ORDER NO. KMA1511067CE

Service Manual

Video Intercom System

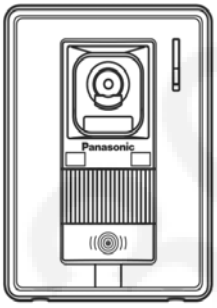
Model No. VL-SVN511BX
VL-MVN511BX
VL-V522LCE
VL-RLY1
VL-PS241

Model No. VL-SVN511CX
Model No. VL-SVN511CX1
VL-MVN511BX
VL-V522LCE
VL-RLY1
VL-PS241

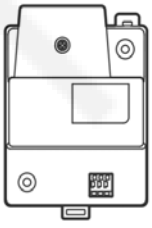
(BX: for Asia, Middle Near East and Africa)
(CX: for Middle East and Hong Kong)
(CX1: for UAE)

VL-SVN511

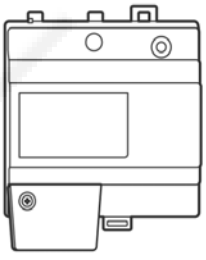
VL-MVN511
(Main Monitor Station)



VL-V522L
(Door Station)



VL-RLY1
(Relay box)



VL-PS241
(Power Supply Unit)

[Version 2.0]

Panasonic

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING

If lead free solder was used in the manufacture of this product, the printed circuit boards will be marked PbF. Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear, please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

- When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.
- The illustrations in this Service Manual may vary slightly from the actual product.

TABLE OF CONTENTS

1 Safety Precautions

1.1. Safety Precautions

1. Before servicing, unplug the power cord to prevent an electrical shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, make the insulation resistance test (Refer to **Insulation Resistance Test** (P.6)) to prevent a shock hazard.

1.2. For Service Technicians

- **Repair service shall be provided in accordance with repair technology information such as service manual so as to prevent fires, injury or electric shock, which can be caused by improper repair work**.
  1. When repair services are provided, neither the products nor their parts or members shall be remodeled.
  2. If a lead wire assembly is supplied as a repair part, the lead wire assembly shall be replaced.
  3. FASTON terminals shall be plugged straight in and unplugged straight out.

- **ICs and LSIs are vulnerable to static electricity.**
  When repairing, the following precautions will help prevent recurring malfunctions.
  1. Cover plastic parts boxes with aluminum foil.
  2. Ground the soldering irons.
  3. Use a conductive mat on worktable.
  4. Do not grasp IC or LSI pins with bare fingers.

1.3. Power Caution

The power socket wall outlet should be located near this equipment and be easily accessible.

2 Warning

2.1. About Lead Free Solder (PbF: Pb free)

Note:

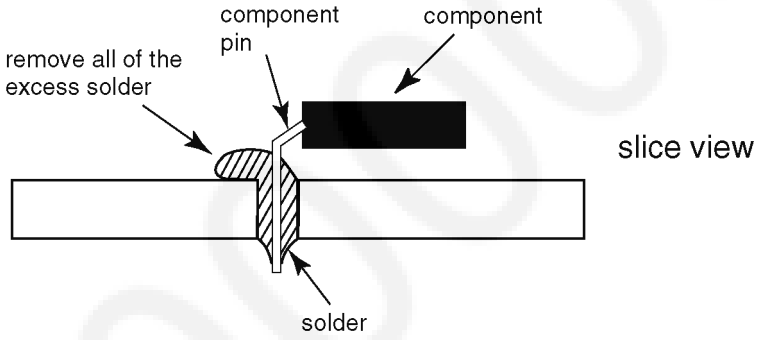
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin, (Sn), Silver, (Ag), and Copper, (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

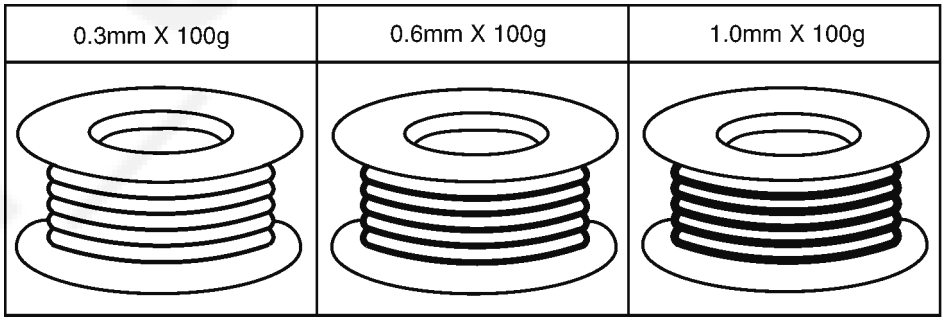
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).
- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).



2.1.1. Suggested Pbf Solder

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

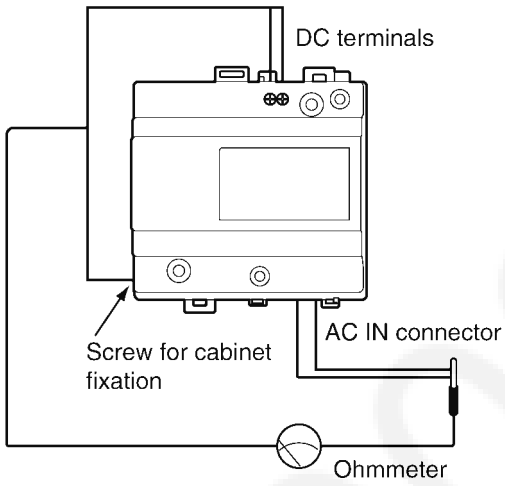
The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.



2.2. Insulation Resistance Test

1. Unplug the AC power cord and short the two prongs of the plug with a jumper wire.
2. Measure the resistance value with ohmmeter between the jumpered AC plug and all the terminals as shown in following figures.
3. If the measurement is outside the specified limits, there is a possibility of shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

Short-circuit at follows point of VL-PS241. And measure it.



Resistance = more than 10MΩ (at DC 500 V)

2.3. Discarding of P.C. Board

When discarding P. C. Board, delete all personal information such as recorded images or scrap P. C. Board.

2.4. Note For Repairing

1. Before carrying out repair, inform the user that there is a possibility of the user data inside the equipment becoming lost.
2. There is a possibility that the equipment to be repaired contains personal data or set data, so take adequate care.
3. When we loan you substitute equipment in order to carry out repair, please initialize the user data and setting data of the substitute equipment.

3 Specifications

Design and specifications are subject to change without notice.

3.1. Main monitor station (VL-MVN511)

Power source:	Power supply unit (VL-PS241) 24 V DC, 0.5 A
Power consumption:	Standby: Approx. 1.8 W During operation: Approx. 10 W
Dimensions (mm): **(height** x **width** x **depth)**	Approx. 186 x 161 x 23.5 (Excluding protruding sections)
Mass (Weight):	Approx. 485 g
Operating environment:	Ambient temperature: Approx. 0 °C to +40 °C Relative humidity (non-condensing): up to 90 %
Display:	Approx. 12.7 cm (5 inches wide colour display)
Talking method:	Hands-free
Installation method:	Wall mount (mounting bracket supplied)
Wireless transmission method:	IEEE 802.11 b/g/n
Encryption:	WPA/WPA2, WEP

3.2. Power supply unit (VL-PS241) (indoor use only)

Power source:	Input: 220-240 V AC, 0.2 A, 50/60 Hz Output: 24 V DC, 0.6 A
Dimensions (mm): **(height** x **width** x **depth)**	Approx. 104 x 100 x 54 (Excluding protruding sections)
Mass (Weight):	Approx. 215 g
Operating environment:	Ambient temperature: Approx. 0 °C to +40 °C Relative humidity (non-condensing): up to 90 %

3.3. Relay box (VL-RLY1)

Power source:	Power supplied by the main monitor
Dimensions (mm): **(height** x **width** x **depth)**	Approx. 92 x 78 x 38 (Excluding protruding sections)
Mass (Weight):	Approx. 130 g
Operating environment:	Ambient temperature: Approx. 0 °C to +40 °C Relative humidity (non-condensing): up to 90 %
Installation method:	Attach to DIN rail

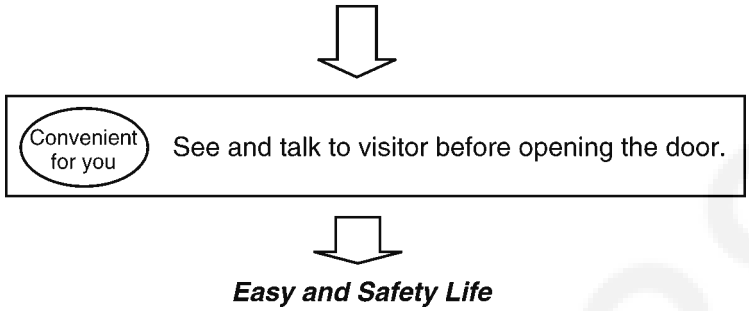
3.4. Door station (VL-V522LCE)

Power source:	Power supplied by the main monitor
Dimensions (mm): **(height** x **width** x **depth)**	Approx. 131 x 99 x 36.5 (Excluding protruding sections)
Mass (Weight):	Approx. 200 g
Operating environment:	Ambient temperature: Approx. -15 °C to +55 °C Relative humidity (non-condensing): up to 90 %
Viewing angle:	Horizontally: approx. 87° Vertically: approx. 66°
Installation method:	Wall mount (mounting base supplied)
Minimum illuminance required:	1 lx (within approx. 50 cm from the camera lens)
Lighting method:	LED lights

4 Technical Descriptions

4.1. What is a Video Intercom?

- easy contact with a visitor, you don't need to go to a entrance.
- easy confirm a visitor who is suspicious person or not in advance.
- more convenient ; door checking (monitoring), door unlocking,



4.2. Video Intercom

4.2.1. Block Diagram

Here is the block diagram of Video intercom system in Fig 1.1.
The image data is converted into NTSC signal by Camera Unit. The NTSC signal is modulated into FM, then transferred to the Monitor station through the interphone cable. Meanwhile the received FM signal is demodulated into the NTSC in the Monitor station. The signal is converted into Y/C signal in LCD controller so that the image is displayed on LCD.

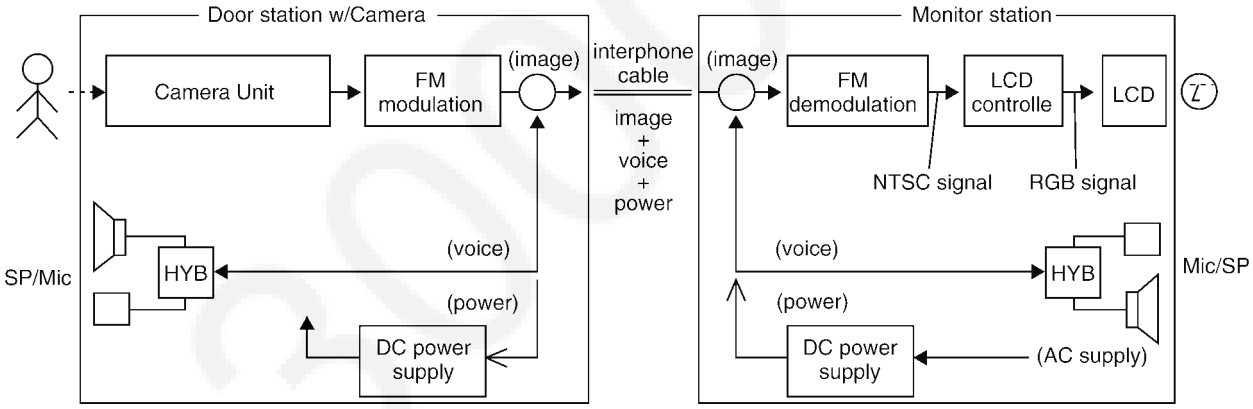


Fig. 1.1 Video intercom system block diagram

Next the voice route between the visitor and the responder is as follows:
the voice signal from the microphone of Door station is sent through a hybrid circuit and interphone cable to the speaker of Monitor station. While the responder's voice from the microphone of Monitor station reaches the speaker of the Door station through the reverse route.

The Monitor station provides the Door station with DC power supply through the interphone cable. It means that the image signal, voice data and power are all sent through the interphone cable.

4.2.2. Cmos Image Sensor Unit Block

Cmos image sensor unit and DSP blocks are shown in Fig. 1.2. Basically the image through the lens is converted into the electric signal by the optical filter and cmos image sensor. Then it is transferred to the DSP block.

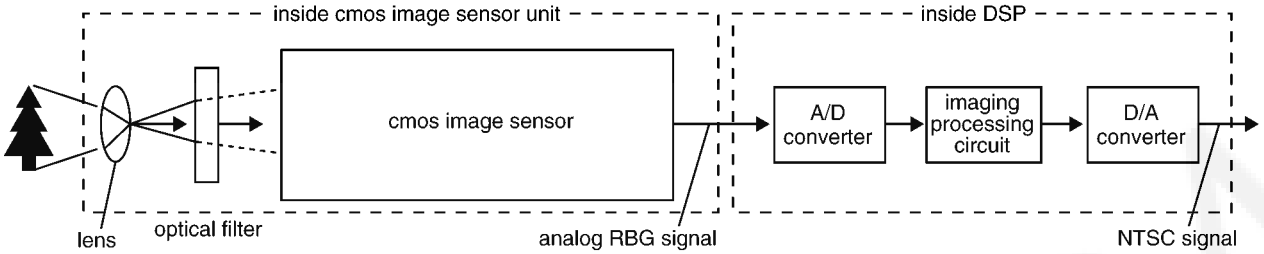


Fig. 1.2 CCD & DSP block

4.2.3. DSP (Digital Signal Processor) Block

In the DSP block the analog RGB signal is converted into the digital data, and the image is processed for NTSC.
After that it is converted into the analog signal again to become NTSC signal.

4.2.4. FM Modulation Block

There are two ways of transferring image, one is FM and the other is AM. FM is chosen in this model because it is hardly influenced by the ambience noise. The anti-noise performance is an essential point because the interphone cable can be placed anywhere in house.

4.2.5. FM Demodulation Block

The FM signal from the interphone cable is demodulated into the NTSC signal in the Monitor station.

4.2.6. LCD Controller and Color LCD Module

Since the demodulated signal is NTSC, it's necessary to be converted to the Y/C signal for LCD module.
Block diagrams of LCD controller and LCD module are shown in Fig. 1.6.

NTSC signal per line is separated into Y (Luminance, Brightness) signal and C (Chroma) signal in Y/C separation circuit.
Y/C signal for X-driver is produced by being added some compensations (Gamma, Brightness, Contrast and so on) in Y/C interface circuit.
Also timing controller makes the horizontally and vertically synchronized signals for X-Y driver of LCD module.
These signals drive each LCD's cells of a screen and then the image of a screen is displayed on the LCD.
LCD requires backlight because LCD itself does not light up.

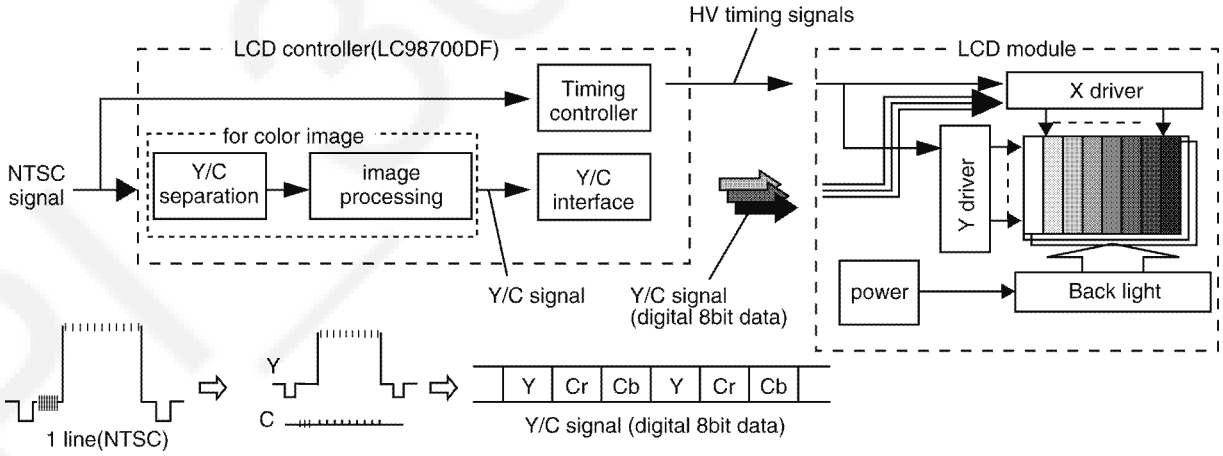


Fig. 1.6 Color LCD module & LCD controller

4.2.7. Voice

The voice from the microphone of Door station is amplified and sent to the Monitor station through 2-4 wire conversion circuit, DC blocking capacitor, transformer and interphone cable.
The visitor's voice is passed through the separation transformer, DC blocking capacitor, 2-4 wire conversion circuit and amplifier, and the voice can be heard through the speaker of the Monitor station.
While the responder's voice from Monitor station's microphone is sent to the speaker of the Door station in reverse order.
Not only voice path but image data path and power supply are also shown in Fig. 1.7.

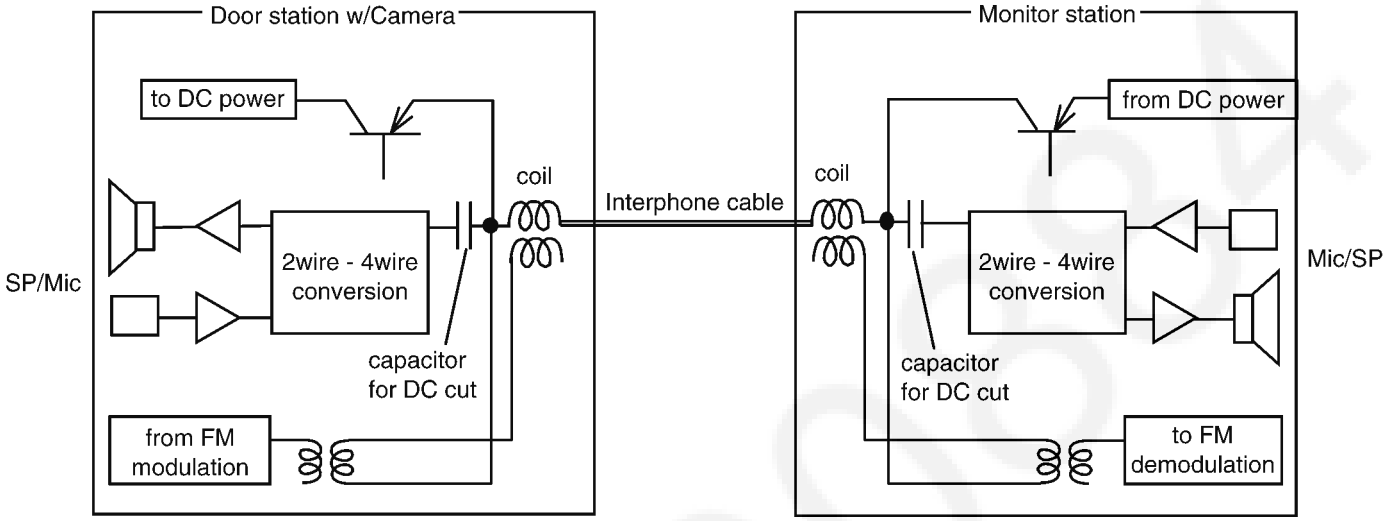


Fig. 1.7 Power supply & Voice, Image data

As you can see a figure the voice is overlapped power supply.

4.2.8. Call Signal

When the call button is pressed in Stand-by mode, the short between lines causes the DC voltage of the interphone cable to go down. The monitor station detects this voltage reduction and then rings the bell. Then LCD of the Monitor station is turned ON.
If the visitor presses the call button again, it may prevent the image from appearing on LCD because above-mentioned detection system reduces DC power supply of Door station.
Therefore after the 2nd calling the information will be added to the FM signal of image. This is called "drop out". The information of "drop out" is added on the other part of image data. Monitor station rings the second bell by detecting "drop out".

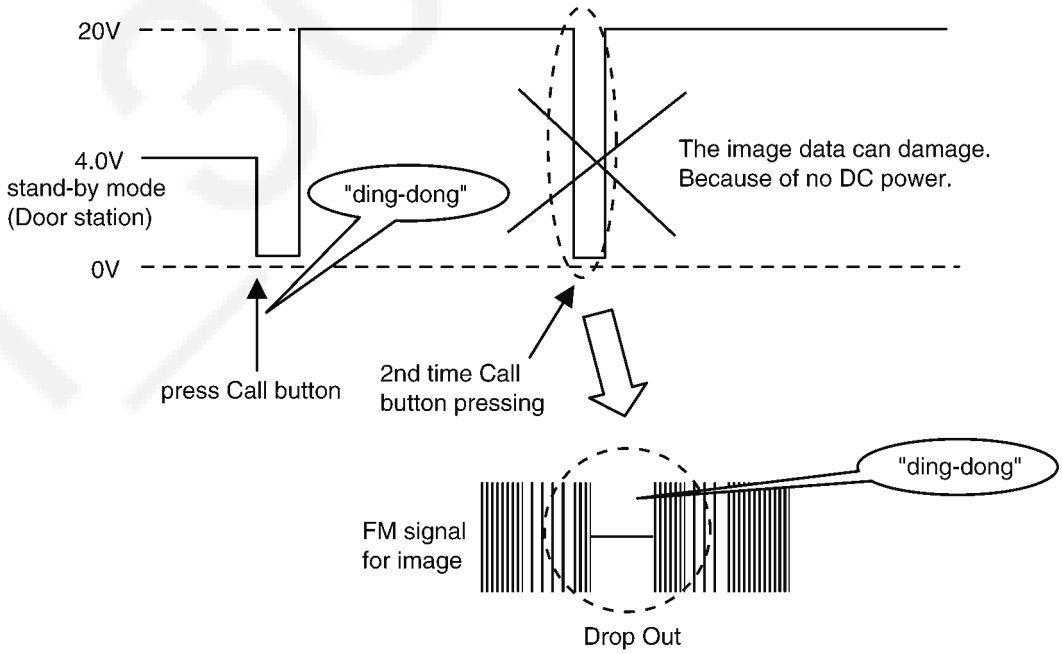
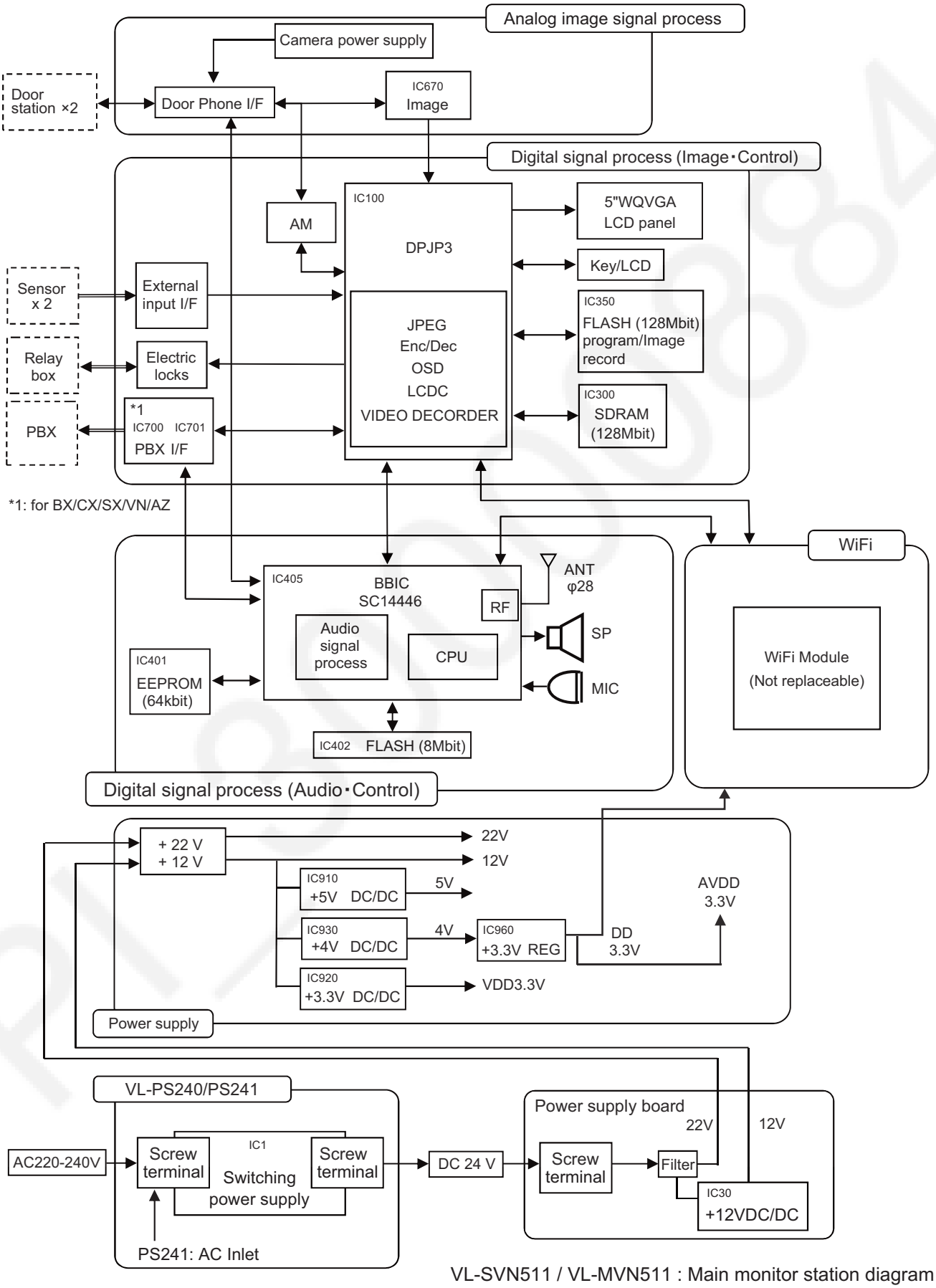


Fig. 1.8 Call signal from Door station

4.3. IC Operation

4.3.1. Monitor Station Section

4.3.1.1. Main Monitor station Diagram



VL-SVN511 / VL-MVN511 : Main monitor station diagram

4.3.1.2. Power Supply Unit (VL-PS241)

Power control IC (IC1)

Input voltage: AC 220V~240V
Output voltage: DC 24V
Package: 7pin DIP
Outline of Operation: It generate from AC 220V~240V to DC 24V.

4.3.1.3. Power Board (VL-MVN511)

Regulator for Power 12V (IC30)

Input voltage: +24V
Output voltage: +12V
Package: 6pin SOT-23-6W
Outline of Operation: It generate from +24V to +12V.

4.3.1.4. Main Board

4.3.1.4.1. External Interface Part

Regulator for Power 5V (IC910)

Input voltage: +12V
Output voltage: +5V
Package: 8pin SOP-8
Outline of Operation: It generate from +12V to +5V.

Regulator for BBIC & SP AMP 4V (IC930)

Input voltage: +12V
Output voltage: +4V
Package: 8pin SOP-8
Outline of Operation: It generate from +12V to +4V.

Regulator for WiFi 3.3V (IC960)

Input voltage: +4V
Output voltage: +3.3V
Package: 6pin SOT89-5
Outline of Operation: It generate from +4V to +3.3V.

Regulator for 3.3V (IC920)

Input voltage: +12V
Output voltage: +3.3V
Package: 8pin SOP-8
Outline of Operation: It generate from +12V to +3.3V.

FM Demodulation (IC670)

Operating Power Supply: +5V
Package: 24pin SOP
Outline of Operation: The video signal (FM) from the Door Station is demodulated.

Regulator for 5V (IC671)

Input voltage: +12V
Output voltage: +5V
Package: 5pin SOT-25A
Outline of Operation: It generate from +12V to +5V (FM Demodulation).

OP AMP for Door station (IC500)

Operating Power Supply: +12V
Package: 8pin SSOP-8
Outline of Operation: The sound signal (send & receive) are converted to 2 line from 4 line.

PBX OFF-HOOK detection photo coupler (IC700)

Operating Power Supply: +3.3V
Package: 4pin
Outline of Operation: The off hook signal detected.

OP AMP for PBX 2/4 conversion (IC701)

Operating Power Supply: +12V
Package: 8pin SSOP-8
Outline of Operation: The sound signal (send & receive) are converted to 2 line from 4 line.

4.3.1.4.2. Audio Part

Sub CPU (IC405)

Operating Power Supply: +3.3V
Operating Power Supply: +4V (SP AMP)
Operating Power Supply: +3.2V (RF)
Operating Power Supply: +1.8V (Core)
Package: 206pin
Package Size: 8.93 x 8.93 mm
Outline of Operation: Baseband signal processing/Sound signal processing/Part of RF and voice control.
System clock frequency: 10.368MHz (X401)

8M FROM (IC402)

Operating Power Supply: +1.8V
Package: 8pin SOIC
Memory capacity: 8Mbit
Outline of Operation: Storing the program of IC405.

EEPROM(IC401)

Operating Power Supply: +3.3V
Package: SOP-J8
Memory capacity: 64kbit
Outline of Operation: Storing the parameter of IC405.

4.3.1.4.3. Video/Timer/LCDIF/TSP Part

OP AMP for LCD_BL Circuit (IC970)

Operating Power Supply : +3.3V
Package: 8pin SSOP-8
Outline of Operation: Control of LCD_BL current.

Timer (IC390)

Operating Power Supply : +3V
Package: 8pin SNT-8A
Outline of Operation: timer of IC1000.
System clock frequency: 32.768KHz (X790).

4.3.1.4.4. DPJP3 Part

DPJP3 (IC100)

Operating Power Supply : +1.2V +3.3V
Package: 216pin LQFP216
Package: 26 x 26 mm
Outline of Operation: Video signal processing/Part of LCD and the other control.
System clock frequency: 27MHz

SDRAM(IC300)

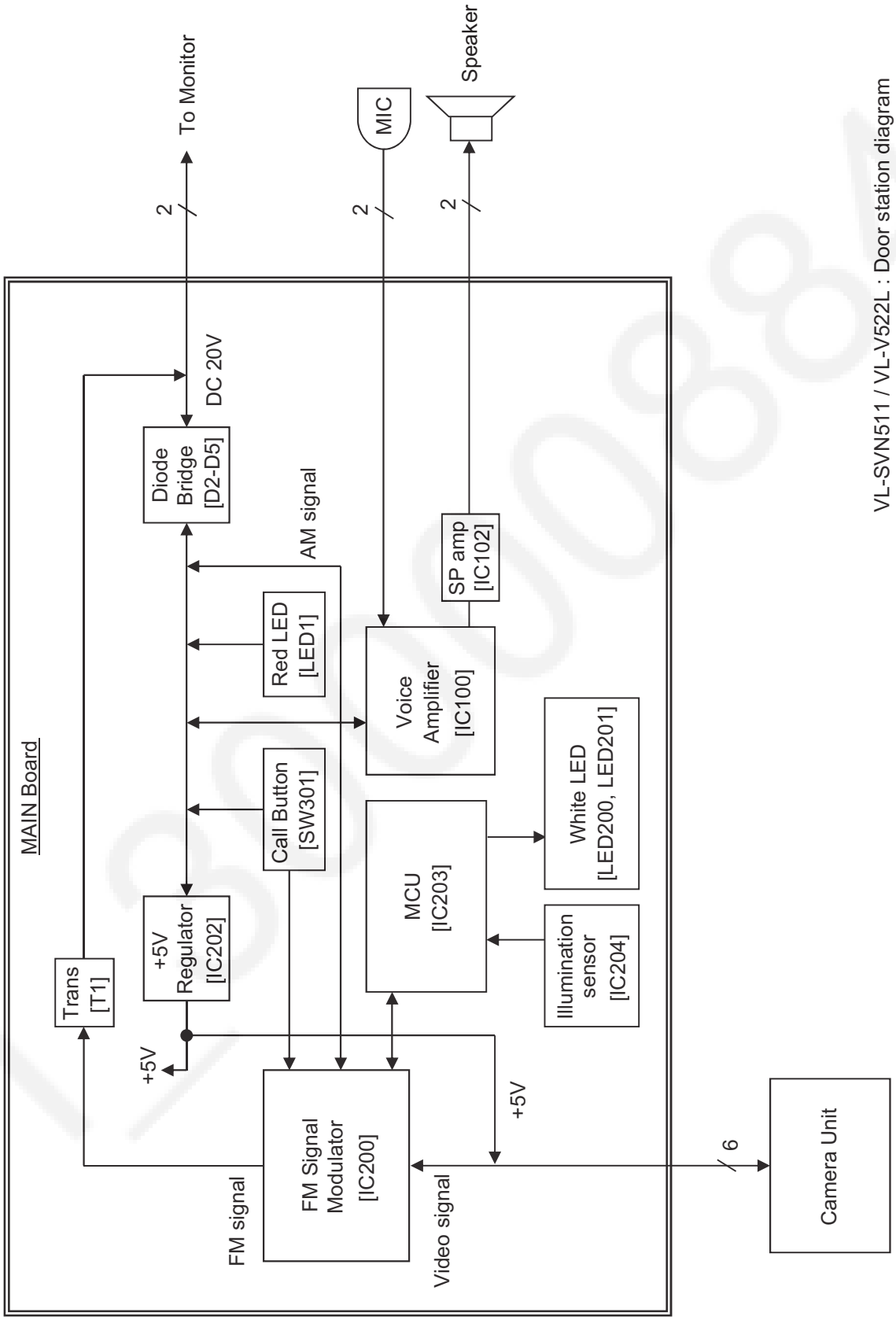
Operating Power Supply: +1.2V +3.3V
Package: 54pin TSPO Ⅱ
Memory capacity: 128Mbit
Outline of Operation: Work area of IC100.

FLASH MEMORY(IC350)

Operating Power Supply: +3.3V
Package: 8pin SOIC
Memory capacity: 128Mbit
Outline of Operation: Storing the program of IC100.

4.3.2. Door Station Section

4.3.2.1. Door station Diagram



VL-SVN511 / VL-V522L : Door station diagram

4.3.2.2. Main Board

Call Button (SW301)

Outline of Operation : When a visitor presses the Call Button, a chime tone will ring at the monitor station.

FM Signal Modulator (IC200)

Operating Power Supply : +5V (+5V : 2, 9pin)
Package : 24pin SOP
Outline of Operation : The frequency modulation of the video signal taken in from Camera Unit is carried out.

+5V Regulator (IC202)

Input Voltage : +20V
Output Voltage : +5V
Package : SOT-23-6W
Outline of Operation : It generate from +20V to +5V.

Voice Amplifier (IC100)

Operating Power Supply : +5V
Package : 8pin SSOP8
Outline of Operation : The voice signal from the Microphone is amplified and sent to the Monitor Station.
The voice signal from the Monitor Station is amplified and sent to the SP amp (IC102).

Speaker Amplifier (IC102)

Operating Power Supply : +5V
Package : VSP-8pin
Outline of Operation : The voice signal from the Voice amp (IC100) is amplified and sent to the Speaker.

MCU (IC203)

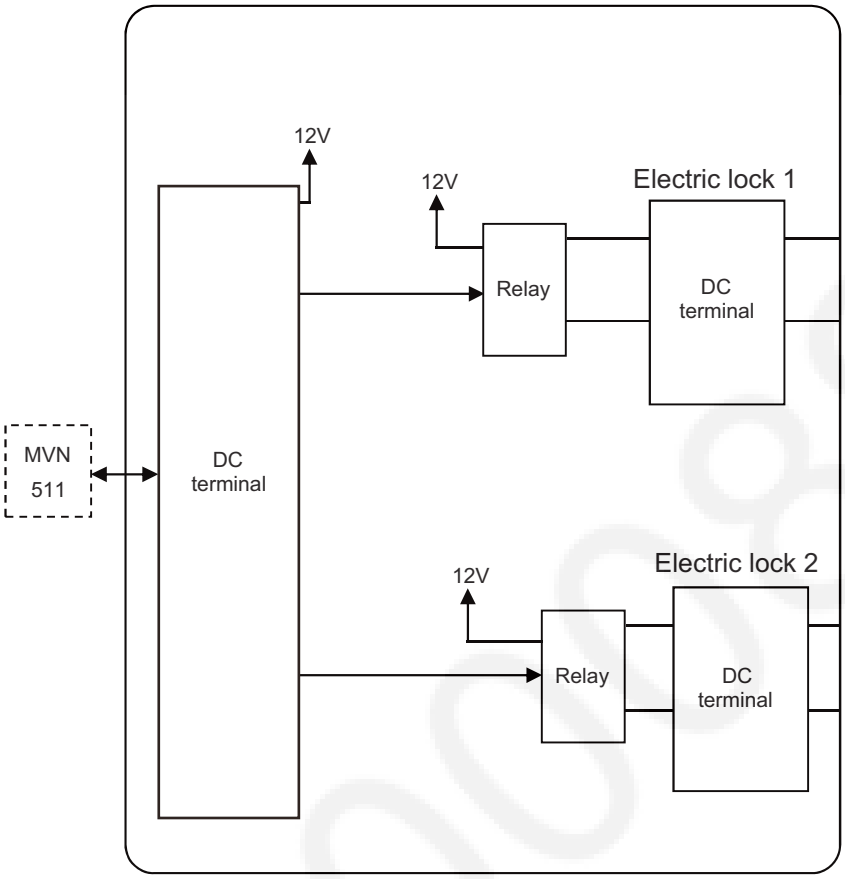
Operating Power Supply : +5V
Package : 32pin QFP
Outline of Operation : It communicates with the Monitor Station by AM signal through IC200.
It controls of the camera, the electric lock, and the lighting, by the operation from the Monitor Station.
Control (zoom processing, backlighting compensation) of a camera is carried out by I2C communication.
At night, MCU turns on LED200 and LED201 automatically based on the information from IC204.

Illumination sensor (IC204)

Operating Power Supply: +5V
Package: 4pin COB
Outline of Operation: The surrounding brightness is detected and the level is outputted to MCU.

4.3.3. Relay box Section

4.3.3.1. Relay box Diagram



VL-SVN511 / VL-RLY1 : Relay box diagram

5 Location of Controls and Components

Refer to the Operating Instructions.

