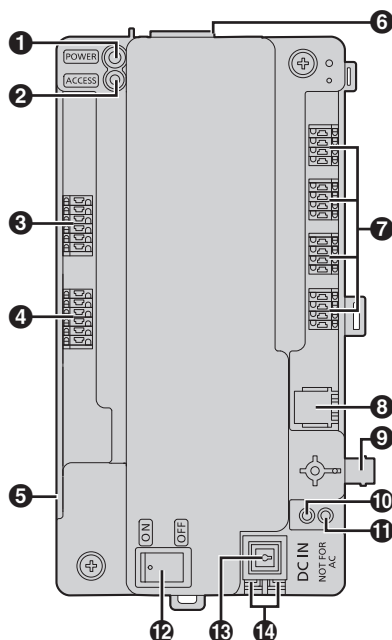
- 1 Heat sensor**
Turns on the display when a visitor is detected.
- 2 Lens cover**
- 3 Light**
Illuminates subjects in dark environments.
- 4 Display**
- 5 Keypad**
- 6 Speaker**
- 7 Camera lens**
- 8 Microphone**
- 9 Search buttons (▲ and ▼)**
Used to select items shown on the display.
- 10 Cancel button (X)**
- 11 Call button (🔔)**

Rear view



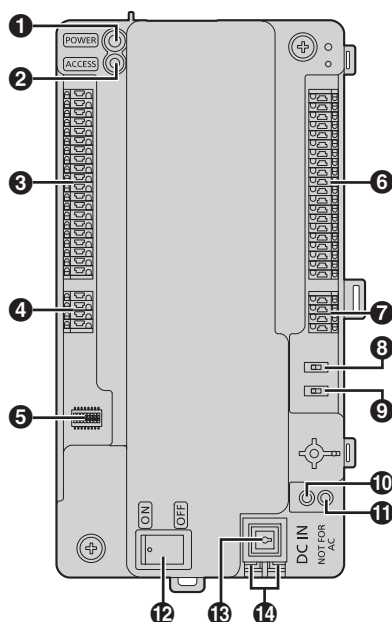
- 1 Reset button (•)**
Used when restarting the lobby station.
- 2 Function button (••)**
For internal use only.
- 3 Power switch**
- 4 Cable release button for DC power supply cable**
- 5 Connection terminals for power supply**
- 6 USB port**
For internal use only.
- 7 Coaxial connector for external camera**
- 8 Connection terminals (output) for electric lock (K-OUT)**
Used to send signals to the electric lock.
- 9 Connection terminals (input) for access controller (K-IN)**
Used to receive signals from the access controller.
- 10 Connection terminals for control box (V700)**

3.2.2 Control Box



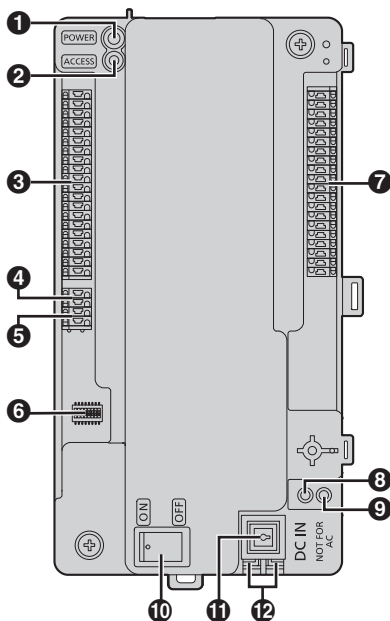
- 1 Power indicator (POWER)**
See 5.8.1 Control box indicators (Page 50).
- 2 Access indicator (ACCESS)**
See 5.8.1 Control box indicators (Page 50).
- 3 Connection terminals for lobby stations**
- 4 Connection terminals for lift controllers**
- 5 USB port** (underneath dust cover)
USB 2.0, standard-B connector. Used for PC programming.
- 6 SD card slot**
Used to save the system log.
- 7 Connection terminals for distribution boxes**
- 8 RJ11 jack for connection to PBX**
- 9 Coaxial connector for external TV monitor**
- 10 Reset button (•)**
Used when restarting the control box.
- 11 Function button (••)**
For internal use only.
- 12 Power switch**
- 13 Cable release button for DC power supply cable**
- 14 Connection terminals for DC power supply**

3.2.3 Distribution Box



- 1 Power indicator (POWER)**
See 5.8.2 Distribution box indicators (Page 50).
- 2 Access indicator (ACCESS)**
See 5.8.2 Distribution box indicators (Page 50).
- 3 Connection terminals for main monitors**
- 4 Connection terminals (input) for control box or distribution box**
- 5 DIP switches**
See page 29.
- 6 Connection terminals for main monitors**
- 7 Connection terminals (output) for distribution box**
- 8 Terminate switch**
See page 29.
- 9 Repeater switch**
See page 29.
- 10 Reset button (•)**
Used when restarting the distribution box.
- 11 Function button (••)**
For internal use only.
- 12 Power switch**
- 13 Cable release button for DC power supply cable**
- 14 Connection terminals for DC power supply**

3.2.4 Lift Controller



- ❶ Power indicator (POWER)**
See 5.8.3 Lift controller indicators (Page 50).
- ❷ Access indicator (ACCESS)**
See 5.8.3 Lift controller indicators (Page 50).
- ❸ Connection terminals for lifts**
- ❹ Connection terminals (output) for lift controller**
Used to send signals to a lift controller.
- ❺ Connection terminals (input) for control box or lift controller**
Used to receive signals from the control box or a lift controller.
- ❻ DIP switches**
See page 32.
- ❼ Connection terminals for lifts**
- ❽ Reset button (•)**
Used when restarting the lift controller.
- ❾ Function button (••)**
For internal use only.
- ❿ Power switch**
- ⓫ Cable release button for DC power supply cable**
- ⓬ Connection terminals for DC power supply**

3.3 Specifications

Lobby Station (VL-V900)

Power source	Power supply unit (VL-PS240: 220 – 240 V AC, 0.2 A, 50 / 60 Hz) 24 V DC, 0.2 A
Power consumption	Standby: Approx. 1.9 W Operating: Approx. 4.5 W
Dimensions (mm) (height × width × depth)	Approx. 373 × 179 × 2.5 (excluding sections embedded into the wall)
Mass (weight)	Approx. 2.0 kg
Operating environment	Ambient temperature for lobby station: approx. -10 °C to +55 °C Ambient temperature for power supply unit: approx. 0 °C to +50 °C Relative humidity: up to 90% (non-condensing) (outdoor installation available; power supply unit is for indoor use only)
Display	Approx. 10.92 cm (4.3 inches) monochrome display (white backlit LCD) Display the date, room number inputted by visitors, how to use, name of residents, and custom item
Installation method	Flush mount (flush mounting box supplied)
External material	Stainless steel (partially ABS and PC)
Talking method	Hands-free
Heat sensor	Pyroelectric sensor installed (detecting human body, part of the stations become luminous)
Image sensor	6.35 mm (1/4 inch) CMOS sensor (approx. 1M pixels)
Viewing angle	Super wide view (H: approx. 170° / V: approx. 115°)
Minimum illuminance	1 lx
Lighting method	White coloured LED lights
Waterproof property	IP55
Vandal proof property	Compliant with IK07
Display languages	English

3. Preparation

Control Box (VL-V700)

Power source	Power supply unit (VL-PS240: 220 – 240 V AC, 0.2 A, 50 / 60 Hz) 24 V DC, 0.2 A
Power consumption	Standby: Approx. 3.5 W Operating: Approx. 3.7 W
Dimensions (mm) (height × width × depth)	Approx. 210 × 108.5 × 52.5 (excluding protruding sections)
Mass (weight)	Approx. 400 g
Operating environment	Ambient temperature: approx. -10 °C to +50°C Ambient temperature for power supply unit: approx. 0 °C to +50°C Relative humidity: up to 90% (non-condensing) Indoor installation only
Installation method	Wall mount or attach to DIN rail
External material	ABS (flame retardant ABS resin)
Log	<p>Text log</p> <p>Save the text logs in the external SD memory card more than 90000 items (date, caller, receiver, operation, status)</p> <p>Image log</p> <p>Save the image logs in the external SD memory card up to 90000 images (over write save) (visitors call)</p>
Supported functions	<ul style="list-style-type: none"> • USB 2.0 connection (to computer) Supported operating systems: Microsoft® Windows® 7, Windows 8, Windows 8.1, Windows 10 • Date and time setting (HH:MM DD/MM/YYYY) • Download/upload the name of residents, room number, and monitor setting • Output the system configuration data • Estimate the status of equipment in the system • Operation setting (Terminal, terminal and camera name, pass code, and so on) • Supported language: English (for administrators) • Video output up to 1 (NTSC) • RJ-11 PBX terminal function (connected to PBX system to guard station)
Connectivity	<p>To lobby stations</p> <p>Number of connectable stations: 3 Wire: 1 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness)</p> <p>To distribution box</p> <p>Number of connectable stations: 4 directly (including the repeaters) Wire: 2 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness)</p> <p>To lift controller</p> <p>Number of connectable stations: 3 directly Wire: 1 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness)</p> <p>To monitor</p> <p>Number of connectable stations: 1 (NTSC) Distance: based on camera specification</p> <p>To PBX</p> <p>RJ-11 jack Distance: comply with the PBX specification</p>

	USB USB 2.0, standard-B connector SD card 4–64 GB SDHC / SDXC memory card is supported
Whole system capacity	<ul style="list-style-type: none"> • Lobby station (VL-V900): up to 3 • Main monitor (VL-MW251, VL-MVN511, VL-MV26): up to 560 (The maximum, for each branch, 7 distribution boxes, 1 repeater, and 140 main monitors can be connected.) • Lift controller (VL-V702): up to 3 branches, totally up to 15 lift controllers • Guard stations: up to 4 (in case of connecting to the PBX system)

Distribution Box (VL-V701)

Power source	Power supply unit (VL-PS240: 220 – 240 V AC, 0.2 A, 50 / 60 Hz) 24 V DC, 0.1 A
Power consumption	Standby: Approx. 1.2 W Operating: Approx. 2.0 W
Dimensions (mm) (height × width × depth)	Approx. 210 × 108.5 × 52.5 (excluding protruding sections)
Mass (weight)	Approx. 400 g
Operating environment	Ambient temperature: approx. -10 °C to +50 °C Ambient temperature for power supply unit: approx. 0 °C to +50 °C Relative humidity: up to 90% (non-condensing) Indoor installation only
Installation method	Wall mount or attach to DIN rail
External material	ABS (flame retardant ABS resin)
Connectivity	To main monitor Number of connectable stations: 20 Wire: 1 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness) To control box Number of connectable stations: 1 Wire: 2 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness) To distribution box Number of connectable stations: 1 Wire: 2 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness)

Lift Controller (VL-V702)

Power source	Power supply unit (VL-PS240: 220 – 240 V AC, 0.2 A, 50 / 60 Hz) 24 V DC, 0.2 A
Power consumption	Standby: Approx. 0.4 W Operating: Approx. 4.4 W
Dimensions (mm) (height × width × depth)	Approx. 210 × 108.5 × 52.5 (excluding protruding sections)
Mass (weight)	Approx. 400 g
Operating environment	Ambient temperature: approx. -10 °C to +50 °C Ambient temperature for power supply unit: approx. 0 °C to +50 °C Relative humidity: up to 90% (non-condensing) Indoor installation only
Installation method	Wall mount or attach to DIN rail

3. Preparation

External material	ABS (flame retardant ABS resin)
Connectivity	To control box Number of connectable stations: 1 Wire: 1 pair PE insulation, thickness of one conductor is from 0.65 – 1.2 mm Distance: up to 200 m (in case of 1.2 mm thickness) To lift Number of outputs to lift: 20 To lift controller Number of outputs to lift controller: 1

4.1 Installation cautions



CAUTION

- Make sure you turn off the power at the breaker before performing any wiring work.
- Always connect AC or DC cables to the appropriate connection terminals. Incorrectly connecting the AC or DC cables may damage the power supply unit.
- To prevent the power cables from disconnecting and to prevent electric shock, secure the power cables using the cable binders (accessory) and attach the cable covers.
- If the wiring is outdoors, use a protection tube or a surge protector.
- If the wiring is underground, use a protection tube and do not make any connections underground.
- Install the product securely adhering to the instructions in this document to prevent it from falling off the wall. Avoid installing onto low-strength walls, such as gypsum board, ALC (autoclaved lightweight concrete), concrete block, or veneer (less than 18 mm thick) walls.

