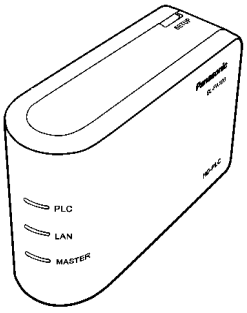
Order No. KMS0603209CE
F15

Service Manual

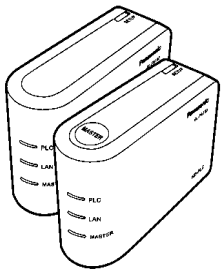
HD-PLC Ethernet Adaptor

BL-PA100A
BL-PA100KTA

(for U.S.A.)



BL-PA100A
(HD-PLC Ethernet Adaptor/Additional)



BL-PA100KTA
(HD-PLC Ethernet Adaptor Starter Pack)

⚠ 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 professionaltechnicians. 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 thatthese 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.

Panasonic®

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

TABLE OF CONTENTS

PAGE

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 following insulation resistance test to prevent a shock hazard.

2 Warning

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

Note:

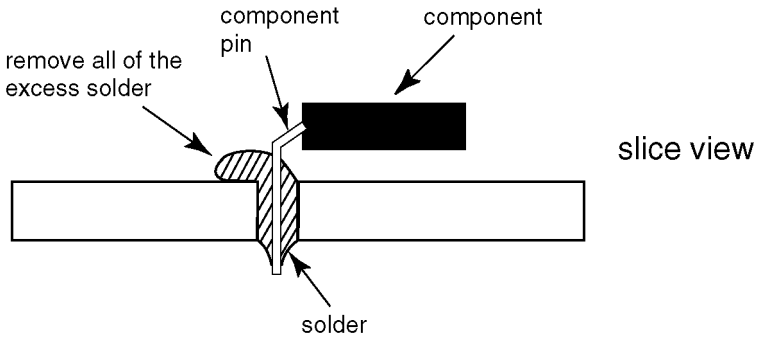
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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.

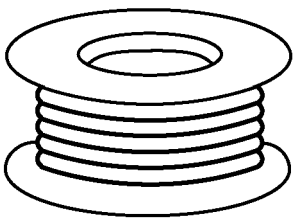
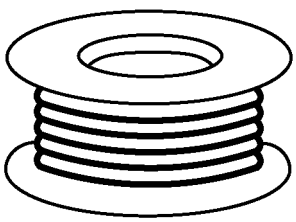
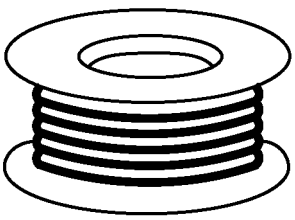
Caution

- 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).