Note:

You can download and refer to the Operating Instructions (Instruction book) on TSN Server.

6 Installation Instructions

Refer to the Operating Instructions.

Note:

You can download and refer to the Installation Guide on TSN Server.

7 Operating Instructions

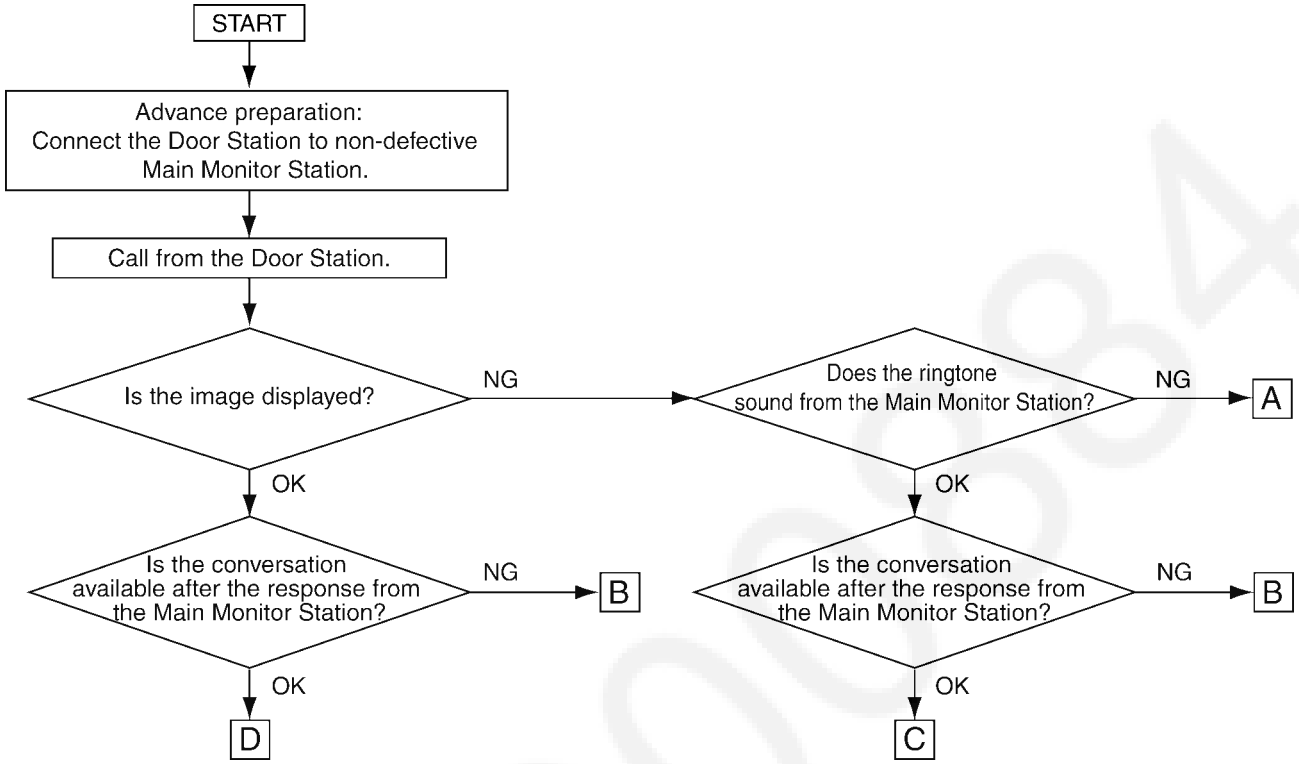
Refer to the Operating Instructions.

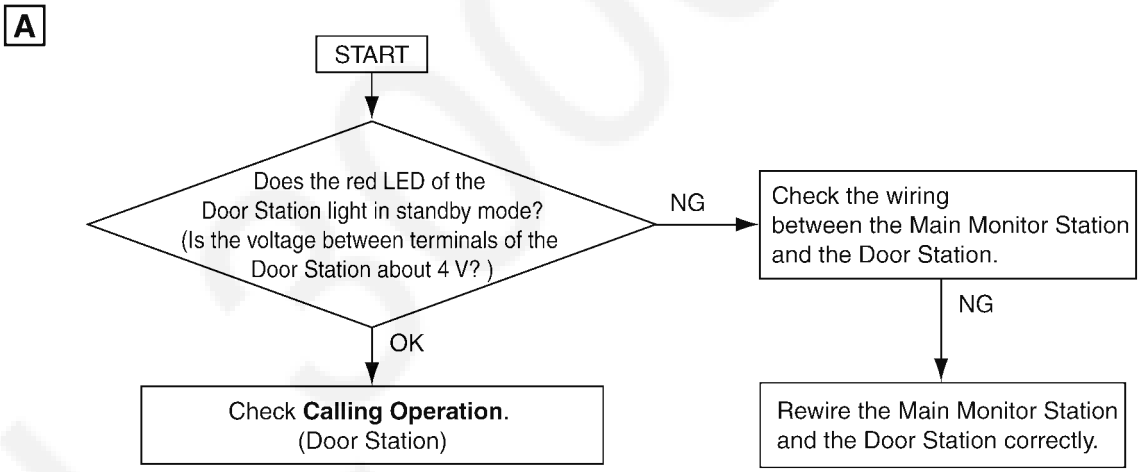
Note:

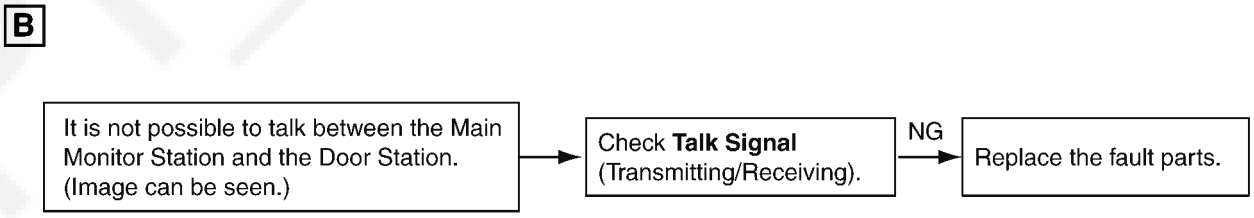
You can download and refer to the Operating Instructions (Instruction book) on TSN Server.

8 Troubleshooting Guide

8.1. Operation Check of the Door Station





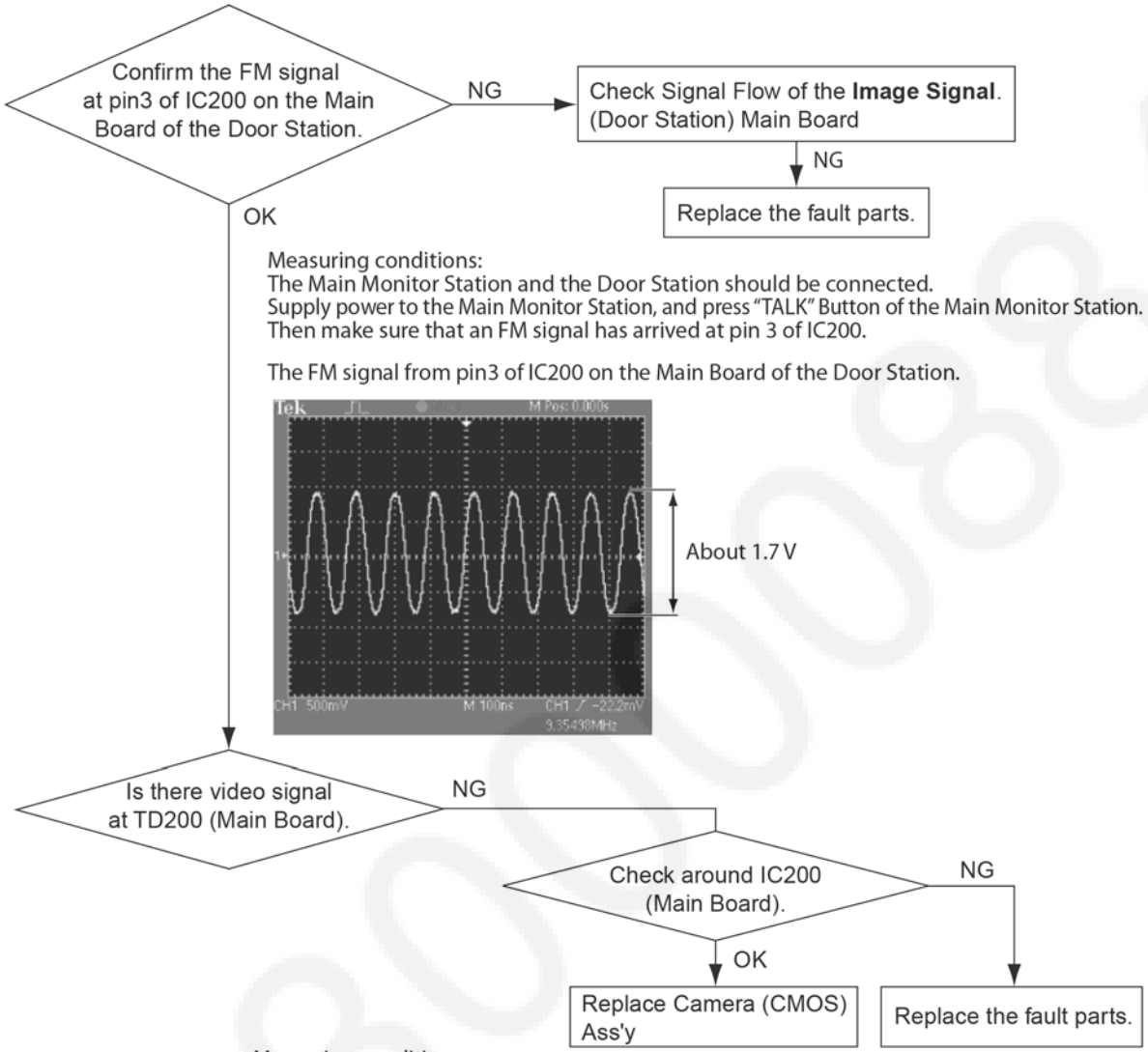


Reference:

- Refer to **Calling Operation** in **Signal Route** (P.32).
- Refer to **Talk Signal** in **Signal Route** (P.32).

C

No image can be seen by the call from the Door Station.
(The ringer tone and the talking are OK.)

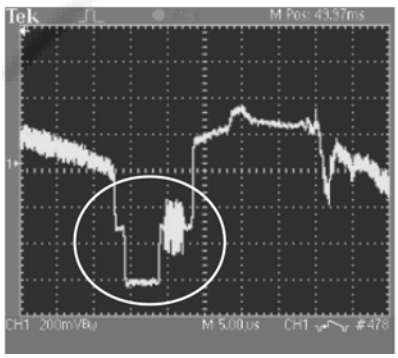


Measuring conditions:
The Main Monitor Station and the Door Station should be connected.
Supply power to the Main Monitor Station, and press "TALK" Button of the Main Monitor Station.
Then make sure that an FM signal has arrived at pin 3 of IC200.

The FM signal from pin3 of IC200 on the Main Board of the Door Station.

Measuring conditions:
The Main Monitor Station and the Door Station should be connected.
Supply AC Power to the Main Monitor Station, and press "TALK" Button of the Main Monitor Station.
Then make sure that a signal has arrived at TD200.
* The signal level and waveform can be changed significantly depending on the subject.
It is OK when the same signal in the circle is confirmed (No concern with the level.).

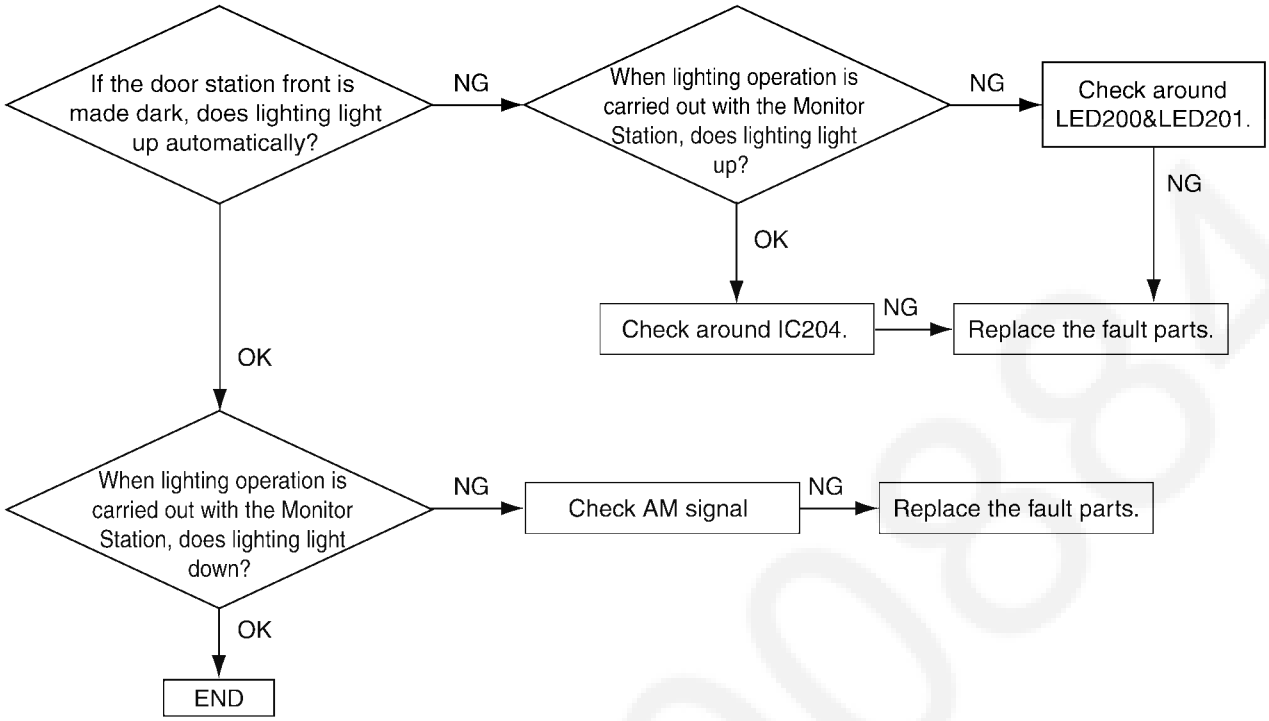
The image signal (TD200) from the Camera unit of the Door Station.



Reference:

- Refer to **Image Signal** in **Signal Route** (P.32).

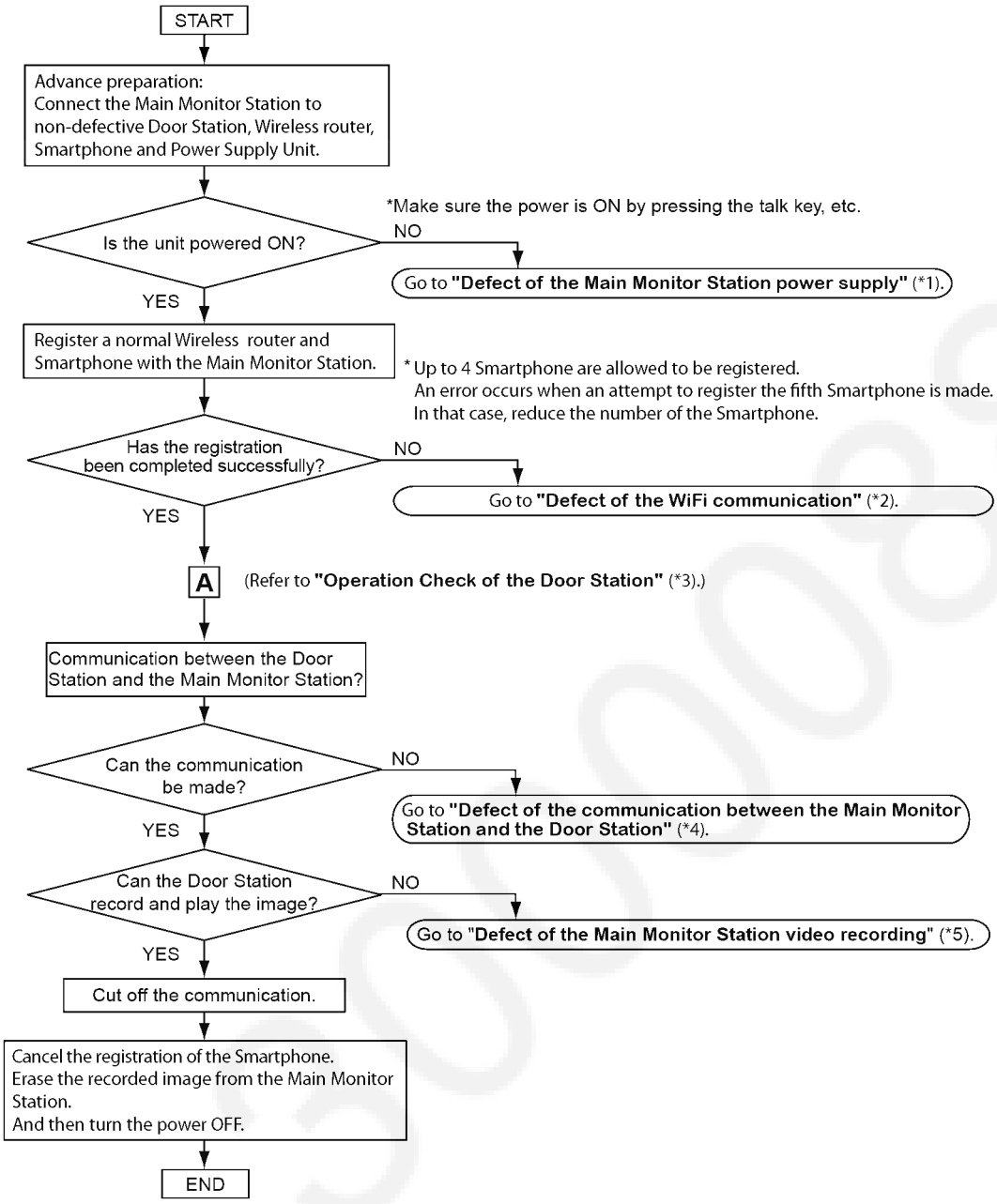
D



Reference:

- Refer to **AM Signal** in **Signal Route** (P.32).

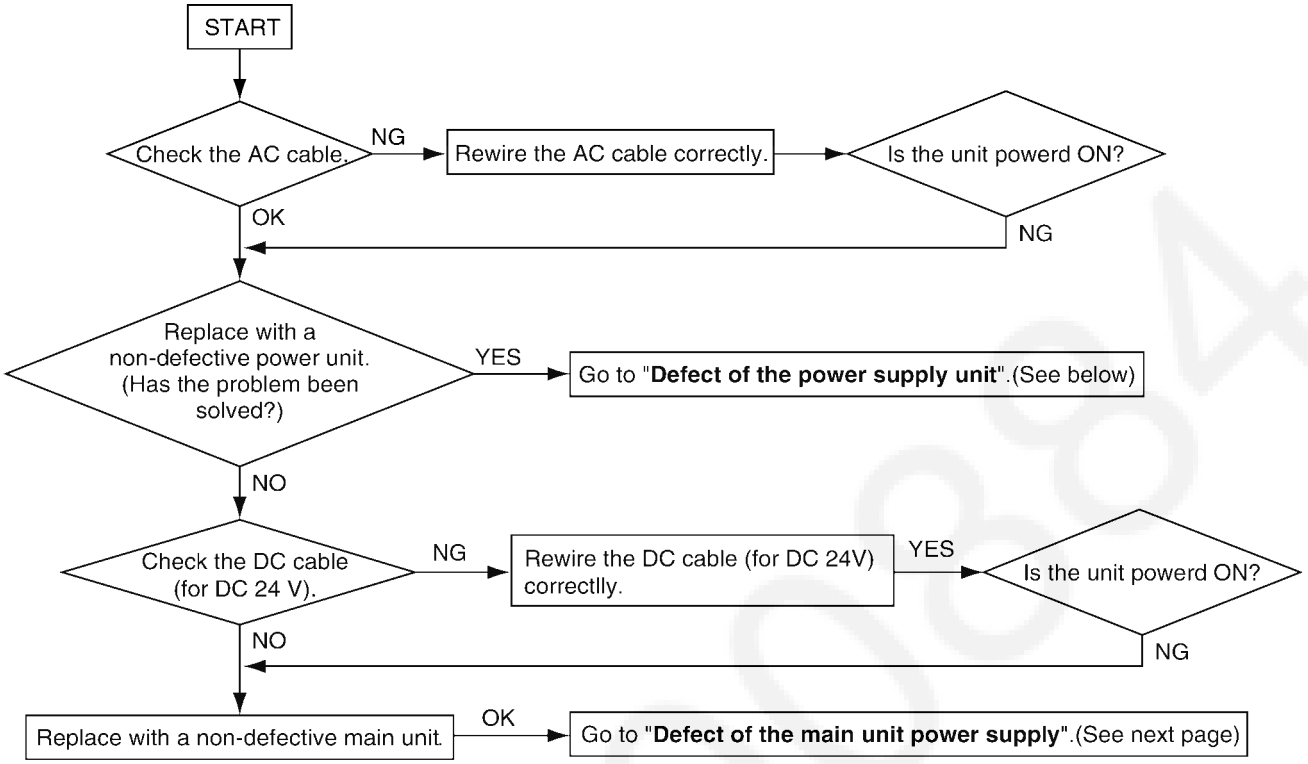
8.2. Operation Check of the Main Monitor Station

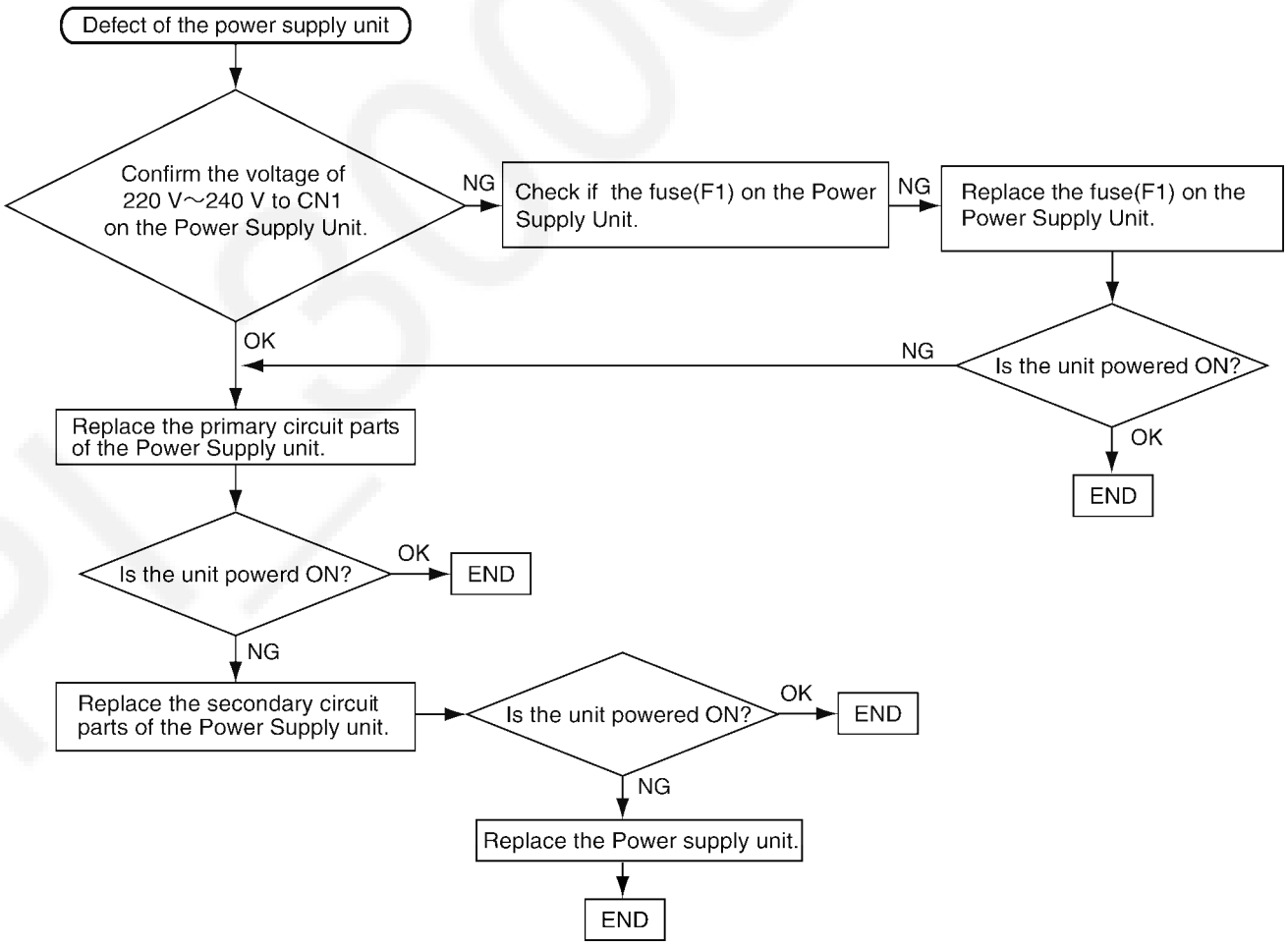


Reference:

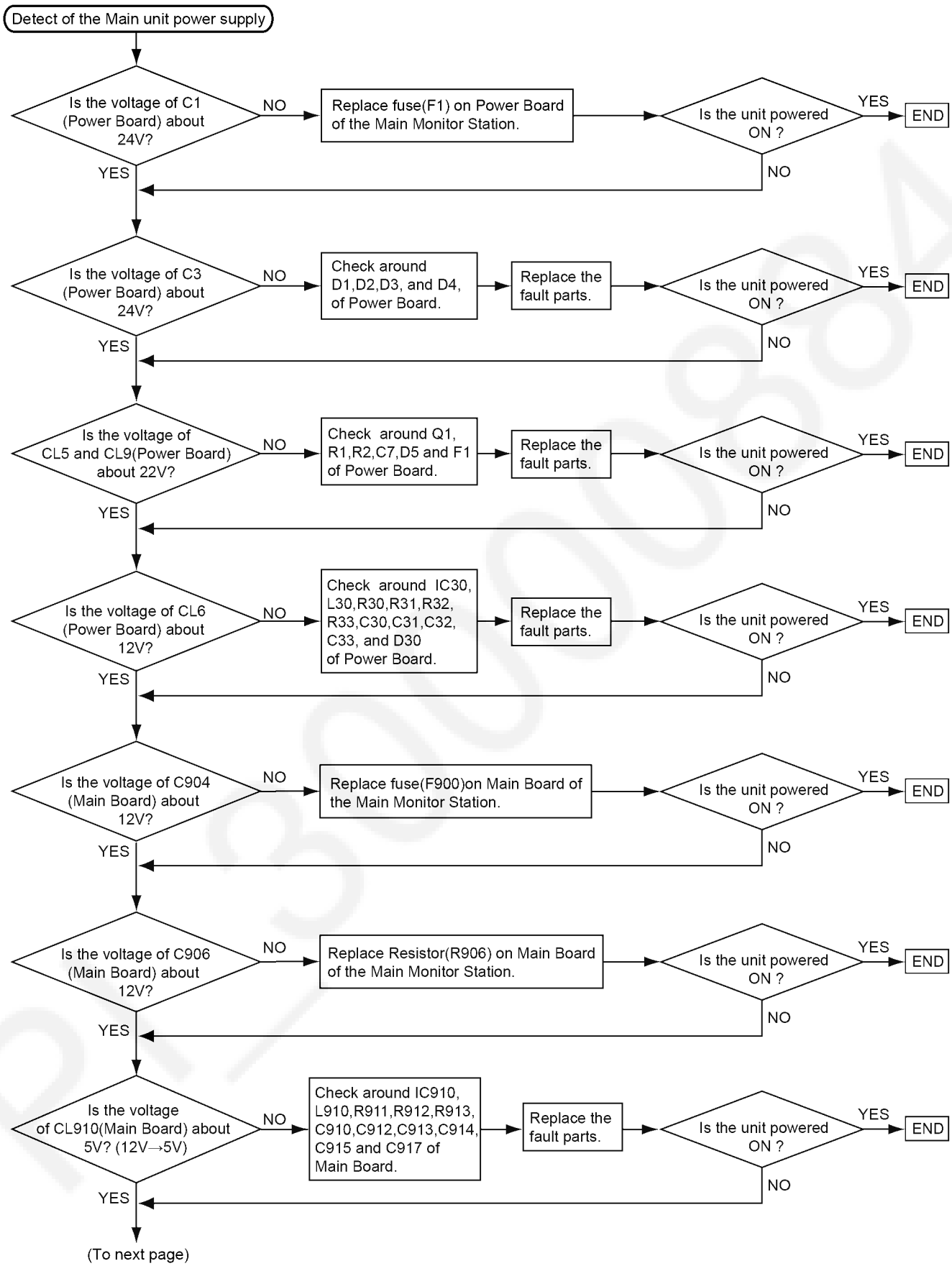
(*1) **Defect of the Main Monitor Station Power Supply**(P.23).
(*2) **Defect of the WiFi Communication** (P.26).
(*3) **Operation Check of the Door Station**(P.19).
(*4) **Defect of the Communication between the Main Monitor Station and the Door Station**(P.28).
(*5) **Defect of the Main Monitor Station Video Recording**(P.27).

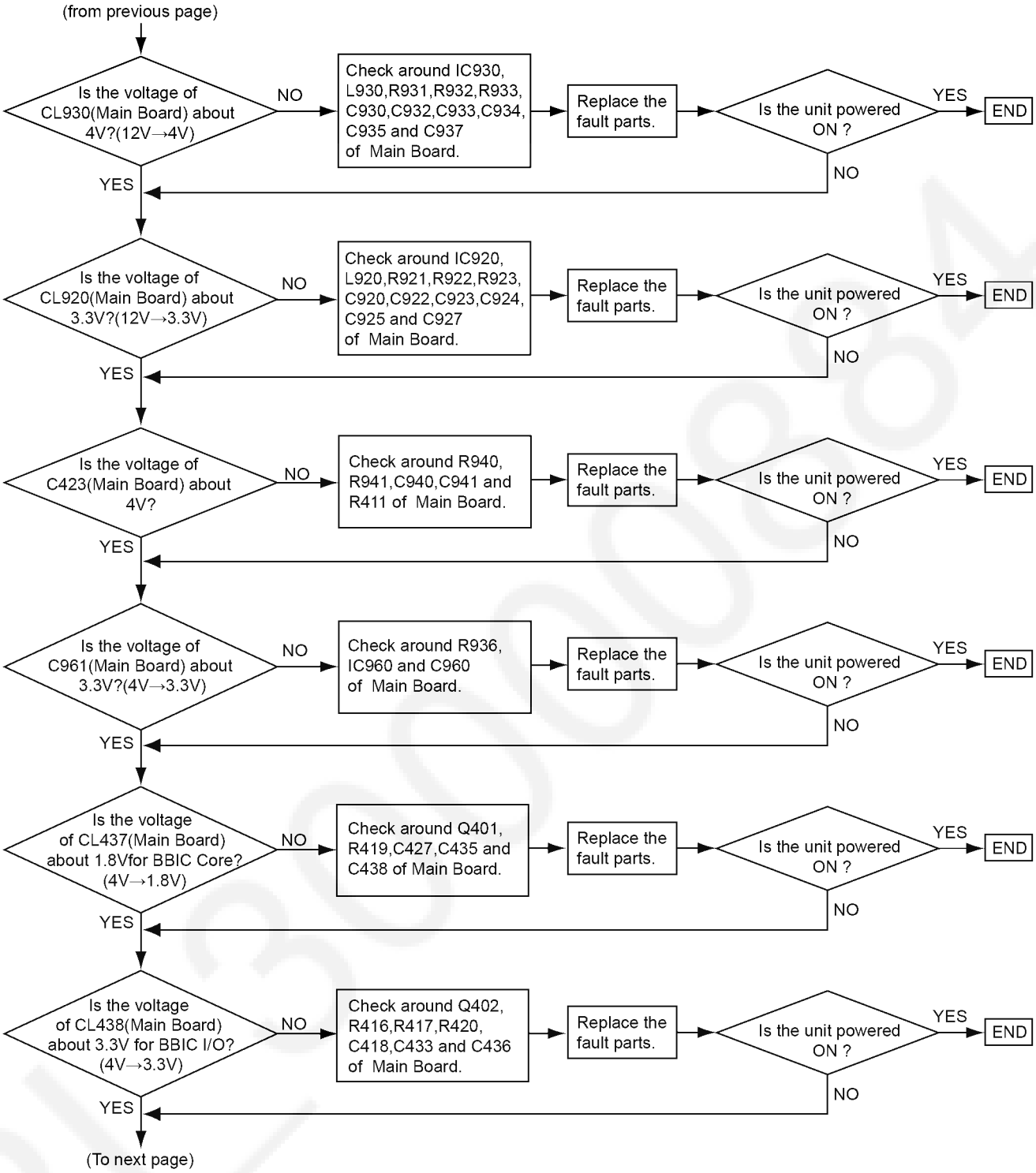
8.2.1. Defect of the Main Monitor Station Power Supply

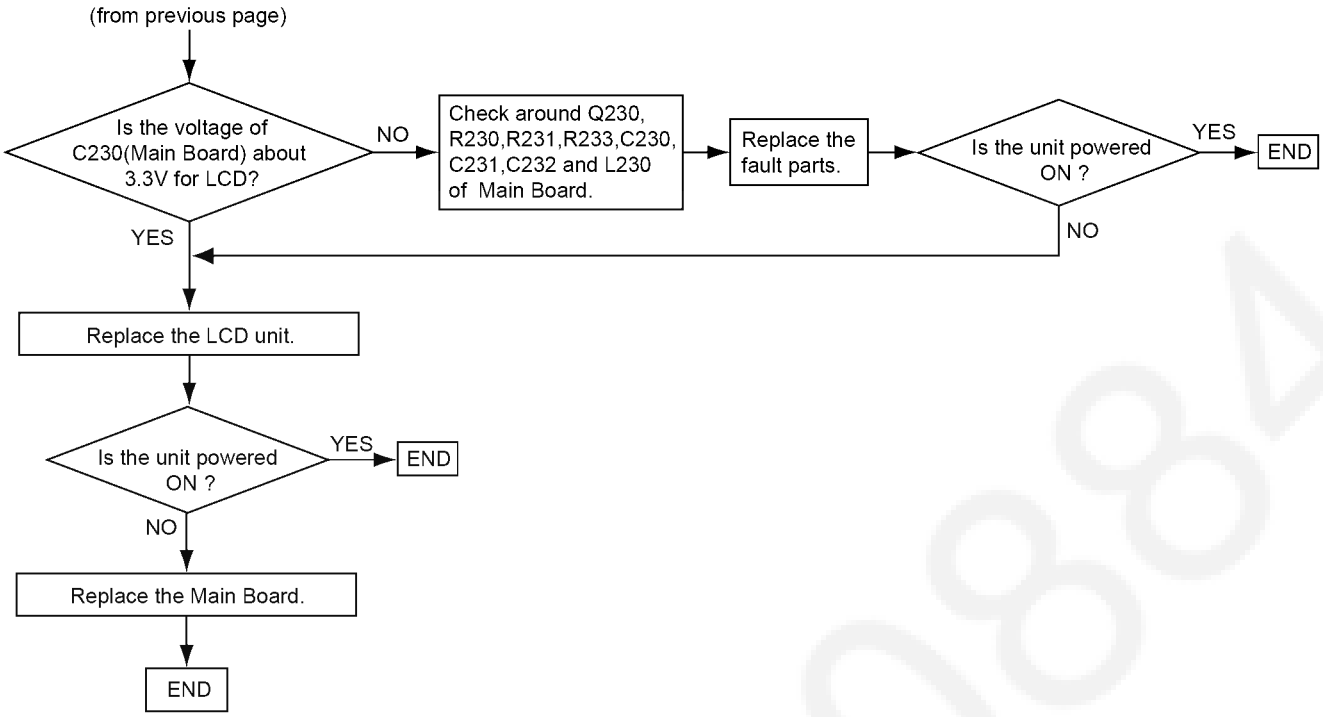




[Defect of the Main unit power supply]

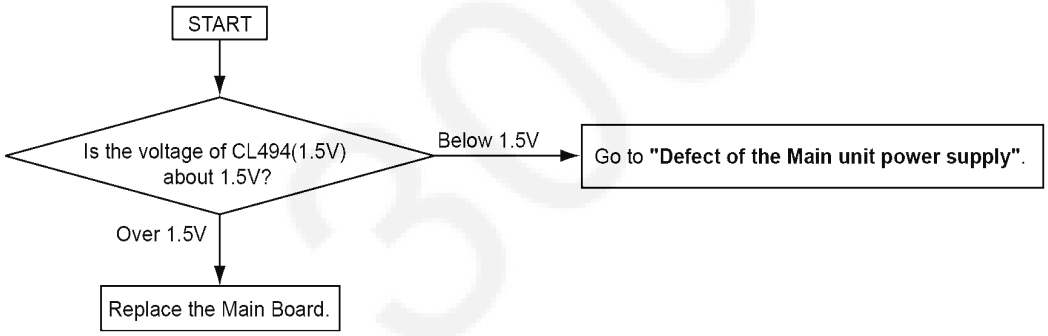



(from previous page)
Is the voltage of CL930(Main Board) about 4V?(12V→4V)
NO
Check around IC930, L930,R931,R932,R933, C930,C932,C933,C934, C935 and C937 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
Is the voltage of CL920(Main Board) about 3.3V?(12V→3.3V)
NO
Check around IC920, L920,R921,R922,R923, C920,C922,C923,C924, C925 and C927 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
Is the voltage of C423(Main Board) about 4V?
NO
Check around R940, R941,C940,C941 and R411 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
Is the voltage of C961(Main Board) about 3.3V?(4V→3.3V)
NO
Check around R936, IC960 and C960 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
Is the voltage of CL437(Main Board) about 1.8Vfor BBIC Core? (4V→1.8V)
NO
Check around Q401, R419,C427,C435 and C438 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
Is the voltage of CL438(Main Board) about 3.3V for BBIC I/O? (4V→3.3V)
NO
Check around Q402, R416,R417,R420, C418,C433 and C436 of Main Board.
Replace the fault parts.
Is the unit powered ON ?
YES
END
NO
YES
(To next page)



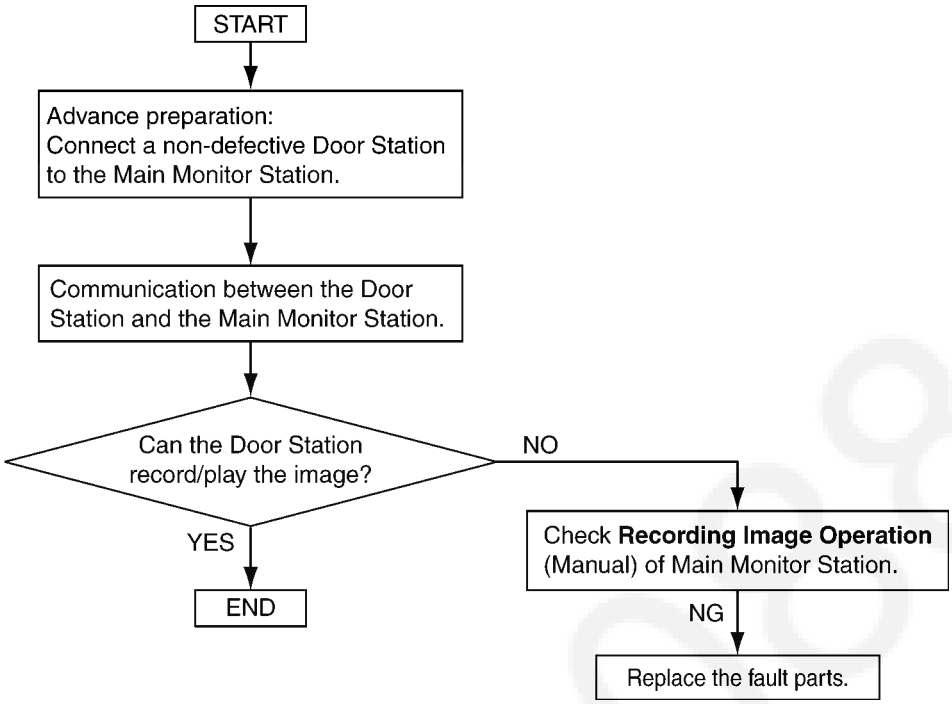
Reference:
• Refer to **LCD start up** in **Signal Route** (P.32).