4.2 Installing the Power Supply Unit

The following 2 methods can be used for installation.

- mounting on a DIN rail
- attaching directly to a wall

About the installation location

- The device must be installed inside an electrical panel or cabinet.
- A readily accessible disconnect device shall be incorporated external to the equipment.
 - The external disconnect device must be certified, and have a creepage and clearance distance of 3 mm or more.

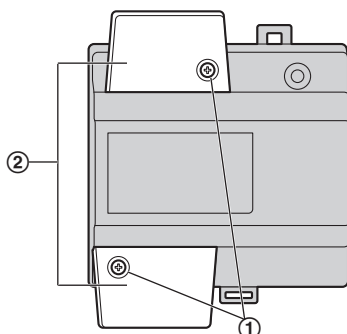
Connecting the power cables (AC and DC cables)

Connect the power supply unit (accessory) and AC and DC cables (user supplied).

1. Strip the AC and DC cables as follows:

AC cable	DC cable

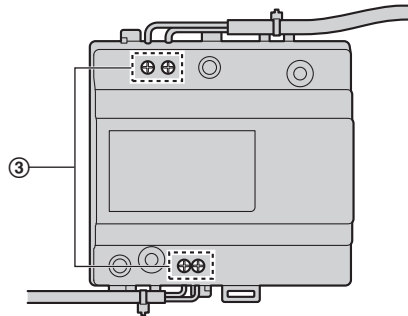
2. Remove the screws (①) and then remove the cable covers (②).



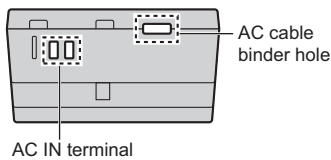
4. Installation

3. Connect the AC cable to the AC IN terminal on the top of the power unit, and the DC cable to the DC OUT terminal on the bottom of the power supply unit, and then securely fasten the screws (③).

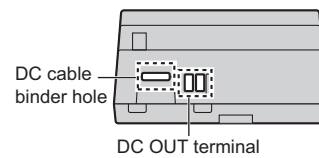
Front view*1



Top view*1



Bottom view*1



Front view

*1 View with the cable covers removed.

- Recommended torque:
 - AC terminal: 0.4 N·m {4.1 kgf·cm}
 - DC terminal: 0.45 N·m {4.6 kgf·cm}



CAUTION

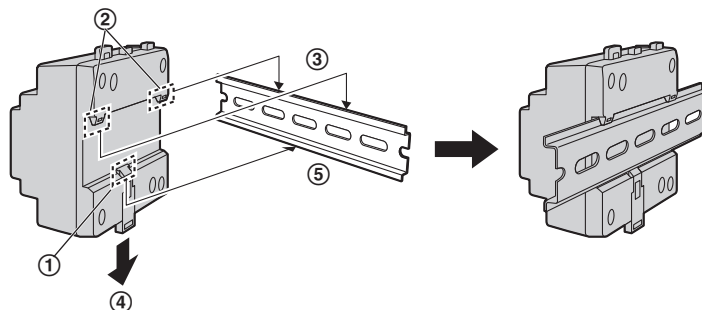
- Insert the AC and DC cables firmly all the way into the terminals. If the cables are not inserted all the way, heat may be generated.

4. Use the cable binders (accessory) to secure the AC and DC cables (double-coated area) to the power supply unit.
5. Make sure to replace the cable covers (②) and then securely fasten the screws (①).

Mounting on a DIN rail

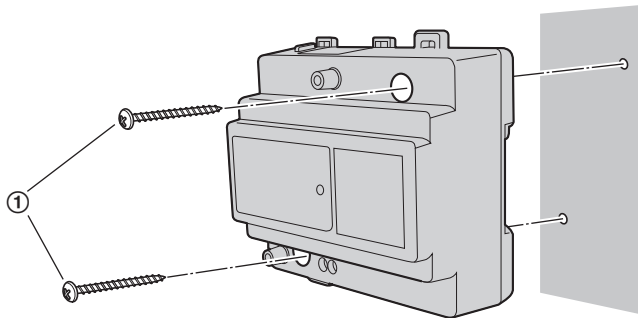
Follow the procedure in the order described below so that hook (①) is positioned at the bottom.

1. Hang the top hooks (②) on the DIN rail (③).
2. Pull and hold the lever down (④).
3. Secure the bottom hook (①) to the DIN rail (⑤).



Attaching directly to a wall

Attach the power supply unit to the wall securely using the 2 supplied screws (①).



4.3 Installing the Lobby Station

Before installation

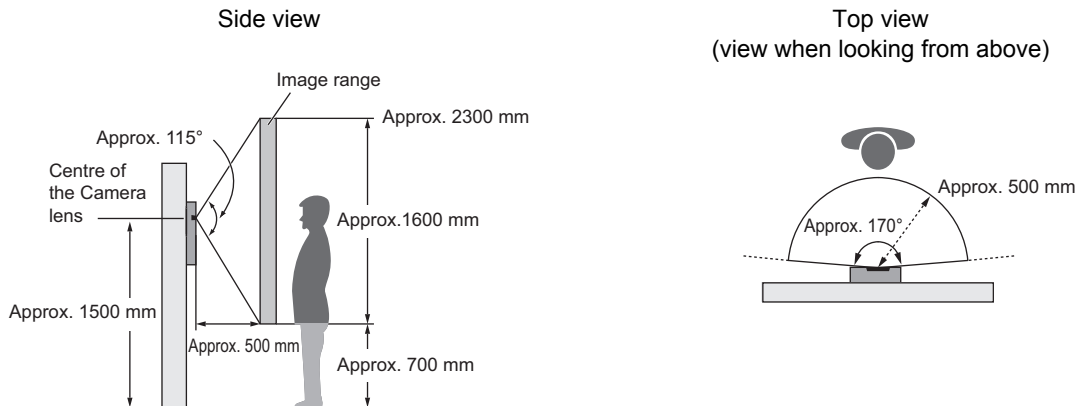
- Do not install the lobby station in the following locations. There may be a risk of malfunction or communication disturbances.
 - Places where vibration, impact, or echoing occurs.
 - Places near a high concentration of dust, hydrogen sulphide, ammonia, sulphur, or noxious fumes.
 - Places where there is excessive smoke, dust, and high temperature.
 - Places exposed to direct sunlight.
 - Places where most of the background is the sky.
 - Places where the background is a white wall, and direct sunlight will reflect off it.

4. Installation

Installation position of the lobby station and camera range

Views when the camera is facing forwards at 0°. Example: Installation height is 1500 mm.

- The measurements and angles shown here are for reference purposes and may vary depending on the environment.

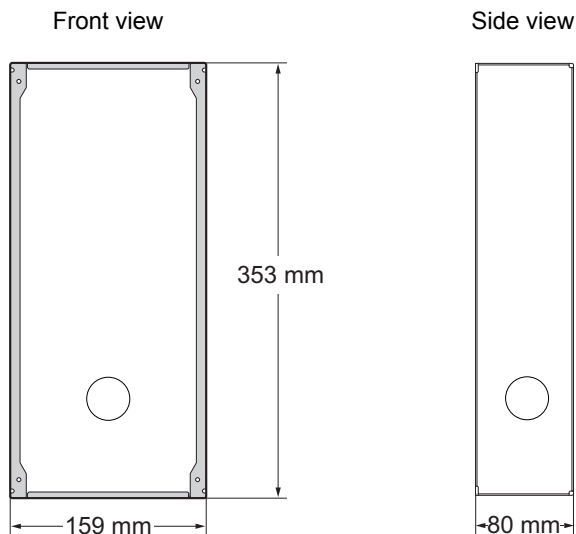


Note:

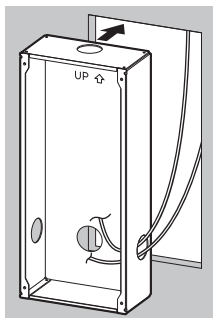
- Install the lobby station so that the lobby station is not exposed to strong light. If strong light shines on the lobby station, the visitor's face may not be distinguishable.

Installation

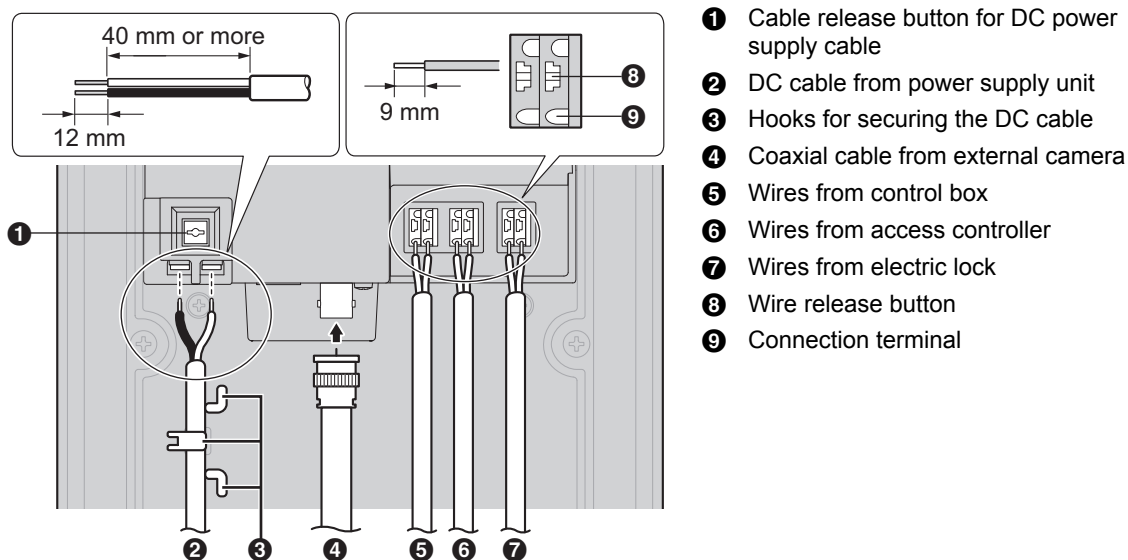
1. Open a hole in the wall for the flush mount box.
 - Note the drilling dimensions of the wall surface of the flush mount box.