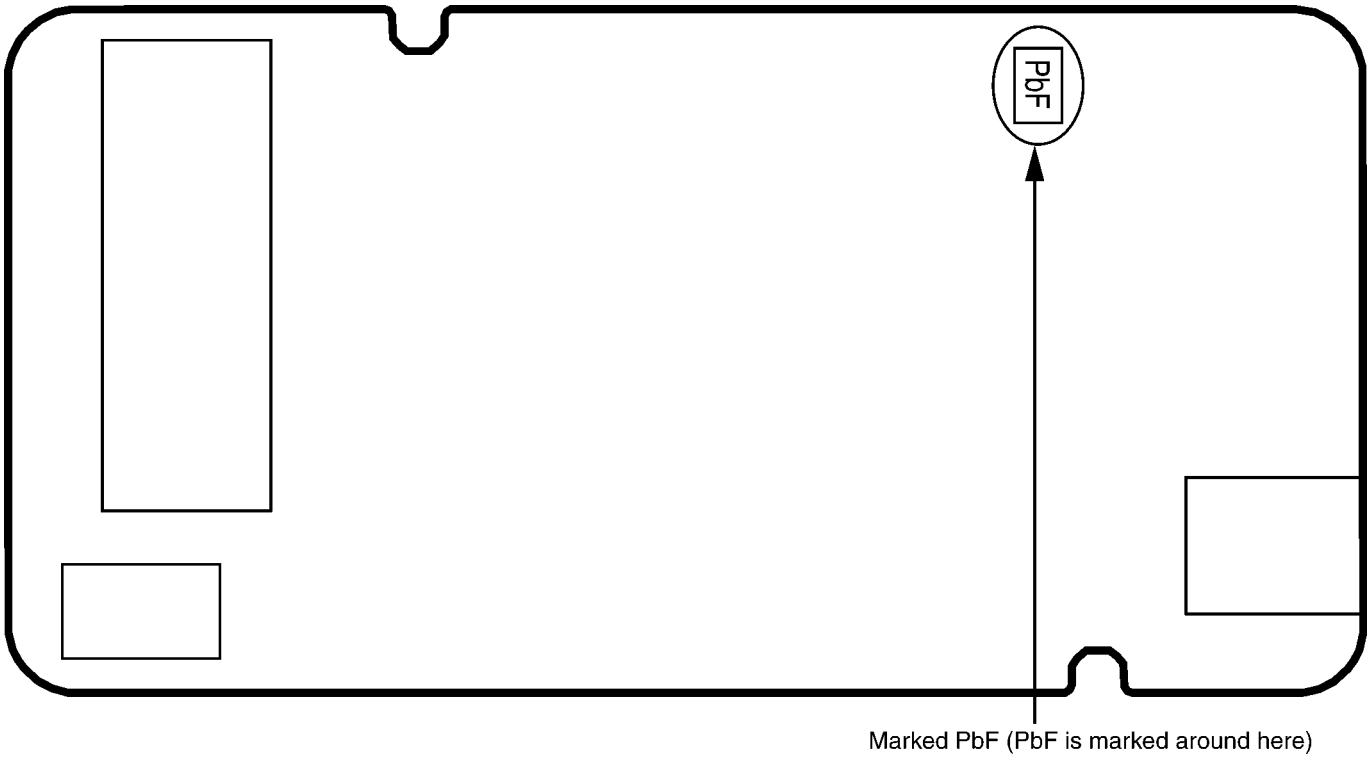
2.1.1. Suggested PbF Solder

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 gauge are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

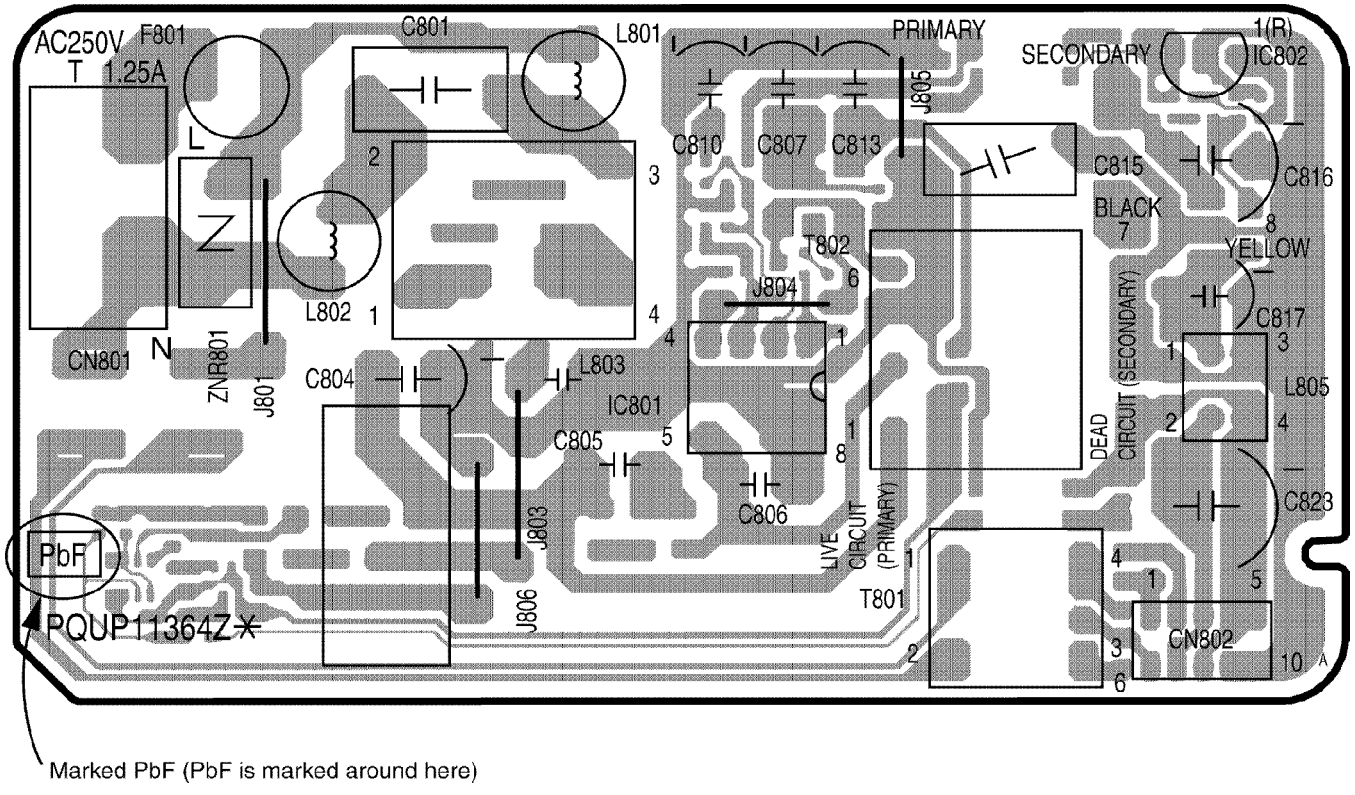
0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