8.2.2. Defect of the WiFi Communication



Reference:
• Refer to **[Defect of the Main unit power supply]** (P.24).

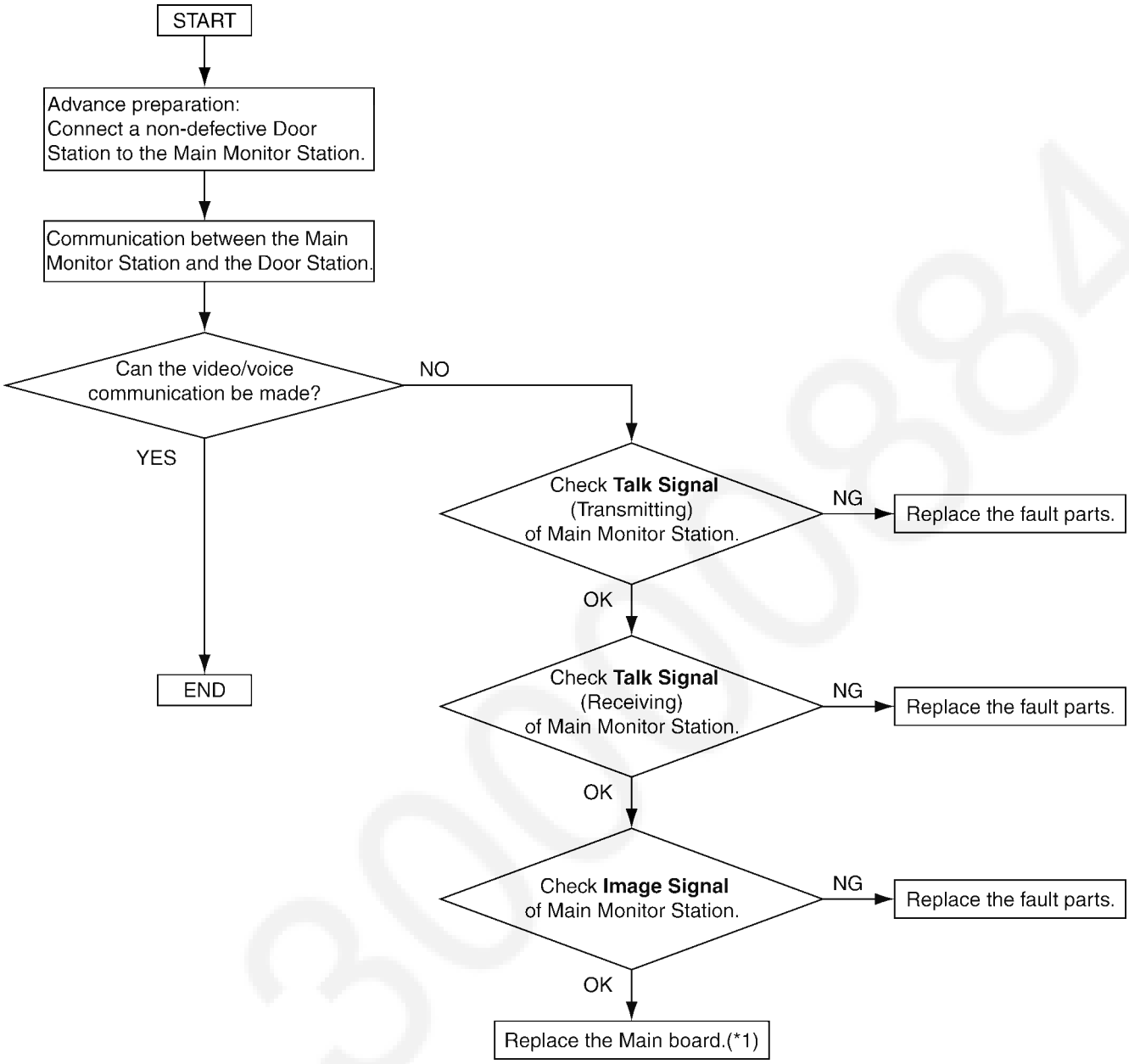
8.2.3. Defect of the Main Monitor Station Video Recording



Reference:

- Refer to **Recording Image Operation** in **Signal Route** (P.32).

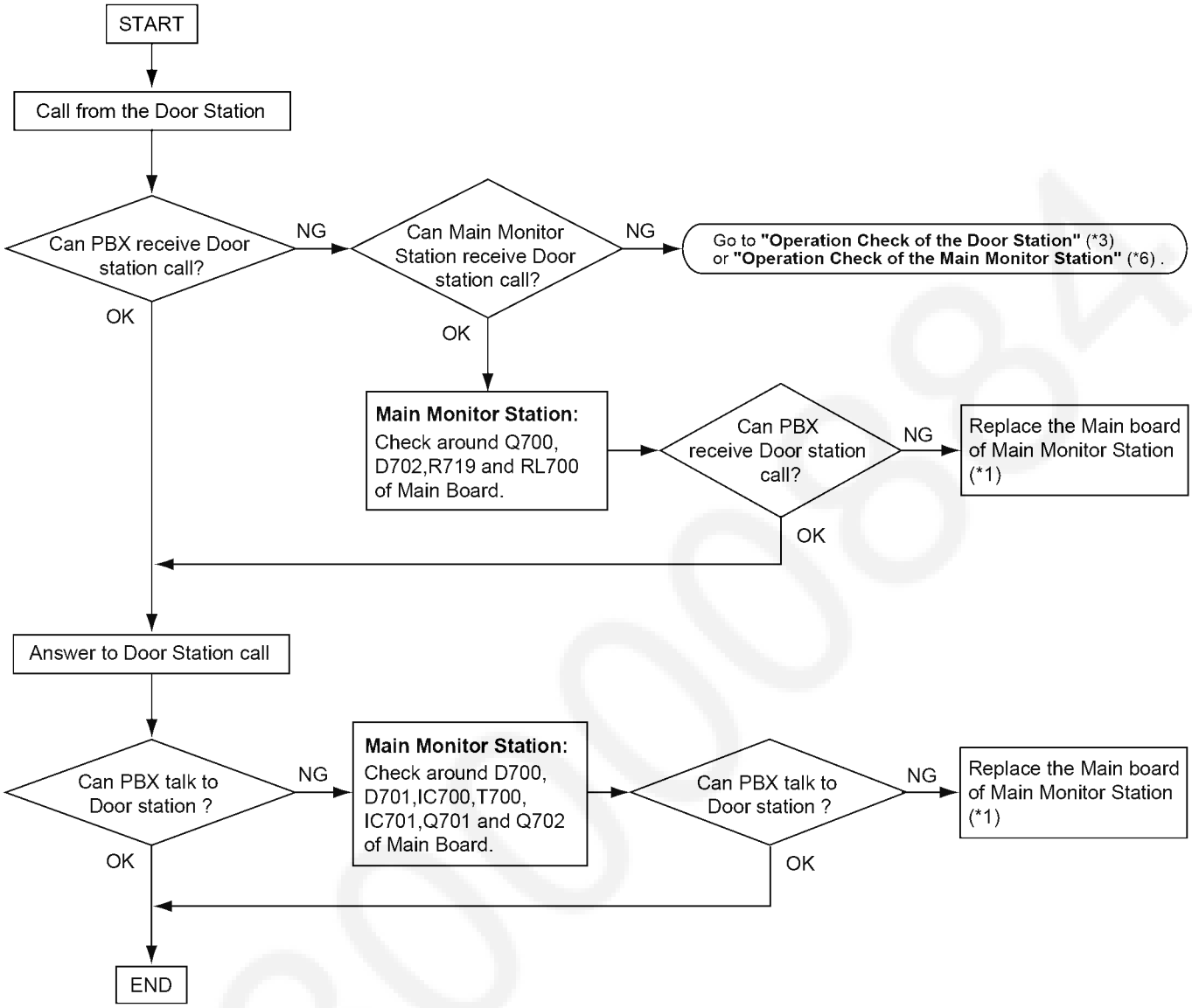
8.2.4. Defect of the Communication between the Main Monitor Station and the Door Station



Reference:

- Refer to **Talk Signal** in **Signal Route** (P.32).
- Refer to **Image Signal** in **Signal Route** (P.32).
- (*1) **How to Remove the Main Board, Mic Board, Speaker and LCD [No.3]** (P.36).

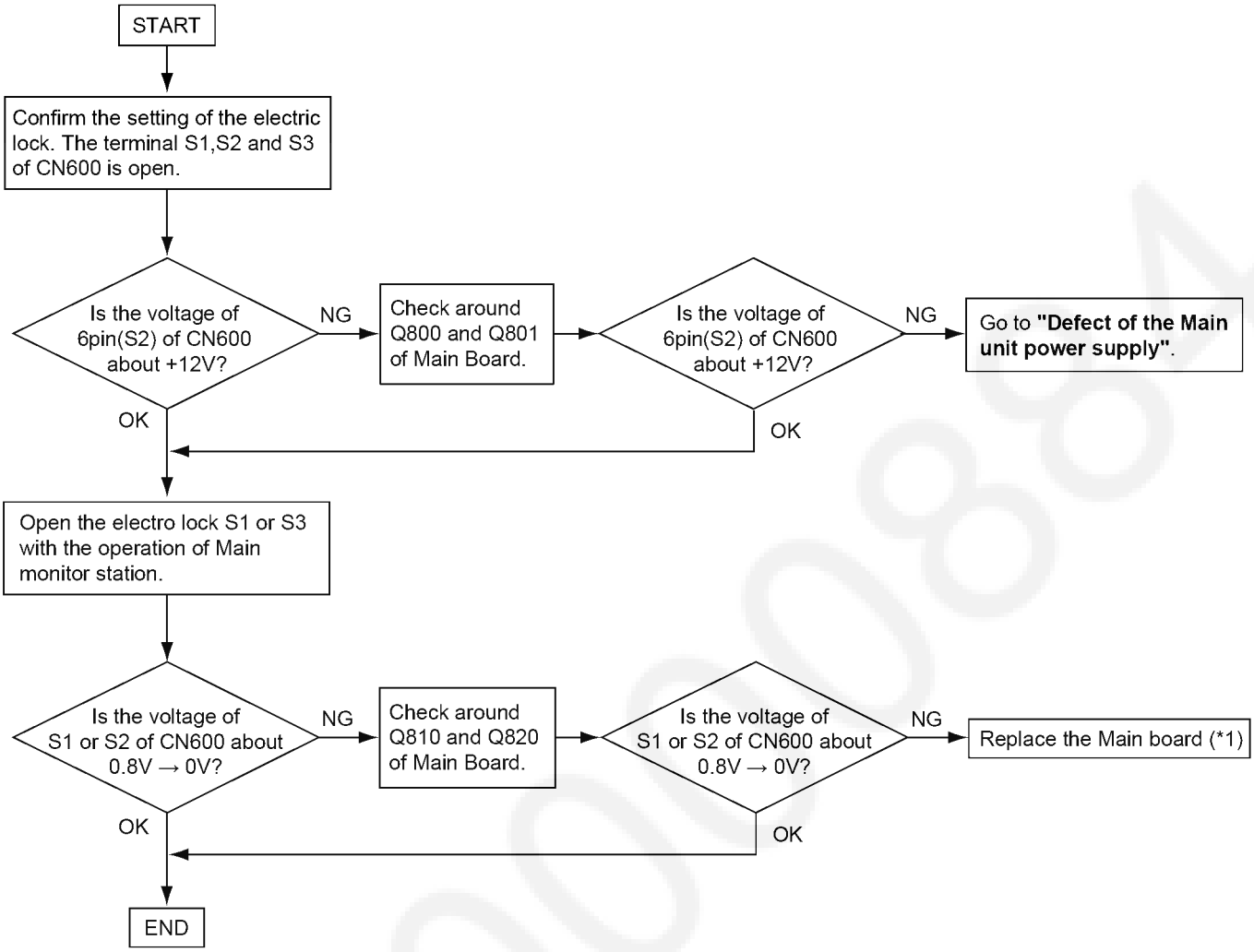
8.2.5. Defect of the Communication between the Door Station and the PBX



Reference:

- (*1) **How to Remove the Main Board, Mic Board, Speaker and LCD [No.3]** (P.36).
- (*3) **Operation Check of the Door Station** (P.19).
- (*6) **Operation Check of the Main Monitor Station** (P.22).

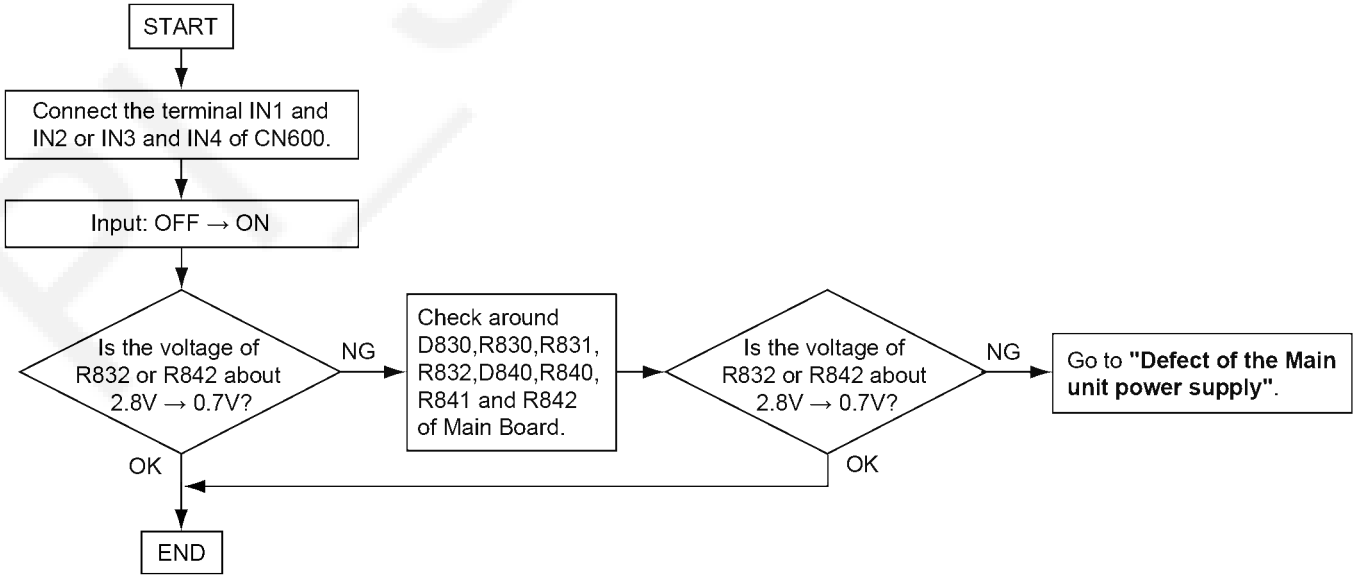
8.2.6. Defect of the operation of the electric lock



Reference:

- Refer to **[Defect of the Main unit power supply]** (P.24).
- (*1) **How to Remove the Main Board, Mic Board, Speaker and LCD [No.3]** (P.36).

8.2.7. Defect of the external input



Reference:

- Refer to **[Defect of the Main unit power supply]** (P.24).

8.3. Error Messages

Refer to Operating Instructions for the settings.

■ Main monitor station

Display	Cause & Solution
IP address is duplicated.	• The same IP address of the main monitor is used by another device. →Confirm the current IP address of the main monitor, and then reconfigure it so that is does not overlap with other IP addresses.
Network is not available Please check the connection of the wireless router	• Your wireless router is not work properly. →Confirm your wireless router is turned on.
Connection failure	• There a problem with wireless network connection. →Move closer to the wireless router and then try connecting again.
	• The setting procedure was not completed within the specified time. →Prepare all the information required for the settings, and then complete the settings within the specified time.
Cannot connect to the server Please check the settings	• The contents configured for the email server settings are not correct. →Check the configured contents and then correct them.
	• The wireless router is not connected to the Internet. →Check your wireless router and connect it to the network.
Cannot connect to the server	• The wireless router is not connected to the Internet. →Check your wireless router and connect it to the network.
Cannot register Register the email server	• “Email notification address” cannot be set when the “Email server registration” is not set. →Set “Email server registration”.
Authentication failure Check the security type and SMTP authentication settings	• The type of the security setting (“TLS”, “SSL”, or “None”) is not set correctly. →Set the setting correctly in “Security type”.
	• The SMTP authentication setting is not set correctly. →Set the setting correctly in “SMTP authentication”.
Authentication failure Verify your account name or password	• SMTP authentication setting (“Account name” or “Password”) is not set correctly. →Set the SMTP authentication setting correctly in “SMTP authentication”.
Cannot register	• The registering procedure was not completed within the specified time. →Confirm the following condition and try again. – The wireless router is turned on. – The main monitor and your mobile device are connected to your wireless router.

8.4. Signal Route

This chapter provides the testing procedures required for the P.C.B. parts. A signal route to be tested is determined depending upon purposes. The signal mainly flowing on this route is analog. You can trace the signal with an oscilloscope. The signal flow on each route is shown in the Check Sheet here. If you find a specific problem in the unit, trace that signal route locally with the following Check Sheet and locate the faulty point.

(SYMPTOM) CHECK ITEMS		Signal ROUTE IN → OUT
Calling Operation (During Standby)	Door station 1	Press the call Button (SW301) of Door station 1 SW301 → Q301 → R305 → L4 → D2, D3, D4, D5 → L2, L3 → LF1→
	Main monitor station	L610 → D610 → Q610 → R612 → IC100(Pin50) Detection of an incoming signal
Calling Operation (During Standby)	Door station 2	Press the call Button (SW301) of Door station 2 SW301 → Q301 → R305 → L4 → D2, D3, D4, D5 → L2, L3 →
	Main monitor station	L620 → D620 → Q620 → R612 → IC100(Pin51) Detection of an incoming signal
Ringer tone (Main monitor station)		Creation of the Ringer Tone :Tone generator in IC405. Ringer tone frequency output (850/680Hz): IC405 (Pin N7, N12, N8, N11) → Speaker
From the Power supply to the door station	Main monitor station	(The power +22 V is supplied from the Main monitor station to the Door station) IC100(Pin12) → Q654(ON) +22 V → Q653 → R660 → R653 → Q651 → L646 → L645 → L644 → L640 →L641 → RL640
	Door station	L2, L3 → D2, D3, D4, D5 → L4 → Q4 → Q2 → R12 → IC202(Pin2) → IC202(Pin1) → L5: +5 V is supplied. → L7→ L6: +5 VA is supplied.
LCD Start up	Main monitor station	LCD POWER ON : IC100(Pin22) → R146 → Q230 → L230 → CN200(Pin37,Pin38) ON: 3.3V is supplied
	Back light	IC100(Pin9) → R140 → Q230 → IC470(Pin2) → Q971 → (Back Light : ON) IC100(Pin3) → R145 → R970 → IC470(Pin3) → Q971 → (Back Light : ON)
Image Signal (Door station)	Camera unit	CL3 →
	MAIN PCB	C211 → IC200(Pin24) → image signal modulation (NTSC to FM signal: from 8.5 to 10MHz) → IC200(Pin3) → R7 → C3 → T1 → R4, R5 → C1, C2 → ①
Image Signal (Main monitor station)		①→ RL640 → C642, C643 → R641, R642 → T640 → C644 → IC670(Pin5) → Image signal demodulation (FM to NTSC) → IC670(Pin3) → C127 → IC100(Pin62) → (NTSC to Digital data) → ② ②→(Clock) IC100(Pin108) → R210 → L201 → CN200(Pin11) →(Image digital data) IC100(Pin76-82,84,86-89,91-98,100-103) → R200,R201,R202,R203,R204 → L202 - L225 → CN200(Pin13-36) →(data timing) IC100(Pin105) → R206 → CN200(Pin6)
Image Signal (Mobile device)		②→ IC100(Pin71-74) → IC490(Pin9-12) → IC490(Pin73) → C490 → TX_ANT ← IC490(Pin64) ← C491 ← RX_ANT

(SYMPTOM) CHECK ITEMS		Signal IN → ROUTE → OUT
Calling Operation While receiving an incoming call	Door station	SW301 → IC200(Pin18) → Overlapping the dropout signal on the FM signal → IC200(Pin3) → R7 → C3 → T1 → R4, R5 → C1, C2 → LF1 →
	Main monitor station	RL640 → C642, C643 → R641, R642 → T640 → C644 → IC670(Pin5) → IC670(Pin18) → R687 → IC100(Pin44) Detection of the dropout signal
Response to an Incoming Call (Main Monitor station)		Response with the Talk button : SW170 → R170 → IC100(Pin171) Response with voice : Microphone input (Specified acoustic pressure : 74dBspl or more, Specified time : 0.5second) C576, C577 → R575 → IC100(PinJ3,H1) Detection of the Voice in DSP of IC405.
Talk Signal (Transmitting)	Main monitor station	Microphone → C576, C577 → R575 → IC405(PinH2, J3) → IC405(PinJ1) → C505 → R504 → IC500(Pin2) → IC500(Pin1) → R505 → C501, C521, C522, C523 → L644 → L640, C640 → L641 → RL640
	Door station	LF1 → L2, L3 → D2, D3, D4, D5 → L4, C4 → C101, C118 → R120 → IC100(Pin2) → IC100(Pin1) → C109 → C117 → R125 → IC102(Pin4) → IC102(Pin5) → Speaker
Talk Signal (Receiving)	Door station	Microphone → C107, C125 → R122, R135 → IC100(Pin6) → IC100(Pin7) → R111 → C101, C118 → L4, C4 → D2, D3, D4, D5 → L2, L3 → LF1
	Main monitor station	RL640 → L641 → L640, C640 → L644 → C501, C521, C522, C523 → C512 → R512 → IC500(Pin6) → IC500(Pin7) → C582 → C586 → R588 → IC405(PinL2) → IC405(PinN7, N12, N8, N11) → Speaker
Talk Signal (Transmitting)	Main monitor station	RX_ANT → IC490(Pin64) → IC490(Pin9, 10, 11, 12) → R402, R404, R406, R412 → IC405(B7, C7, A8, B8) → C505 → R504 → IC500(Pin2) → IC500(Pin1) → R505 → C501, C521, C522, C523 → L644 → L640, C640 → L641 → RL640
	Door station	LF1 → L2, L3 → D2, D3, D4, D5 → L4, C4 → C101, C118 → R120 → IC100(Pin2) → IC100(Pin1) → C109 → C117 → R125 → IC102(Pin4) → IC102(Pin5) → Speaker
Talk Signal (Receiving)	Door station	Microphone → C107, C125 → R122, R135 → IC100(Pin6) → IC100(Pin7) → R111 → C101, C118 → L4, C4 → D2, D3, D4, D5 → L2, L3 → LF1
	Main monitor station	RL640 → L641 → L640, C640 → L644 → C501, C521, C522, C523 → C512 → R512 → IC500(Pin6) → IC500(Pin7) → C582 → R581 → IC405(PinL2) → IC405(B7, C7, A8, B8) → R402, R404, R406, R412 → IC490(Pin9, 10, 11, 12) → IC490(Pin73) → TX_ANT
Monitor Operation (Main monitor station)	Main monitor station control signal	Press the main talk button SW170 → R170 → IC405(Pin171)
	Door station talk signal	Microphone → C107, C125 → R122, R135 → IC100(Pin6) → IC100(Pin7) → R111 → C101, C118 → L4, C4 → D2, D3, D4, D5 → L2, L3 → LF1
	Main monitor station talk signal	RL640 → L641 → L640, C640 → L644 → C501, C521, C522, C523 → C512 → R512 → IC500(Pin6) → IC500(Pin7) → C582 → R581 → IC405(PinL2) → IC405(PinN7, N12, N8, N11) → Speaker

(SYMPTOM) CHECK ITEMS		Signal ROUTE IN → OUT
Door Opener Operation	Main monitor station control signal	Press the main monitor button Main Monitor station: IC100(Pin209, 211) → R115 → Q810, Q820 → L818, L828 → Relaly box: RL10, RL20
Recording Image Signal (Auto)		① → RL640 → C642, C643 → R641, R642 → T640 → R645 → C644 → IC670(Pin5) → Image signal demodulation (FM to NTSC) → IC670(Pin3) → C127→ IC100(Pin62)

(SYMPTOM) CHECK ITEMS		Signal ROUTE IN → OUT
Recording Image Operation (Manual)	Main monitor station control signal	Press the main monitor F2 button(SW174) SW174 → R171 → IC100(Pin169)
	Main monitor station recording image signal	① → RL640 → C642, C643 → R641, R642 → T640 → C644 → IC670(Pin5) → Image signal demodulation (FM to NTSC) → IC670(Pin3) → C127 → IC100(Pin62)
AM Signal	Main monitor station	IC670(Pin12) → R676 → C670 → L670 → L641 → RL640
	Door station	LF1 → L2, L3 → D2, D3, D4, D5 → L200 → C217 → C210 → IC200(Pin16) → IC200(Pin13) → IC203(Pin19)

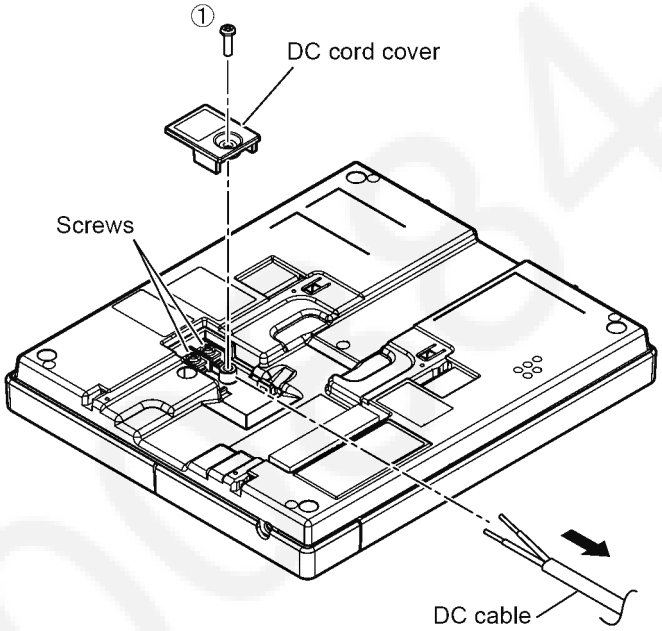
9 Disassembly and Assembly Instructions

9.1. Main Monitor Station

9.1.1. How to Remove the DC cable [No.1]

■ **Procedure No.1**

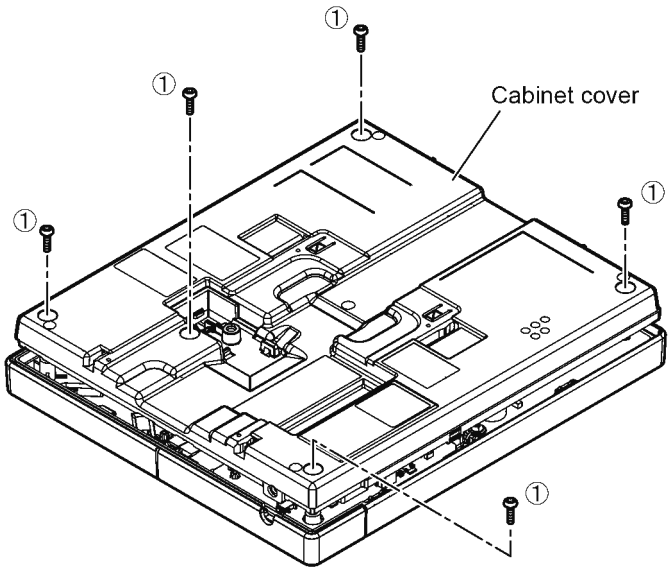
1. Remove a screw ① .
2. Remove the DC cord cover.
3. Loosen screws and pull out the wires of the DC cable from the terminal connectors.



9.1.2. How to Remove the Cabinet Cover [No.2]

■ **Procedure No.1→No.2**

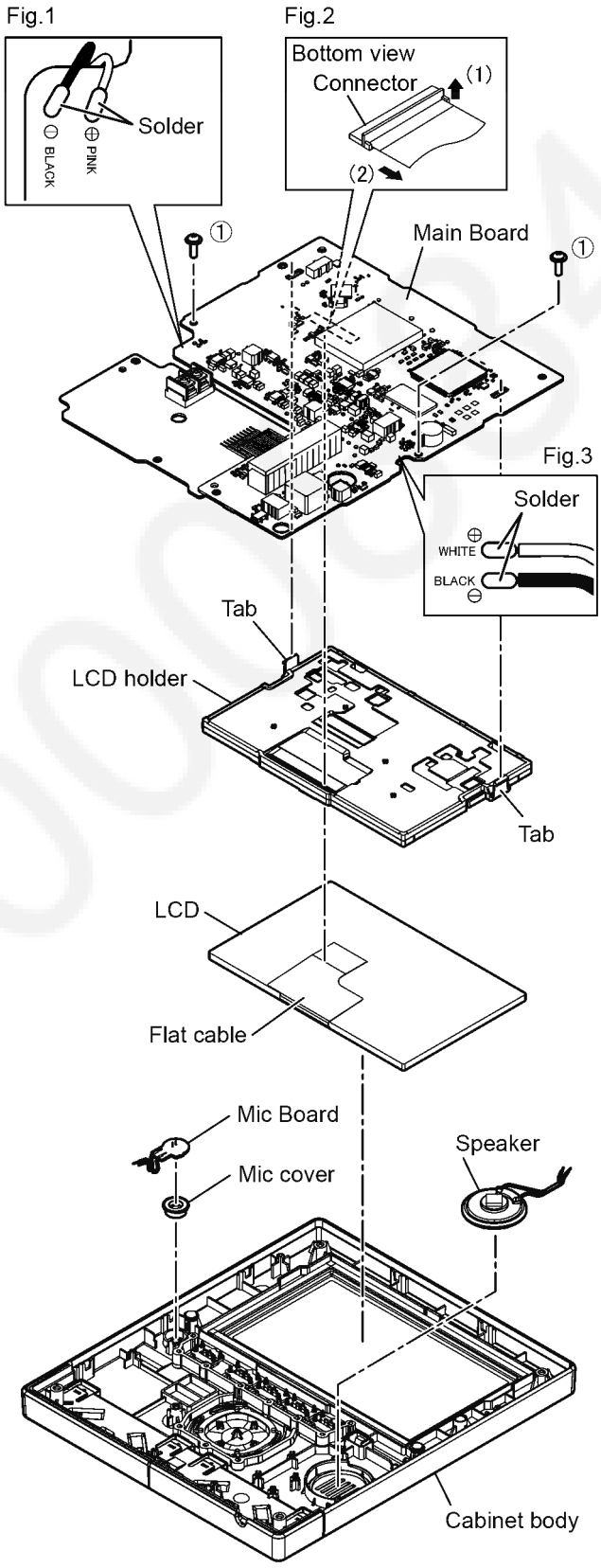
1. Remove 5 screws ① .
2. Remove the cabinet cover.

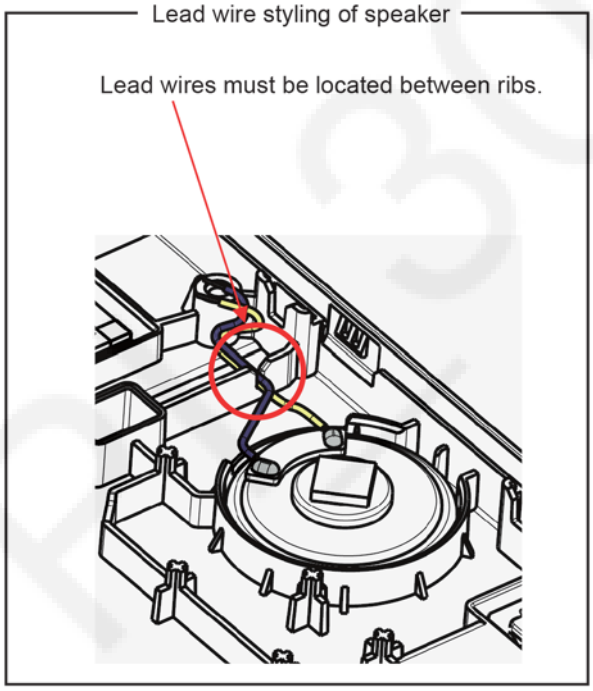


9.1.3. How to Remove the Main Board, Mic Board, Speaker and LCD [No.3]

■ Procedure No.1→No.2→No.3

1. Remove 2 screws ① .
2. Remove the solder of the Mic Board lead wire (Fig.1).
3. Remove the solder of the Speaker lead wire (Fig.3).
4. Remove the Main Board from Cabinet.
5. Unhook 2 tabs of the LCD holder.
6. Remove the Flat cable from Main board as shown in Fig.2.





9.2. Door Station

9.2.1. How to Remove the Mounting Base [No.1]

■ Procedure No.1

1. Open the screw cover, as shown in Fig. F.
2. Loose 1 screw (D).
3. Remove the Mounting base, as shown in Fig. G.

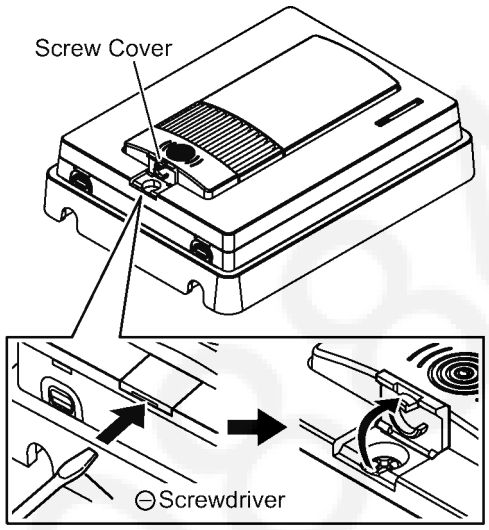


Fig. F

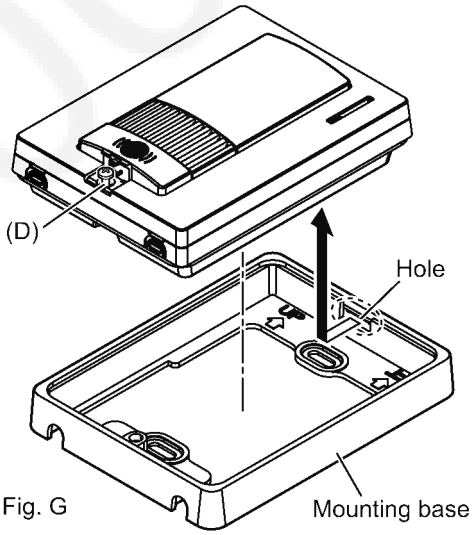
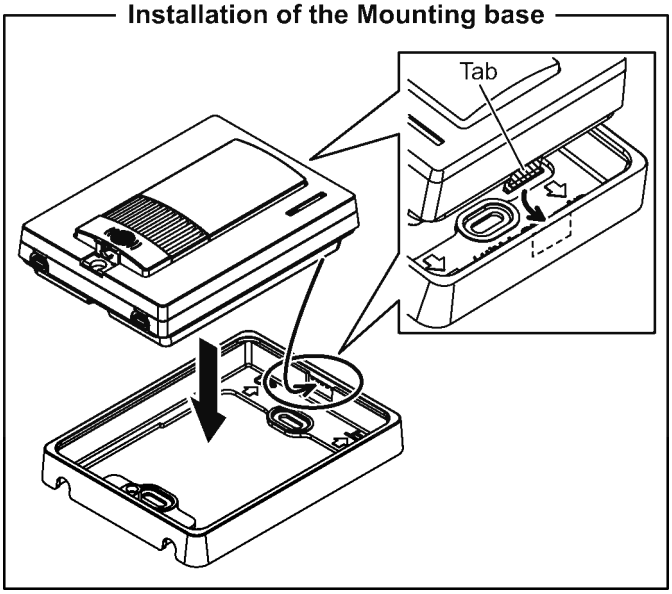


Fig. G

Installation of the Mounting base



9.2.2. How to Remove the Main Board and Camera Unit [No.2]

■ **Procedure No.1→No.2**

1. Remove 2 screws (E).
2. Please remove the cabinet cover from cabinet body with care to the tabs.
3. Remove the solder on the lead wire-A and lead wire-B.
4. After unhook the 2 tabs as shown in Fig. H, remove the Main board with Camera Unit.
5. Disconnect a connector.