2. Open the knockout holes of the flush mount box, and then pass all necessary cables and wires (DC cable, wires for control box, access controller, electric lock, etc.) through the knockout holes.



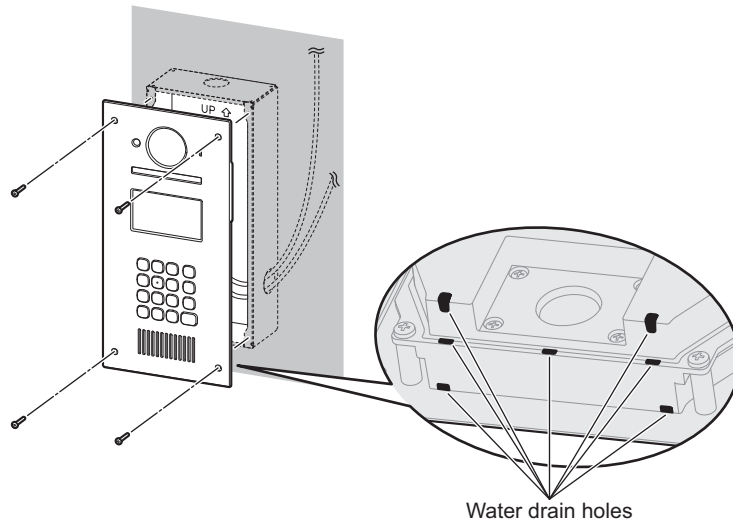
3. Mount the box in the wall.
4. Connect the wires and cables to the lobby station.
 - Strip the wires and cables as shown below.
 - See 4.5.1 Wiring schematics (Page 24) for wiring schematic diagrams.



- To connect the DC cable from the power supply unit, press the cable release button while inserting the cable into the connection terminals. (To disconnect the cable, press the button while pulling it out.) Use the hooks to secure the cable.
 - To connect wires, press the wire release button with a pointed object such as a screwdriver while inserting the wire into the connection terminal. (To disconnect a wire, press the button while pulling it out.)
 - Refer to 4.5.2 Wire type and maximum wire length (Page 28) for information on the type and length of wires that can be used.
5. Attach the lobby station to the flush mount box.

4. Installation

- Secure the lobby station to the flush mount box using the 4 supplied screws. Use the supplied hex wrench to fasten the screws.



Note:

- Do not cover the water drain holes.

Registering the lobby station

Perform this procedure once for each lobby station after it is connected to the control box.

- Press any number key.
- Press **[△]**.
 - The lobby station is registered in the system.
 - If an error is displayed, the lobby station will still be registered to the system.

4.4 Installing the Control Box/Distribution Box/Lift Controller

The following 2 methods can be used for installation.

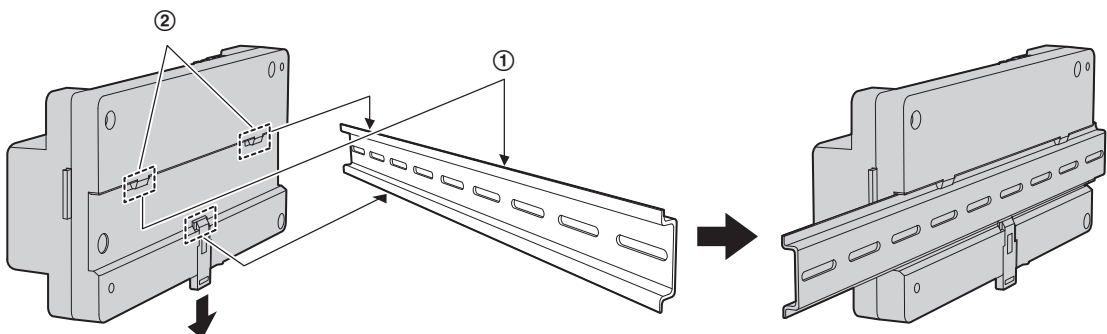
- mounting on a DIN rail
- attaching directly to a wall

Note:

- Keep the control box away from electrical noise generating devices, such as fluorescent lamps and motors.
- Do not remove the dust cover covering the control box's USB port (page 11) during installation, and make sure it completely covers the USB port to prevent any debris from falling into the USB port.

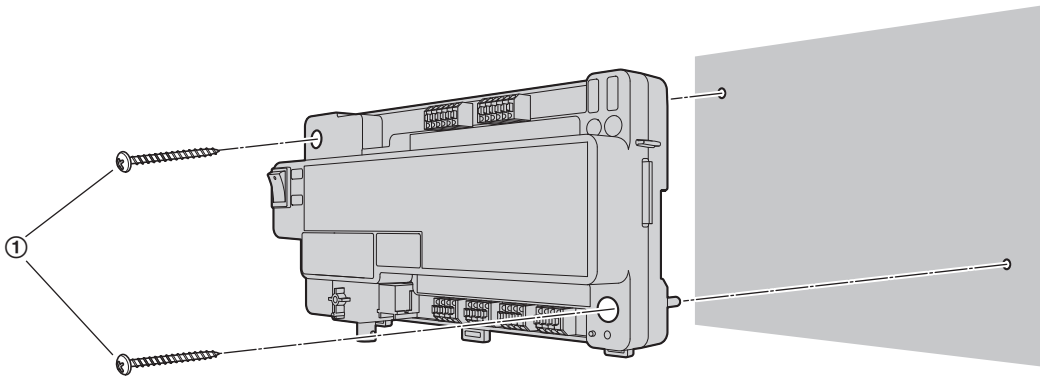
Mounting on a DIN rail

Mount the control box on the DIN rail (①) using the hooks (②).

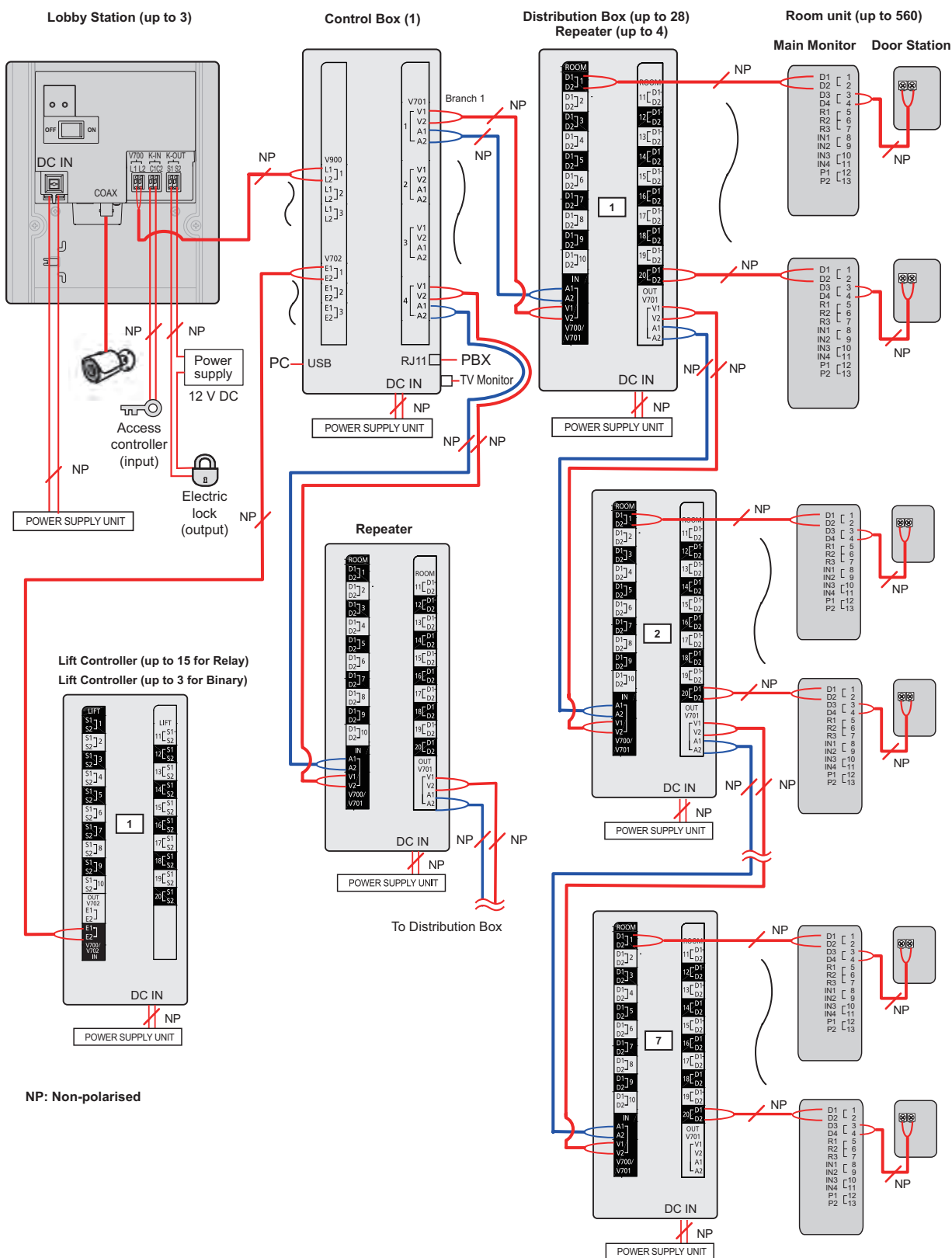


Attaching directly to a wall

Attach the unit to the wall securely using the 2 supplied screws (①).