2.1.2. How to Recognize That Pb Free Solder is Used

MAIN BOARD



POWER SUPPLY BOARD



2.2. For Service Technician

ICs and LSIs are vulnerable to static electricity.

When replacing, the following precautions will help to prevent recurring malfunctions.

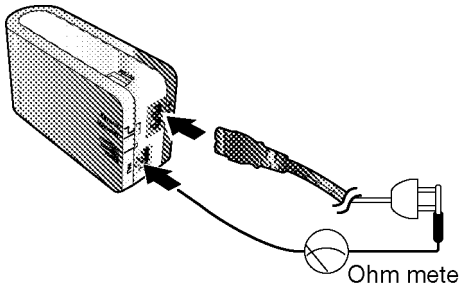
1. Cover the plastic parts with aluminum foil.
2. Use a conductive mat on the work-table.
3. Do not grasp IC or LSI pins with bare fingers.

2.3. INSULATION RESISTANCE TEST

1. Unplug the 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 Exposed Metal (LAN Connector).

   Note:

   Some exposed parts may be isolated from the chassis by design. These will read infinity.
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.



Resistance = more than 1MΩ (at DC 500 V)

2.4. CAUTION

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

2.5. Trademarks

- Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.
- All other trademarks identified herein are the property of their respective owners.

3 Specifications

All specifications are subject to change without notice.

Power Line Communication interface

Standard	HD-PLC
Actual transmission speed[*1]	UDP: Max. 70 Mbps TCP[*2]: Max. 42 Mbps
Maximum recommended no. of adaptors per network[*3]	16 (including the master)
Maximum recommended no. of network devices connected to an adaptor[*4]	8

*1 Results may vary depending on electrical conditions, network environment, and other factors. For information on how transmission speed is measured, access the Panasonic PLC Support Site at: **http://panasonic.co.jp/pcc/products/en/plc/**

*2 Using Linux FTP.

*3 Performance may be affected as more adaptors are added to the network.

*4 Connecting more network devices to an adaptor may increase network traffic and affect performance.