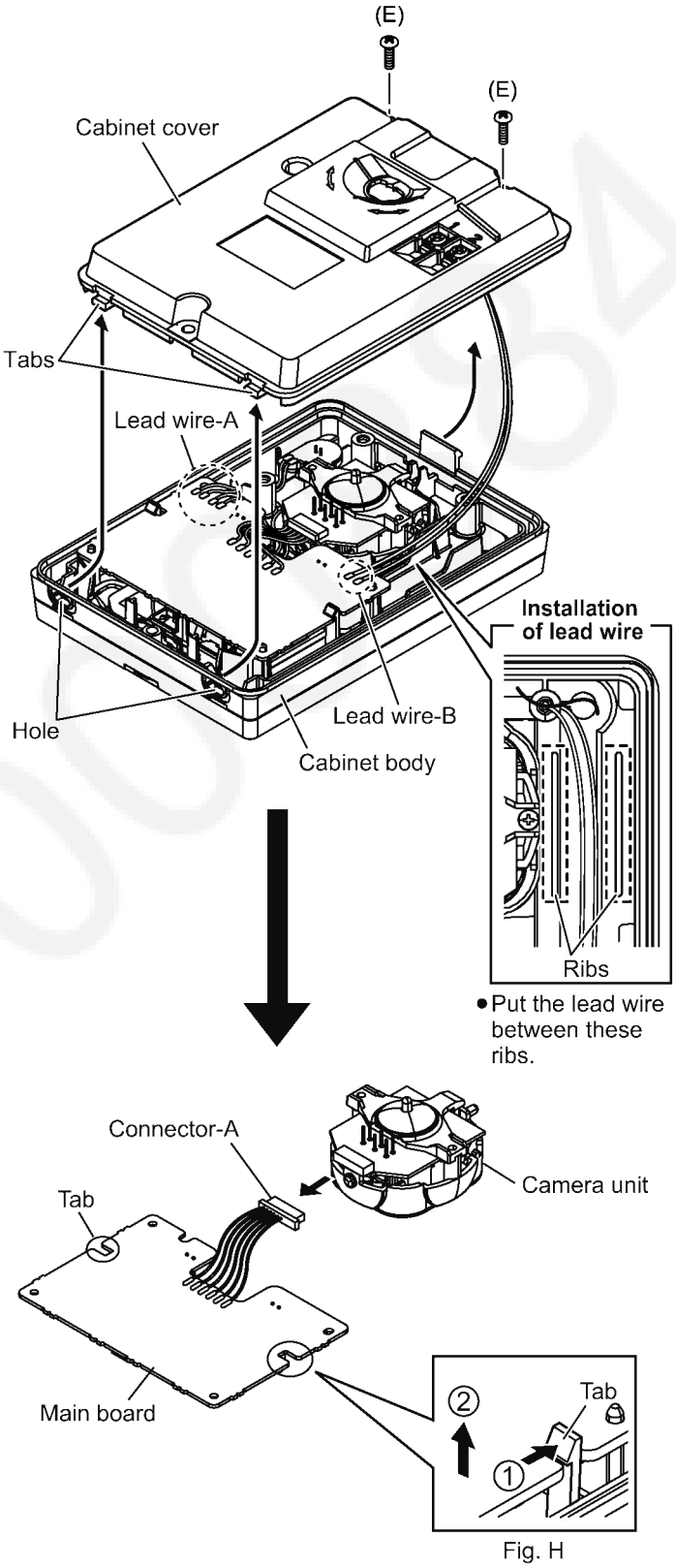
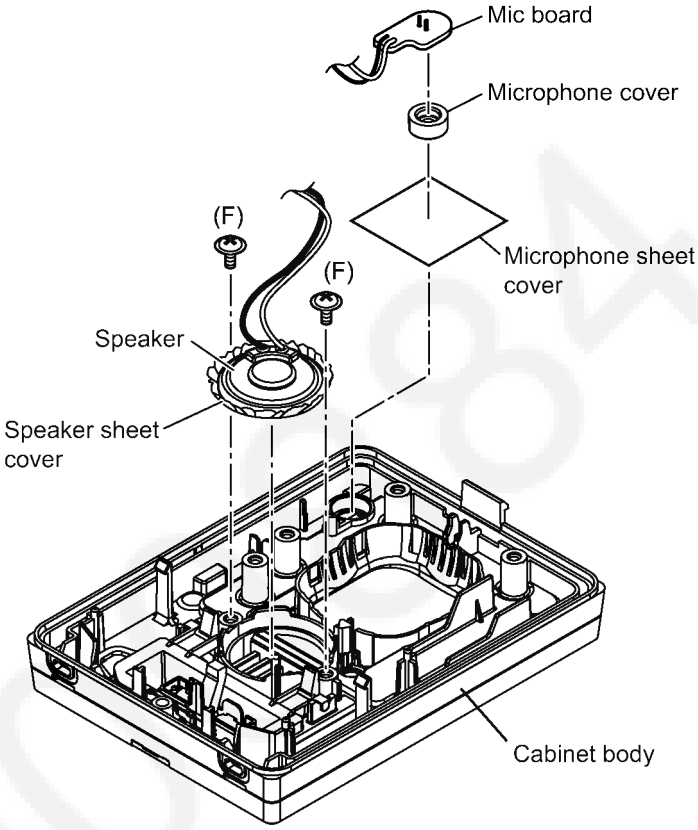


Fig. H

9.2.3. How to Remove the Mic Board and Speaker [No.3]

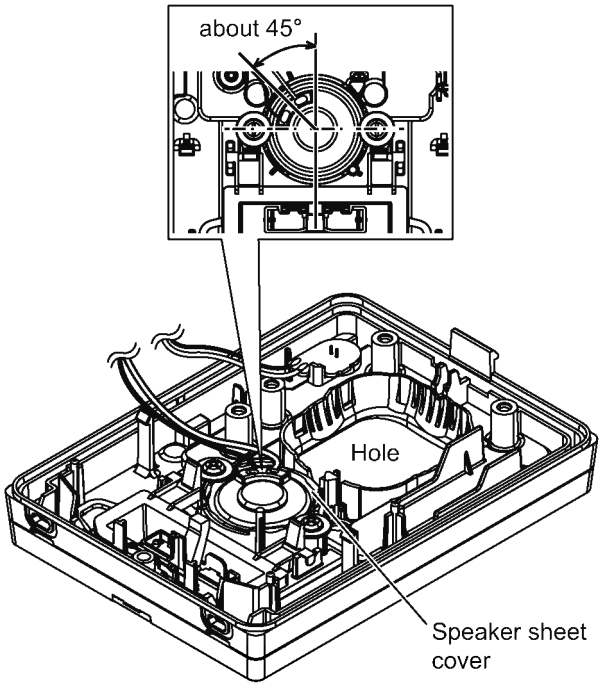
■ **Procedure No.1→No.2→No.3**

1. Remove the Mic board.
2. Remove 2 screws (F).
3. Remove the Speaker.



Installation of the Speaker

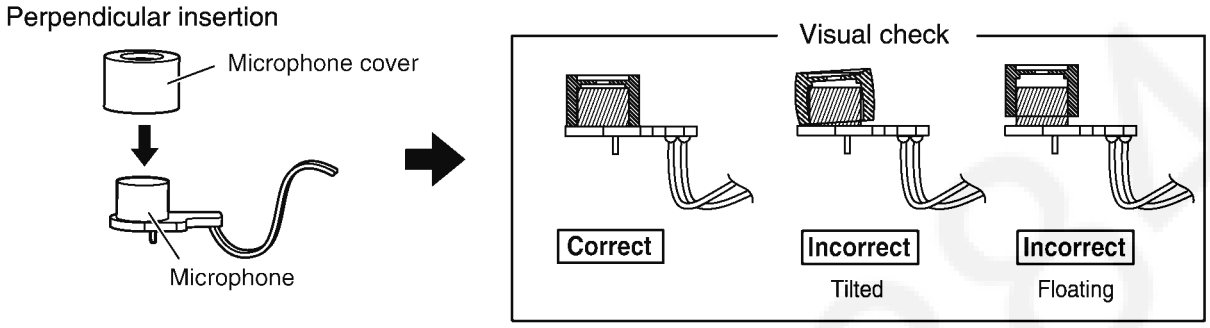
1. Make sure the speaker sheet cover does not protrude on the hole. Because the speaker sheet cover may show on the monitor.
2. Install the speaker as follows.



9.2.3.1. Note for Microphone Assembly (for anti-feedback)

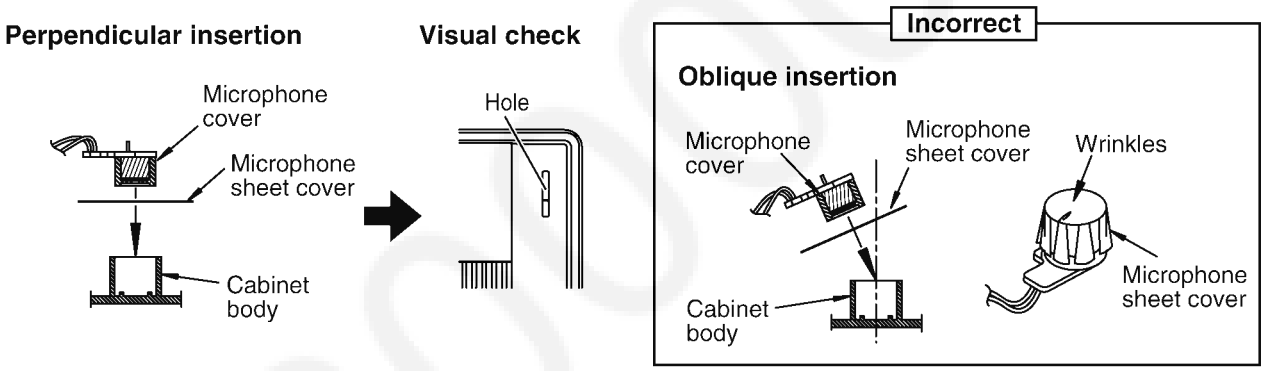
■ Installation of Microphone rubber

Insert the microphone perpendicularly into the microphone cover, and visually check to see if it is tilted or floating.

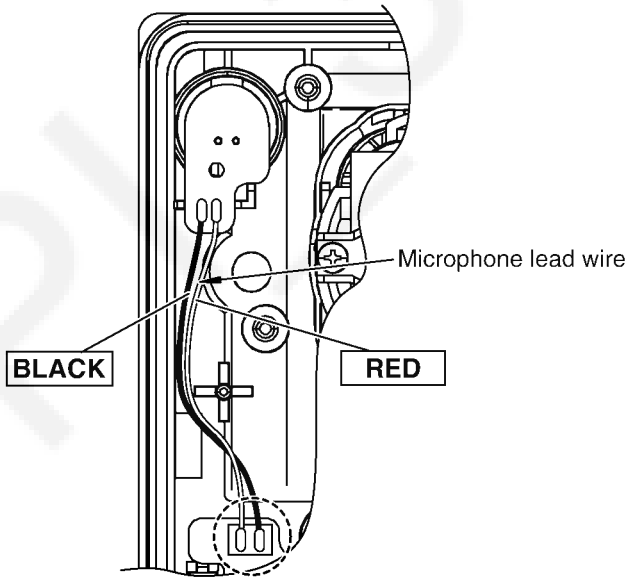


■ Installation to the front cabinet

Insert the microphone perpendicularly into the cabinet body, then visually check it from the front direction of the door station and ensure that there are no wrinkles.



■ Installation position of the microphone lead wire



9.2.4. How to Remove the Front Panel [No.4]

■ Procedure No.4

1. After unhook the 6 tabs as shown in Fig. J, remove the Front panel.

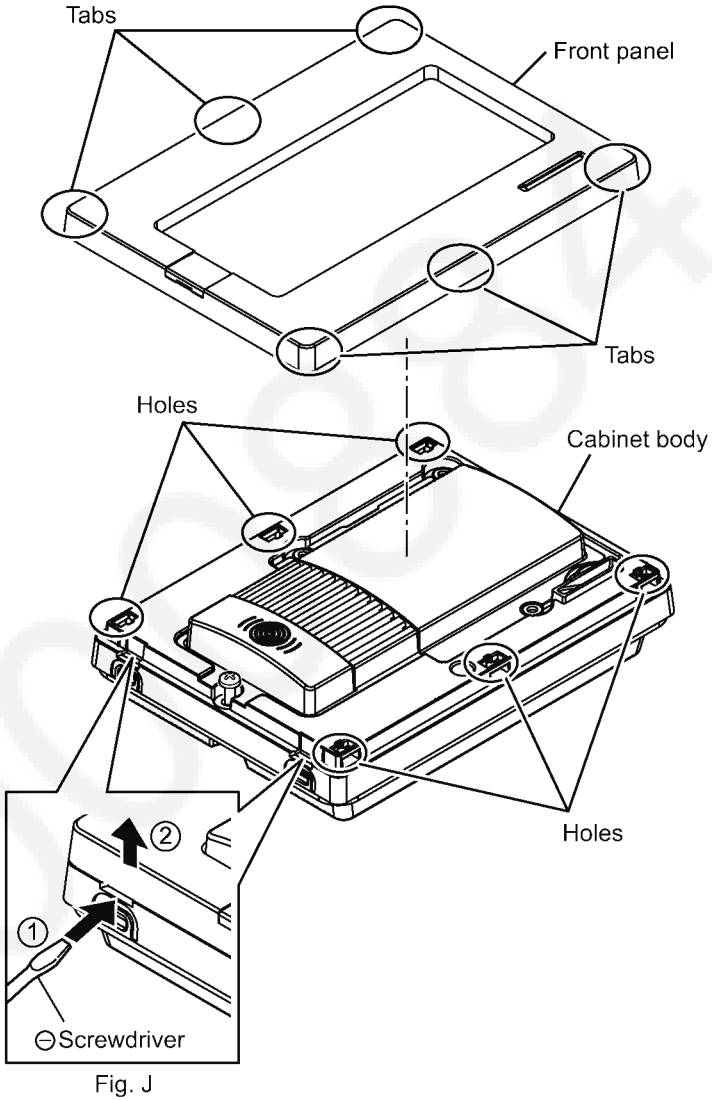
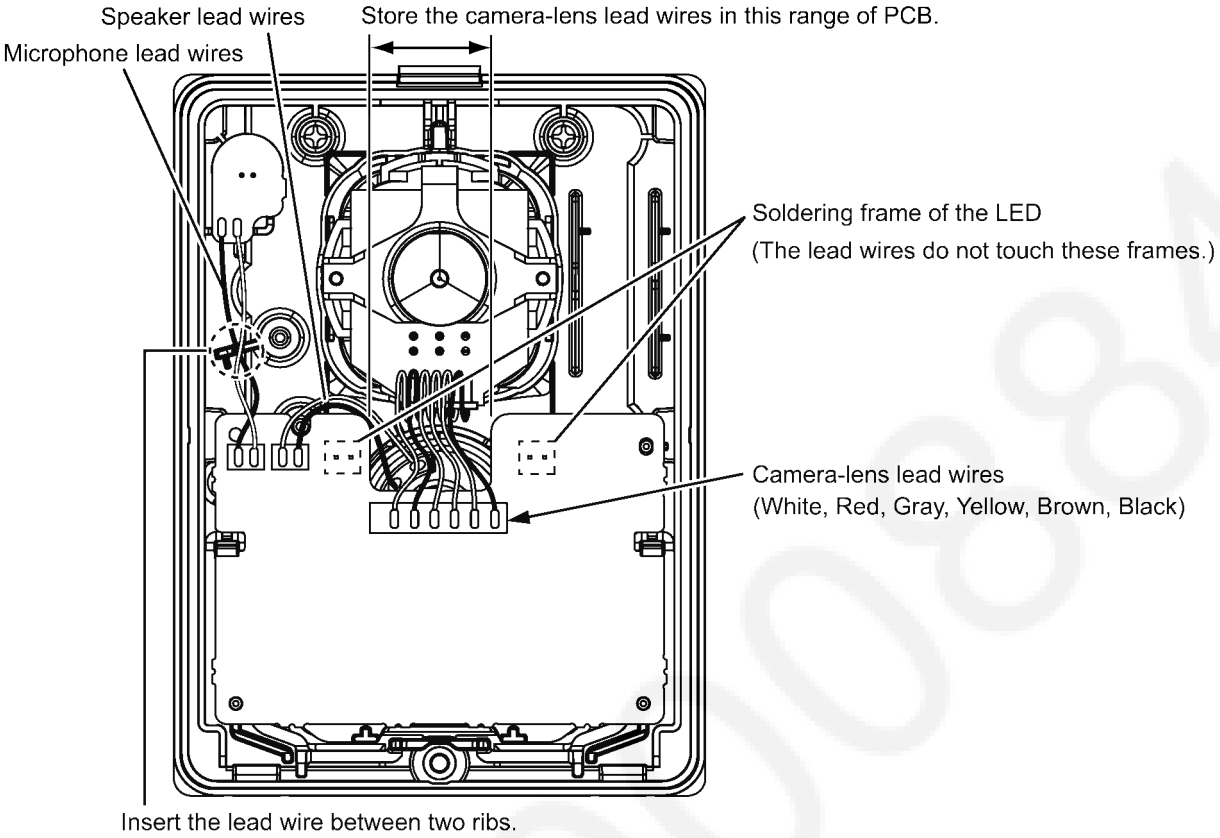


Fig. J

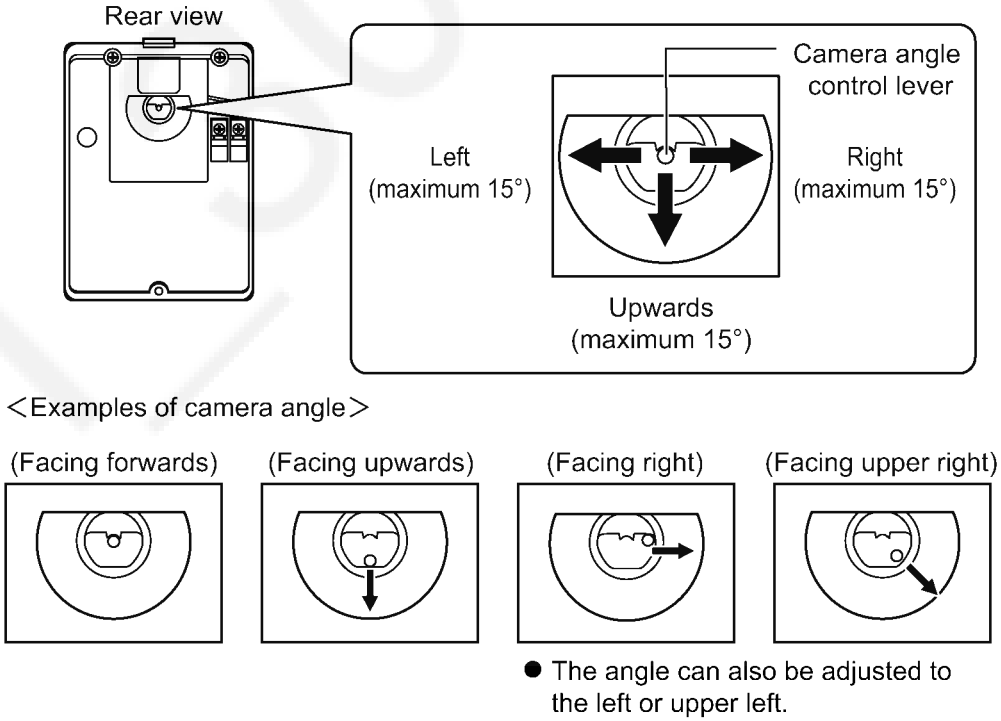
9.2.5. Installation of the lead wires

When assembling the door station, route the lead wires as shown in the figure below, and be careful that they do not get caught.



9.2.6. Item to be checked after completion of assembly (camera lens angle adjustment)

After completing assembly work, move the angle adjustment lever on the rear surface in the left and right directions, and confirm that it moves all the way.

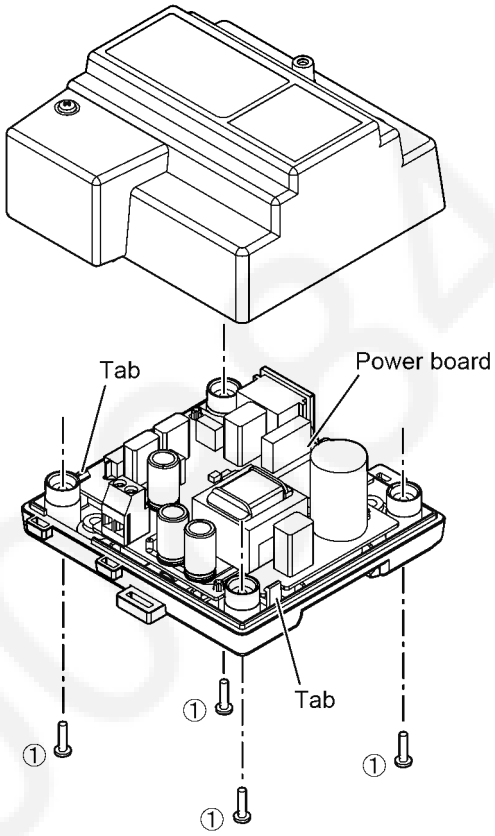


Note:

When the camera angle is adjusted to the upper left and upper right, the image may be slightly distorted.

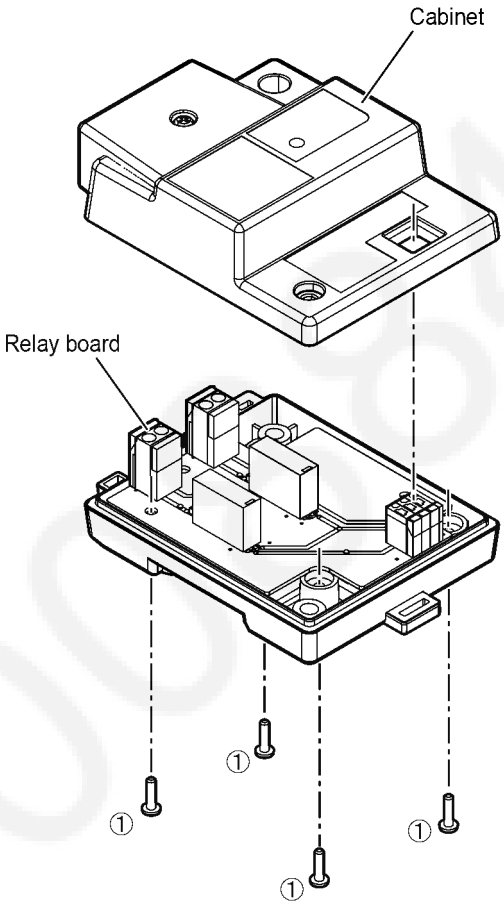
9.3. Power Supply Unit

1. Remove 4 screws ① .
2. Remove the Power Board by unhooking 2 tabs.



9.4. Relay Box

1. Remove 4 screws ① .
2. Remove the Cabinet and Relay Board.

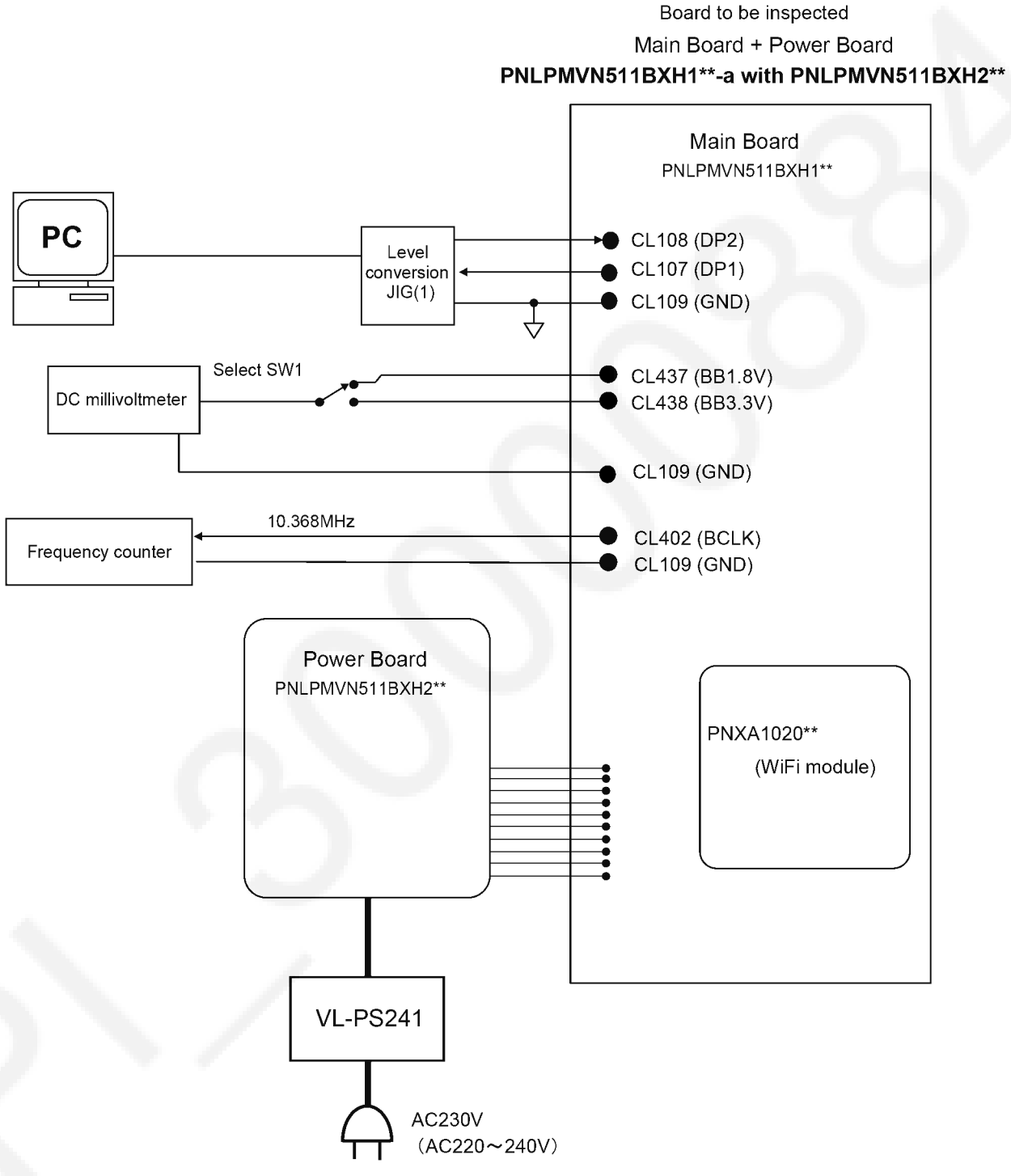


10 Measurements and Adjustments

10.1. Main Monitor Station

10.1.1. Connections

When replacing the main board (Monitor Station), please refer to the following items for adjusting.



10.1.2. Things to do after replacing IC

If repairing FLASH Memory, EEPROM, it is necessary to initialize and adjustment. The set doesn't operate if it is not executed.

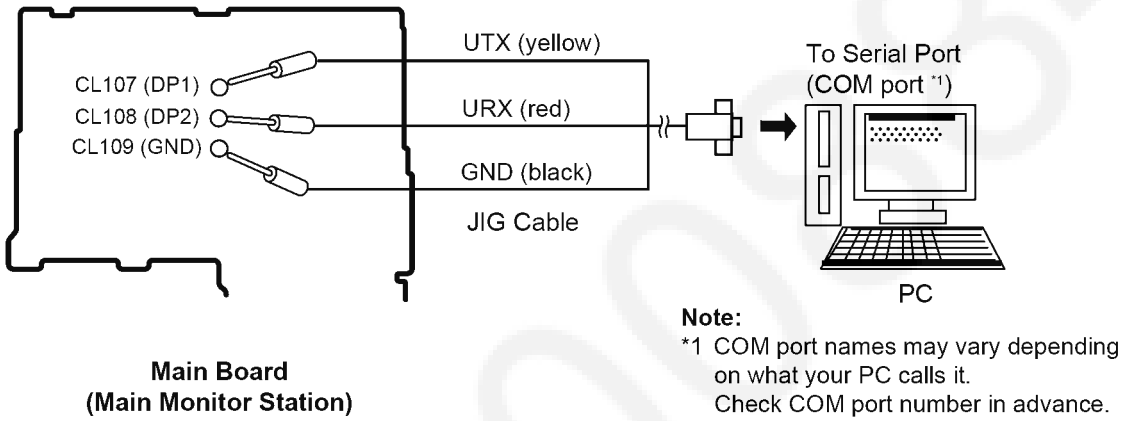
■ Preparation

1. Serial JIG cable: PQZZ1CD300E
2. PC in which "Tera Term (Ver. 4.78 later)" (communication software) is installed
3. Macro file CD-ROM for setting: PNZZN511EX

■ Procedure

1. Connect the AC cord into the power outlet.

2. Connect the PC to the Main monitor using the 3-Wire cable, as shown below.



Main Board
(Main Monitor Station)

Note:
*1 COM port names may vary depending on what your PC calls it.
Check COM port number in advance.

3. Start the communication software (Tera Term). The settings are shown below.

① Open "Tera Term", select **"Serial Port: COM□"** at "Tera Term: New connection", then click "**OK**".
② Select **"Terminal"** on the tab of "Setup" to open "Tera Term: Terminal setup".
③ Select "Receive: **CR+LF**" and "Transmit: **CR**" at "New-Line". And then click "**OK**".
④ Select **"Serial port"** on the tab of "Setup" to open "Tera term: Serial port setup". And then select the below items, then click "**OK**".

Baud rate:	**57600**
Data:	**8 bit**
Parity:	**none**
Stop:	**1 bit**
Flow control:	**none**

⑤ Select [Setup] → [Terminal...] It checks to Local echo.
⑥ Select [Control] → [Macro] Attached macro (dp3_term.ttl) is performed.

4. To confirm the connection, type in "**EPD F**", then press the **Enter** key. The response is "**OK**".

5. Refer to the “Measurements and Adjustments” for adjustment.

6. Disconnect the AC cord, and disconnect the 3-wire cable.

10.1.3. When replacing BBIC and X'tal

■ **Preparation:**
1. PC setting refer to "**Things to do after replacing IC** (P.46).
2. Supply AC 230V to Power supply unit (PS241).

Note:
Test points: Refer to **Main Board (Bottom View)** (P.63).

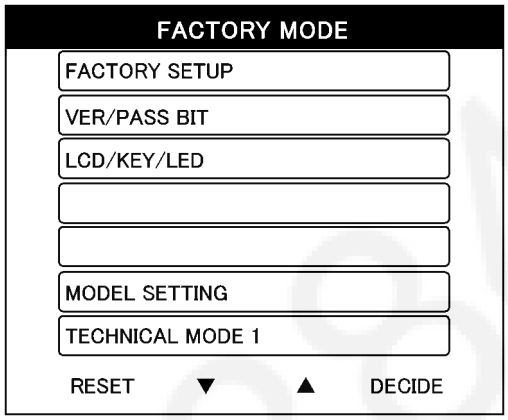
No.	Items	Check Point	Procedure
1	1.8 V Supply Adjustment	CL437(BB1.8V)	1.Confirm that the voltage between test point CL437 and CL109 (GND) is 1.8 V ± 0.02 V. 2.Execute the command "VDD", then check the current value. 3.Adjust the 1.8V voltage of VDD1 executing command "VDD XX" (XX is the value).
2	3.3 V Supply Confirmation	CL438(BB3.3V)	1.Confirm that the voltage between test point CL438 and CL109(GND) is 3.3 V ± 0.2 V.
3	BBIC Clock Adjustment	CL402(BCLK)	1.Confirm frequency between CL402 and CL109(GND). 2.Input Command "sfr", then you can confirm the current value. 3.Check X' tal Frequency. (10.368 MHz ± 100 Hz). 4.If the frequency is not 10.368 MHz ± 100 Hz, adjust the frequency of CKM executing the command "sfr xx xx" (where xx xx is the value: d) so that the reading of the frequency counter is 10.368000 MHz ± 5 Hz.

• After finishing the adjustment, turn off and disconnect the 3-Wire cable.

10.1.4. Factory Mode

■ **Entering Factory Mode:**

1. Turn AC Power “ON”, while pressing **[OFF]** button, **[TALK]** button and **[F4]** at the same time, about 5 seconds or more. (FACTORY MODE screen is displayed.)



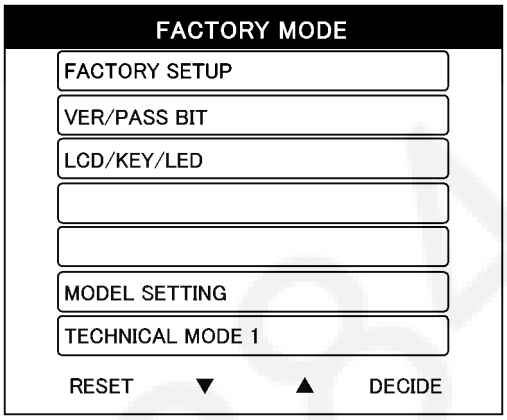
■ **In order to exit Factory Mode:**

1. Press the [OFF] button.

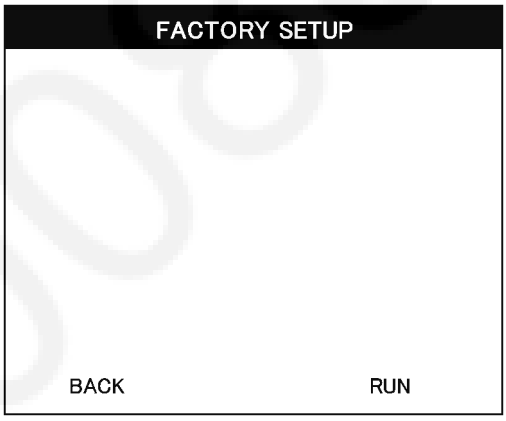
10.1.4.1. Factory Setup

Initialize the logs and the all parameters except for the factory adjusted value, and delete the recorded images.

1. Select **“FACTORY SETUP”** by Navigation key.
2. Press **[F4 (DECIDE)]**.



3. Press **[F4 (RUN)]**.
   • If “WiFi module starting ...” is displayed, wait until disappear.

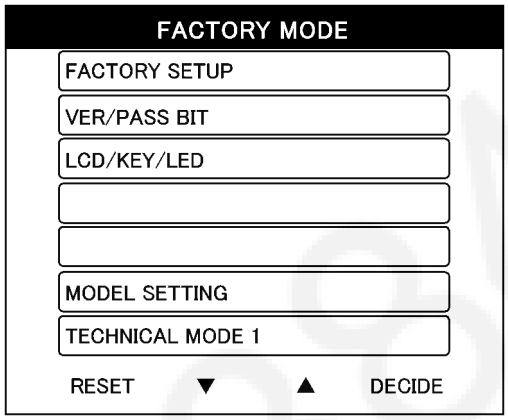


4. Press **[F4 (RESET)]** .

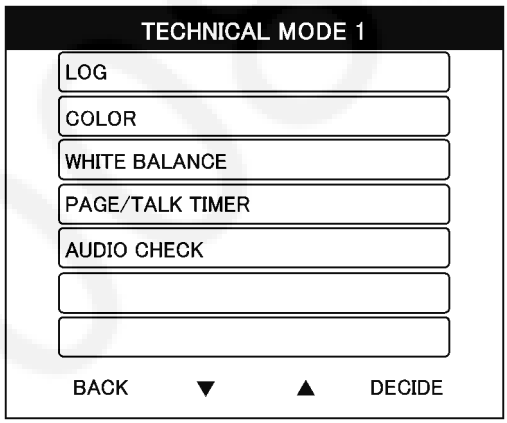
10.1.4.2. White Balance Adjustment

The adjustment is done only when the color of the LCD display has changed after you have replaced the LCD.
(Basically, adjustment is unnecessary.)

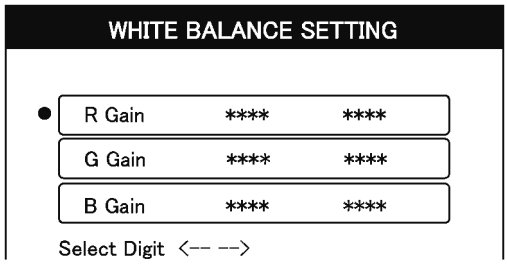
1. Select **"TECHNICAL MODE 1"** by Navigation key.



2. Select **"WHITE BALANCE"** by Navigation key.



3. Set to default value.
   ① Select the color by Navigation key
   ② Press **[F4 (DECIDE)]**
   ③ Set to default value as below by Navigation key
      •R Gain: 0400
      •G Gain: 0400
      •B Gain: 0400
   (During the adjustment, the color of the screen will change)



4. Adjust the white balance by R Gain and B Gain.
   ① Select the color to be adjust by Navigation key
   ② Press **[F4 (DECIDE)]**
   ③ Adjust the white balance as below by Navigation key
      •to red: R Gain > 0400
      •to blue: R Gain < 0400
      •to yellow: B Gain < 0400
      •to green: R Gain < 0400 and B Gain < 0400

5. Press **[TALK]**.

6. Press **[F1 (BACK)]**.

7. Press **[F1 (RESET)]**.

10.1.4.3. Advance settings Mode

This setting is optional settings for e-mail transmission.

■ **Entering Advance settings Mode:**

1. Turn AC Power “ON”, while pressing [OFF] button, [TALK] button and [F1] at the same time, about 5 seconds or more.

Function Setting List

[ ] : It is the contents of the initial value.

Function Menu	Settings and Overview
SMTP authentication type	Selection: [Auto], CRAM-MD5, PLAIN, LOGIN If you can not send mail to SMTP authentication, depending on the configuration of the server, it can be resolved by changing the setting to such as "PLAIN" and "LOGIN".
TLS version	Selection: Version 1.0, [Version 1.2] If you can not send e-mail due to the version mismatch of the security type (TLS), and depending on the setting of the mail server, it can be resolved by changing the setting to such as “version 1.0” and “version 1.2”.