Expanded system example

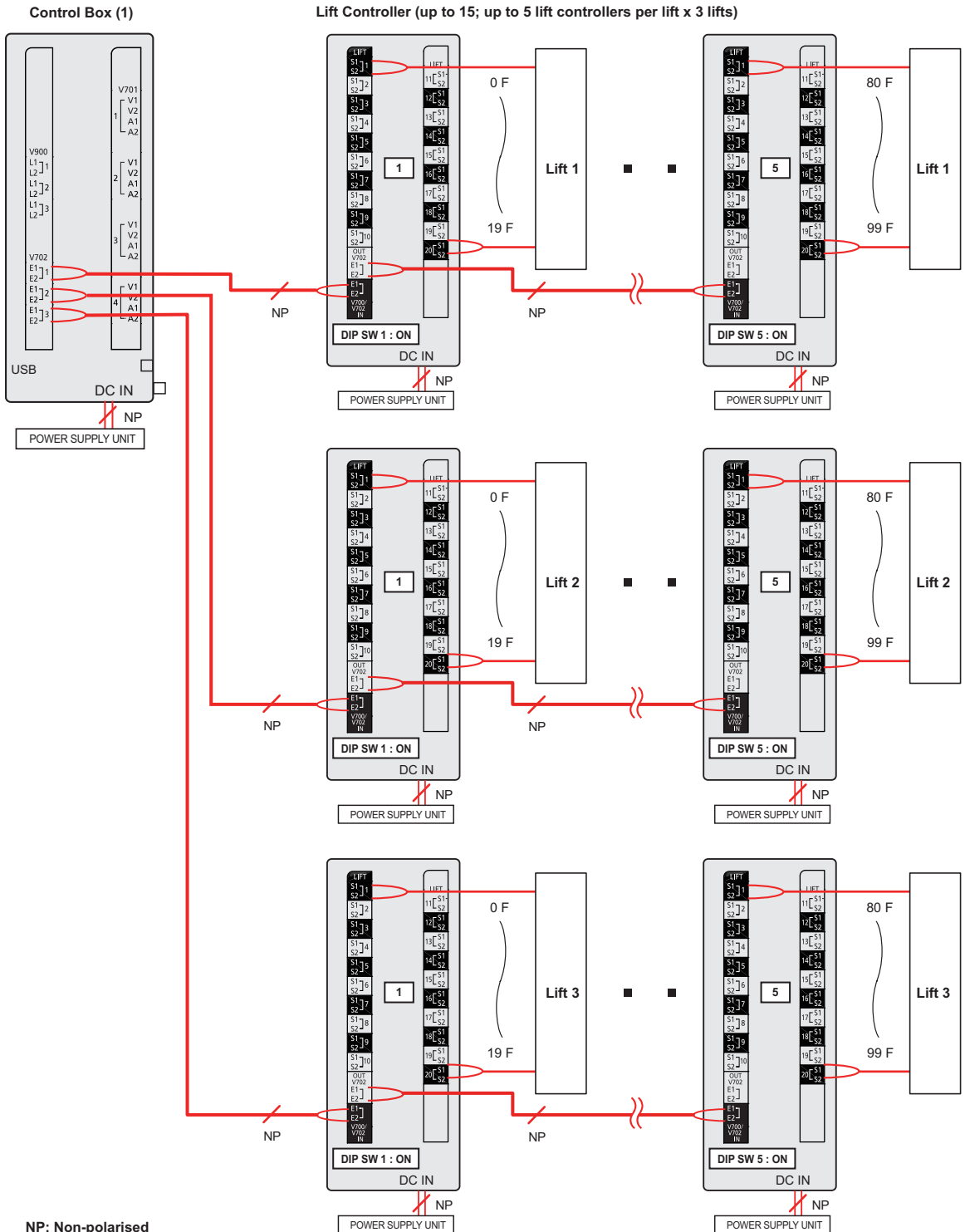


4. Installation

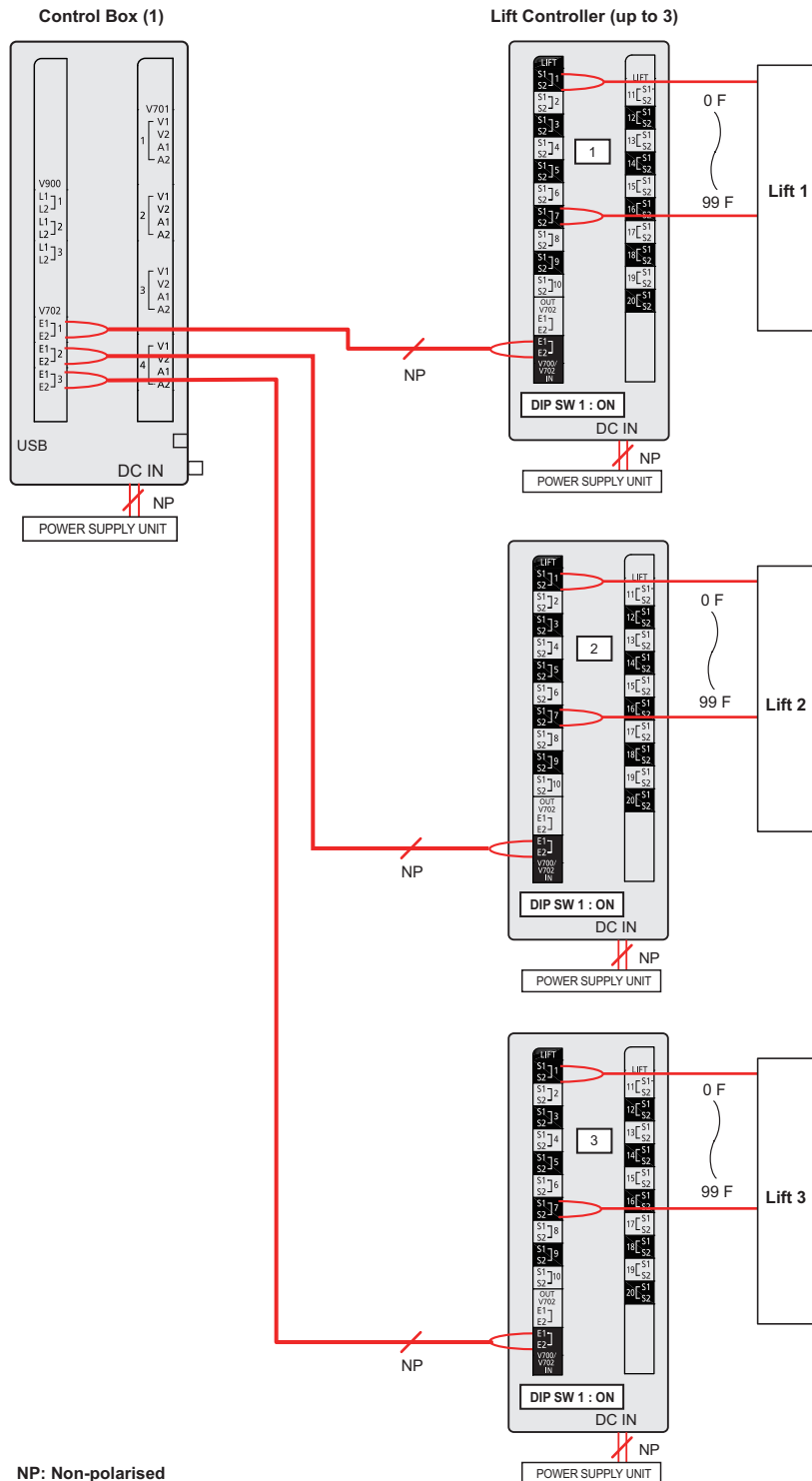
Note:

- See page 29 for information about distribution box switch settings.
- See page 32 for information about lift controller DIP switch settings.

Lift controller wiring example (relay signalling)



Lift controller wiring example (binary signalling)



4. Installation

4.5.2 Wire type and maximum wire length

Wiring run			Wire diameter	Max. length
Control box ↔ Lobby station			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Control box ↔ Distribution mode The farthest distribution box			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Control box ↔ Repeater mode The distribution box that is operating as a repeater			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Repeater mode The distribution box that is operating as a repeater ↔ Distribution mode The farthest distribution box			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Distribution box ↔ Main monitor			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Control box ↔ The farthest lift controller			0.65 mm (22 AWG)	approx. 100 m
			1.2 mm (17 AWG)	approx. 200 m
Power supply unit ↔ Lobby station Control box Distribution box Lift controller			0.65 mm (22 AWG)	approx. 10 m
			2 mm (12 AWG)	approx. 20 m
Power supply unit ↔ AC power source			1.2 mm (17 AWG)	No requirement
			2 mm (12 AWG)	
Lobby station ↔ Electric lock			0.5 mm (24 AWG)	According to specification of connected device.
			1.2 mm (17 AWG)	

Note the following when selecting wiring

- Use 2-conductor (solid copper) wiring with a PE (polyethylene)-insulated PVC jacket. Mid-capacitance, non-shielded cable is recommended.
- A certified power supply wiring has to be used with this equipment. The relevant national installation and/or equipment regulations shall be considered. A certified power supply wiring not lighter than ordinary polyvinyl chloride flexible wiring according to IEC 60227 shall be used.
- When connecting an electric lock to the electric lock connection terminal (K-OUT), select a device that meets the following guidelines.
 - N/C or N/O dry closure contact
 - 12 V AC/DC, less than 1 A

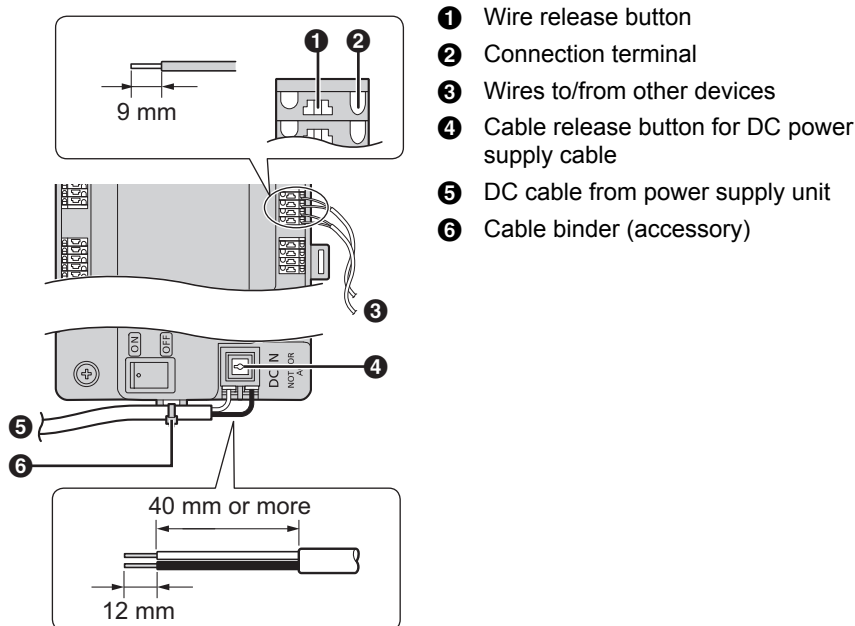
When connecting the control box to a PBX

Refer to the PBX's specifications for connecting analogue extension telephones.

4.5.3 Connecting wiring for the Control Box/Distribution Box/Lift Controller

Refer to the following when connecting the wires and cables to each device.

- Strip the wires and cables as shown below.
- See 4.5.1 Wiring schematics (Page 24) for wiring schematic diagrams.



- To connect the DC cable from the power supply unit, press the cable release button while inserting the cable into the connection terminals. (To disconnect the cable, press the button while pulling it out.) Use the hooks to secure the cable.
- To connect wires, press the wire release button with a pointed object such as a screwdriver while inserting the wire into the connection terminal. (To disconnect a wire, press the button while pulling it out.)
- Refer to 4.5.2 Wire type and maximum wire length (Page 28) for information on the type and length of wires that can be used.

4.5.4 Distribution box switch settings

The distribution box has 3 types of switches that determine how it operates.

DIP switches

DIP switches determine the distribution box number (1–7) of each distribution box in the branch.

Terminate switch

Set this switch to the "on" position for the last distribution box in a branch. Set this switch to the "off" position for all other distribution boxes in the branch.