LAN interface

Standard	IEEE 802.3/IEEE 802.3u
Interface	10 Base-T 100 Base-TX Auto MDI/MDI-X
Protocol	IPv4, IPv6, TCP, UDP
Access method	CSMA/CD

User interface

Indicators	**PLC** (blue, red) **LAN** (green, orange) **MASTER** (green)
Other	Mode Selector (**MASTER** or **TERMINAL** switch) **SETUP** button **FACTORY DEFAULT RESET** button

General

Operational environment	0-40 °C (32-104 °F) 20%-85% humidity (without condensation)
Dimensions (W x D x H)	Approx. 121 mm x 40 mm x 70 mm (4 3/4” x 1 9/16” x 2 3/4”)
Weight	240 g (0.53 lb.)
Power supply	Input 120 V, 60 Hz
Power consumption	4 W

HD-PLC interface

Frequency band	4-28 MHz
Modulation	Wavelet OFDM (16 PAM-2 PAM)
Transmission PHY rate	Max. 190 Mbps[*1]
Access method	CSMA/CA TDMA
Error correction	Reed-Solomon encoder/decoder Convolutional encoder/Viterbi decoder
Encryption	AES 128-bit encryption
Communication distance	Approx. 150 m (490 ft.)[*2]

*1 This is the theoretical maximum data transmission speed of the HD-PLC standard.

*2 Varies depending on the electrical environment.

4 Features

Flexible and stable network access anywhere in your home

The BL-PA100 offers the next generation in home networking: High Definition Power Line Communication (HD-PLC). High-speed internet access and high performance data transfers are now available in any room.

Every AC outlet becomes a home network access point

Because HD-PLC technology makes use of the existing electrical wiring in your home, there is no need to run cables between rooms.

Easy to setup (for BL-PA100A)

Simply plug your adaptors into a wall outlet, press the setup button to configure the adaptors, and you're ready to integrate your HD-PLC adaptors into your existing home network.

Easy to expand

Up to 16 adaptors in all can be used, which means you can add additional adaptors whenever you need to add a network connection in another room of the house.

Simple network speed testing

You can confirm the speed of each adaptor's HD-PLC connection by simply pressing a button.