■ **In order to exit Advance settings Mode:**

1. Press the [OFF] button.

10.1.4.4. Apartment mode

This setting is used connect the Main Monitor Station to “Lobby Station” or “Video Intercom System for Apartment Complexes”.

Note: When this mode is selected, all data and images will be initialize.

■ **Entering Advance settings Mode:**

1. Turn AC Power “ON”, while pressing [OFF] button, [TALK] button and [F2] at the same time, about 5 seconds or more.

Function Setting List

[ ] : It is the contents of the initial value.

Function Menu	Settings and Overview
House mode	Selection: Display, [Don't display] Display: Use only when connecting the “Lobby Station” (VL-V590) in House mode.
Apartment mode	It is used when connecting to the “Video Intercom System for Apartment Complexes”. It switches automatically to Apartment mode in the communication settings from the PC tool. Please use when switching manually.

■ **In order to exit Apartment Mode:**

1. Press the [OFF] button.

11 Miscellaneous

11.1. How to Replace the Flat Package IC

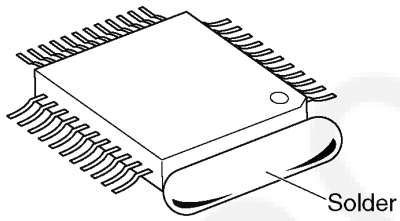
Even if you do not have the special tools (for example, a spot heater) to remove the Flat IC, with some solder (large amount), a soldering iron and a cutter knife, you can easily remove the ICs that have more than 100 pins.

11.1.1. Preparation

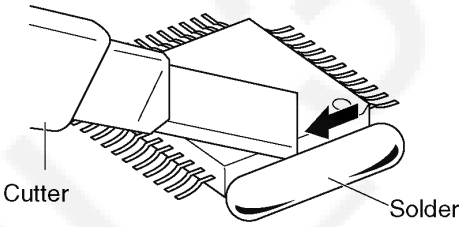
- PbF (: Pb free) Solder
- Soldering Iron
  Tip Temperature of 700°F ± 20°F (370°C ± 10°C)
  Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.
- Flux
  Recommended Flux: Specific Gravity → 0.82.
  Type → RMA (lower residue, non-cleaning type)
  Note: See **About Lead Free Solder (PbF: Pb free)** (P.5).

11.1.2. Flat Package IC Removal Procedure

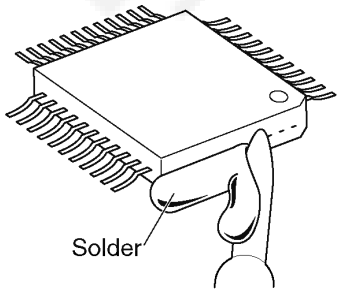
1. Put plenty of solder on the IC pins so that the pins can be completely covered.
   Note:
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.



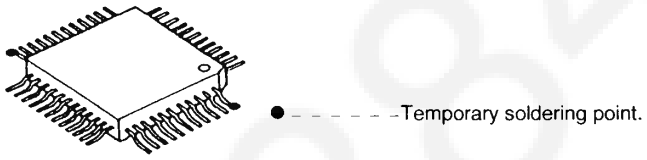
3. While the solder melts, remove it together with the IC pins.



When you attach a new IC to the board, remove all solder left on the land with some tools like a soldering wire. If some solder is left at the joint on the board, the new IC will not be attached properly.

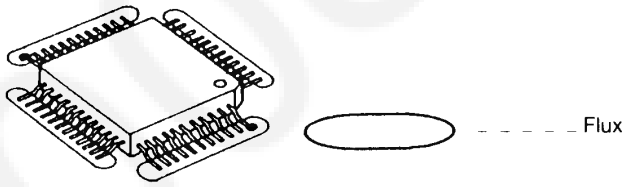
11.1.3. Flat Package IC Installation Procedure

1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.

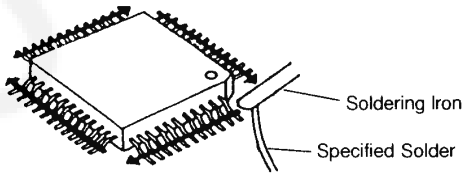


*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux to all pins of the FLAT PACKAGE IC.

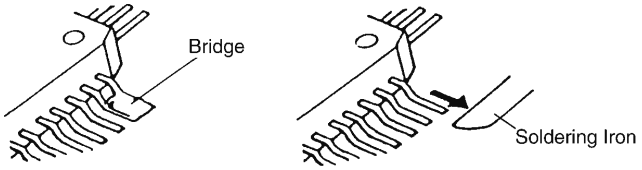


3. Solder the pins, sliding the soldering iron in the direction of the arrow.



11.1.4. Bridge Modification Procedure

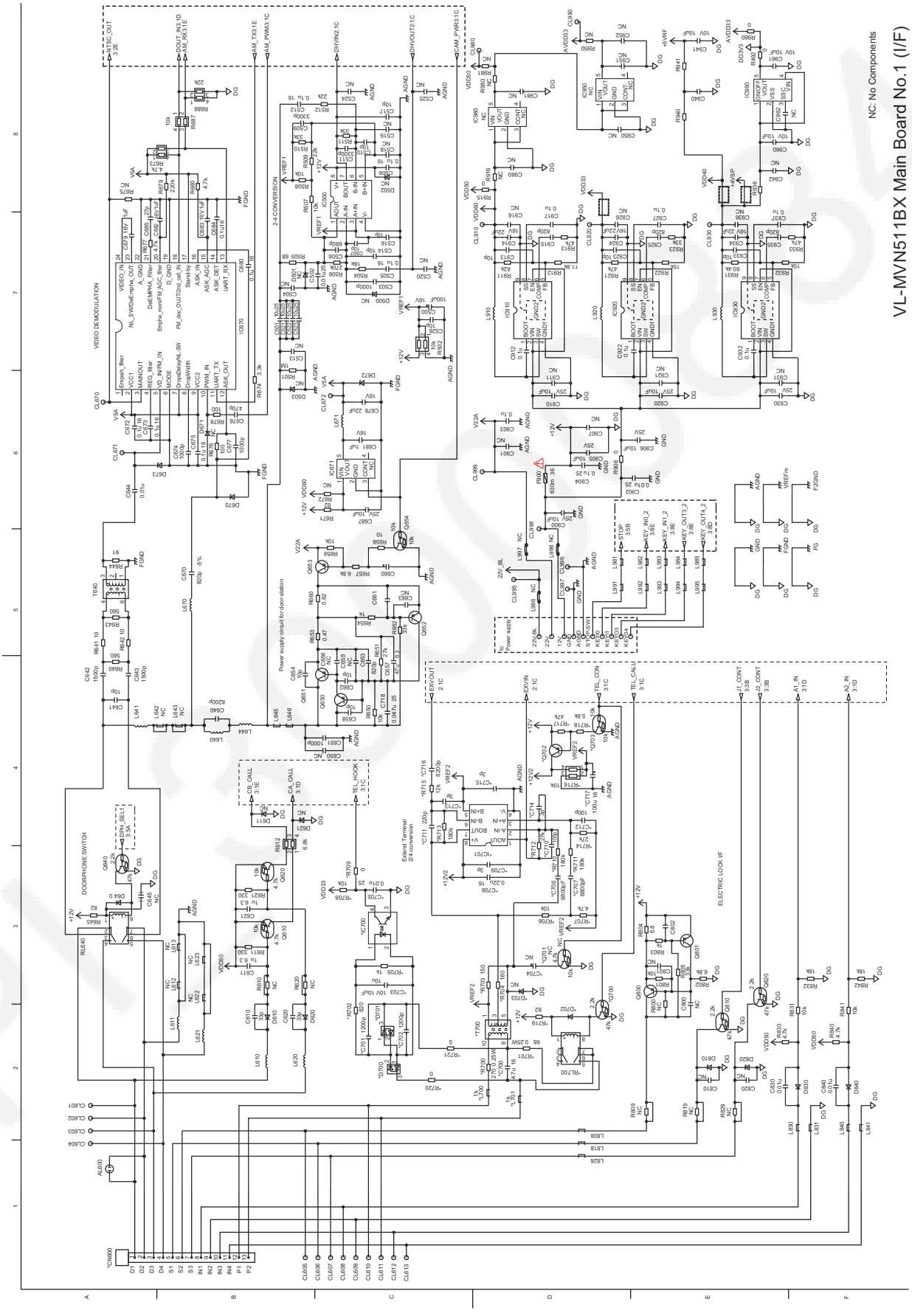
1. Lightly resolder the bridged portion.
2. Remove the remaining solder along the pins using a soldering iron as shown in the figure below.



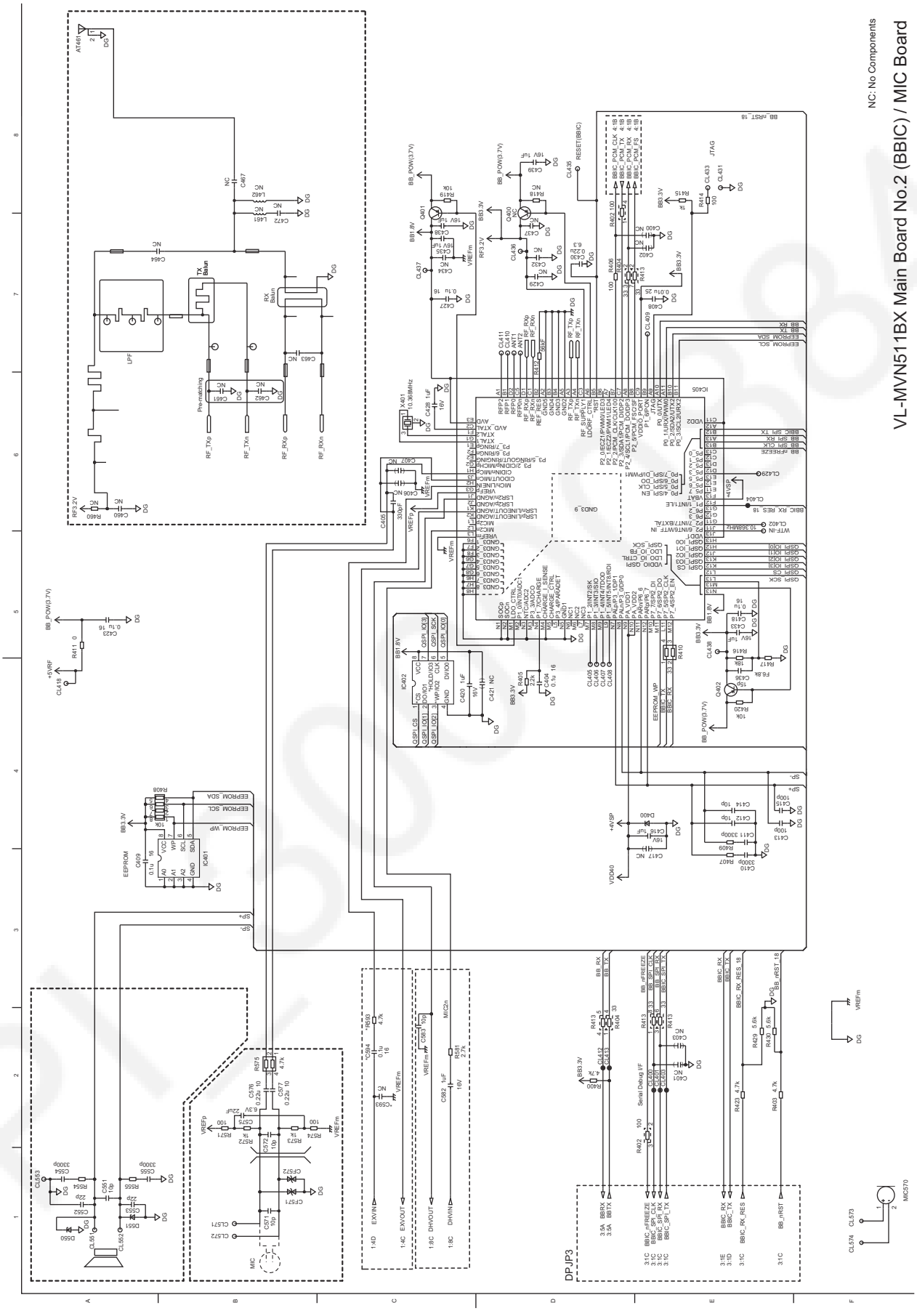
12 Schematic Diagram

12.1. Main Monitor Station

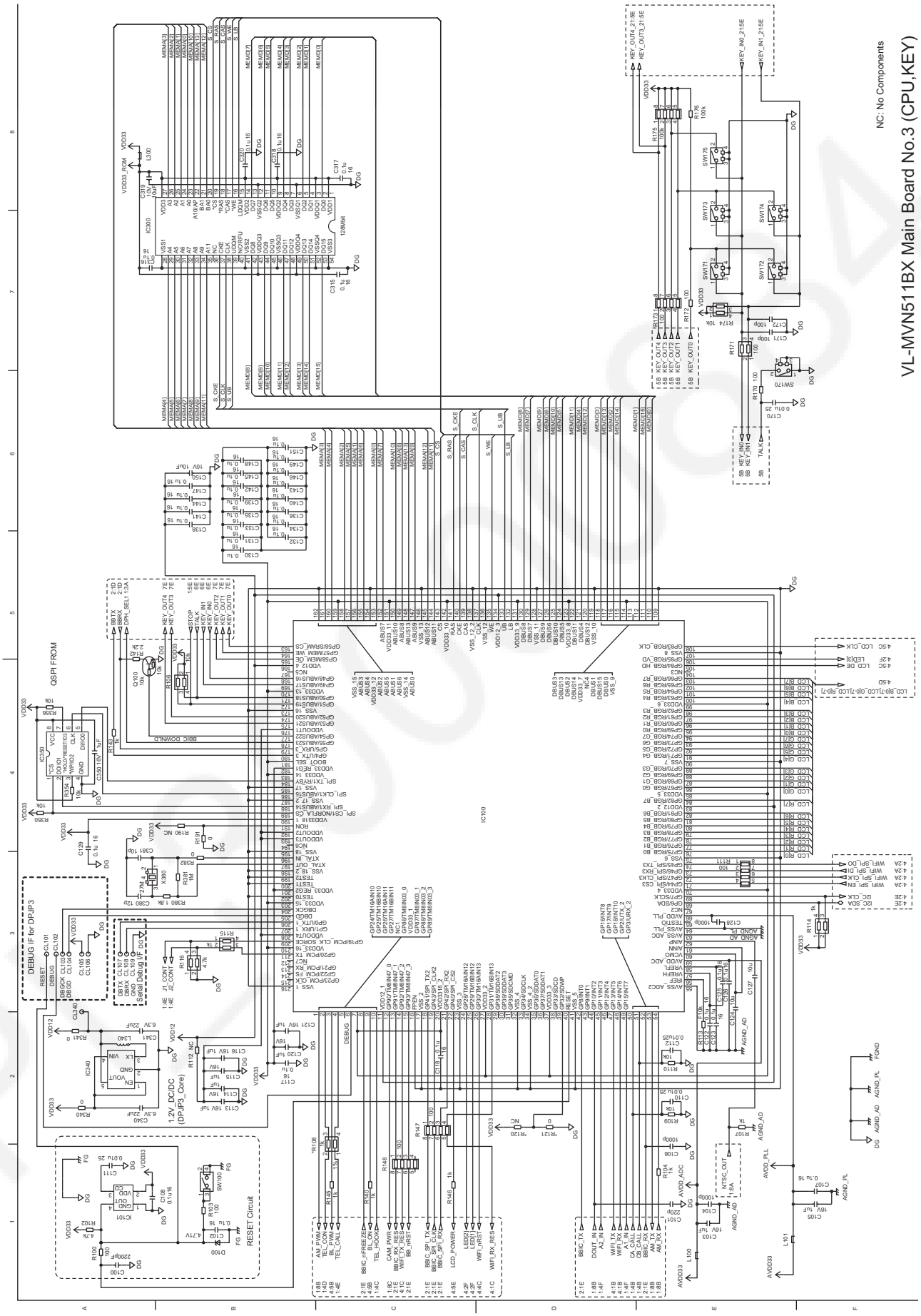
12.1.1. Main Board (1)



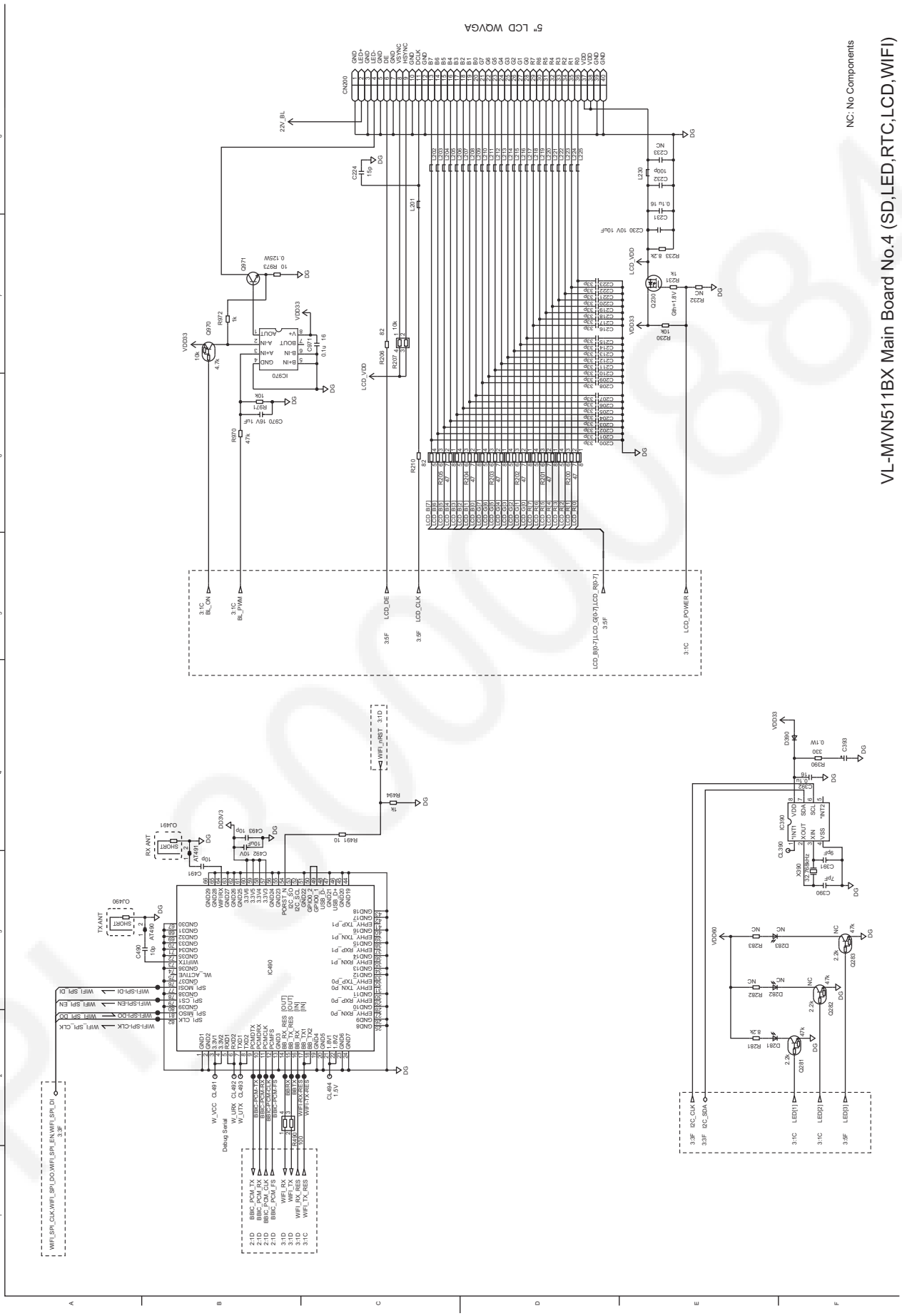
12.1.2. Main Board (2) / MIC Board



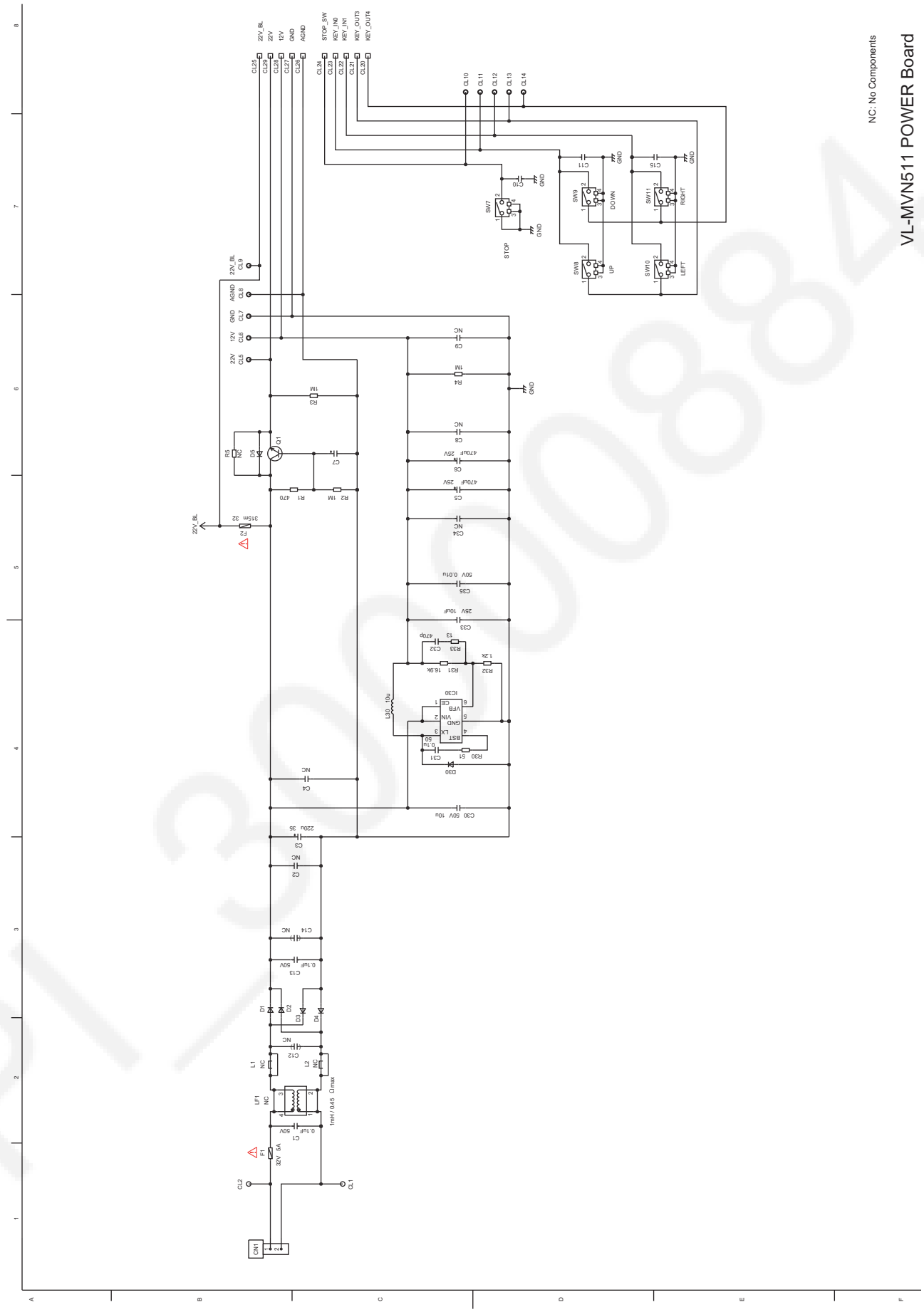
12.1.3. Main Board (3)



12.1.4. Main Board (4)

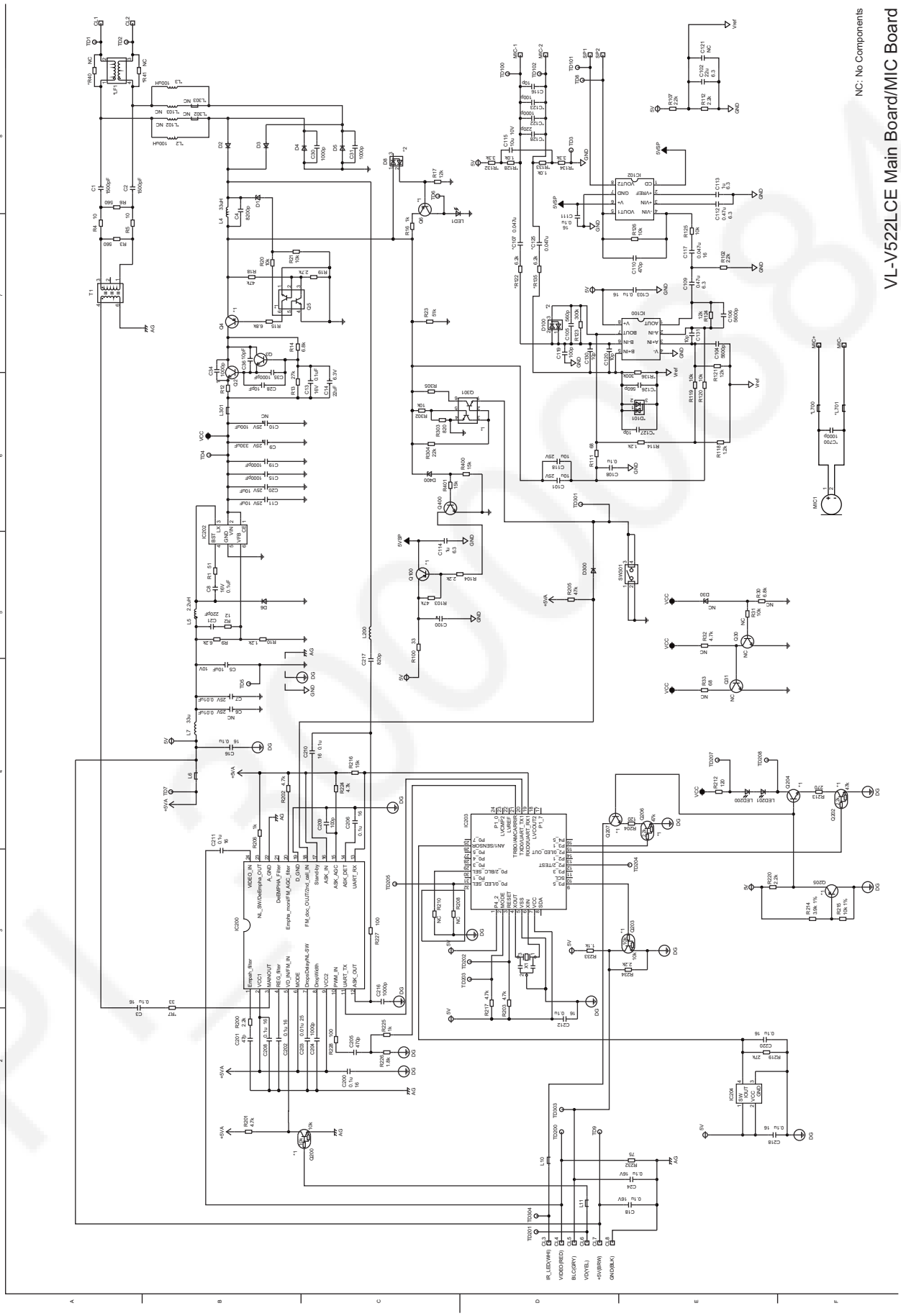


12.1.5. Power Board



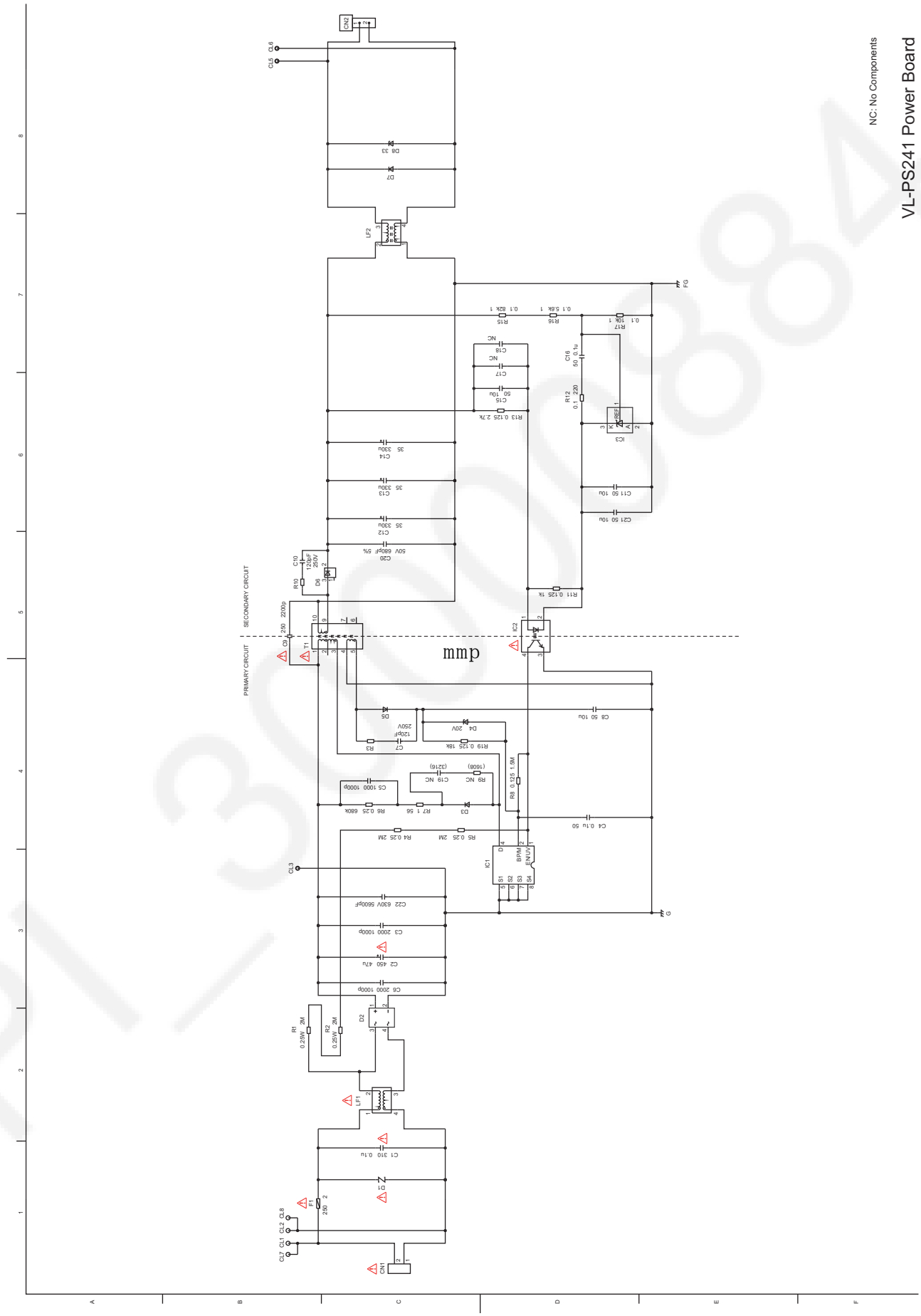
12.2. Door Station

12.2.1. Main Board / MIC Board



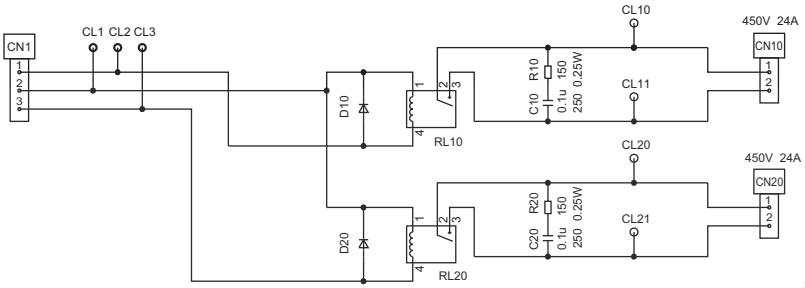
12.3. Power Supply Unit

12.3.1. Power Board



12.4. Relay Box

12.4.1. Relay Board

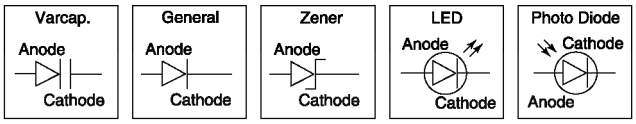


VL-RLY1 Relay Board

13 Appendix Information of Schematic Diagram

Note:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

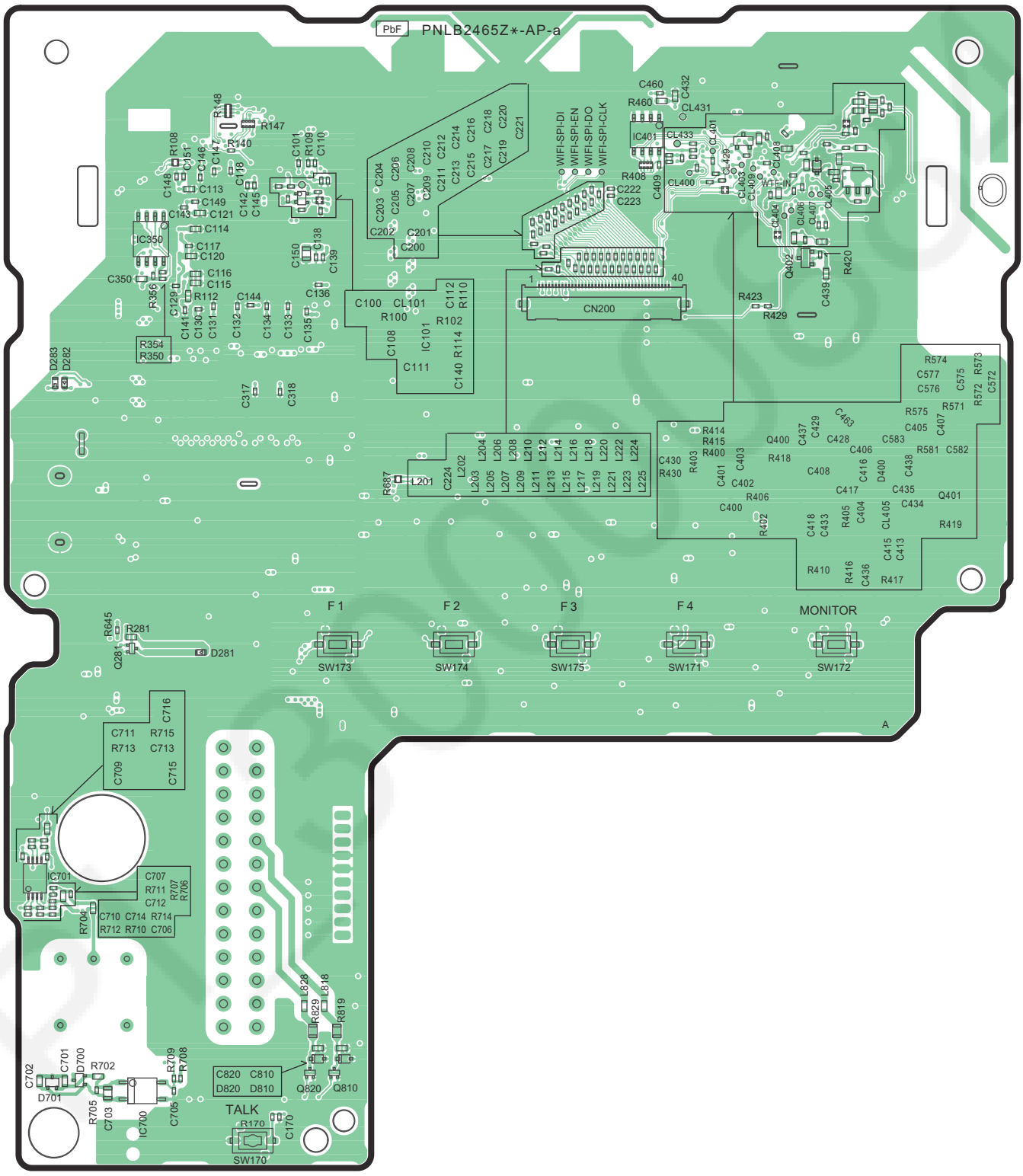


Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of there components, use only manufacturer's specified parts.