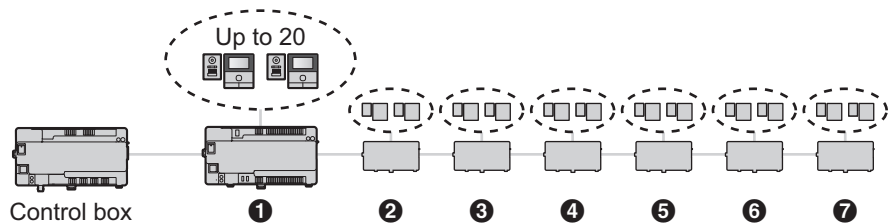
Repeat switch

Determines whether the distribution box is used in distribution mode or repeater mode.

In distribution mode, distribution boxes are connected in serial (up to 7 per branch) and up to 20 main monitors can be connected to each distribution box. In repeater mode, distribution boxes are connected in serial (up to 7 per branch), with one distribution box in a branch can be used only to forward signals from one distribution box to another. This is useful when you need to extend the maximum distance between 2 distribution boxes. No main monitors can be connected to a distribution box that is used in repeater mode.

4. Installation

Distribution mode example



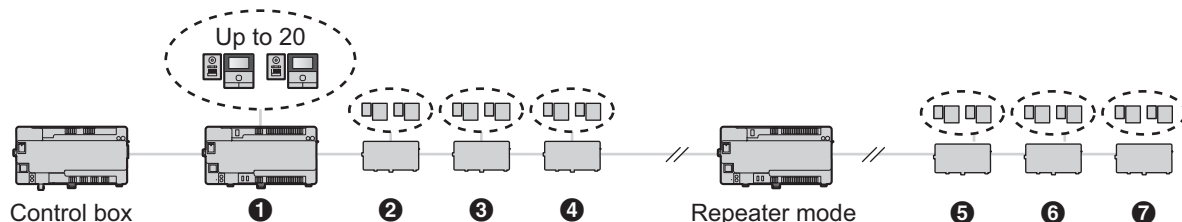
Distribution box	DIP switch ^{*1}	Repeat switch ^{*2}	Terminate switch ^{*3}
1	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
2	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
3	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
4	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
5	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
6	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
7	ON OFF 1 2 3 4 5 6 7 8	(off)	(on)

*1 Each DIP switch setting can only be used one time per branch.
The number 8 switch must always be set to the "off" position.
Only one DIP switch is set to the "on" position. All others are set to the "off" position.

*2 In distribution mode, the repeat switch of all distribution boxes in the branch is set to the "off" position.

*3 The terminate switch of the last distribution box in the branch is set to the "on" position. All others are set to the "off" position.

Repeater mode example



Distribution box	DIP switch ^{*1}	Repeat switch ^{*2}	Terminate switch ^{*3}
①	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
②	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
③	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
④	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
Repeater mode ^{*4}	ON OFF 1 2 3 4 5 6 7 8	(on)	(on)
⑤	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
⑥	ON OFF 1 2 3 4 5 6 7 8	(off)	(off)
⑦	ON OFF 1 2 3 4 5 6 7 8	(off)	(on)

*1 Each DIP switch setting can only be used one time per branch.

The number 8 switch must always be set to the "off" position.

Only one DIP switch is set to the "on" position. All others are set to the "off" position.

*2 In repeater mode, the repeat switch of one distribution box in the branch is set to the "on" position. All others are set to the "off" position.

Only one distribution box per branch can be used in repeater mode.

Main monitors cannot be connected to a distribution box that is set to repeater mode.

*3 The terminate switch of the last distribution box in the branch is set to the "on" position. All others (except for a distribution box that is operating in repeater mode) are set to the "off" position.

*4 The distribution box functioning in repeater mode can be located between the control box and a distribution box, or between 2 distribution boxes.

4. Installation

4.5.5 Lift controller DIP switch settings

The lift controller supports the following methods for sending signals to the lift. Select the signalling method according to the specifications of the lift by setting the lift controller's DIP switches.

Relay signalling

Each port of the lift controller controls one floor of the lift. Each lift controller can control 20 different floors; up to 5 lift controllers can be used to control up to 100 different floors.

When using relay signalling, DIP switches determine the lift controller number of each lift controller in the branch.

Binary signalling

One lift controller can control up to 100 different floors.

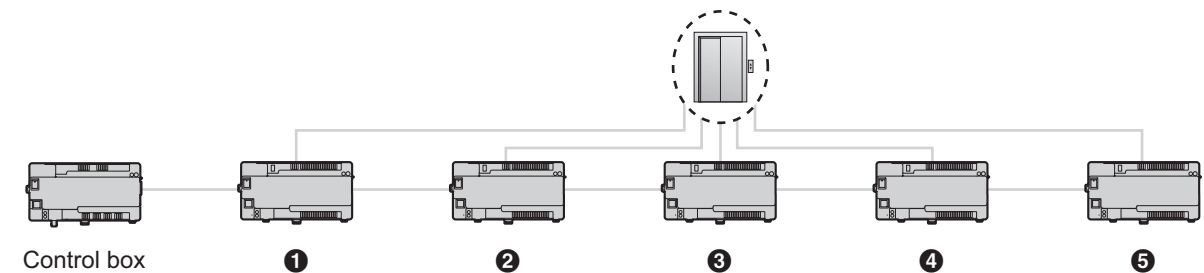
Normally open and normally closed connections

For both relay and binary signalling, the number 8 DIP switch determines whether connections are normally open or normally closed.

Note:

- After you have set the DIP switches, you must also configure the system to use relay signalling or binary signalling. Use PC programming (page 36) to configure the **[Lift Signal Mode]** setting, or lobby station programming (page 42) to configure the "SIGNAL MODE TO LIFT" setting.

Relay signalling example



Lift controller	DIP switch*1	Floors																		
①	ON OFF <table><tr><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>8</td></tr></table>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	1	2	3	4	5	6	7	8	8	0–19 (0 is the ground floor)
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>												
1	2	3	4	5	6	7	8	8												
②	ON OFF <table><tr><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>8</td></tr></table>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	1	2	3	4	5	6	7	8	8	20–39
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>												
1	2	3	4	5	6	7	8	8												
③	ON OFF <table><tr><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>8</td></tr></table>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	1	2	3	4	5	6	7	8	8	40–59
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>												
1	2	3	4	5	6	7	8	8												
④	ON OFF <table><tr><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>8</td></tr></table>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	1	2	3	4	5	6	7	8	8	60–79
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>												
1	2	3	4	5	6	7	8	8												
⑤	ON OFF <table><tr><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td><td><div></div></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>8</td></tr></table>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	1	2	3	4	5	6	7	8	8	80–99
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>												
1	2	3	4	5	6	7	8	8												

*1 For switches 1–5, each switch setting can only be used one time per branch.
The number 6 and 7 switches must always be set to the "off" position.
The number 8 DIP switch determines whether connections are normally open (switch is in the "off" position) or normally closed (switch is in the "on" position).

Binary signalling example



Lift controller	DIP switch*1	Floors
①	<div>ON OFF</div> <div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>123456788</div></div> <div>0-99 (0 is the ground floor)</div>	

- *1 The number 2–7 switches must always be set to the "off" position.
 The number 8 DIP switch determines whether connections are normally open (switch is in the "off" position) or normally closed (switch is in the "on" position).

4.6 Connecting other devices

4.6.1 Connecting electric locks

An electric lock can be connected to the electric lock connection terminal located on the rear of the lobby station (page 10).

- One electric lock can be connected to each lobby station.
- After connecting an electric lock to the lobby station, confirm that the door can be properly locked and unlocked using the main monitor.

4.6.2 Connecting to a PBX

The control box can be connected to a Panasonic PBX. Use the RJ11 jack located on the side of the control box (page 11) to connect it to an analogue extension port of the PBX. Consult your certified Panasonic dealer for more information.

- The control box can be connected to only one PBX.
- For information on how to connect extensions telephones to the PBX, see the operating instructions included with the PBX.
 - 4 extension numbers of the PBX can be registered with the control box for use by facility staff, receptionists, etc.
 - One extension number of the PBX can be registered with the control box for use as the emergency terminal.

4.6.3 Connecting to lifts

A lift can be connected to the lift connection terminals located on the side of the lift controller (page 12). For information on how to connect lifts to the lift controller, refer to the operating instructions included with the lift.

- Up to 3 lifts can be controlled.

4.6.4 Connecting cameras

A camera can be connected to the coaxial connector located on the rear of the lobby station (page 10).

- One camera can be connected to each lobby station.
- Compatible cameras:
 - Cameras that support PAL or NTSC video signals. Consult your certified Panasonic dealer for more information.

4.6.5 Connecting a TV monitor

A TV monitor can be connected to the coaxial connector located on the side of the control box (page 11).

- One TV monitor can be connected to the control box.
- Note that the control box can only output NTSC video signals to the TV monitor.
- Compatible TV monitors:
 - TV monitors that support NTSC video signals. Consult your certified Panasonic dealer for more information.

4.7 Basic settings

The following is a list of basic settings we recommend that you configure before using the system. Most items can be configured using PC programming, but other programming methods may be available. See the programming chapter (page 36) for details.

- **For the control box**
 - Date and time
Configure using PC programming (5.2.7 Setting the control box's date and time (Page 39))
 - Room number and other information for each room
Configure using PC programming (Control Box — Room settings (Page 39))
 - General system settings
Configure using PC programming (Control Box — General settings (Page 40))
- **For lobby stations**
 - General settings stored in each lobby station
Configure using PC programming (Lobby Station 1–3 — General settings (Page 41))
 - Room number and name stored in each lobby station
Configure using PC programming (Lobby Station 1–3 — Room settings (Page 41))
- **For distribution boxes**
 - DIP switch settings
Configure using the device's DIP switches (4.5.4 Distribution box switch settings (Page 29))
- **For lift controllers**
 - DIP switch settings
Configure using the device's DIP switches (4.5.5 Lift controller DIP switch settings (Page 32))
 - Lift access permissions for each room
Configure using PC programming (Control Box — Room settings (Page 39))
 - Confirming the connection
Perform using the setup tool (5.2.9 Confirming the control box's connection to the lift controllers (Page 39))
- **For main monitors**
 - Room number and other information for each room
We recommend using PC programming for initial setup (Control Box — Room settings (Page 39). You can change these settings on a room by room basis using main monitor programming if necessary (5.5 Main monitor programming (Page 47)).
 - Applying room settings to the main monitors
Perform using the setup tool (5.2.8 Configuring the main monitors (Page 39))
- **For electric locks and access controllers**
 - Door open times, codes, signals types, and various other settings
Configure using PC programming (Lobby Station 1–3 — General settings (Page 41))
- **For terminals**
 - Extension numbers, terminal names, and various other settings
Configure using PC programming (Control Box — General settings (Page 40))

5.1 Programming overview

There are 2 methods for configuring the system.

- Using a computer to configure the system. This is called "PC programming".
- Using individual station devices (lobby stations, main monitors, and PBX extension telephones) to configure the system. This is called "lobby station programming" (page 42), "main monitor programming" (page 47), and "Telephone programming" (page 46).