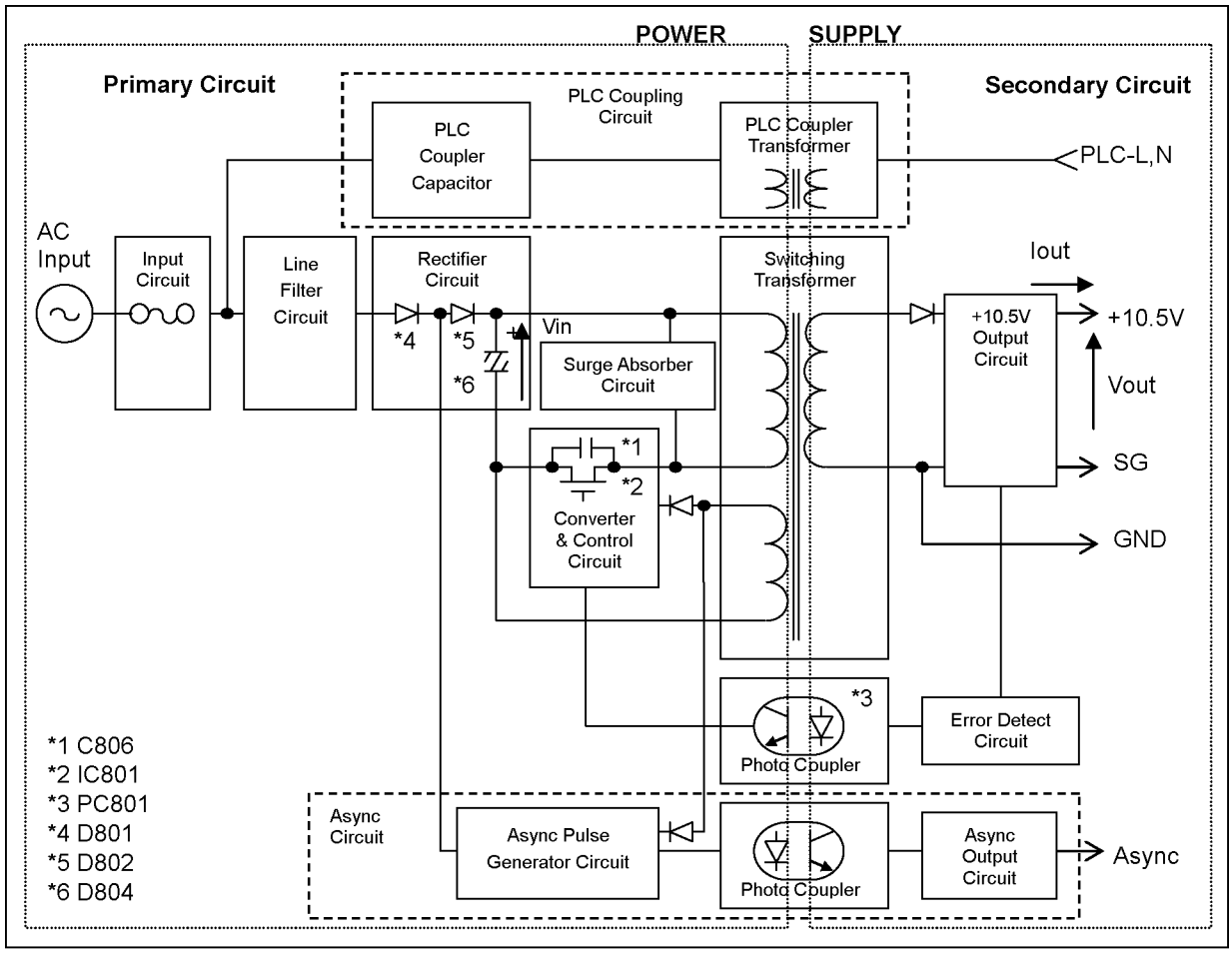
Fast, reliable, and secure

With speeds of up to 190 Mbps (PHY rate)*1, advanced error correction, and AES 128-bit encryption, the BL-PA100 provides peace of mind at the speed of light.

*1 This is the theoretical maximum data transmission speed of the HD-PLC standard. The actual maximum data transmission speed is about 70 Mbps for UDP and 42 Mbps for TCP. Results may vary depending on electrical conditions, network environment, and other factors. See the specifications for more information.

5 Technical Descriptions

This power supply board uses the switching regulator method.



[Input Circuit]

The input current goes into the input rectifier circuit through both the fuse and the filter circuit. The filter circuit decreases the noise voltage and the noise electric field strength.

[Rectifier Circuit]

The input current is rectified by D801 and D802 and charges C804 to make DC voltage. Then it supplies power to the converter circuit.

[Converter & Control Circuit]

The following is an overview of how the power supply unit is controlled.

The control method of this power supply unit is pulse width modulation as Semi-Resonance Ringing Choke Converter.

When IC801 is ON, the energy is charged in the switching transformer primary coil according to Vin. When IC801 is OFF, the energy is output from the secondary transfer as follows. Then the power is supplied to the Load. When IC801 is ON, power is not output from the secondary side.

The output voltage is feed back in the IC801 according to the error detect circuit.

When Vin increase, IC801's on duty Ratio decrease. As a result, Charge of energy to the switching transformer primary coil becomes the same as Low Vin, and Vout is kept constant.

When Iout increase, IC801's on duty Ratio increase. As a result, Charge of energy to the switching transformer primary coil becomes the same as Low Vin, and Vout is kept constant.

C806 (Resonance Capacitor) is connect to IC801's #5pin-#7pin, rapid standup of flyback voltage is controlled.(Semi-Resonance Ringing choke converter operation)

[Surge Absorber Circuit]

This circuit is for absorbing surge voltage generated by the transformer.

[Error detect Circuit]

The control circuit amplifies the output with increased voltage detected in the error detecting circuit.

In this power supply, the duty ratio is defined by changing the ON period of IC801.

This is shown as follows.