14 Printed Circuit Board

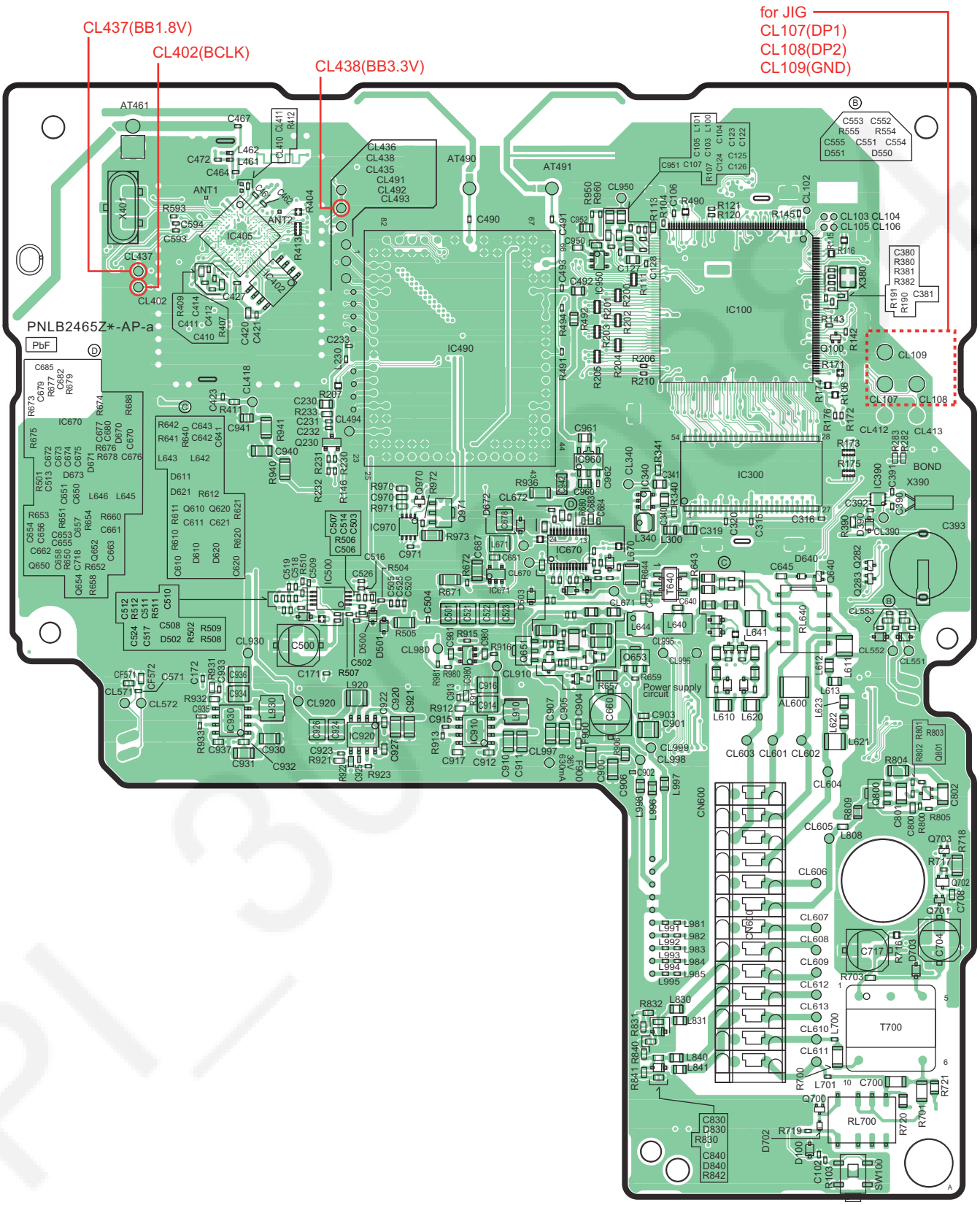
14.1. Main Monitor Station

14.1.1. Main Board (Component View)



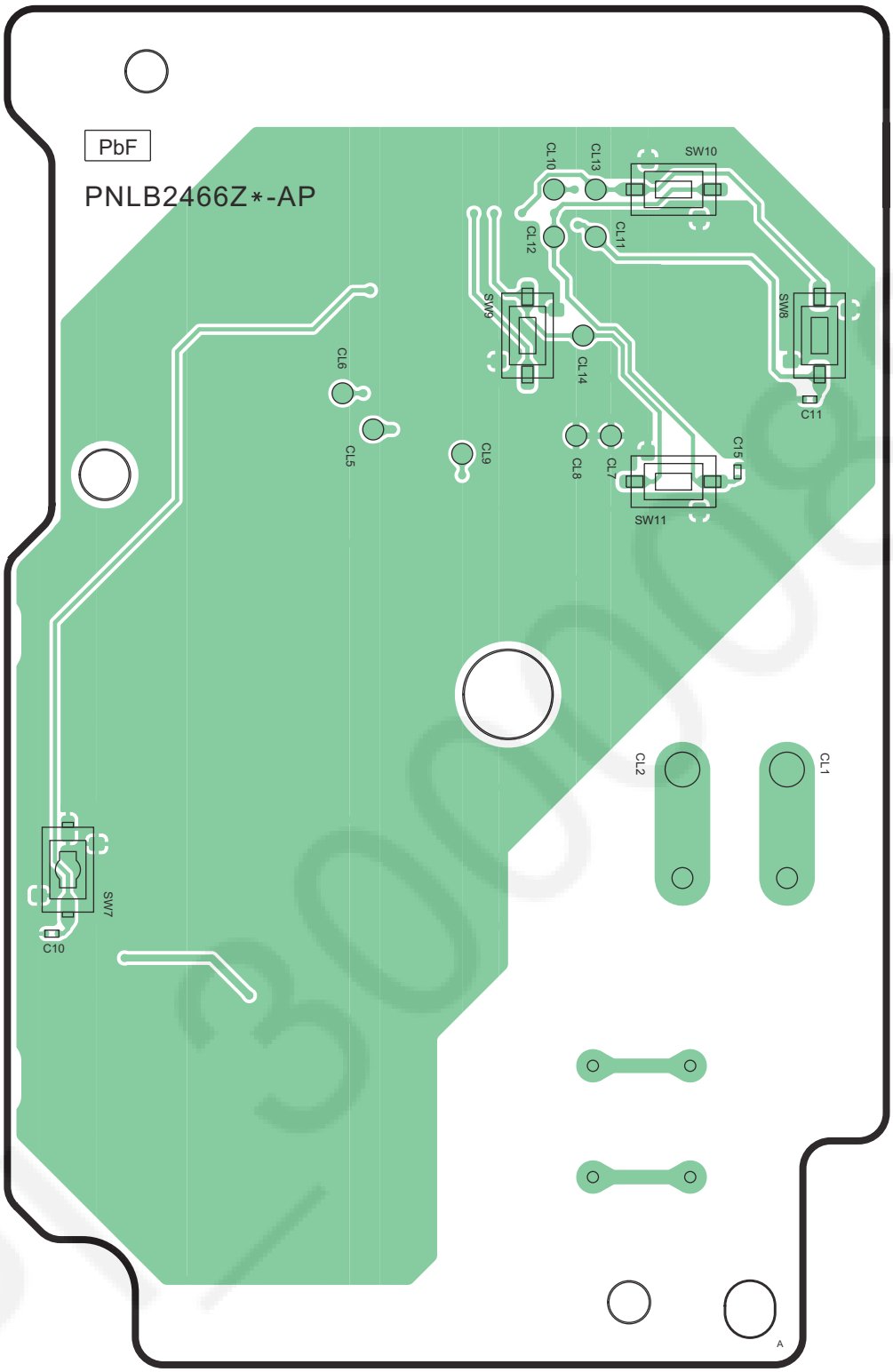
VL-MVN511 Main Board (Component View)

14.1.2. Main Board (Bottom View)



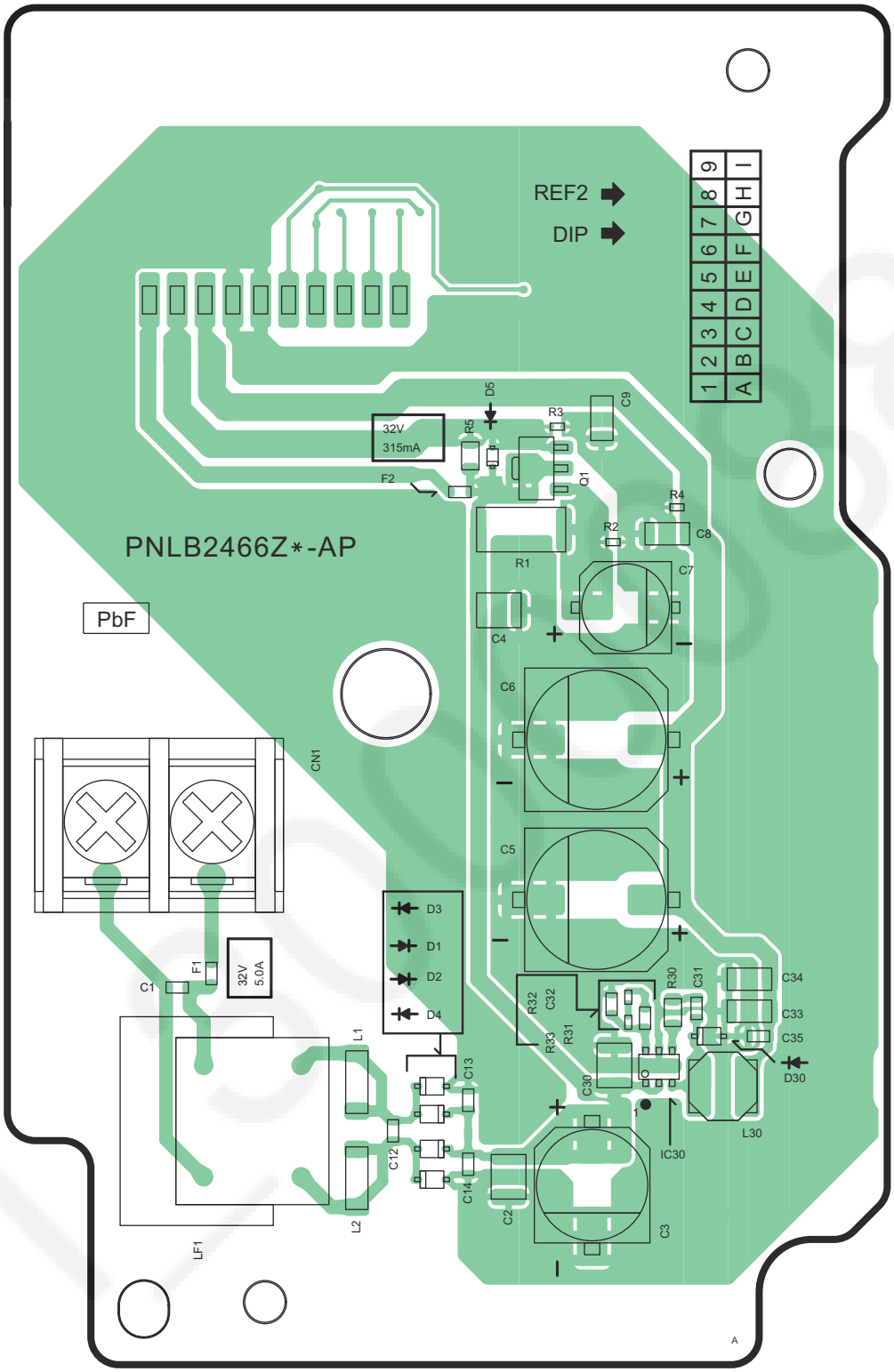
VL-MVN511 Main Board (Bottom View)

14.1.3. Power Board (Component View)



VL-MVN511 Power Board (Component View)

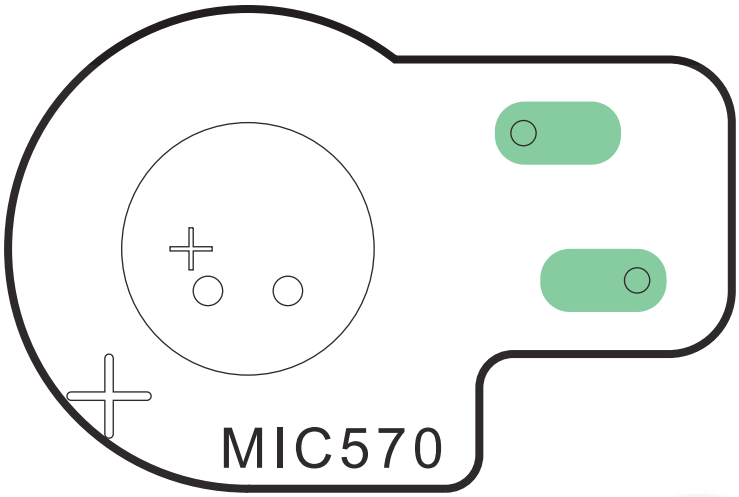
14.1.4. Power Board (Bottom View)



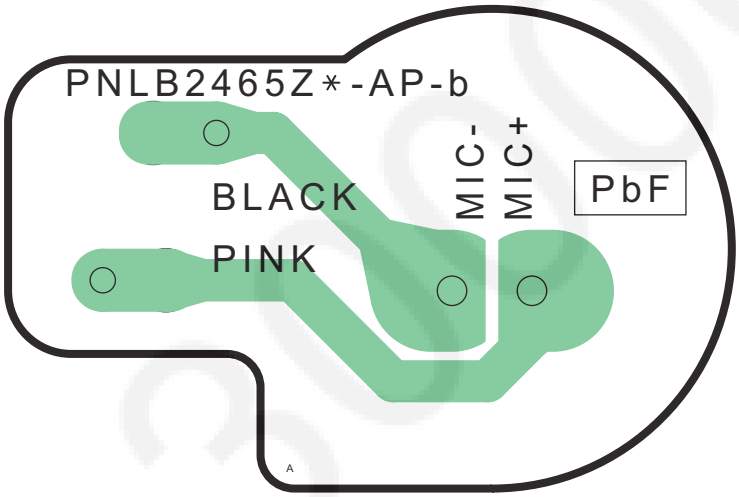
VL-MVN511 Power Board (Bottom View)

14.1.5. MIC Board

(Component View)



(Bottom View)

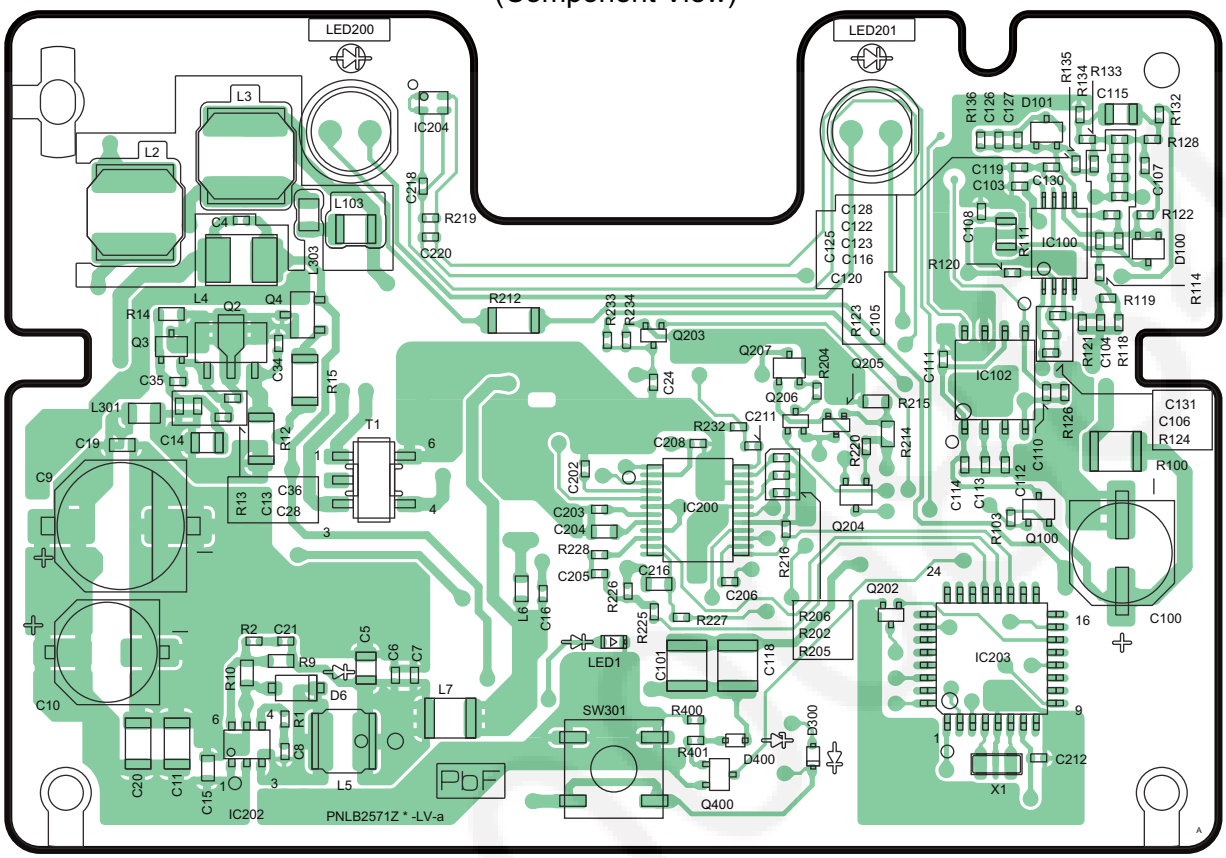


VL-MVN511 MIC Board

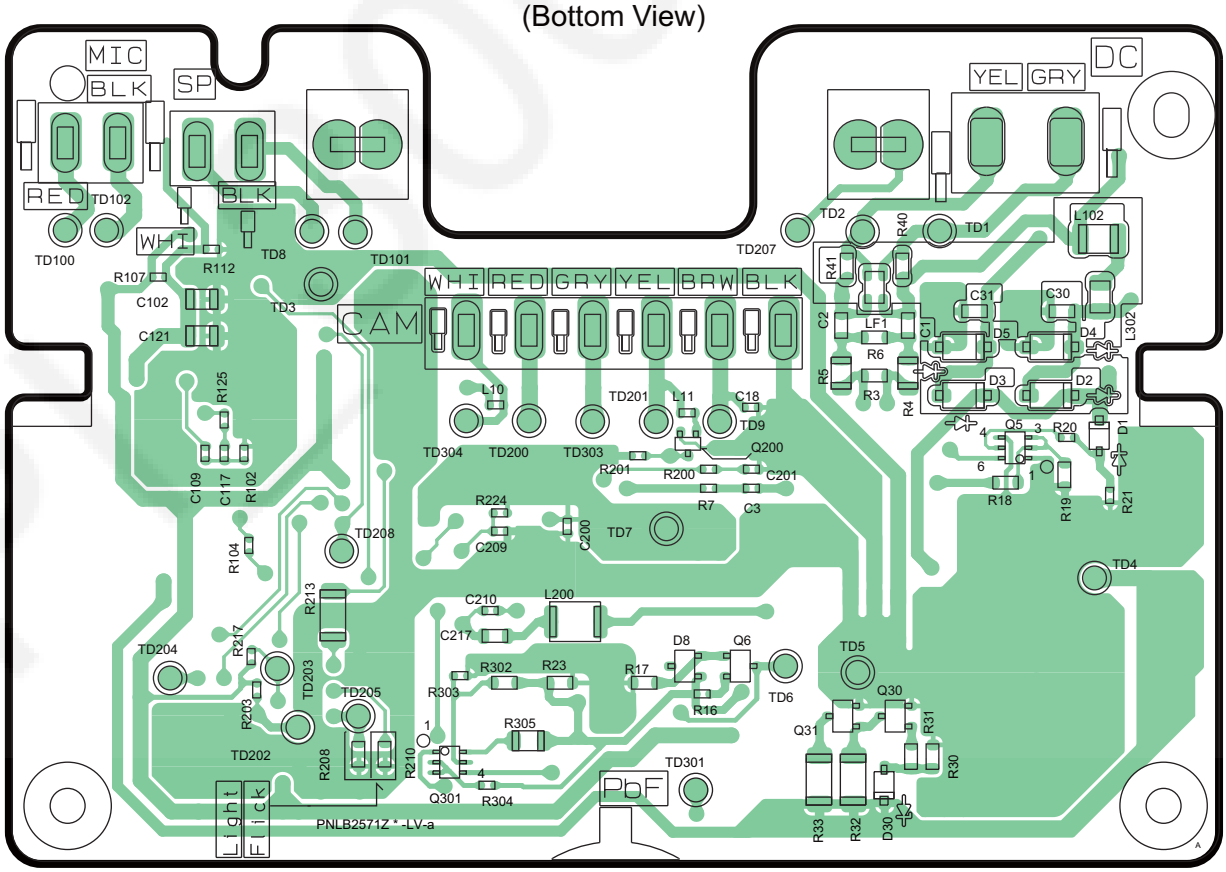
14.2. Door Station Board

14.2.1. Main Board

(Component View)



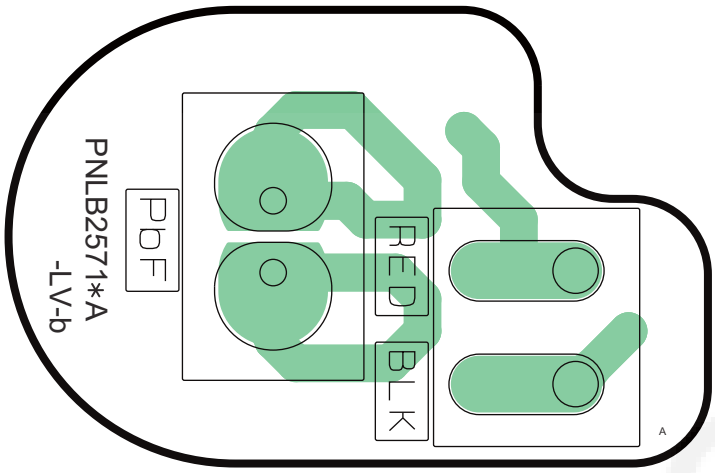
(Bottom View)



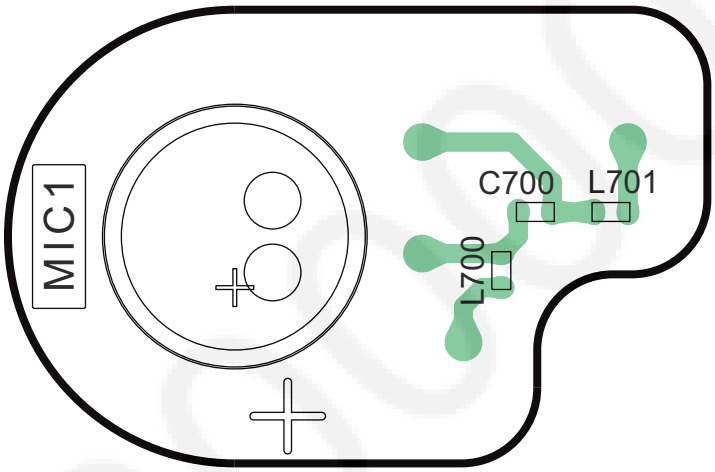
VL-V522LCE Main Board

14.2.2. MIC Board

(Component View)



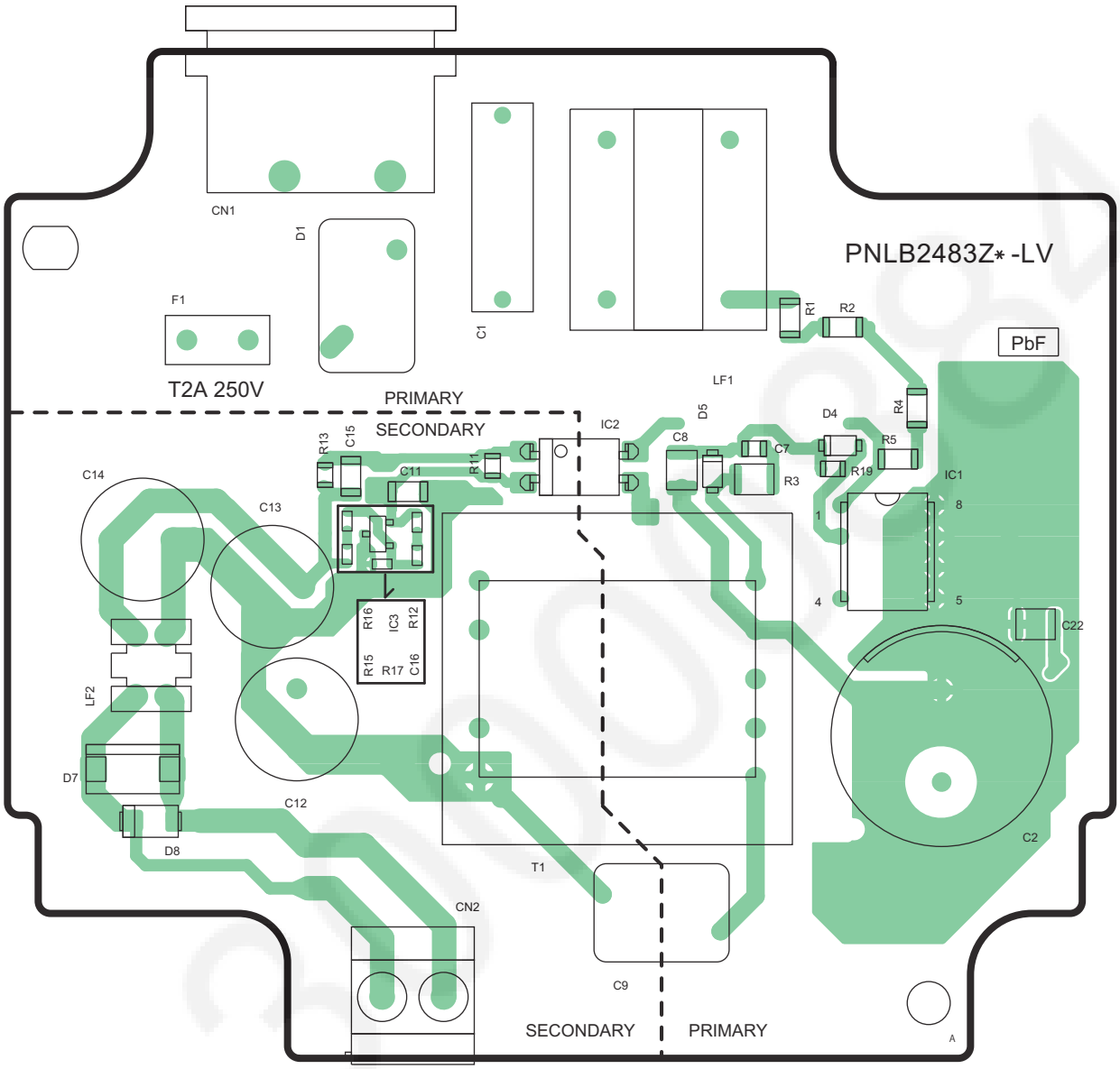
(Bottom View)



V522LCE MIC Board

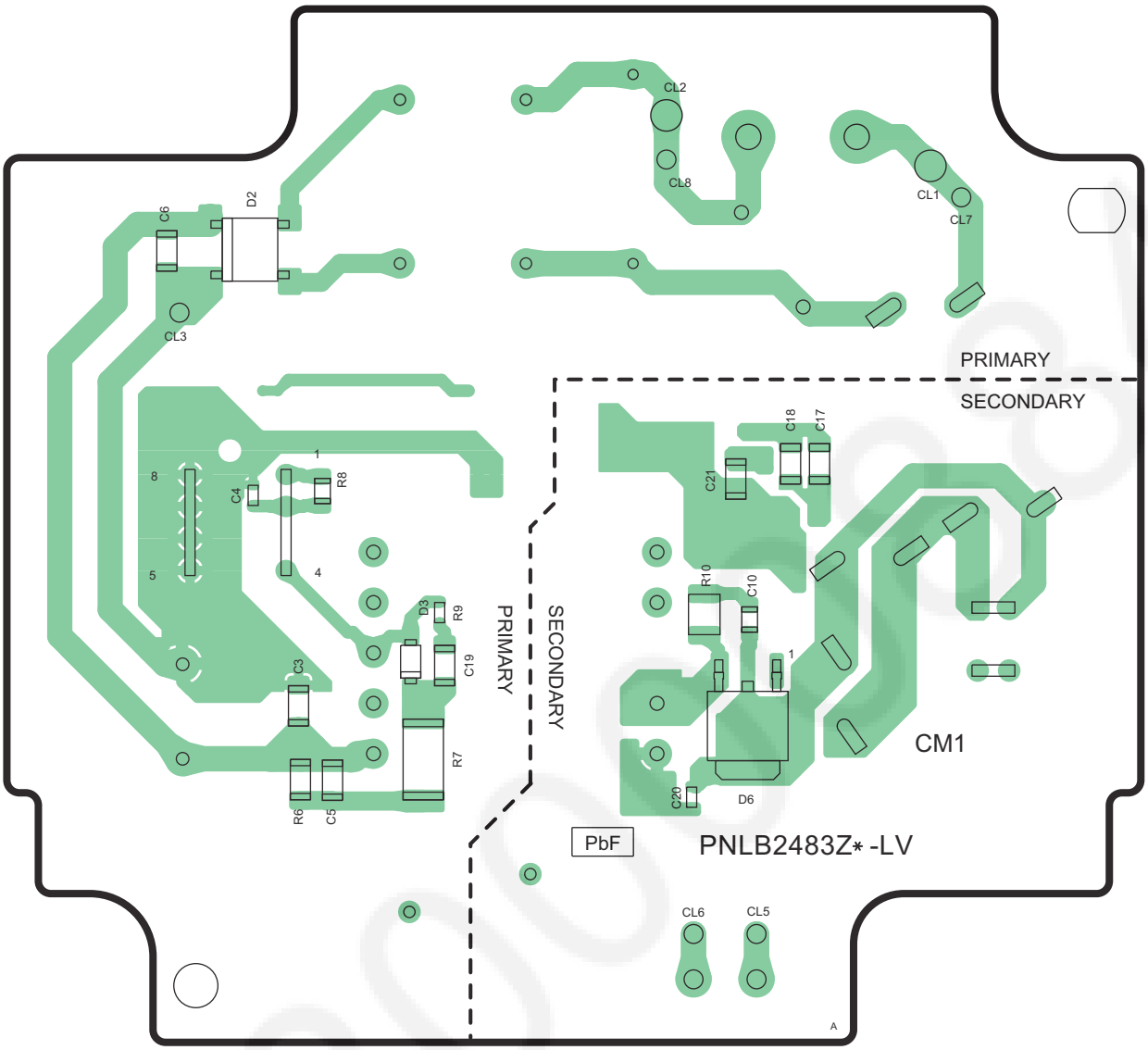
14.3. Power Supply Unit Board

14.3.1. Power Board (Component View)



VL-PS241 (Component View)

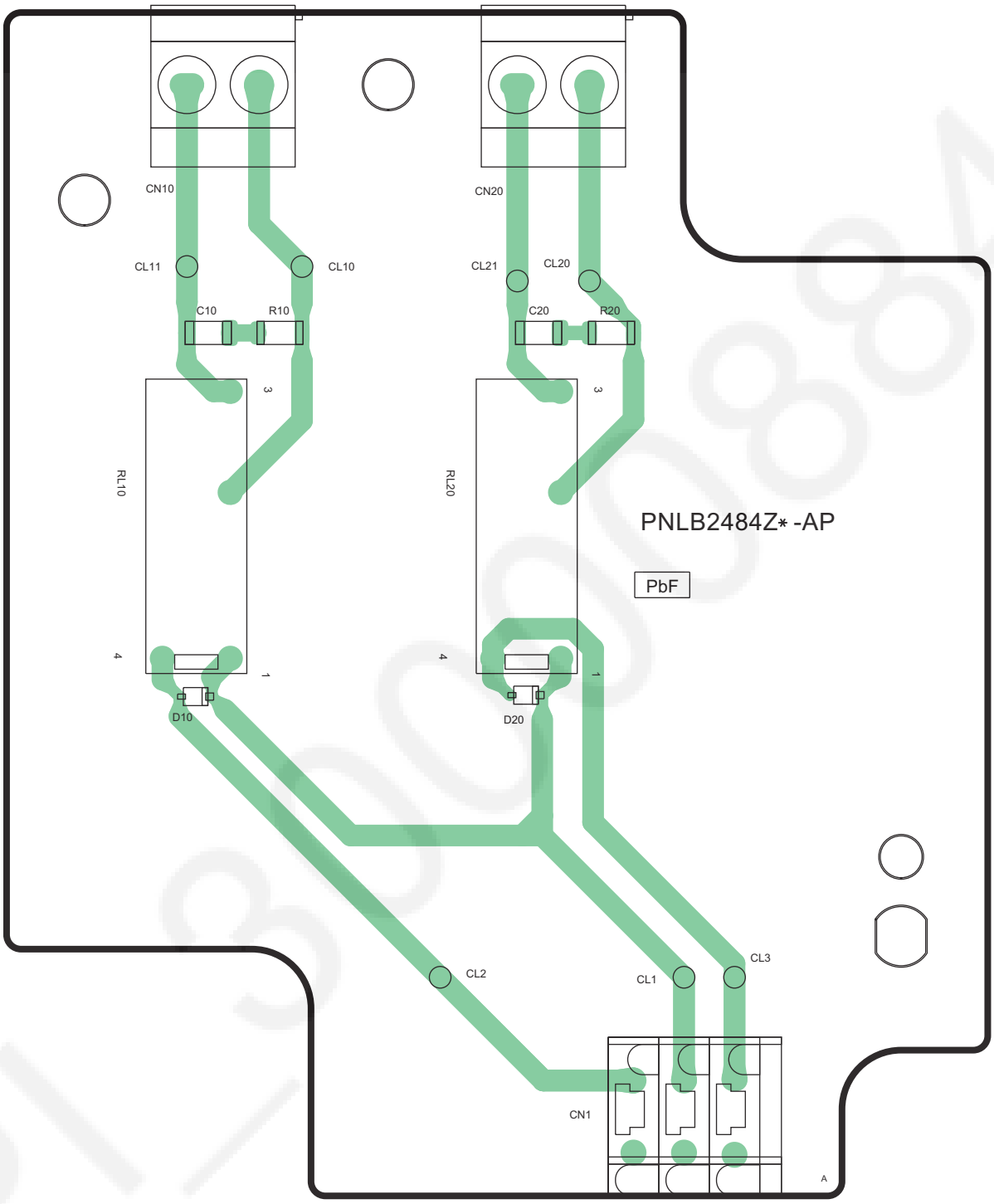
14.3.2. Power Board (Bottom View)



VL-PS241 (Bottom View)

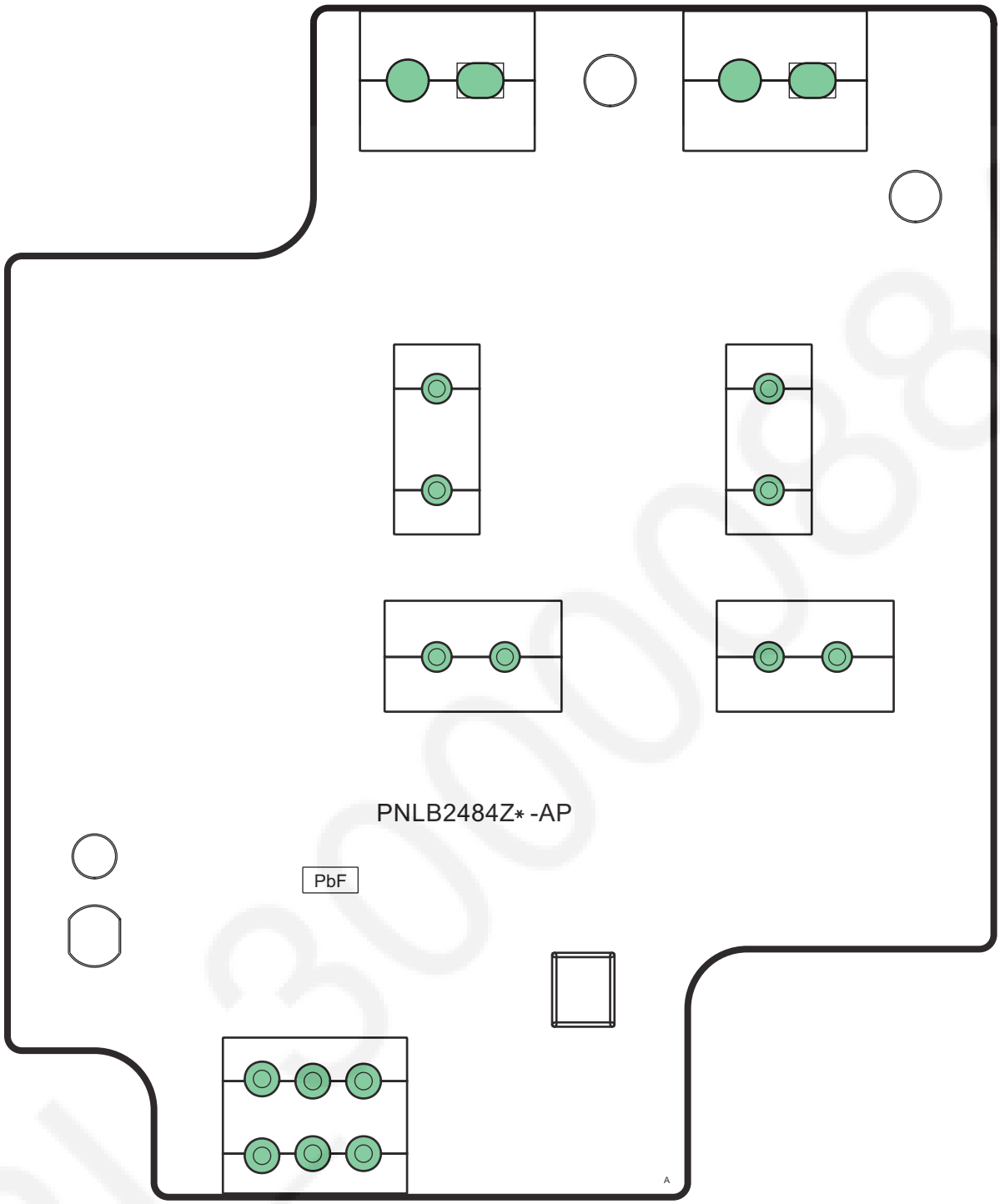
14.4. Relay Box Board

14.4.1. Relay Board (Component View)



VL-RLY1 (Component View)