You can combine these methods to suit your needs. For example, you can configure the system for the first time using a PC, and then make small changes to the system later using a station device.

5.2 PC programming

PC programming allows you to use a computer and the Panasonic Large Apartment System Setup Tool to create and edit system data while offline, and then upload the data to the system while on-site.

Important:

- **After using the setup tool to communicate with the system, restart the control box (page 50).**

Note:

- The Panasonic Large Apartment System Setup Tool is also called "setup tool" in this document.

System requirements

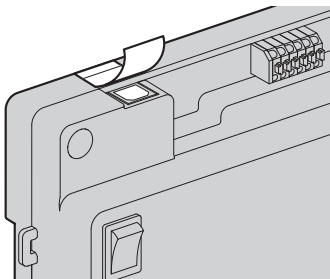
- **Operating system:** Microsoft Windows 7, Windows 8, Windows 8.1, Windows 10
- **Additional framework:** .Net Framework 4.0 or later

5.2.1 Installing the setup tool and USB driver

- 1 Download the installer.
 - Download information is available at the following web site.
<http://panasonic.net/pcc/support/intercom/v900>
- 2 Double-click the installer.
- 3 Follow the on-screen instructions and install the tool and the USB driver.

5.2.2 Connecting the computer to the control box

- 1 Connect a USB cable to your computer's USB port.
 - Use a USB 2.0 cable with a standard-B connector for connecting to the control box.
- 2 Lift up the dust cover that protects the control box's USB port.



- Do not remove the dust cover.
- 3 Make sure no debris has fallen into the USB port.
 - 4 Connect the USB cable to the control box's USB port.

Note:

- When disconnecting the USB cable from the control box, make sure the dust cover completely covers the USB port to prevent any debris from falling into it.

5.2.3 Setup tool overview

The setup tool is organized into the following sections.

The screenshot shows the 'Panasonic Large Apartment System Setup Tool' window. It is divided into six main sections, each highlighted with a red border and a numbered callout:

- 1. Select folder:** A section with a 'File(F) Help(H)' menu, a text prompt '1. Select folder', a sub-prompt 'Select the folder to save the data.', a 'Folder Path :' text box, and a 'Select Folder...' button.
- 2. Prepare the data:** A section with three main areas: 'To create new files' (with a 'Create Files' button), 'To use existing files' (with a 'Check Files' button), and 'To download from devices'. The 'To download from devices' area includes a 'Download the data from :' section with checkboxes for 'Control Box', 'Lobby Station 1', 'Lobby Station 2', and 'Lobby Station 3', and a 'Download' button. To the right is a 'Status of data preparation' table with columns 'Room' and 'General'.
- 3. Load and edit the data:** A section titled 'Load and edit the data' containing a table for 'Control Box' and three 'Lobby Station' entries. Each entry has 'Room settings' and 'General settings' text boxes (all showing 'No data file') and a 'Load / Edit ...' button.
- 4. Upload the data to device:** A section with 'Upload to device' (containing 'Upload the data to :' checkboxes for 'Control Box', 'Lobby Station 1', 'Lobby Station 2', and 'Lobby Station 3', and an 'Upload' button) and a 'Status of data upload' table with columns 'Room' and 'General'.
- 5. Time and date settings:** A section with a 'Time and Date Settings (Control Box)' button.
- 6. Connection Check:** A section with two buttons: 'Check Main Monitor (Set General Data)' and 'Check Lift Controller'.

1 Select folder

Allows you to select the folder where you want to save your configuration files. Configuration files are saved in CSV format.

2 Prepare the data

Allows you to choose whether you want to create new configuration files, use existing configuration files, or download the current data from the system's devices.

3 Load and edit the data

Allows you to load the data saved in the configuration files into the setup tool for editing.

4 Upload the data to device

Allows you to upload the data saved in the configuration files to the system's devices.

5 Time and date settings

Allows you to set the control box's time and date settings (used for time stamps saved in the system log).

6 Connection check

Allows you to confirm the control box's connection to the main monitors and lift controllers.

5. Programming

5.2.4 Using the setup tool to edit data

- 1 Start the setup tool.
- 2 In the **[Prepare the data]** section, click **[Check Files]**.
 - The paths of each configuration file are displayed in the **[Load and edit the data]** section.
- 3 In the **[Load and edit the data]** section, click **[Load / Edit ...]** next to a configuration file that you want to edit.
 - The files's details are displayed.
- 4 For **[Room settings] for lobby stations 1–3**
 - a. Click **[Edit ...]** to open the configuration file.
 - Use a third-party text editor or spreadsheet program to open the configuration file.
 - b. Change the values in the appropriate columns, and then save the file.
 - c. In the setup tool, click **[Reload]**.
 - The content of the configuration is reloaded and displayed.
 - d. Click **[Close]**.

For all other settings

- a. Select the desired setting.
 - b. Enter the desired value in the **[Edit Data]** section.
 - Acceptable values are displayed in a pop-up when you mouse-over the text field.
 - c. Click **[Apply / Save]** to save the settings to the configuration file.
 - d. Click **[Close]**.
- 5 Repeat from step 3 for each configuration file that you want to edit.
 - Files that are ready to be uploaded are indicated by **[OK]** displayed in the right side of the **[Load and edit the data]** section.
 - 6 In the **[Upload the data to device]** section, select the devices that you want to upload the data to and then click **[Upload]**.

Note:

- See 5.2.10 List of PC programming parameters (Page 39) for information about each parameter.

5.2.5 Downloading and backing up data

You can download the data that is saved in the system's devices, and back them up on your computer.

- 1 Start the setup tool.
- 2 In the **[Prepare the data]** section, turn on the checkboxes for the desired devices listed under **[Download the data from]**.
- 3 Click **[Download]**.
 - The data from the selected devices is downloaded to your computer and overwrites the configuration files saved on your computer.
 - Refer to the **[Select folder]** section and note the location of the configuration files.
- 4 Backup the configuration files as needed.

5.2.6 Editing configuration files directly

You can edit large amounts of data by editing configuration files directly.

- 1 Start the setup tool.
- 2 Refer to the **[Select folder]** section and note the location of the existing configuration files.
 - If you want to create new configuration files in a different folder, create the folder on your computer, select the folder in the **[Select folder]** section, and then click **[Create Files]** in the **[Prepare the data]** section.
- 3 Using your computer's file explorer, open the folder containing the existing configuration files.
- 4 Open the desired configuration file.
 - Use a third-party text editor or spreadsheet program to open the configuration file.

- 5 Change the values in the **[Data]** column as desired, and then save the file.
 - Acceptable values are explained in the **[Data Note]** column.
 - Descriptions of each setting and other information are explained in the **[Item Note]** column.
 - See 5.2.10 List of PC programming parameters (Page 39) for information about each parameter.
- 6 Using the setup tool, click **[Check Files]** the **[Prepare the data]** section.
 - The paths of each configuration file are displayed in the **[Load and edit the data]** section.
- 7 In the **[Load and edit the data]** section, click **[Load / Edit ...]** next to a configuration file that you want to upload.
 - The files's details are displayed.
- 8 Click **[Close]**.
- 9 Repeat from step 7 for each configuration file that you want to upload.
 - Files that are ready to be uploaded are indicated by **[OK]** displayed in the right side of the **[Load and edit the data]** section.
- 10 In the **[Upload the data to device]** section, select the devices that you want to upload the data to and then click **[Upload]**.

5.2.7 Setting the control box's date and time

- 1 Start the setup tool.
- 2 In the **[Time and date settings]** section, click **[Time and Date Settings (Control Box)]**.
- 3 Set the date and time, and then click **[Set to Control Box]**.

5.2.8 Configuring the main monitors

After you have configured the settings in the **[Control Box — Room settings]**, use the following procedure to apply these settings to the main monitors.

- 1 Start the setup tool.
- 2 In the **[Connection check]** section, click **[Check Main Monitor (Set General Data)]**, and then click **[Execute]**.

5.2.9 Confirming the control box's connection to the lift controllers

- 1 Start the setup tool.
- 2 In the **[Connection check]** section, click **[Check Lift Controller]**.

5.2.10 List of PC programming parameters

The following parameters are available when using PC programming.

Control Box — Room settings

Parameter	Description and available settings	Default
Room No.	Determines the room number of the main monitor connected to the corresponding control box port, distribution box number, and distribution box port. (1–99999; 0 is displayed when the room is not configured)	—
Floor No.	Determines the floor number setting of the corresponding room number. (0–99; 0 is the ground floor)	0
Lift access permission (Lift 1–3)	Determines which lifts can be used by visitors to each lobby station.	0 (No lifts can be used)

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Control Box — General settings

Parameter	Description and available settings	Default
Monitor Time Out	Determines the amount of time that passes when watching camera images before the standby screen is displayed. [0]: 180 SEC [1]: 90 SEC [2]: 60 SEC [3]: 30 SEC	0 (180 SEC)
Talk Time Out	Determines the amount of time that passes when talking before the standby screen is displayed. [0]: 90 SEC [1]: 60 SEC [2]: 30 SEC [3]: 180 SEC [4]: 300 SEC	0 (90 SEC)
Camera Signal	Tells the system what signal format is used by the external camera. [0]: PAL [1]: NTSC	0 (PAL)
Lift Signal Mode	Determines the signalling method used by the lift controller to communicate with the lift. Select the signal type according to the specifications of the lift. [0]: RELAY [1]: BINARY	0 (RELAY)
Lift Signal Time	After a visitor is admitted, this setting determines the amount of time that the visitor can use the lift to visit the corresponding floor. If the lift has a similar setting, set this parameter to any value other than "0"; the lift setting will take priority. (1–900 SEC, or 0 to disable)	300 (300 SEC)
Visitor Call Mode	Determines if visitors can call rooms directly or if their calls are directed to a reception terminal. [0]: ROOM MODE [1]: RECEPTION MODE	0 (ROOM MODE)
Terminal 1–4 Extension Number	Tells the system the extension number for terminal 1–4. (24 digits max.)	—
Terminal 1–4 Name Code	Determines the name for terminal 1–4. [1]: TERMINAL # [2]: RECEPTION [3]: GATE [4]: CONTROL ROOM [5]: RESTAURANT [6]: HALL [7]: POOL [8]: SECURITY OFFICE [9]: ENTRANCE [10]: GYM [11]: GUEST ROOM [12]: KID'S ROOM [13]: PARKING [14]: TERRACE [15]: LIFT LOBBY	1 (TERMINAL #)

Parameter	Description and available settings	Default
Terminal 1–4 Reception Code	Determines whether terminal 1–4 is a reception terminal or a normal terminal (i.e., cannot be used as a reception terminal). [0]: NORMAL TERMINAL [1]: RECEPTION TERMINAL	0 (NORMAL TERMINAL)
Emergency Terminal Extension Number	Tells the system the extension number for the emergency terminal. (24 digits max.)	—
Emergency Terminal Emergency Mode	Determines whether the emergency terminal can talk to residents during an emergency call (emergency talk mode) or if the emergency terminal receives an announcement only (emergency notice mode). [0]: EMERGENCY TALK [1]: EMERGENCY NOTICE	0 (EMERGENCY TALK)