When the output voltage of the +10.5V circuit increases, the current of the photo coupler PC801 increases, the pulse width of IC801 becomes narrower and the ON period of IC801 becomes shorter.

[Over Current Limiter (O.C.L)]

The highest drain current (IC801) is limited by a internal circuit of IC801. The +10.5V output is limited by this circuit.

[Over Voltage Protection Circuit (O.V.P)]

If the +10.5V output increases because the error detecting circuit is broken, The internal circuit of IC801 will recognize this signal and output becomes 0V.

[Thermal Shutdown Circuit]

IC801 become shutdown when internal temperature becomes 130 degrees C (typ).

[PLC Coupling Circuit]

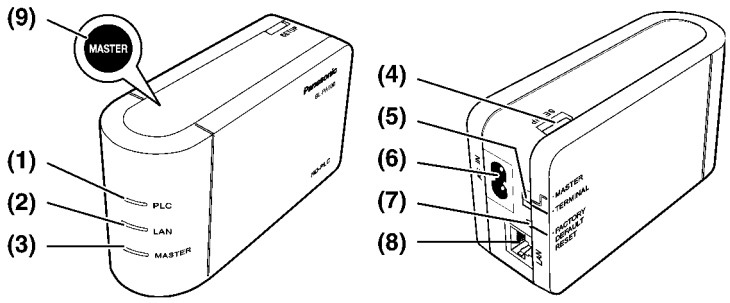
This circuit superimposes a PLC signal on AC voltage from a MAIN board.

[Async Circuit]

This circuit outputs the rectangle waveform which synchronized with AC frequency.

6 Location of Controls and Components

6.1. Main unit



(1) PLC Indicator
Lights to indicate that the adaptor is connected to the HD-PLC network.

(2) LAN Indicator
Lights when a LAN cable is connected to the adaptor, and flashes when data is being sent or received.

(3) MASTER Indicator
Lights when the adaptor is configured as the master.

(4) SETUP Button
Used to register the adaptor or test the terminal is network speed.

(5) Mode Selector
The position of this selector during registration determines whether the adaptor is used as the master or as a terminal.

(6) AC IN
Connects the adaptor to AC power as well as to the HD-PLC network.

(7) FACTORY DEFAULT RESET Button
Used to reset the adaptor and erase its registration.

(8) LAN Jack
Connects the adaptor to a network device, such as a broadband router, hub, computer, etc.

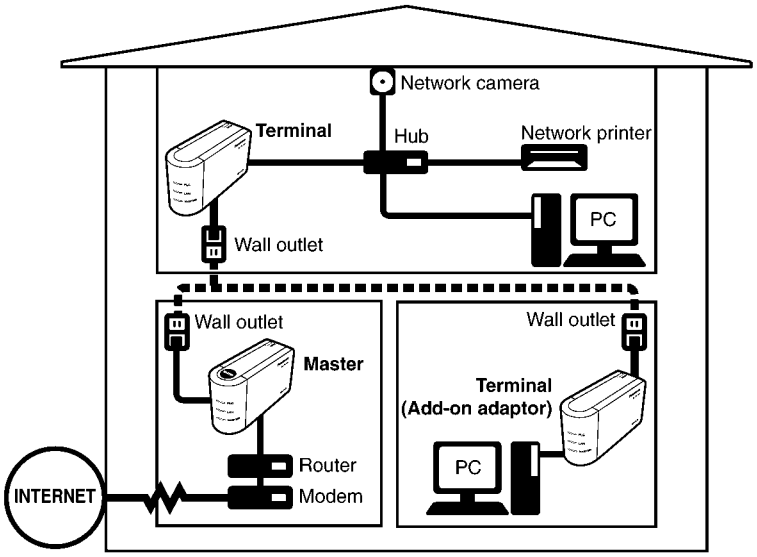
(9) MASTER Seal (BL-PA100KTA: master adaptor only)
Indicates which adaptor is pre-configured as the master adaptor.