14.4.2. Relay Board (Bottom View)

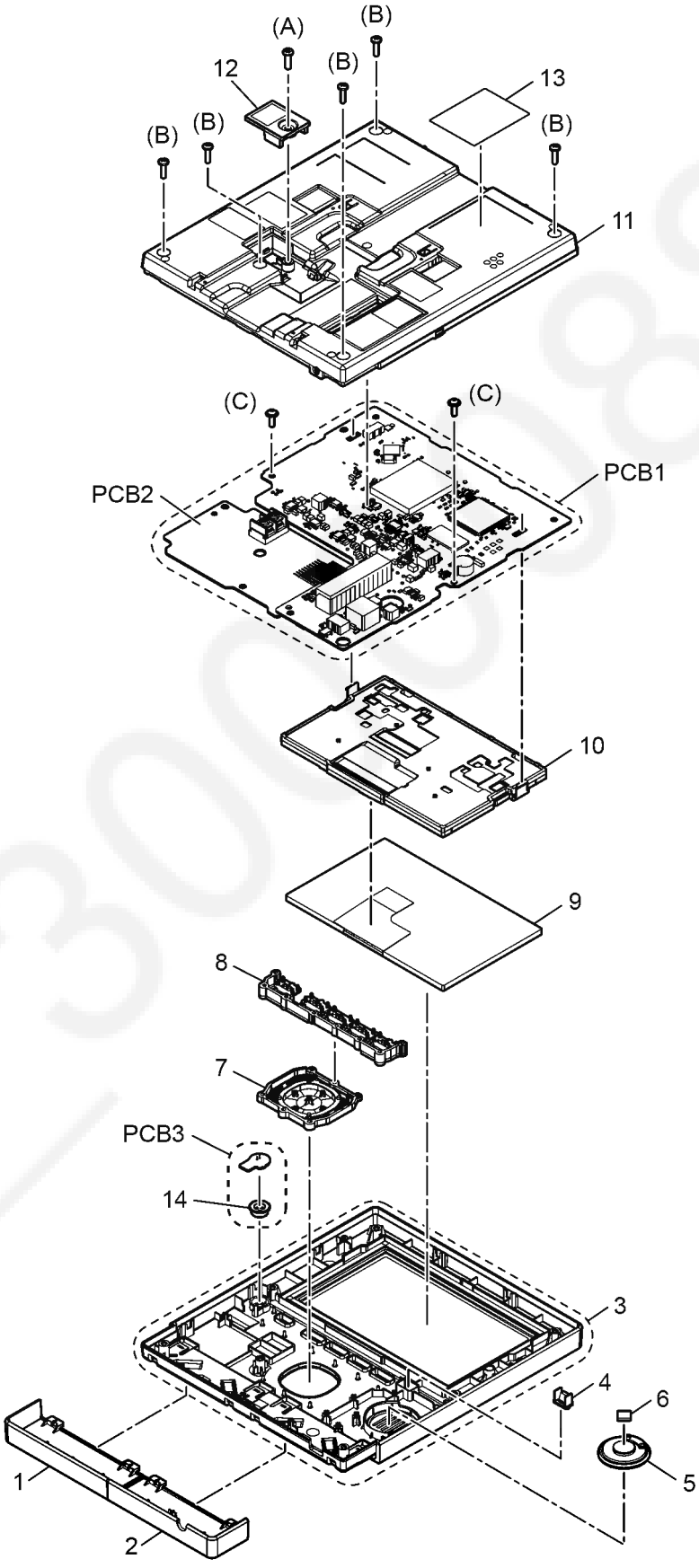


VL-RLY1 (Bottom View)

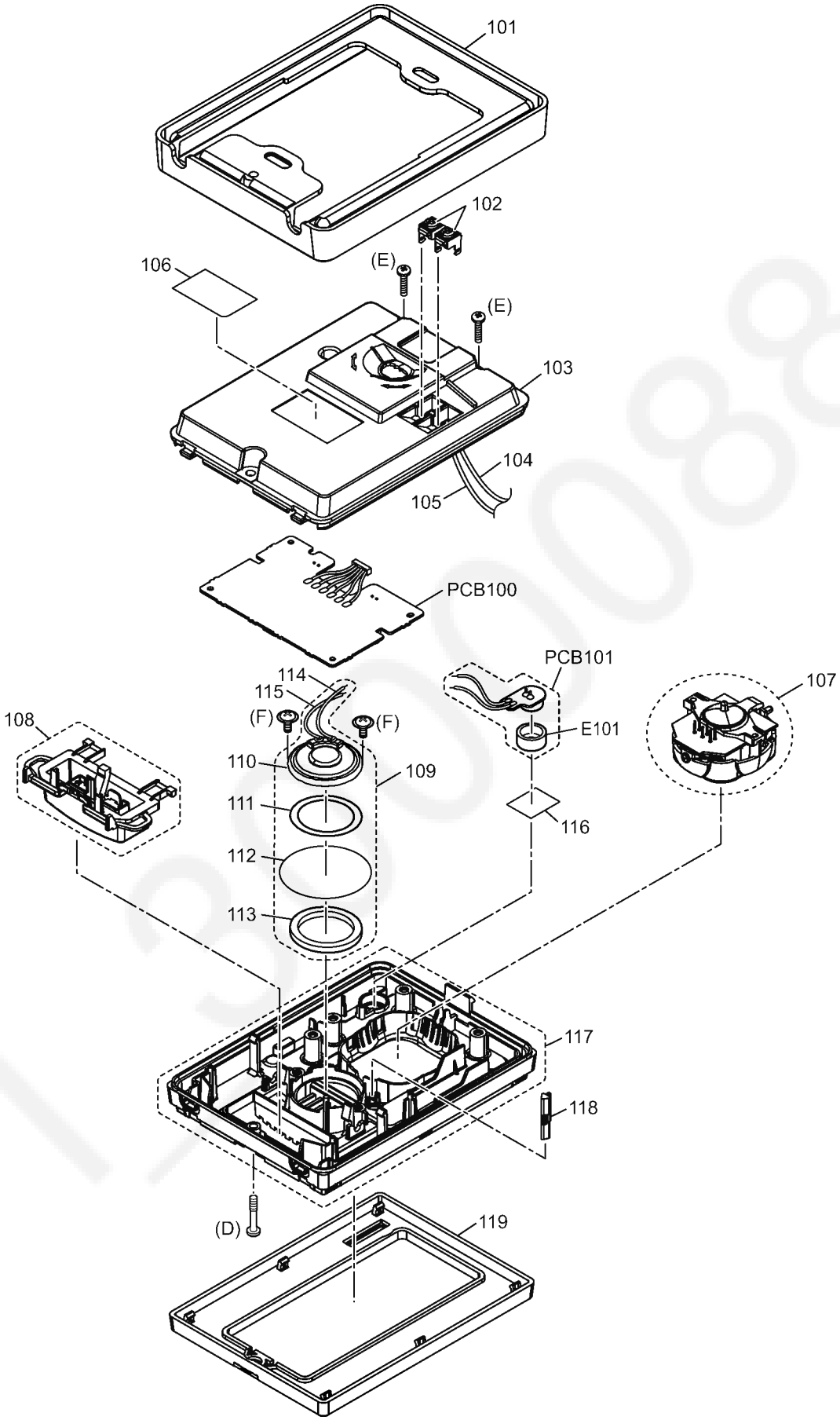
15 Exploded View and Replacement Parts List

15.1. Exploded View

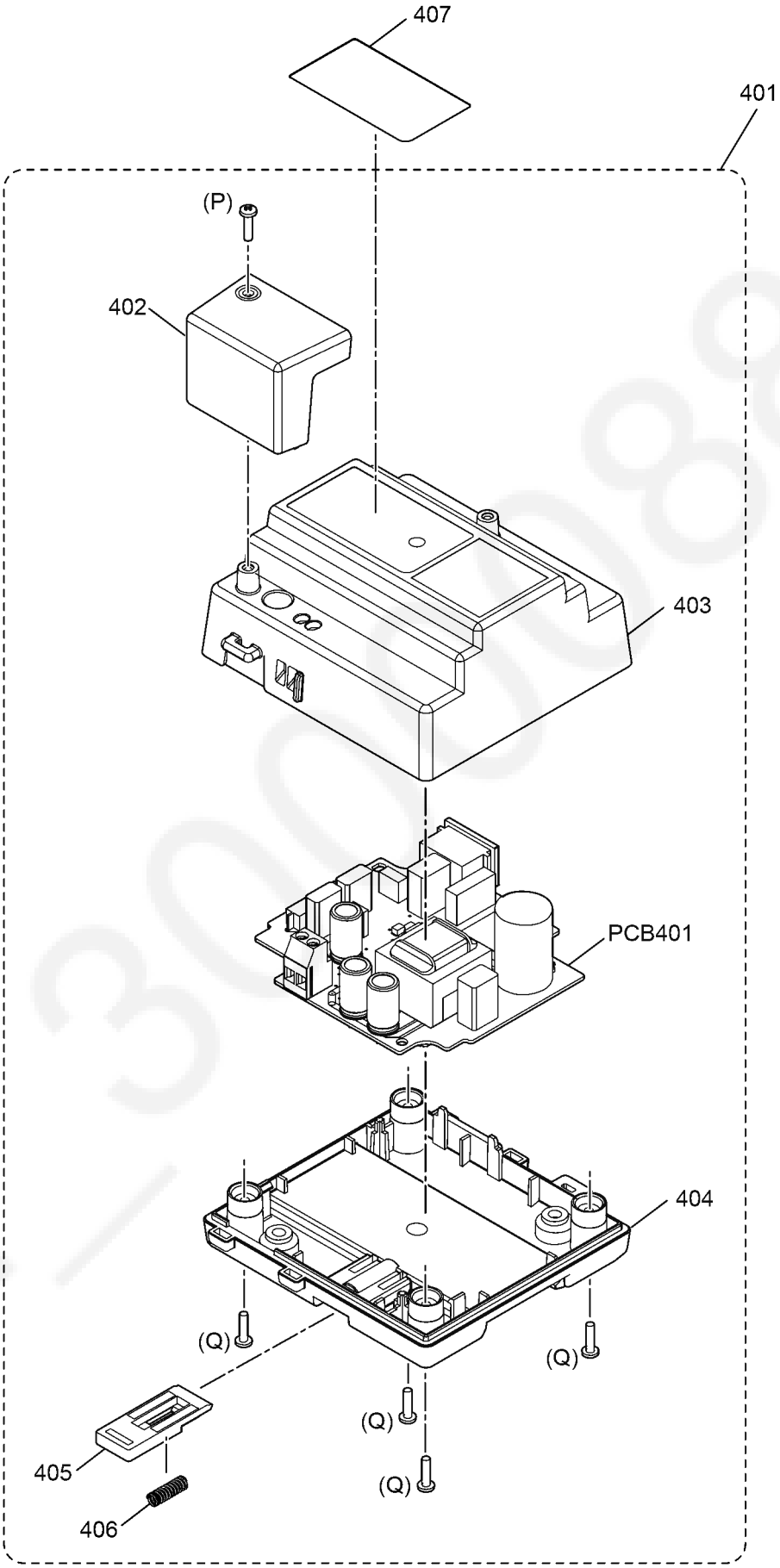
15.1.1. Main Monitor Station



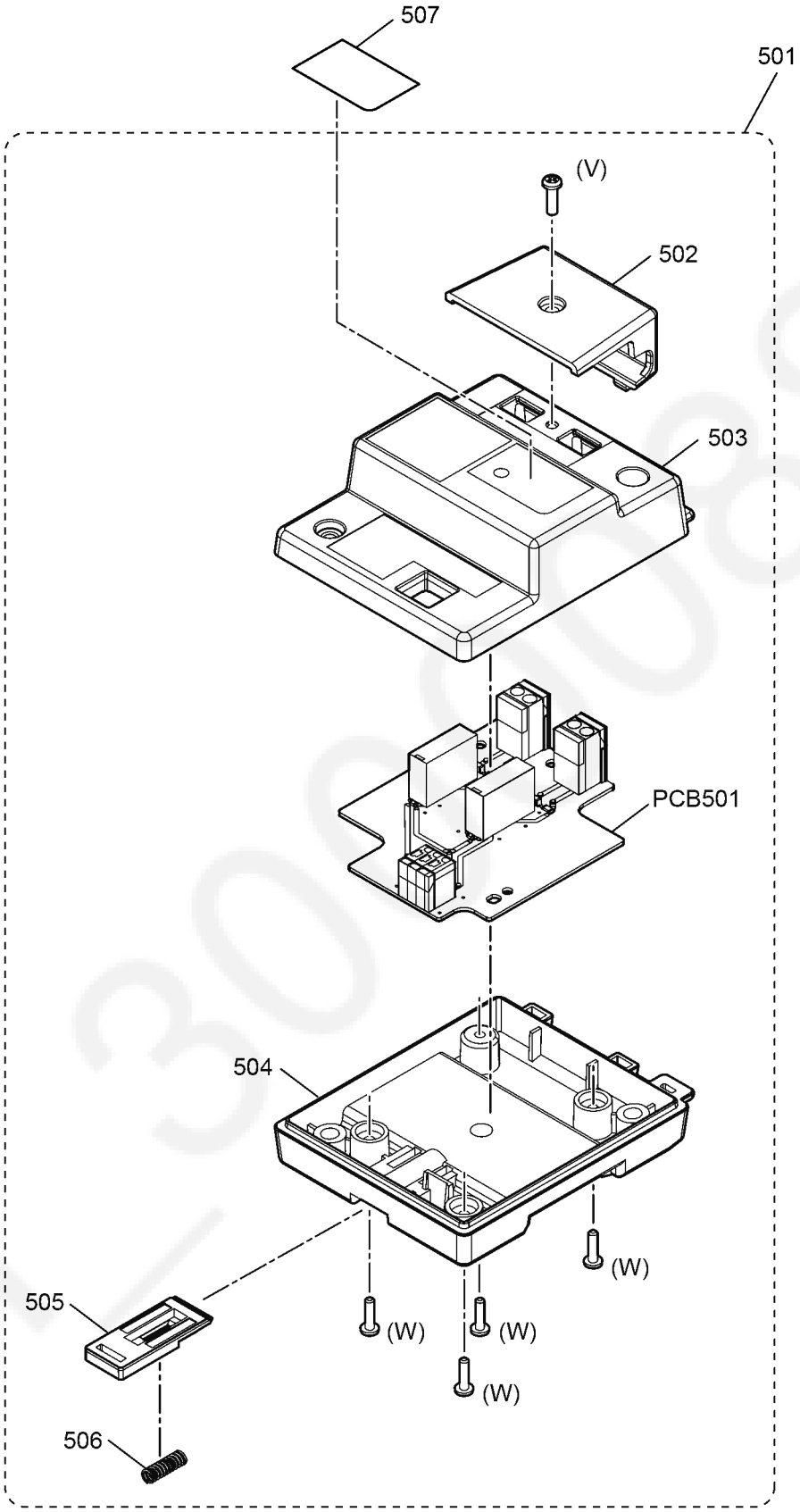
15.1.2. Door Station



15.1.3. Power Supply Unit

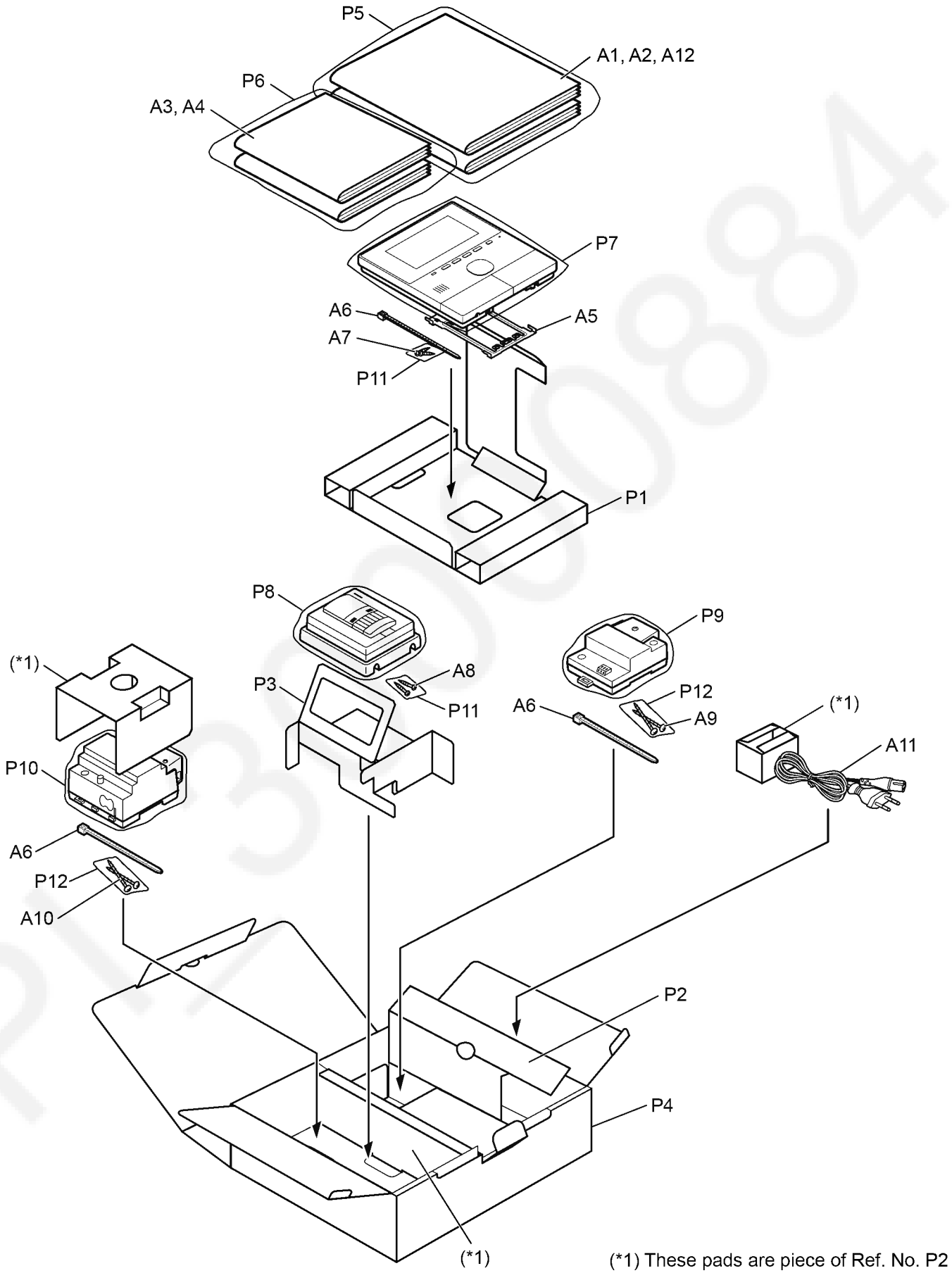


15.1.4. Relay Box



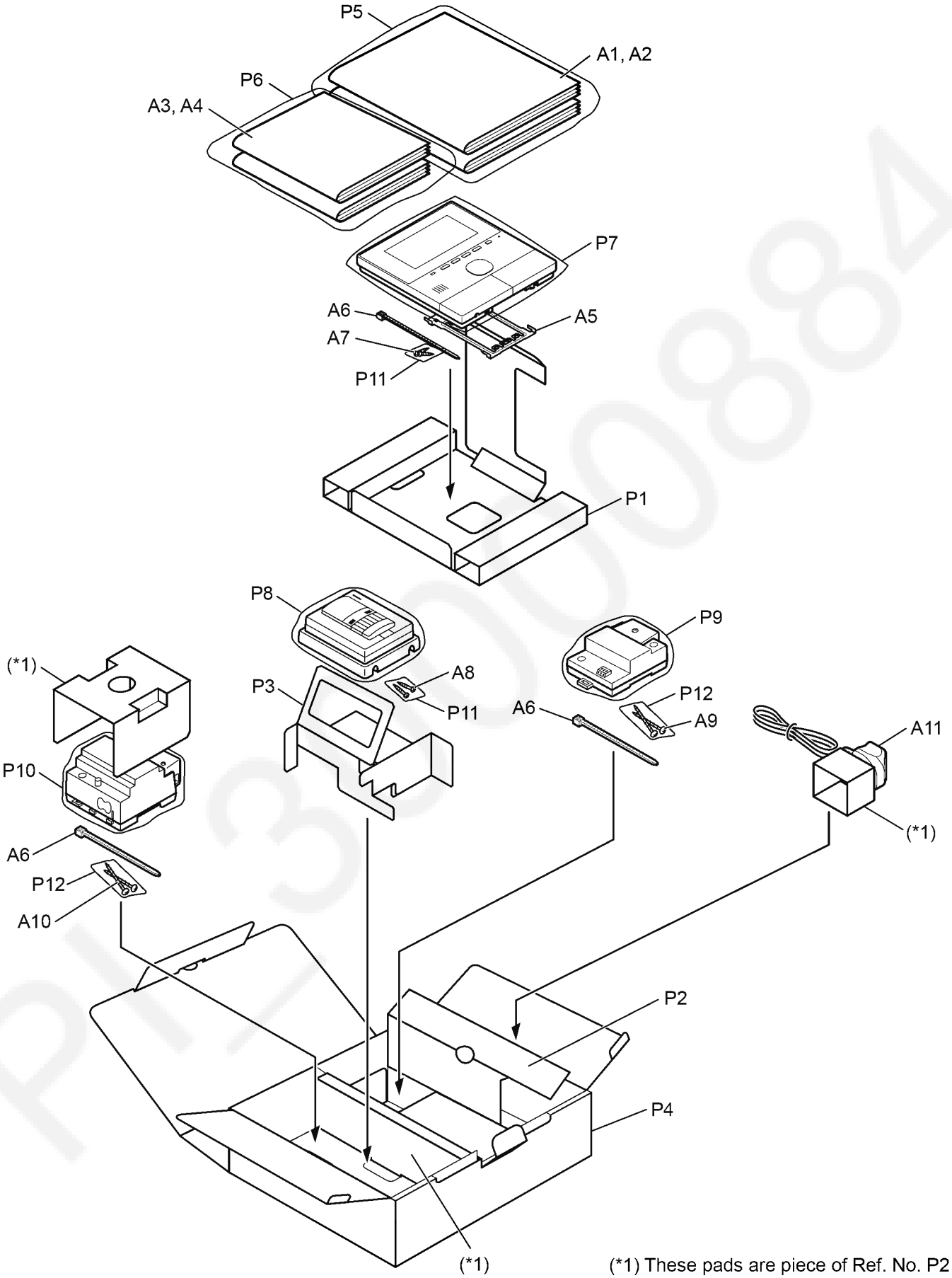
15.1.5. Accessories and Packing Materials Location

15.1.5.1. VL-SVN511BX



(*1) These pads are piece of Ref. No. P2

15.1.5.2. VL-SVN511CX/VL-SVN511CX1



(*1) These pads are piece of Ref. No. P2

15.2. Replacement Parts List

Note:

1. RTL (Retention Time Limited)
   The marking (RTL) indicates that the Retention Time is limited for this item.
   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.
3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.
4. ISO code (Example : ABS-HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.
5. RESISTORS & CAPACITORS
   Unless otherwise specified;
   All resistors are in ohms (Ω), k=1000Ω, M=1000kΩ
   All capacitors are in MICRO FARADS (μF), p=μ(μF)

■RESISTOR

Type

ERC: Solid ERD: Carbon PQ4R: Chip	ERX: Metal Film ERG: Metal Oxide ERO: Metal Film	PQRD: Carbon PQRQ: Fuse ERF : Wire Wound

Wattage

10,16,18: 1/8W	14,25,S2: 1/4W	12,50,S1: 1/2W	1: 1W	2: 2W	5: 5W

■CAPACITOR

Type

ECFD: Semi-Conductor ECQS: Styrol PQCBX, ECUV: Chip ECMS: Mica	ECCD, ECKD, PQCBC,PQVP: Ceramic ECQM, ECQV, ECQE, ECQU, ECQB: Polyester ECEA, ECSZ, ECOS: Electrolytic ECQP: Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECsz Type	Others	
1H: 50V 2A: 100V 2E: 250V 2H: 500V	05 : 50V 1 : 100V 2 : 200V	OF : 3.15V 1A : 10V 2V : 35V OJ : 6.3V	OJ : 6.3V 1A : 10V 1C : 16V 1E,25 : 25V	1V : 35V 50,1H : 50V 1J : 63V 2A : 100V

15.2.1. Main Monitor Station

15.2.1.1. Cabinet and Electrical Parts

(*1) When replacing LCD of main monitor station, make adjustments in "WHITE BALANCE". (Refer to **White Balance Adjustment** (P.50)).

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PNBC1618Z1	OFF BUTTON	ABS-V0 S
	2	PNBC1617Z1	TALK BUTTON	ABS-V0 S
	3	PNYMAN511EX	CABINET BODY	ABS-V0, PC-HB
	4	PNHR1698Z	LED LENS	PS-HB
	5	L0AA02A00087	SPEAKER	
	6	PNHG1148Z	SPEAKER RUBBER	
	7	PNBC1604Z1	NAVI BUTTON	ABS-V0 S
	8	PNBC1603Z1	FUNCTION BUTTON	ABS-V0 S
	9	L5EDDYY00671	LIQUID CRYSTAL DISPLAY (*1)	
	10	PNHR2159Z	LCD HOLDER	ABS-V0
	11	PNKF1403Z1	CABINET COVER	PS-HI-V0 S
	12	PNKV1236Z1	DC CORD COVER	ABS-V0 S
	13	PNGT9471Z	NAME PLATE	
	14	PNMG1012Z	MIC COVER	Si
	A	XTN3+10GFJ	SMAL SCREW	
	B	XTB26+10GFJ	SMALL SCREW	
	C	XTW26+T8PFJ	TAPPING SCREW	

15.2.1.2. Main P.C. Board Parts

(*2) When replacing IC401, refer to **Things to do after replacing IC** (P.46).

(*3) When replacing IC401, IC405 or X401, make adjustments. (Refer to **When replacing BBIC and X'tal** (P.47)).