Lobby Station 1–3 — Room settings

Parameter	Description and available settings	Default
Room No.	Determines the room number. (1–99999; 0 is displayed when the room is not configured)	—
Resident Name	Determines the resident name for the corresponding room number. (20 characters max., uppercase letters only)	—

Lobby Station 1–3 — General settings

Parameter	Description and available settings	Default
Door Key Open Time	Determines the amount of time the door stays open. If set to 0 SEC, the door cannot be opened. (1–20 SEC, or 0 to disable)	5 SEC
Door Key Out Signal	Determines whether the signal sent to the electric lock is a closed signal (i.e., the signal is normally open) or an open signal (i.e., the signal is normally closed). [0]: CLOSE [1]: OPEN	0 (CLOSE)
Door Key Open Code	Determines the door open code. If disabled, the door cannot be opened using a code. (4 digits, or ##### to disable)	#### (DISABLE)
Door Key External In	Tells the system whether an access controller (door opener, key switch, card reader, etc.) is connected to the lobby station and used to unlock the door. [0]: NO [1]: YES	0 (NO)
Door Key In Signal	Determines whether the signal received from the access controller is a closed signal (i.e., the signal is normally open) or an open signal (i.e., the signal is normally closed). [0]: CLOSE [1]: OPEN	0 (CLOSE)
Camera Connection	Tells the system whether a camera is connected or not. [0]: NO [1]: YES	0 (NO)

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Parameter	Description and available settings	Default
Camera Name	Determines the camera name. [1]: CAMERA # [2]: RECEPTION [3]: GATE [4]: CONTROL ROOM [5]: RESTAURANT [6]: HALL [7]: POOL [8]: SECURITY OFFICE [9]: ENTRANCE [10]: GYM [11]: GUEST ROOM [12]: KID'S ROOM [13]: PARKING [14]: TERRACE [15]: LIFT LOBBY	1 (CAMERA #)
Camera Display Priority	Determines which camera image is displayed when monitoring begins. [0]: LOBBY [1]: CAMERA [2]: CAMERA ONLY	0 (LOBBY)
Camera Switching Image	Determines whether visitors (lobby station users) can switch between the lobby station camera and the external camera. [0]: NO [1]: YES	0 (NO)
Wide/Zoom	Determines whether camera images are displayed in wide mode or in zoom mode when monitoring begins. [0]: WIDE [1]: ZOOM	0 (WIDE)
Zoom Position	Determines the camera zoom position. [1]: UPPER LEFT [2]: UPPER SIDE [3]: UPPER RIGHT [4]: LEFT [5]: CENTRE [6]: RIGHT [7]: LOWER LEFT [8]: LOWER SIDE [9]: LOWER RIGHT	5 (CENTRE)
Power Frequency	Tells the system what frequency of power is supplied to the lobby station. [0]: 50 HZ [1]: 60 HZ	0 (50 HZ)
Access Code	Determines the access code that allows you to use lobby stations to configure the system. (6 digits)	123456

5.3 Lobby station programming

You can use a lobby station to configure various system settings.

- 1 Register the lobby station (page 22).
 - If you have already registered the lobby station, skip this step.

- 2 Press **[#]** → enter the access code → **[Δ]**.
 - The default access code is "123456". If necessary, you can change the access code (Changing the access code (Page 43)).
- 3 Set each parameter.
 - You can browse parameters by pressing **[▲]** and **[▼]**, and select a parameter by pressing **[Δ]**.
 - You can return to the previous screen by pressing **[X]**.
 - See 5.3.1 List of lobby station programming parameters (Page 43) for information about each parameter.
- 4 Press **[X]** when finished.
 - The lobby station exits programming mode and the standby screen is displayed.

Entering numbers and characters

You can use the keypad to enter numbers and characters.

- Press a key repeatedly to scroll through the characters assigned to that key.
- Follow the hints displayed on the bottom of the display.
 - To erase all numbers or characters, press **[*]**.
 - To advance the cursor, press **[#]**.
 - To cancel, press **[X]**.
 - To confirm or save the entered numbers or characters, press **[Δ]**.

Changing the access code

The access code is required to use the lobby station programming.

1. Press **[#]** → enter the access code → **[Δ]**.
 - The default access code is "123456".
2. Select **"SET ACCESS CODE"** → **[Δ]**.
3. Enter the desired 6-digit code → **[Δ]**.
4. Press **[X]**.

5.3.1 List of lobby station programming parameters

The following parameters are available when using lobby station programming.

Note:

- You can also use PC programming to configure these settings for each main monitor. Parameter names are slightly different when using PC programming.

Parameter	Description and available settings	Default
SET ROOM NO.	Determines the room number and resident name. (1–99999, 20 characters max., lowercase letters not available) • See Entering numbers and characters (Page 43) for more information.	—
DELETE ROOM NO.	Deletes the room number and resident name. (1–99999)	—
SET DOOR KEY		
DOOR KEY OPEN TIME	Determines the amount of time the door stays open. If set to 0 SEC, the door cannot be opened. (01–20 SEC, or 00 to disable)	05 (5 SEC)
DOOR KEY OUT SIGNAL	Determines whether the signal sent to the electric lock is a closed signal (i.e., the signal is normally open) or an open signal (i.e., the signal is normally closed). [00]: CLOSE [01]: OPEN	00 (CLOSE)

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Parameter		Description and available settings	Default
	DOOR KEY OPEN CODE	Determines the door open code. If disabled, the door cannot be opened using a code. (4 digits, or ##### to disable)	#### (DISABLE)
	DOOR KEY EXTERNAL IN	Tells the system whether an access controller (door opener, key switch, card reader, etc.) is connected to the lobby station and used to unlock the door. [00]: NO [01]: YES	00 (NO)
	DOOR KEY IN SIGNAL	Determines whether the signal received from the access controller is a closed signal (i.e., the signal is normally open) or an open signal (i.e., the signal is normally closed). [00]: CLOSE [01]: OPEN ● Available only when “DOOR KEY EXTERNAL IN” is set to “YES”.	00 (CLOSE)
SET CAMERA			
	CAMERA CONNECTION	Tells the system whether a camera is connected or not. [00]: NO [01]: YES	00 (NO)
	CAMERA NAME	Determines the camera name. [01]: CAMERA # [02]: RECEPTION [03]: GATE [04]: CONTROL ROOM [05]: RESTAURANT [06]: HALL [07]: POOL [08]: SECURITY OFFICE [09]: ENTRANCE [10]: GYM [11]: GUEST ROOM [12]: KID'S ROOM [13]: PARKING [14]: TERRACE [15]: LIFT LOBBY	01 (CAMERA #)
	DISPLAY PRIORITY	Determines which camera image is displayed when monitoring begins. [00]: LOBBY [01]: CAMERA [02]: CAMERA ONLY	00 (LOBBY)
	SWITCHING IMAGE	Determines whether visitors (lobby station users) can switch between the lobby station camera and the external camera. [00]: NO [01]: YES	00 (NO)
SET WIDE/ZOOM			
	WIDE/ZOOM SETTINGS	Determines whether camera images are displayed in wide mode or in zoom mode when monitoring begins. [00]: WIDE [01]: ZOOM	00 (WIDE)

Parameter		Description and available settings	Default
	ZOOM POSITION	Determines the camera zoom position. [01]: UPPER LEFT [02]: UPPER SIDE [03]: UPPER RIGHT [04]: LEFT [05]: CENTRE [06]: RIGHT [07]: LOWER LEFT [08]: LOWER SIDE [09]: LOWER RIGHT	05 (CENTRE)
	SET POWER FREQ.	Tells the system what frequency of power is supplied to the lobby station. [00]: 50 HZ [01]: 60 HZ	00 (50 HZ)
	SET CAMERA SIGNAL	Tells the system what signal format is used by the external camera. [00]: PAL [01]: NTSC	00 (PAL)
	SET TIME&DATE	Determines the system's time and date settings.	1/JAN/2015 00:00
SET TIME OUT			
	MONITOR TIME OUT	Determines the amount of time that passes when watching camera images before the standby screen is displayed. [00]: 180 SEC [01]: 90 SEC [02]: 60 SEC [03]: 30 SEC	00 (180 SEC)
	TALK TIME OUT	Determines the amount of time that passes when talking before the standby screen is displayed. [00]: 90 SEC [01]: 60 SEC [02]: 30 SEC [03]: 180 SEC [04]: 300 SEC	00 (90 SEC)
SET LIFT			
	SIGNAL MODE TO LIFT	Determines the signalling method used by the lift controller to communicate with the lift. Select the signal type according to the specifications of the lift. [00]: RELAY [01]: BINARY	00 (RELAY)
	SIGNAL TIME TO LIFT	After a visitor is admitted, this setting determines the amount of time that the visitor can use the lift to visit the corresponding floor. If the lift has a similar setting, set this parameter to any value other than "0"; the lift's box setting will take priority. (001-900 SEC, or 000 to disable)	300 (300 SEC)
	SET ACCESS CODE	Determines the access code that allows you to use lobby stations to configure the system. (6 digits)	123456

5.4 Telephone programming

Use this procedure to configure the following settings.

- The extension numbers of the PBX that will be used as terminals 1–4 and the emergency terminal
- The names assigned to terminals 1–4
- Whether terminals 1–4 are used as a reception terminal or not
- Whether the emergency terminal can talk to the main monitor caller during an emergency call

1 Dial the extension number assigned to the control box.

2 Enter a feature number to specify which terminal you will assign.

Feature number	Description
# # * 0 #	Emergency terminal
# # * 1 #	Terminal 1
# # * 2 #	Terminal 2
# # * 3 #	Terminal 3
# # * 4 #	Terminal 4

3 Enter the extension number of the terminal that you want to assign → press [#].

- Example: For extension 101, enter 1 0 1 #.

4 Emergency terminal

Skip this step.

Terminals 1–4

Enter a feature number to specify the terminal's name.

- This name can be used to call the terminal, and can be displayed when a station receives a call from the terminal.

Feature number	Description
0 1 # (default)	TERMINAL #
0 2 #	RECEPTION
0 3 #	GATE
0 4 #	CONTROL ROOM
0 5 #	RESTAURANT
0 6 #	HALL
0 7 #	POOL
0 8 #	SECURITY OFFICE
0 9 #	ENTRANCE
1 0 #	GYM
1 1 #	GUEST ROOM
1 2 #	KID'S ROOM
1 3 #	PARKING
1 4 #	TERRACE
1 5 #	LIFT LOBBY

- 5 Enter a feature number to specify the terminal's operation mode.

Feature number	Description
[0][0][#] (default)	For the emergency terminal Selects EMERGENCY TALK mode. During an emergency call, the main monitor can talk to the emergency terminal (up to 10 minutes). For terminals 1–4 Selects NORMAL TERMINAL mode. The terminal cannot be used as a reception terminal.
[0][1][#]	For the emergency terminal Selects EMERGENCY NOTICE mode. During an emergency call, the emergency terminal receives a repeating emergency announcement. For terminals 1–4 Selects RECEPTION TERMINAL mode. The terminal can be used as a reception terminal.

- 6 Hang up.