7 Operation Instructions

7.1. How does it work?

Each HD-PLC adaptor has an AC cord that plugs into a wall outlet. This connection not only powers the adaptor, but also allows the adaptor to send data to and from the other adaptors in your home using your existing electrical wiring. Each adaptor also has a LAN jack, which connects each adaptor to your broadband router, hub, computer, network printer, network camera, etc.
Once your adaptors are registered, simply plug them into the wall outlets around your home. (The included adaptors are already registered.) Finally, connect the master adaptor to your broadband internet router or modem, and then connect the other adaptors to your network devices (computers, network printers, network cameras, etc.). When you're finished, each network device will be able to access the internet as well as each other.

Example of an integrated HD-PLC network



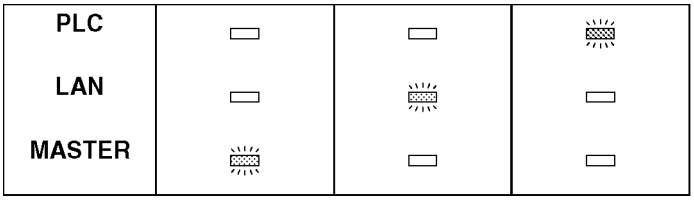
Master and terminal adaptors

Before using your adaptors, it is important to understand the concept of a "master" adaptor and a "terminal" adaptor.
An HD-PLC network contains at least 2 adaptors. One (and only one) adaptor must be configured as the master. All other adaptors are configured as terminals. (A maximum of 15 terminals per network is recommended.) An adaptor is configured as either a master or a terminal during registration. For simplicity, we recommend configuring the adaptor that is directly connected to one of your router's LAN ports as the master.

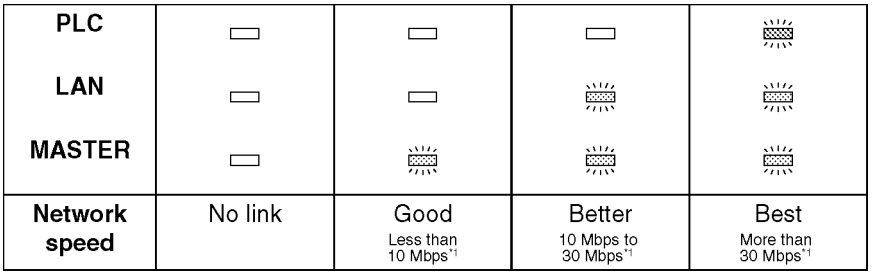
7.2. Testing a terminal's network speed

Once you have connected the adaptors where you plan to use them, use the procedure below to test the speed of each terminal's network connection to the master. Make sure that the terminal has already been registered to a master.

1. Press and hold the terminal's **SETUP** button for about 1 second.
   • The indicators on the terminal light one at a time in succession for a few seconds.



2. The indicators light for a few seconds. This indicates the network speed test result.
3. Refer to the chart below to determine the network speed.



Network speed	No link	Good Less than 10 Mbps*1	Better 10 Mbps to 30 Mbps*1	Best More than 30 Mbps*1

*1 Approximate data transmission speed when transmitting data using the UDP protocol.

4. If you are not satisfied with the speed test result, connect the terminal to a different wall outlet and repeat the test.

Note

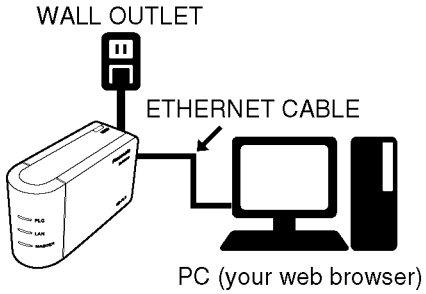
- At least one indicator ("Good" network speed) must be lit in order to use the terminal.
- If you are not satisfied with the speed test result and have tried connecting the terminal to different wall outlets, refer to the troubleshooting section.
- If the electrical conditions in your home changes after performing the speed test, network speed may also change.

Once you are satisfied with the termina's speed test result, you are ready to connect each adaptor to a network device (broadband router, hub, computer, network printer, network camera, etc.).