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWPAN511BX	MAIN BOARD ASS'Y	
			(ICs)	
	IC100	MN103SW55	IC	
	IC101	C0EBY0000665	IC	
	IC300	C3ABQY000101	IC	
	IC340	C0DBAYY01630	IC	
	IC390	C1ZBZ0004359	IC	
	IC401	C3EBJY000044	IC (*2)(*3)	
	IC402	PNWIAN511BX	IC	
	IC405	C1CB00004202	IC (*3)	
	IC500	C0ABBB000179	IC	
	IC670	C1AB00002793	IC	
	IC671	C0DBGYY02061	IC	
	IC700	B3PBA0000138	PHOTO ELECTRIC TRANS-DUCER	
	IC701	C0ABBB000179	IC	
	IC910	C0DBAYY01694	IC	
	IC920	C0DBAYY01694	IC	
	IC930	C0DBAYY01694	IC	
	IC960	C0DBGYY03592	IC	
	IC970	C0ABBA000159	IC	
	IC350	It is impossible to supply (IC350 and IC490) by itself. Therefore, when this part is in need of replacing, please replace the Main Board Ass'y (PCB1).		
	IC490			
			(TRANSISTORS)	
	Q100	DRC9114E0L	TRANSISTOR(SI)	
	Q230	B1CHPC000014	TRANSISTOR(SI)	
	Q281	B1GBCFYY0014	TRANSISTOR(SI)	
	Q401	DSA7003R0L	TRANSISTOR(SI)	
	Q402	B1ADGE000012	TRANSISTOR(SI)	
	Q610	B1GDCFGJ0008	TRANSISTOR(SI)	
	Q620	B1GDCFGJ0008	TRANSISTOR(SI)	
	Q640	B1GBCFYY0014	TRANSISTOR(SI)	
	Q650	B1ADBL000017	TRANSISTOR(SI)	
	Q651	B1ADMJ000003	TRANSISTOR(SI)	
	Q652	B1ADBL000017	TRANSISTOR(SI)	
	Q653	B1ADMJ000003	TRANSISTOR(SI)	
	Q654	B1GBCFJK0001	TRANSISTOR(SI)	
	Q700	B1GBCFYY0014	TRANSISTOR(SI)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	Q702	B1ADGD000005	TRANSISTOR(SI)	
	Q703	B1GBCFJK0001	TRANSISTOR(SI)	
	Q800	B1ADMJ000003	TRANSISTOR(SI)	
	Q801	B1ADBL000017	TRANSISTOR(SI)	
	Q810	B1GBCFYY0014	TRANSISTOR(SI)	
	Q820	B1GBCFYY0014	TRANSISTOR(SI)	
	Q970	B1GDCFGJ0008	TRANSISTOR(SI)	
	Q971	DSC7003R0L	TRANSISTOR(SI)	
			(DIODES)	
	D281	B3AEB0000146	DIODE(SI)	
	D390	1SS355	DIODE(SI)	S
	D400	DZ2J051M0L	DIODE(SI)	
	D550	DZ2J051M0L	DIODE(SI)	
	D551	DZ2J051M0L	DIODE(SI)	
	D610	B0ACEM000012	DIODE(SI)	
	D620	B0ACEM000012	DIODE(SI)	
	D640	B0ACCK000003	DIODE(SI)	
	D670	B0BC4R7A0268	DIODE(SI)	S
	D672	DZ2J075M0L	DIODE(SI)	
	D673	B0BC4R7A0268	DIODE(SI)	S
	D700	DA3J101F0L	DIODE(SI)	
	D701	DA3J101F0L	DIODE(SI)	
	D702	B0ACCK000003	DIODE(SI)	
	D810	DZ2J270M0L	DIODE(SI)	
	D820	DZ2J270M0L	DIODE(SI)	
	D830	B0ACEM000012	DIODE(SI)	
	D840	B0ACEM000012	DIODE(SI)	
			(CONNECTORS)	
	CN200	K1MY40BA0685	CONNECTOR	
	CN600	K4AC13B00004	TERMINAL-TERMINAL PLATE	
			(FUSES)	
⚠	F900	K5H631100003	FUSE	
			(COILS & IC FILTERS)	
	L100	J0JHC0000027	MECHANICAL FILTER	
	L101	J0JHC0000027	MECHANICAL FILTER	
	L201	J0JCC0000274	IC FILTER	
	L202	J0JCC0000275	IC FILTER	
	L203	J0JCC0000275	IC FILTER	
	L204	J0JCC0000275	IC FILTER	
	L205	J0JCC0000275	IC FILTER	
	L206	J0JCC0000275	IC FILTER	
	L207	J0JCC0000275	IC FILTER	
	L208	J0JCC0000275	IC FILTER	
	L209	J0JCC0000275	IC FILTER	
	L210	J0JCC0000275	IC FILTER	
	L211	J0JCC0000275	IC FILTER	
	L212	J0JCC0000275	IC FILTER	
	L213	J0JCC0000275	IC FILTER	
	L214	J0JCC0000275	IC FILTER	
	L215	J0JCC0000275	IC FILTER	
	L216	J0JCC0000275	IC FILTER	
	L217	J0JCC0000275	IC FILTER	
	L218	J0JCC0000275	IC FILTER	
	L219	J0JCC0000275	IC FILTER	
	L220	J0JCC0000275	IC FILTER	
	L221	J0JCC0000275	IC FILTER	
	L222	J0JCC0000275	IC FILTER	
	L223	J0JCC0000275	IC FILTER	
	L224	J0JCC0000275	IC FILTER	
	L225	J0JCC0000275	IC FILTER	
	L230	J0JYC0000057	COIL	
	L300	J0JCC0000092	IC FILTER	
	L340	G1C2R2MA0392	COIL	
	L610	G1C681MA0072	COIL	
	L611	G1C470MA0203	COIL	
	L620	G1C681MA0072	COIL	
	L621	G1C470MA0203	COIL	
	L640	G1C330KA0100	COIL	
	L641	G1C470MA0203	COIL	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L644	G1C100MA0395	COIL	
	L645	J0JCC0000092	IC FILTER	
	L646	J0JCC0000092	IC FILTER	
	L670	G1C331JA0036	COIL	
	L671	G1C330K00022	COIL	
	L700	J0JCC0000286	IC FILTER	
	L701	J0JCC0000286	IC FILTER	
	L808	PQLQR2KA113	COIL	S
	L818	PQLQR2KA113	COIL	S
	L828	PQLQR2KA113	COIL	S
	L830	J0JCC0000092	IC FILTER	
	L831	J0JCC0000092	IC FILTER	
	L840	J0JCC0000092	IC FILTER	
	L841	J0JCC0000092	IC FILTER	
	L910	G1C6R8MA0249	COIL	
	L920	G1C3R3MA0203	COIL	
	L930	G1C6R8MA0249	COIL	
	L981	J0JAC0000059	IC FILTER	
	L982	J0JAC0000059	IC FILTER	
	L983	J0JAC0000059	IC FILTER	
	L984	J0JAC0000059	IC FILTER	
	L985	J0JAC0000059	IC FILTER	
	L991	J0JCC0000276	IC FILTER	
	L992	J0JCC0000276	IC FILTER	
	L993	J0JCC0000276	IC FILTER	
	L994	J0JCC0000276	IC FILTER	
	L995	J0JCC0000276	IC FILTER	
			(RELAYS)	
	RL640	K6B4CGA00010	RELAY	
	RL700	K6B4CGA00010	RELAY	
			(SWITCHES)	
	SW100	K0H1BB000063	PUSH SWITCH	
	SW170	K0H1BA000361	SPECIAL SWITCH	
	SW171	K0H1BA000594	PUSH SWITCH	
	SW172	K0H1BA000594	PUSH SWITCH	
	SW173	K0H1BA000594	PUSH SWITCH	
	SW174	K0H1BA000594	PUSH SWITCH	
	SW175	K0H1BA000594	PUSH SWITCH	
			(TRANSFORMERS)	
	T640	G5ZZ00000110	TRANSFORMER	
	T700	G4A1A0000176	TRANSFORMER	
			(CRYSTAL OSCILLATORS)	
	X380	H0J270500137	CRYSTAL OSCILLATOR	
	X390	H0A327200192	CRYSTAL OSCILLATOR	
	X401	H0J103500042	CRYSTAL OSCILLATOR (*3)	
			(RESISTORS)	
	R100	ERJ2GEJ101	100	S
	R102	ERJ2GEJ472X	4.7k	S
	R103	ERJ2GEJ101	100	S
	R104	ERJ2GEJ102	1k	S
	R106	D1H41032A014	10k	
	R107	ERJ2GEJ102	1k	S
	R108	EXB24V102JX	1k	S
	R109	ERJ2GEJ103	10k	S
	R110	ERJ2GEJ103	10k	S
	R111	D1H81014A042	100	
	R113	ERJ3EKF1002	0.1	
	R114	EXB24V102JX	1k	S
	R115	EXB24V102JX	1k	S
	R121	ERJ2GE0R00	0	S
	R140	ERJ2GEJ102	1k	S
	R142	ERJ2GEJ222	2.2k	S
	R143	ERJ2GEJ102	1k	S
	R145	D1BA1001A015	1k	S
	R146	ERJ2GEJ102	1k	
	R147	D1H81014A042	100	
	R148	D1H81014A042	100	
	R170	ERJ2GEJ101	100	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R171	D1H41012A014	100	
	R172	ERJ2GEJ101	100	S
	R173	D1H81014A042	100	
	R174	D1H41032A014	10k	
	R175	D1H81044A042	100k	
	R176	D0GA104JA021	100k	S
	R191	ERJ2GE0R00	0	S
	R200	D1H84704A042	47	
	R201	D1H84704A042	47	
	R202	D1H84704A042	47	
	R203	D1H84704A042	47	
	R204	D1H84704A042	47	
	R205	D1H84704A042	47	
	R206	ERJ2GEJ820	82	S
	R207	D1H41032A014	10k	
	R210	ERJ2GEJ820	82	S
	R230	ERJ2GEJ103	10k	S
	R231	ERJ2GEJ102	1k	S
	R233	ERJ3GEYJ822	8.2k	S
	R281	ERJ3GEYJ822	8.2k	S
	R340	ERJ3GEY0R00	0	S
	R341	ERJ3GEY0R00	0	S
	R350	ERJ2GEJ103	10k	S
	R354	ERJ2GEJ103	10k	S
	R356	ERJ2GEJ103	10k	S
	R380	ERJ2GEJ182	1.8k	S
	R381	ERJ2GEJ105X	1m	S
	R382	ERJ2GE0R00	0	S
	R390	ERJ3GEYJ331	330	S
	R400	ERJ2GEJ472X	4.7k	S
	R402	D1H41012A014	100	
	R403	ERJ2GEJ472X	4.7k	S
	R404	D1H43302A014	33	
	R405	ERJ2GEJ222	2.2k	S
	R406	ERJ2GEJ101	100	S
	R407	ERJ3BQJ1R0V	1	
	R408	D1H81034A042	10k	
	R409	ERJ3BQJ1R0V	1	
	R410	D1H43302A014	33	
	R411	ERJ3GEY0R00	0	S
	R412	D0GA563ZA006	56k	
	R413	D1H83304A042	33	
	R414	ERJ2GEJ101	100	S
	R415	ERJ2GEJ102	1k	S
	R416	ERJ3EKF1802	18k	
	R417	ERJ3EKF6801	6.8k	
	R419	ERJ2GEJ103	10k	S
	R420	ERJ2GEJ103	10k	S
	R423	ERJ2GEJ472X	4.7k	S
	R429	ERJ2GEJ562X	5.6k	S
	R430	ERJ2GEJ562X	5.6k	S
	R490	D1H41012A014	100	
	R491	ERJ2GEJ100	10	S
	R492	ERJ6GEY0R00	0	S
	R494	ERJ2GEJ102	1k	S
	R501	ERJ2GEJ105X	1m	S
	R502	D1H41032A014	10k	
	R504	ERJ2GEJ183	18k	S
	R505	ERJ8GEYJ680	68	S
	R506	ERJ2GEJ274	270k	S
	R507	ERJ2GEJ103	10k	S
	R508	ERJ2GEJ103	10k	S
	R509	ERJ2GEJ223	22k	S
	R510	ERJ2GEJ333	33k	S
	R511	ERJ2GEJ333	33k	S
	R512	ERJ2GEJ223	22k	S
	R554	ERJ3BQJ3R3V	3.3	
	R555	ERJ3BQJ3R3V	3.3	
	R571	ERJ2GEJ101	100	S
	R572	ERJ2GEJ102	1k	S
	R573	ERJ2GEJ102	1k	S
	R574	ERJ2GEJ101	100	S
	R575	EXB24V472JX	4.7	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R581	ERJ2GEJ272	2.7k	S
	R593	ERJ2GEJ472X	4.7k	S
	R611	PQ4R10XJ331	330	S
	R612	D1H46822A014	6.8k	
	R621	PQ4R10XJ331	330	S
	R640	ERJ3GEYJ561	560	S
	R641	PQ4R10XJ100	10	S
	R642	PQ4R10XJ100	10	S
	R643	ERJ3GEYJ561	560	S
	R644	ERJ2GEJ910	91	S
	R645	ERJ2GEJ820	82	S
	R650	ERJ2GEJ103	10k	S
	R651	ERJ2GEJ273X	27k	S
	R652	ERJ2GEJ333	33k	S
	R653	ERJ8RQJR47V	0.47	
	R654	ERJ2GEJ102	1k	S
	R657	PQ4R18XJ682	6.8k	S
	R658	ERJ2GEJ100	10	S
	R659	ERJ2GEJ103	10k	S
	R660	ERJ8RQJR82V	0.82	
	R671	ERJ8GEYJ620V	62	S
	R673	EXB24V472JX	4.7	
	R674	D0GA332JA015	3.3k	S
	R676	ERJ2GEJ101	100	S
	R677	ERJ2GEJ472X	4.7k	S
	R678	ERJ2GEJ101	100	S
	R679	ERJ2GEJ224	220k	S
	R680	ERJ2GEJ472X	4.7k	S
	R687	D1H41032A014	10k	
	R688	D1H42232A014	22k	
	R700	PQ4R18XJ271	270	S
	R701	ERJ8GEYJ680	68	S
	R702	ERJ3GEYJ821	820	S
	R703	ERJ3GEYJ151	150	S
	R704	ERJ3GEYJ181	180	S
	R705	ERJ2GEJ102	1k	S
	R706	ERJ2GEJ103	10k	S
	R707	ERJ3GEYJ472	4.7k	S
	R708	ERJ2GEJ103	10k	S
	R709	ERJ2GE0R00	0	S
	R710	ERJ2GEJ184	180k	S
	R711	ERJ2GEJ184	180k	S
	R712	ERJ2GEJ273X	27k	S
	R713	ERJ2GEJ184	180k	S
	R714	ERJ2GEJ273X	27k	S
	R715	ERJ2GEJ123	12k	S
	R716	D1H41032A014	10k	
	R717	ERJ2GEJ473	47k	S
	R718	PQ4R18XJ562	5.6k	S
	R719	ERJ2GEJ820	82	S
	R720	ERJ6GEY0R00	0	S
	R721	ERJ6GEY0R00	0	S
	R801	ERJ2GEJ103	10k	S
	R802	ERJ2GEJ682	6.8k	S
	R803	ERJ2GEJ102	1k	S
	R804	PQ4R18XJ6R8	6.8	S
	R805	ERJ2GEJ333	33k	S
	R830	ERJ3GEYJ472	4.7k	S
	R831	ERJ3GEYJ103	10k	S
	R832	ERJ3GEYJ183	18k	S
	R840	ERJ3GEYJ472	4.7k	S
	R841	ERJ3GEYJ103	10k	S
	R842	ERJ3GEYJ183	18k	S
	R906	ERJ6GEY0R00	0	S
	R911	ERJ3EKF6202	62k	
	R912	ERJ3EKF1182V	11.8k	
	R913	ERJ2GEJ473	47k	
	R915	ERJ2GE0R00	0	S
	R921	ERJ3EKF4702	47k	
	R922	ERJ3EKF1502	15k	
	R923	ERJ2GEJ333	33k	S
	R931	ERJ3EKF6042V	60.4k	
	R932	ERJ3EKF1502	15k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R933	ERJ2GEJ473	47k	S
	R936	ERJ8GEY0R00	0	S
	R940	ERJ8RQJR47V	0.47	
	R941	ERJ8GEY0R00	0	S
	R960	ERJ2GE0R00	0	S
	R970	ERJ3EKF4702	47k	
	R971	ERJ3EKF1002	0.1	
	R972	ERJ2GEJ102	1k	S
	R973	ERJ8ENF10R0V	10	
			(CAPACITORS)	
	C100	ECUE1H222KBQ	0.0022	S
	C101	ECUE1H221JCQ	220p	S
	C102	ECUE1C104KBQ	0.1	
	C103	ECUV1C105KBV	1	
	C104	ECUE1H102KBQ	0.001	
	C105	ECUV1C105KBV	1	
	C106	ECUE1H102KBQ	0.001	
	C107	ECUE1C104KBQ	0.1	
	C108	ECUE1C104KBQ	0.1	
	C110	ECUE1E103KBQ	0.01	
	C111	ECUE1E103KBQ	0.01	
	C112	ECUE1E103KBQ	0.01	
	C113	ECUV1C105KBV	1	
	C114	ECUV1C105KBV	1	
	C115	ECUV1C105KBV	1	
	C116	ECUV1C105KBV	1	
	C117	ECUE1C104KBQ	0.1	
	C118	ECUE1C104KBQ	0.1	
	C120	ECUV1C105KBV	1	
	C121	ECUV1C105KBV	1	
	C122	ECUE1C104KBQ	0.1	
	C123	ECUE1C104KBQ	0.1	
	C124	F1J1A106A043	10	
	C125	ECUE1C104KBQ	0.1	
	C126	ECUE1C104KBQ	0.1	
	C127	F1J1A106A043	10	
	C128	ECUE1H102KBQ	0.001	
	C129	ECUE1C104KBQ	0.1	
	C130	ECUE1C104KBQ	0.1	
	C131	ECUE1C104KBQ	0.1	
	C132	ECUE1C104KBQ	0.1	
	C133	ECUE1C104KBQ	0.1	
	C134	ECUE1C104KBQ	0.1	
	C135	ECUE1C104KBQ	0.1	
	C136	ECUE1C104KBQ	0.1	
	C138	ECUE1C104KBQ	0.1	
	C139	ECUE1C104KBQ	0.1	
	C140	ECUE1C104KBQ	0.1	
	C141	ECUE1C104KBQ	0.1	
	C142	ECUE1C104KBQ	0.1	
	C143	ECUE1C104KBQ	0.1	
	C144	ECUE1C104KBQ	0.1	
	C145	ECUE1C104KBQ	0.1	
	C146	ECUE1C104KBQ	0.1	
	C147	ECUE1C104KBQ	0.1	
	C148	ECUE1C104KBQ	0.1	
	C149	ECUE1C104KBQ	0.1	
	C150	F1J1A106A024	10	
	C151	ECUE1C104KBQ	0.1	
	C170	ECUE1E103KBQ	0.01	
	C171	ECUE1H101JCQ	100p	
	C172	ECUE1H101JCQ	100p	
	C200	ECUE1H330JCQ	33p	
	C201	ECUE1H330JCQ	33p	
	C202	ECUE1H330JCQ	33p	
	C203	ECUE1H330JCQ	33p	
	C204	ECUE1H330JCQ	33p	
	C205	ECUE1H330JCQ	33p	
	C206	ECUE1H330JCQ	33p	
	C207	ECUE1H330JCQ	33p	
	C208	ECUE1H330JCQ	33p	
	C209	ECUE1H330JCQ	33p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C210	ECUE1H330JCQ	33p	
	C211	ECUE1H330JCQ	33p	
	C212	ECUE1H330JCQ	33p	
	C213	ECUE1H330JCQ	33p	
	C214	ECUE1H330JCQ	33p	
	C215	ECUE1H330JCQ	33p	
	C216	ECUE1H330JCQ	33p	
	C217	ECUE1H330JCQ	33p	
	C218	ECUE1H330JCQ	33p	
	C219	ECUE1H330JCQ	33p	
	C220	ECUE1H330JCQ	33p	
	C221	ECUE1H330JCQ	33p	
	C222	ECUE1H330JCQ	33p	
	C223	ECUE1H330JCQ	33p	
	C224	ECUE1H150JCQ	15p	
	C230	F1J1A106A024	10	
	C231	ECUE1C104KBQ	0.1	
	C232	ECUE1H101JCQ	100p	
	C315	ECUE1C104KBQ	0.1	
	C316	ECUE1C104KBQ	0.1	
	C317	ECUE1C104KBQ	0.1	
	C318	ECUE1C104KBQ	0.1	
	C319	F1J1A106A024	10	
	C320	ECUE1C104KBQ	0.1	
	C340	F1J0J2260004	22	
	C341	F1J0J2260004	22	
	C350	ECUV1C105KBV	1	
	C380	ECUE1H120JCQ	12p	
	C381	ECUE1H100DCQ	10p	
	C390	ECUE1H7R0CCQ	7	
	C391	ECUE1H9R0DCQ	9	
	C392	ECUE1C104KBQ	0.1	
	C393	EECS0HD224H	220000	
	C404	ECUE1C104KBQ	0.1	
	C405	ECUE1H331KBQ	330p	
	C408	ECUE1E103KBQ	0.01	
	C409	ECUE1C104KBQ	0.1	
	C410	ECUE1H332KBQ	0.0033	
	C411	ECUE1H332KBQ	0.0033	
	C412	ECUE1H100DCQ	10p	
	C413	ECUE1H101JCQ	100p	
	C414	ECUE1H100DCQ	10p	
	C415	ECUE1H101JCQ	100p	
	C416	ECUV1C105KBV	1	
	C418	ECUE1C104KBQ	0.1	
	C420	ECUV1C105KBV	1	
	C423	ECUE1C104KBQ	0.1	
	C427	ECUE1C104KBQ	0.1	
	C428	ECUV1C105KBV	1	
	C430	ECJ0EB0J224K	0.22	S
	C432	ECUV1C105KBV	1	
	C433	ECUV1C105KBV	1	
	C435	ECUV1C105KBV	1	
	C436	ECUE1H150JCQ	15p	
	C438	ECUV1C105KBV	1	
	C439	ECUV1C105KBV	1	
	C490	F1G1H100A723	10p	
	C491	F1G1H100A723	10p	
	C492	F1J1A106A024	10	
	C493	ECUE1H100DCQ	10p	
	C500	F2G1C1010034	100	
	C501	F1L1E1060021	10	
	C502	ECUE1E103KBQ	0.01	
	C503	ECUE1H102KBQ	0.001	
	C505	ECUE1C104KBQ	0.1	
	C506	ECUE1H681KBQ	680p	
	C507	ECUE1H100DCQ	10p	
	C508	ECUE1C104KBQ	0.1	
	C509	ECUE1H332KBQ	0.0033	
	C510	ECUE1H100DCQ	10p	
	C511	ECUE1H332KBQ	0.0033	
	C512	ECUE1C104KBQ	0.1	
	C514	ECUE1H100DCQ	10p	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C516	ECUE1H100DCQ	10p	
	C517	ECUE1H100DCQ	10p	
	C521	F1L1E1060021	10	
	C522	F1L1E1060021	10	
	C523	F1L1E1060021	10	
	C526	ECUE1H100DCQ	10p	
	C551	ECUE1H100DCQ	10p	
	C552	ECUE1H220JCQ	22p	
	C553	ECUE1H220JCQ	22p	
	C554	ECUE1H332KBQ	0.0033	
	C555	ECUE1H332KBQ	0.0033	
	C571	ECUE1H100DCQ	10p	
	C572	ECUE1H100DCQ	10p	
	C575	F1J0J2260004	22	
	C576	ECUV1A224KBV	0.22	
	C577	ECUV1A224KBV	0.22	
	C582	ECUV1C105KBV	1	
	C583	ECUE1H100DCQ	10p	
	C594	ECUE1C104KBQ	0.1	
	C610	ECUE1H330JCQ	33p	
	C611	ECUE0J105KBQ	1	
	C620	ECUE1H330JCQ	33p	
	C621	ECUE0J105KBQ	1	
	C640	ECUV1H822KBV	0.0082	
	C641	ECUE1H100DCQ	10p	
	C642	ECUE1H152KBQ	0.0015	
	C643	ECUE1H152KBQ	0.0015	
	C644	ECUV1H103KBV	0.01	
	C651	ECUE1H102KBQ	0.001	
	C653	F1G1H821A541	820p	
	C654	ECUE1H100DCQ	10p	
	C657	F1K0J476A004	47	
	C658	ECUE1H100DCQ	10p	
	C660	F2G1V330A291	33	
	C661	F1K0J107A036	100	
	C662	ECUE1H100DCQ	10p	
	C670	F1G1H821A541	820p	
	C672	ECUE1C104KBQ	0.1	
	C673	ECUE1C104KBQ	0.1	
	C674	ECUE1H102KBQ	0.001	
	C675	ECUE1C104KBQ	0.1	
	C676	ECUE1H471KBQ	470p	
	C677	ECUE1H102KBQ	0.001	
	C678	F1L1C2260012	22	
	C679	ECUV1C105KBV	1	
	C680	ECUE1C104KBQ	0.1	
	C681	ECUV1C105KBV	1	
	C682	ECUV1C105KBV	1	
	C683	ECUV1C105KBV	1	
	C684	ECUE1C104KBQ	0.1	
	C685	ECUE1H270JCQ	27p	
	C687	F1K1E1060001	10	
	C700	F1K1C4750023	4.7	
	C701	ECUV1H122KBV	0.0012	
	C702	ECUV1H122KBV	0.0012	
	C703	F1J1A106A024	10	
	C705	ECUE1E103KBQ	0.01	
	C706	ECUE1E682KBQ	0.0068	
	C707	ECUE1E682KBQ	0.0068	
	C708	ECUV1C224KBV	0.22	
	C709	ECUE1H3R0CCQ	3	
	C710	ECUE1H101JCQ	100p	
	C711	ECUE1H221KBQ	220p	
	C712	ECUE1H101JCQ	100p	
	C713	ECUE1H3R0CCQ	3	
	C714	ECUE1H3R0CCQ	3	
	C715	ECUE1H3R0CCQ	3	
	C716	ECUV1H822KBV	0.0082	
	C717	F2G1C1010034	100	
	C718	ECUV1E473KBV	0.047	
	C802	F1K0J107A036	100	
	C830	ECUV1H103KBV	0.01	
	C840	ECUV1H103KBV	0.01	
	C900	F1K1E1060001	10	
	C902	ECUE1E103KBQ	0.01	
	C903	F1H1H104A913	0.1	
	C904	ECUV1E104KBV	0.1	
	C905	F1K1E1060001	10	
	C906	F1K1E1060001	10	
	C910	F1K1E1060001	10	
	C912	ECUV1H104KBV	0.1	
	C913	ECUE1H100DCQ	10p	
	C914	F1L1C2260012	22	
	C915	F1G1H821A541	820p	
	C917	ECUV1H104KBV	0.1	
	C920	F1K1E1060001	10	
	C922	ECUV1H104KBV	0.1	
	C923	ECUE1H100DCQ	10p	
	C924	F1L1C2260012	22	
	C925	F1G1H821A541	820p	
	C927	ECUV1H104KBV	0.1	
	C930	F1K1E1060001	10	
	C932	ECUV1H104KBV	0.1	
	C933	ECUE1H100DCQ	10p	
	C934	F1L1C2260012	22	
	C935	F1G1H821A541	820p	
	C937	ECUV1H104KBV	0.1	
	C940	F1K0J107A036	100	
	C941	F1J1A106A024	10	
	C960	F1J1A106A024	10	
	C961	F1J1A106A024	10	
	C970	ECUV1C105KBV	1	
	C971	ECUE1C104KBQ	0.1	
			(VARISTORS)	
	AL600	D4EDY201A035	VARISTOR	
	CF571	D4ZZ00000039	VARISTOR	
	CF572	D4ZZ00000039	VARISTOR	
			(OTHERS)	
	1AP101	PNJE1234Z	LEAD WIRE	

15.2.1.3. Power P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PNLPN511BX2	POWER SUPPLY BOARD ASS'Y (RTL)	
			(ICs)	
	IC30	C0DBAYY00932	IC	
			(TRANSISTORS)	
	Q1	B1ABMF000022	TRANSISTOR(SI)	
			(DIODES)	
	D1	B0JCME000087	DIODE(SI)	
	D2	B0JCME000087	DIODE(SI)	
	D3	B0JCME000087	DIODE(SI)	
	D4	B0JCME000087	DIODE(SI)	
	D5	B0ACCK000003	DIODE(SI)	
	D30	B0JCME000087	DIODE(SI)	
			(CONNECTORS)	
	CN1	K4AA02A00080	TERMINAL	
			(FUSES)	
⚠	F1	K5H502Y00002	FUSE	
⚠	F2	K5H311200001	FUSE	
			(COILS)	
	L30	G1C100MA0426	COIL	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(SWITCHES)	
	SW7	K0H1BA000361	SPECIAL SWITCH	
	SW8	K0H1BA000594	PUSH SWITCH	
	SW9	K0H1BA000594	PUSH SWITCH	
	SW10	K0H1BA000594	PUSH SWITCH	
	SW11	K0H1BA000594	PUSH SWITCH	
			(RESISTORS)	
	R1	ERJ1TYJ471U	470	
	R2	ERJ2GEJ105X	1m	S
	R3	ERJ2GEJ105X	1m	S
	R4	ERJ2GEJ105X	1m	S
	R30	ERJ6GEYJ510V	51	S
	R31	ERJ3EKF1692V	16.9k	
	R32	ERJ3GEYF122	1.2k	S
	R33	ERJ2GEJ130	13	S
			(CAPACITORS)	
	C1	F1H1H104A913	0.1	
	C3	F2G1V2210014	220	
	C5	F2G1E4710007	470	
	C6	F2G1E4710007	470	
	C7	F2G1V470A281	47	
	C10	ECUE1H102KBQ	0.001	
	C11	ECUE1H102KBQ	0.001	
	C13	F1H1H104A913	0.1	
	C15	ECUE1H102KBQ	0.001	
	C30	F1L1H106A125	10	
	C31	F1H1H104A913	0.1	
	C32	F1G1H471A541	470p	S
	C33	F1K1E1060001	10	
	C35	ECUV1H103KBV	0.01	

15.2.1.4. MIC P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB3	PNWPBN511BX	MIC BOARD ASS'Y (RTL)	
			(MICROPHONE)	
	MIC570	L0CBAY000053	BUILTIN-MICROPHONE	

15.2.2. Door Station

15.2.2.1. Cabinet and Electrical Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	101	PFKU1001Z	CABINET COVER (Mounting Base)	PC+PS-V0
	102	4F0009ADAK	TERMINAL PLATE	S
	103	PNKF1230V1	CABINET COVER	ABS-HB
	104	PNWLPH70BDXX	LEAD WIRE (Gray)	
	105	PNWLPY70BDXX	LEAD WIRE (Yellow)	
	106	PNGT9561Z	NAME PLATE	
	107	PFWP1V566U	CAMERA UNIT	PC+PS-V0, PMMA
	108	PNYBV522ULS	CALL BUTTON ASS'Y	
	109	PNWHV522UL	SPEAKER ASS'Y	
	110	L0AD02A00010	SPEAKER	
	111	PNHX1545Z	DOUBLE FACED TAPE for SPEAKER	
	112	PNHX1023Z	SHEET COVER for SPEAKER	
	113	PFHG1221X	RUBBER, SPEAKER	
	114	PNWLSB40KKXX	SPEAKER LEAD WIRE (Black)	
	115	PNWLSW40KKXX	SPEAKER LEAD WIRE (White)	
	116	PNHX1199Z	SHEET COVER for MIC	PC+PS-V0, PMMA
	117	PNYMV522ULS	UPPER CABINET ASS'Y	PMMA
	118	PNHR1537Z	LENS, SENSOR	ABS-V0
	119	PFYP1019Z	FRONT PANEL	
	D	PFHD1038Z	TAPPING SCREW	
	E	XTN3+10GFJ	SMAL SCREW	
	F	XTW3+W6PFJ	TAPPING SCREW	

15.2.2.2. Main P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB100	PNWPAV522CE	MAIN BOARD ASS'Y (RTL)	
			(ICs)	
	IC100	C0ABBB000274	IC	
	IC102	C1BB00001024	IC	
	IC200	C1AB00002793	IC	
	IC202	C0DBAYY00932	IC	
	IC203	C2CBYY001131	IC	
	IC204	B3JB00000223	PHOTO ELECTRIC TRANS-DUCER	
			(TRANSISTORS)	
	Q2	DSC7003R0L	TRANSISTOR(SI)	
	Q3	B1ABCF000139	TRANSISTOR(SI)	
	Q4	B1ADGJ000002	TRANSISTOR(SI)	
	Q5	B1HBDFA00002	TRANSISTOR(SI)	
	Q6	2SA1576R	TRANSISTOR(SI)	S
	Q100	B1ADGD000005	TRANSISTOR(SI)	
	Q200	B1GBCFJK0001	TRANSISTOR(SI)	
	Q202	B1GBCFYY0014	TRANSISTOR(SI)	
	Q203	B1GBCFJK0001	TRANSISTOR(SI)	
	Q204	B1ABDF000026	TRANSISTOR(SI)	
	Q205	DSA900100L	TRANSISTOR(SI)	
	Q206	B1GBCFYY0014	TRANSISTOR(SI)	
	Q207	B1ABDF000026	TRANSISTOR(SI)	
	Q301	B1HBDFA00002	TRANSISTOR(SI)	
	Q400	B1ABCF000139	TRANSISTOR(SI)	
			(DIODES)	
	D1	DZ2J270M0L	DIODE(SI)	
	D2	B0JCME000123	DIODE(SI)	
	D3	B0JCME000123	DIODE(SI)	
	D4	B0JCME000123	DIODE(SI)	
	D5	B0JCME000123	DIODE(SI)	
	D6	B0JCME000123	DIODE(SI)	
	D8	DA3J101F0L	DIODE(SI)	
	D100	B0ADEJ000026	DIODE(SI)	
	D101	B0ADEJ000026	DIODE(SI)	
	D300	DB2S31100L	DIODE(SI)	
	D400	DZ2S130M0L	DIODE(SI)	
	LED1	B3AAB0000408	DIODE(SI)	
	LED200	B3ADA0000252	DIODE(SI)	
	LED201	B3ADA0000252	DIODE(SI)	
			(CONNECTORS)	
	LEAD1	PNJS081034Z	CONNECTOR	
			(COILS & IC FILTERS)	
	L2	G1C101MA0291	COIL	
	L3	G1C101MA0291	COIL	
	L4	G1C330KA0100	COIL	
	L5	G1C2R2MA0395	COIL	
	L6	PQLQR2KA113	COIL	S
	L7	G1C330MA0203	COIL	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L10	J0JYC0000101	IC FILTER	
	L11	J0JYC0000101	IC FILTER	
	L200	G1C331JA0036	COIL	
	L301	J0JCC0000092	IC FILTER	
	L700	J0JCC0000277	IC FILTER	
	L701	J0JCC0000277	IC FILTER	
	LF1	G1BYYYC00029	COIL	
			(SWITCHES)	
	SW301	K0H1BA000573	SPECIAL SWITCH	
			(TRANSFORMERS)	
	T1	G5ZZ00000110	TRANSFORMER	
			(CRYSTAL OSCILLATORS)	
	X1	H2D200500011	CERAMIC FILTER	
			(RESISTORS)	
	R1	ERJ2GEJ510	51	S
	R2	ERJ2GEJ120	12	S
	R3	ERJ3GEYJ561	560	S
	R4	PQ4R10XJ100	10	S
	R5	PQ4R10XJ100	10	S
	R6	ERJ3GEYJ561	560	S
	R7	ERJ2GEJ330	33	S
	R9	ERJ3EKF6201	6.2k	
	R10	ERJ3GEYF122	1.2k	S
	R12	ERJ8GEYJ1R0	1	S
	R13	ERJ2GEJ273X	27k	S
	R14	ERJ3GEYJ682	6.8k	S
	R15	PQ4R18XJ682	6.8k	S
	R16	ERJ2GEJ102	1k	S
	R17	ERJ3GEYJ123	12k	S
	R18	ERJ3GEYJ473	47k	S
	R19	ERJ3GEYJ272	2.7k	S
	R20	ERJ2GEJ103	10k	S
	R21	ERJ2GEJ103	10k	S
	R23	ERJ3GEYJ513	51k	S
	R100	ERJ14YJ330H	33	S
	R102	ERJ2GEJ222	2.2k	S
	R103	ERJ2GEJ473	47k	S
	R104	ERJ2GEJ222	2.2k	S
	R107	ERJ2GEJ222	2.2k	S
	R111	PQ4R10XJ680	68	S
	R112	ERJ2GEJ222	2.2k	S
	R114	ERJ2GEJ122	1.2k	S
	R118	ERJ2GEJ122	1.2k	S
	R119	ERJ2GEJ103	10k	S
	R120	ERJ2GEJ103	10k	S
	R121	ERJ2GEJ123	12k	S
	R122	ERJ2GEJ622X	6.2k	S
	R123	ERJ2GEJ304	300k	S
	R124	ERJ2GEJ123	12k	S
	R125	ERJ2GEJ103	10k	S
	R126	ERJ2GEJ103	10k	S
	R128	ERJ2GEJ102	1k	S
	R132	D0GA332JA015	3.3k	S
	R133	ERJ2GEJ102	1k	S
	R134	D0GA332JA015	3.3k	S
	R135	ERJ2GEJ622X	6.2k	S
	R136	ERJ2GEJ304	300k	S
	R200	ERJ2GEJ222	2.2k	S
	R201	ERJ2GEJ472X	4.7k	S
	R202	ERJ2GEJ472X	4.7k	S
	R203	ERJ2GEJ472X	4.7k	S
	R204	ERJ2GEJ121	120	S
	R205	ERJ2GEJ473	47k	S
	R206	ERJ2GEJ102	1k	S
	R212	PQ4R18XJ121	120	S
	R213	PQ4R18XJ271	270	S
	R214	ERJ3EKF3901	3.9k	
	R215	ERJ3EKF1002	10k	
	R216	ERJ2GEJ153	15k	S

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R217	ERJ2GEJ472X	4.7k	S
	R219	ERJ2GEJ273X	27k	S
	R220	ERJ2GEJ222	2.2k	S
	R224	ERJ2GEJ472X	4.7k	S
	R225	ERJ2GEJ102	1k	S
	R226	ERJ2GEJ182	1.8k	S
	R227	ERJ2GEJ101	100	S
	R228	ERJ2GEJ101	100	S
	R232	ERJ2GEJ750	75	S
	R233	ERJ2GEJ112X	1.1k	S
	R234	ERJ2GEJ222	2.2k	S
	R302	ERJ3EKF1002	10k	
	R303	ERJ2RKF8200	820	
	R304	ERJ2GEJ223	22k	S
	R305	PQ4R10XJ151	150	S
	R400	ERJ2GEJ153	15k	S
	R401	ERJ2GEJ153	15k	S
			(CAPACITORS)	
	C1	ECUV1H152KBV	0.0015	
	C2	ECUV1H152KBV	0.0015	
	C3	ECUE1C104KBQ	0.1	
	C4	ECJ0EB1C822K	0.0082	S
	C5	F1J1A106A024	10	
	C7	ECUE1E103KBQ	0.01	
	C8	ECUE1C104KBQ	0.1	
	C9	F2G1E3310019	330	
	C11	F1K1E1060001	10	
	C13	ECUE1C104KBQ	0.1	
	C14	F1J0J2260004	22	
	C15	ECJ1VC1H102J	0.001	S
	C16	ECUE1C104KBQ	0.1	
	C18	ECUE1C104KBQ	0.1	
	C19	ECJ1VC1H102J	0.001	S
	C20	F1K1E1060001	10	
	C21	ECUE1H221KBQ	220p	
	C24	ECUE1C104KBQ	0.1	
	C28	ECUE1H100DCQ	10p	
	C30	ECUV1H102KBV	0.001	
	C31	ECUV1H102KBV	0.001	
	C34	ECUE1H102KBQ	0.001	
	C35	ECUE1H102KBQ	0.001	
	C36	ECUE1H100DCQ	10p	
	C100	F2G1C1010034	100	
	C101	F1L1E1060021	10	
	C102	F1J0J2260004	22	
	C103	ECUE1C104KBQ	0.1	
	C104	ECUE1E562KBQ	0.0056	
	C105	ECUE1H561JCQ	560p	
	C106	ECUE1E562KBQ	0.0056	
	C107	F1G1C473A081	0.047	S
	C108	ECUE1C104KBQ	0.1	
	C109	F1G0J4740002	0.47	S
	C110	ECUE1H471KBQ	470p	
	C111	ECUE1C104KBQ	0.1	
	C112	F1G0J4740002	0.47	S
	C113	ECUE0J105KBQ	1	
	C114	ECUE0J105KBQ	1	
	C115	F1J1A106A043	10	
	C116	ECUE1H100DCQ	10p	
	C117	F1G1C473A081	0.047	S
	C118	F1L1E1060021	10	
	C119	ECUE1H101JCQ	100p	
	C120	ECUE1H100DCQ	10p	
	C122	ECUE1H102KBQ	0.001	
	C123	ECUE1H101JCQ	100p	
	C125	F1G1C473A081	0.047	S
	C126	ECUE1H561JCQ	560p	
	C127	ECUE1H100DCQ	10p	
	C128	ECUE1H221JCQ	220p	
	C130	ECUE1H100DCQ	10p	
	C131	ECUE1H100DCQ	10p	
	C200	ECUE1C104KBQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C201	ECUE1H470JCQ	47p	
	C202	ECUE1C104KBQ	0.1	
	C203	ECUE1E103KBQ	0.01	
	C204	ECUV1H102KBV	0.001	
	C205	ECUE1H471KBQ	470p	
	C206	ECUE1C104KBQ	0.1	
	C208	ECUE1C104KBQ	0.1	
	C209	ECUE1H101JCQ	100p	
	C210	ECUE1C104KBQ	0.1	
	C211	ECUE1C104KBQ	0.1	
	C212	ECUE1C104KBQ	0.1	
	C216	ECUV1H102KBV	0.001	
	C217	ECUV1H821JCV	820p	
	C218	ECUE1C104KBQ	0.1	
	C220	ECUE1C104KBQ	0.1	
	C700	ECUE1H102KBQ	0.001	

15.2.2.3. MIC P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB101	PNWPBV522CE	MIC BOARD ASS'Y (RTL)	
	MIC1	L0CBAY000053	BUILTIN MICROPHONE	
	E101	PNMG1009Z	MIC COVER	

15.2.3. Power Supply Unit

15.2.3.1. Cabinet and Electrical Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	401	PNVLPS241A	POWER SUPPLY UNIT ASS'Y	
	402	PNKV1232Z1	TERMINAL COVER	PC+ABS-5VB
	403	PNKM1518Y1	CABINET BODY	PC+ABS-5VB
	404	PNKF1306Y1	CABINET COVER	PC+ABS-5VB
	405	PNKE1308Z1	SLIDE LEVER	PC+ABS-5VB
	406	PNUR1034Z	COIL SPRING	
	407	PNGT8040Y	NAME PLATE	
	P	XTN3+10GFJ	SMALL SCREW	
	Q	XTB26+10GFJ	SMALL SCREW	

15.2.3.2. Power P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	PCB401	PNWPPS241A	POWER SUPPLY BOARD ASS'Y (RTL)	
			(ICs)	
	IC1	B1LAZ0000030	TRANSISTOR(SI)	
⚠	IC2	B3PBA0000485	PHOTO ELECTRIC TRANS-DUCER	
	IC3	C0DBAYY00781	IC	
			(DIODES)	
⚠	D1	ERZV10D751	750	
	D2	B0EDKT000007	DIODE(SI)	
	D3	B0ECGT000002	DIODE(SI)	
	D4	DZ2W20000L	DIODE(SI)	
	D5	B0ECKM000038	DIODE(SI)	
	D6	B0HCPM000009	DIODE(SI)	
	D7	B0ECMR000006	DIODE(SI)	
	D8	B0BC03300002	DIODE(SI)	
			(CONNECTORS)	
⚠	CN1	K2AAYB000001	TERMINAL	
	CN2	K4AA02A00083	TERMINAL	
			(FUSES)	
⚠	F1	K5G202Y00006	FUSE	
			(COILS)	
⚠	LF1	G0B363C00001	COIL	
	LF2	G0B150G00004	COIL	
			(TRANSFORMERS)	
⚠	T1	G4DYA0000556	TRANSFORMER	
			(RESISTORS)	
	R1	ERJ8GEYJ205V	2m	S
	R2	ERJ8GEYJ205V	2m	S
	R3	ERJ14YJ620U	62	
	R4	ERJ8GEYJ205V	2m	S
	R5	ERJ8GEYJ205V	2m	S
	R6	D0GF684KA001	680k	
	R7	ERJ1TYJ560	56	
	R8	PQ4R10XJ155	1.5m	S
	R10	ERJ14YJ820	82	
	R11	PQ4R10XJ102	1k	S
	R12	ERJ3GEYJ221	220	S
	R13	PQ4R10XJ272	2.7k	S
	R15	ERJ3ENF8202	82k	S
	R16	ERJ3EKF5601	5.6k	
	R17	ERJ3EKF1002	10k	
	R19	PQ4R10XJ183	18k	S
			(CAPACITORS)	
⚠	C1	F0CAF104A105	0.1	
⚠	C2	F2A2W470A317	47	
	C3	F1K3D1020001	1000p	
	C4	F1H1H104A913	0.1	
	C5	F1K3A102A013	1000p	
	C6	F1K3D1020001	1000p	
	C7	F1J2E121A025	120p	
	C8	F1L1H106A125	10	
⚠	C9	F1B2E222A050	2200p	
	C10	F1J2E121A025	120p	
	C11	F1K1H106A208	10	
	C12	F2A1V3310046	330	
	C13	F2A1V3310046	330	
	C14	F2A1V3310046	330	
	C15	F1K1H106A208	10	
	C16	F1H1H104A913	0.1	
	C20	ECUV1H681JCV	680p	S
	C21	F1K1H106A208	10	
	C22	F1L2J562A047	5600p	

15.2.4. Relay Box

15.2.4.1. Cabinet and Electrical Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	501	PNVLRLY1EXU	RELAY BOX ASS'Y	
	502	PNKV1295Z1	TERMINAL COVER	ABS-5VB S
	503	PNKM1667Z1	CABINET BODY	ABS-5VA S
	504	PNKF1404Z1	CABINET COVER	ABS-5VA S
	505	PNKE1308Z1	SLIDE LEVER	PC+ABS-5VB S
	506	PNUR1034Z	COIL SPRING	
	507	PNGT9388Z	NAME PLATE	
	V	XTN3+10GFJ	SMAL SCREW	
	W	XTB26+10GFJ	SMALL SCREW	

15.2.4.2. Relay P.C. Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB501	PNLPRLY1Z	RELAY BOARD ASS'Y (RTL)	
			(DIODES)	
	D10	B0ACCK000003	DIODE(SI)	
	D20	DA2J10100L	DIODE(SI)	
			(CONNECTORS)	
	CN1	K4AC03B00024	TERMINAL	
	CN10	K4AA02A00083	TERMINAL	
	CN20	K4AA02A00083	TERMINAL	
			(RELAYS)	
	RL10	K6B1AGA00198	RELAY	
	RL20	K6B1AGA00198	RELAY	
			(RESISTORS)	
	R10	D0GF151KA001	150	
	R20	D0GF151KA001	150	
			(CAPACITORS)	
	C10	F1K2E1040004	0.1	
	C20	F1K2E1040004	0.1	

15.2.5. Accessories and Packing Materials

Note:

(*5) You can download and refer to the “Operating Instructions (Instruction book)” and “Installation Guide (Leaflet)” on TSN Server.

15.2.5.1. VL-SVN511BX

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A1	PNQX7567Z	INSTRUCTION BOOK (*5)	
	A2	PNQX7568Z	INSTRUCTION BOOK (*5)	
	A3	PNQX7569Z	INSTALLATION GUIDE (*5)	
	A4	PNQX7570Z	INSTALLATION GUIDE (*5)	
	A5	PNMH1076Z	MOUNTING BRACKET	S
	A6	PQHR945Z	CABLE BINDER	
	A7	XTN4+16AFJA	SMAL SCREW	
	A8	XMM38+20VW	W00D SCREW	
	A9	XTN4+40AFJV1	TAPPING SCREW	
	A10	XTN4+40AFJV1	TAPPING SCREW	
⚠	A11	PFJA02A006Y	AC CORD	
	A12	PNQW4751Z	LEAFLET, QRG (*5)	
	P1	PNPN1508Z	CUSHION	
	P2	PNPN1509Z	CUSHION	
	P3	PNPN1511Z	CUSHION	
	P4	PNPK3991003Z	GIFT BOX	
	P5	PNPP1038Z	PROTECTION COVER, PRINTED MATERIAL	S
	P6	XZB18X27A04L	PROTECTION COVER, PRINTED MATERIAL	S
	P7	PNPM1026Z	PROTECTION COVER, MAIN MONITOR STATION	
	P8	XZB18X27A04	PROTECTION COVER, DOOR STATION	
	P9	XZB18X27A04L	PROTECTION COVER, RELAY BOX	S
	P10	XZB15X20A04	PROTECTION COVER, POWER SUPPY UNIT	
	P11	XZB05X08A04	PROTECTION COVER, SCREW	
	P12	PNPP1199Z	PROTECTION COVER, SCREW	

15.2.5.2. VL-SVN511CX/SVN511CX1

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A1	PNQX7567Z	INSTRUCTION BOOK (*5)	
	A2	PNQX7568Z	INSTRUCTION BOOK (*5)	
	A3	PNQX7569Z	INSTALLATION GUIDE (*5)	
	A4	PNQX7570Z	INSTALLATION GUIDE (*5)	
	A5	PNMH1076Z	MOUNTING BRACKET	S
	A6	PQHR945Z	CABLE BINDER	
	A7	XTN4+16AFJA	SMAL SCREW	
	A8	XMM38+20VW	W00D SCREW	
	A9	XTN4+40AFJV1	TAPPING SCREW	
	A10	XTN4+40AFJV1	TAPPING SCREW	
⚠	A11	PSJA1106X	AC CORD	
	P1	PNPN1508Z	CUSHION	
	P2	PNPN1509Z	CUSHION	
	P3	PNPN1511Z	CUSHION	
	P4	PNPK3991004Z	GIFT BOX	
	P5	PNPP1038Z	PROTECTION COVER, PRINTED MATERIAL	S
	P6	XZB18X27A04L	PROTECTION COVER, PRINTED MATERIAL	S
	P7	PNPM1026Z	PROTECTION COVER, MAIN MONITOR STATION	
	P8	XZB18X27A04	PROTECTION COVER, DOOR STATION	
	P9	XZB15X20A04	PROTECTION COVER, RELAY BOX	
	P10	XZB18X27A04L	PROTECTION COVER, POWER SUPPY UNIT	S
	P11	XZB05X08A04	PROTECTION COVER, SCREW	
	P12	PNPP1199Z	PROTECTION COVER, SCREW	

15.2.6. Fixtures and Tools

(*6) This is used for adjustments. (Refer to **Things to do after replacing IC** (P.46).

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
		PQZZ1CD300E	JIG CABLE (*6)	
		PNZZN511EX	Macro file CD-ROM (*6)	

16 Change Information

Ver. No.	Main Revision Contents	Issue
1.0	First version	November, 2015
2.0	Add a destination model (VL-SVN511CX1).	May, 2019

SA