Note:

- A compatible main monitor, such as the VL-MVN511, is required to make emergency calls to the emergency terminal.

Deleting a terminal assignment

Use this procedure to stop using a terminal with the system.

1. Dial the extension number assigned to the control box.
2. Enter a feature number to specify which terminal will be deleted.

Feature number	Description
##*0#	Emergency terminal
##*1#	Terminal 1
##*2#	Terminal 2
##*3#	Terminal 3
##*4#	Terminal 4

3. Hang up.

5.5 Main monitor programming

Use this procedures in this section to configure the following settings. Perform this procedure for each main monitor.

- Set the main monitor to apartment mode
- Set the room number
- Set the floor number
- Set lift permissions for visitors

Note:

- You can also use PC programming to configure these settings for each main monitor.
- Operations vary depending on the model number of the main monitor.

When programming the VL-MVN511

1. Press and hold the second soft key button from the left, **[OFF]**, and **[TALK]** at the same time (3 buttons total).
 - Continue to hold the buttons and perform the next step.
2. Press and hold the **[RESET]** button for about 3 seconds, then release the **[RESET]** button only.
 - The main monitor starts up and enters programming mode.

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3. When the display lights up, release all the buttons.
4. Use the navigator key to select “**APARTMENT MODE**” → .

 - The main monitor initialises its settings.
 - While performing the next steps, you can cancel without saving your settings by pressing **[OFF]**.

5. Enter the room number.
 - a. Use the navigator key to select the desired number.
 - b. Use the navigator key to accept the entered number and advance the cursor.
 - c. Press when finished.
6. Enter the floor number.
 - a. Use the navigator key to select the desired number.
 - b. Press when finished.
7. Set lift permissions for visitors.
 - a. Use the navigator key to allow or prohibit lift usage for visitors to each lobby.
 - b. Use the navigator key to select the next lobby station.
 - c. Press when finished.
8. Confirm the displayed settings.
 - Press to go back and enter the desired settings again.
9. Press to check for a duplicate room number.
 - If a duplicate room number is found, press to overwrite the existing room number settings, or to cancel saving the settings.
If no duplicate is found, the settings are saved in the control box.

Note:

- If you press , the settings will be saved in the main monitor only, and the main monitor will restart. To save the settings in the control box, press .

When programming the VL-MW251

1. Press and hold **[OFF]**, **[TALK]**, and **[MENU]** at the same time (3 buttons total).
 - Continue to hold the buttons and perform the next step.
2. Press and hold the **[RESET]** button for about 3 seconds, then release the **[RESET]** button only.
 - The main monitor starts up and enters programming mode.
3. When the display lights up, release all the buttons.
4. Press the or soft keys to select “**APARTMENT MODE**” → .

 - The main monitor initialises its settings.
 - While performing the next steps, you can cancel without saving your settings by pressing **[OFF]**.

5. Enter the room number.
 - a. Press or to select the desired number.
 - b. Press to accept the entered number and advance the cursor.
 - c. Press when finished.
6. Enter the floor number.
 - a. Press or to select the desired number.
 - b. Press when finished.
7. Set lift permissions for visitors.
 - a. Press or to allow or prohibit lift usage for visitors to each lobby.
 - b. Press to select the next lobby station.
 - c. Press when finished.
8. Confirm the displayed settings.
 - Press to go back and enter the desired settings again.

9. Press **SET** to check for a duplicate room number.
- If a duplicate room number is found, press **YES** or **NO** to select whether you want to overwrite the existing room number settings.
- If no duplicate is found, the settings are saved in the control box.

Note:

- If you press **SAVE**, the settings will be saved in the main monitor only, and the main monitor will restart. To save the settings in the control box, press **SET**.

5.5.1 List of main monitor programming parameters

The following parameters are available when using main monitor programming.

Note:

- You can also use PC programming to configure these settings for each main monitor. Parameter names are slightly different when using PC programming.

Parameter	Description	Default
ROOM NUMBER	Tells the system what room the main monitor is installed in. (1–99999)	—
FLOOR NUMBER	Tells the system what floor the main monitor is installed on. (0–99; 0 is the ground floor)	—
LIFT 1 LIFT 2 LIFT 3	Determines which lifts can be used by visitors to each lobby station. (Yes, No)	No (No lifts can be used)

5.6 System log

You can insert an SD into the control box and use it to log system event information. The following information can be logged.

- Caller and called party information (lobby station number, room number, terminal number, etc.)
- Whether the 2 parties talked
- Whether a door was unlocked or a lift was used
- The date and time for all events
- Images from lobby station cameras (captured when the lobby station called a room number)

Important:

- An SD card must be inserted into the control box in order to use this feature.**
- Before inserting an SD card into the control box, format the card using the tool described in "Formatting the SD card".**
- Once the system is installed and functioning, view the system log to confirm that information is being logged.**

Note:

- Up to 90000 image files can be logged, after which new image files will overwrite old ones.

SD card specifications

- SDHC or SDXC
- Capacity: 4 GB or larger.

Formatting the SD card

Before inserting an SD card into the control box, format the SD card using your computer and the SD formatting tool available from the web page listed below.

www.sdcard.org/downloads/formatter_4/

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Note:

- **If you do not format the card before using it with the control box**
Information may not be logged properly, and new image files may not be able to overwrite old ones.

Viewing the system log

You can insert the SD card into a computer and view the log.

Note:

- **If you use a computer to modify the SD card's files or folders**
The next time you insert the SD card into the control box, the log database will be rebuilt. This can take up to one hour. During this time, no information will be logged.
- **If you add data to the card using a computer, digital camera, or other device**
Information may not be logged properly, and new image files may not be able to overwrite old ones.

5.7 Restarting a device

You can restart the control box, distribution box, or lift controller by pressing its reset button (•).

5.8 POWER and ACCESS indicators

5.8.1 Control box indicators

Category	Meaning	POWER	ACCESS
Normal operation	Idle	Lit	Off
	Call or monitoring in progress	Lit	Lit
	Accessing SD card	Lit	Flashing quickly
System setup	PC programming in progress	Lit	Lit
	PC connection check in progress	Lit	Lit
Error	Duplicate distribution box number found	Off	Flashing slowly

5.8.2 Distribution box indicators

Category	Meaning	POWER	ACCESS
Normal operation	Idle	Lit	Off
	Call or monitoring in progress	Lit	Lit
Error	DIP switch 8 is in the "on" position	Off	Flashing slowly
	2 or more DIP switches are in the "on" position	Off	Flashing slowly

5.8.3 Lift controller indicators

Category	Meaning	POWER	ACCESS
Normal operation	Idle	Lit	Off
	Visitor is currently able to use the lift	Lit	Lit
Error	DIP switch 6 or 7 is in the "on" position	Off	Flashing slowly
	2 or more DIP switches are in the "on" position	Off	Flashing slowly

6.1 System conditions and limitations

Please note the following system conditions and limitations.

- Only one call or monitoring session can be handled at a time.
Subsequent calls will disconnect the current call (if the current call has lower priority), or will not be connected (if the current call has higher priority).

Low priority	Monitoring
Medium priority	General calls (lobby to main monitor, main monitor to terminal, etc.)
High priority	Emergency calls

- All calls and monitoring sessions are disconnected after the pre-programmed "timeout" time elapses.
The default time is 90 seconds for calls and 180 seconds for monitoring.
Emergency calls are limited to 10 minutes.

6.2 Lobby station operations

6.2.1 Calling a resident

Entering a room number

- Enter the resident's room number.
- Press **[⏏]** to call.

Searching by first letter of the name

- Press **[*]**.
- Use the keypad to enter the first letter of the resident's name.
 - Press a key repeatedly to scroll through the letters assigned to that key.
 - Note the hints displayed at the bottom of the screen.
- Press **[▲]** or **[▼]** to search for the desired name.
- Press **[⏏]** to call.

Searching through all names

- Press **[▼]**.
- Press **[▲]** or **[▼]** to search for the desired name.
- Press **[⏏]** to call.

6.2.2 Calling a receptionist

- Press **[▼]**.
- Press **[▲]** or **[▼]** to search for the receptionist.
- Press **[⏏]** to call.

6.2.3 Opening the door by entering an unlock code

- Press **[#]**.
- Enter the 4-digit unlock code.
- Press **[⏏]**.

6. Basic Operations

6.3 Facility staff operations

Facility staff can use an extension telephone of a PBX to perform a variety of operations.

Operations available when not on a call

1. Dial the extension number assigned to the control box.
2. Enter the feature number according to the feature you want to operate.

Feature number	Assignment
(room number) [#]	Call the specified room number
[*][1]	Call lobby station 1
[*][2]	Call lobby station 2
[*][3]	Call lobby station 3
[#][#][0][0][#]	Switch the visitor call mode to room mode
[#][#][0][1][#]	Switch the visitor call mode to reception mode

3. Follow the voice guidance.

Operations available when on a call

Enter the feature number according to the feature you want to operate.

Feature number	Assignment
[*][0][0][0][#]	Open the entrance door(s)
[*] (2-digit floor number) [#]	Open the entrance door(s) and allow the lift to visit the specified floor
[*][#]	Repeat the voice guidance

Room mode vs. reception mode

When the visitor call mode setting is set to room mode, lobby visitors can call a specific resident or room number, and speak with residents directly. The resident can open the entrance door based on the conversation he/she had with the visitor.

When the visitor call mode setting is set to reception mode, calls from lobby visitors are directed to a reception terminal, even if the visitor called a specific resident or room number. Visitors do not speak directly with residents. The reception terminal user can open the entrance door based on the conversation he/she had with the resident.

7.1 Basic troubleshooting

For advanced troubleshooting, refer the information on the following web site.

<http://panasonic.net/pcc/support/intercom/v900>

"BUSY" is displayed. I cannot make a call.

- Another call is in progress.
→ Wait and try again later.
- The control box is not connected properly to the PBX (telephone system) that controls the terminals, or the control box cannot call the PBX for some reason.
→ Check the connections between the control box and the PBX, and all relevant PBX settings.

Calls are disconnected.

- The call with higher priority (such as an emergency call) was made, causing the current call to be disconnected.
→ Wait and try again later.
- The current call timed out and was disconnected.
→ To conserve system resources, all calls time out and are disconnected after a programmed amount of time.

The lobby station screen is blank.

- The lobby station has not detected the visitor.
→ Lobby stations feature a motion sensing device that turns on the screen only when a visitor is detected. Stand in front of the lobby station when operating it.

7.2 Cleaning

Wipe the product with a soft, dry cloth.

For excessive dirt, wipe the product with a slightly damp cloth.

Important:

- **Do not use any cleaning products that contain alcohol, polish powder, powder soap, benzine, thinner, wax, petroleum, or boiling water. Also do not spray the product with insecticide, glass cleaner, or hair spray. This may cause a change in colour or quality of the product.**

7.3 Trademarks

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- SDXC Logo is a trademark of SD-3C, LLC.



7.4 Terms and illustrations in this document

- SD memory cards are referred to as "SD cards".
- Model number suffixes (e.g., the "BX" in "VL-V900BX") are omitted unless necessary.
- Illustrations may vary slightly from the actual product.

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