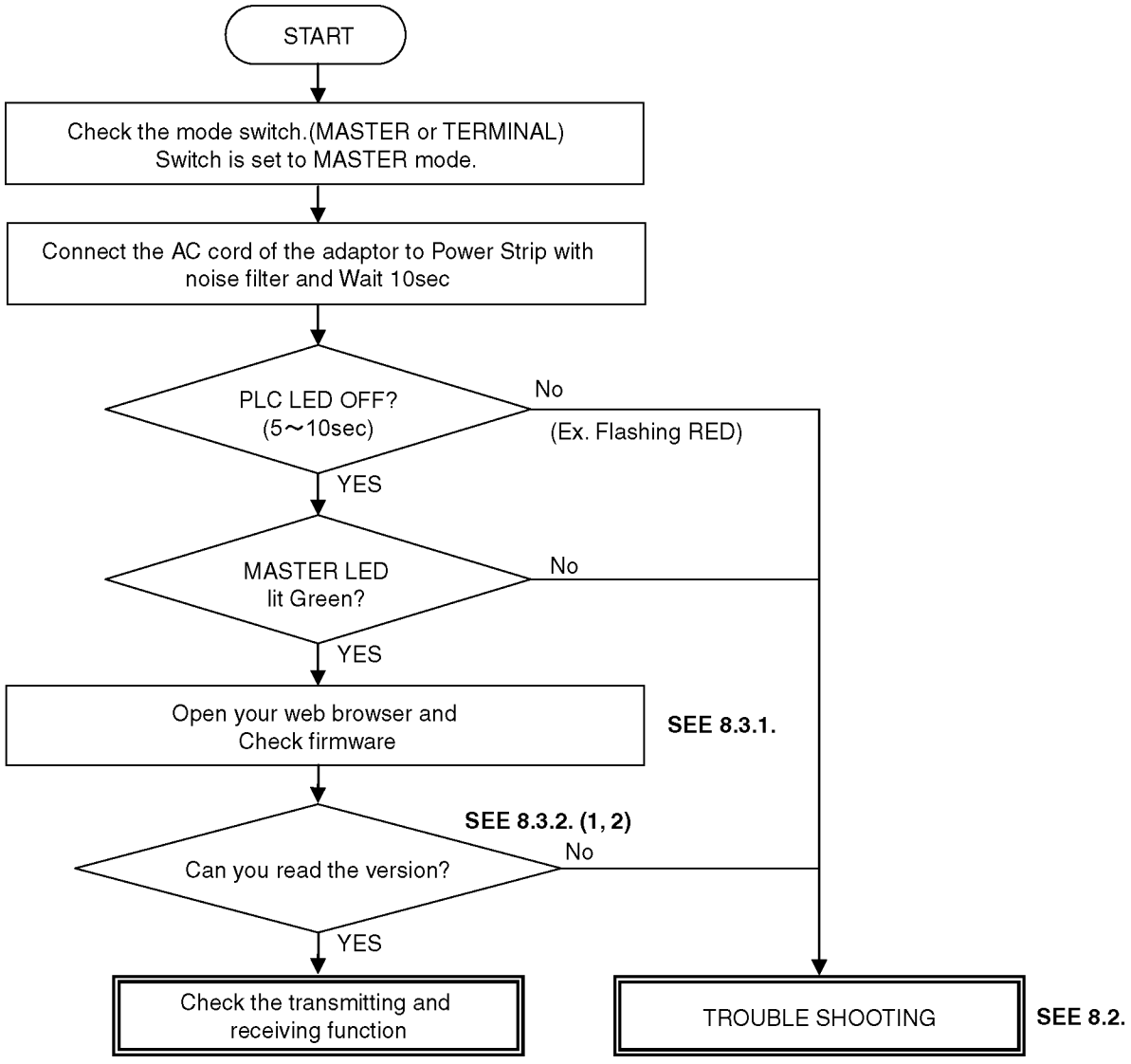
8 Troubleshooting Guide

8.1. Basic Check

8.1.1. Connection



8.1.2. Check LED & Ether



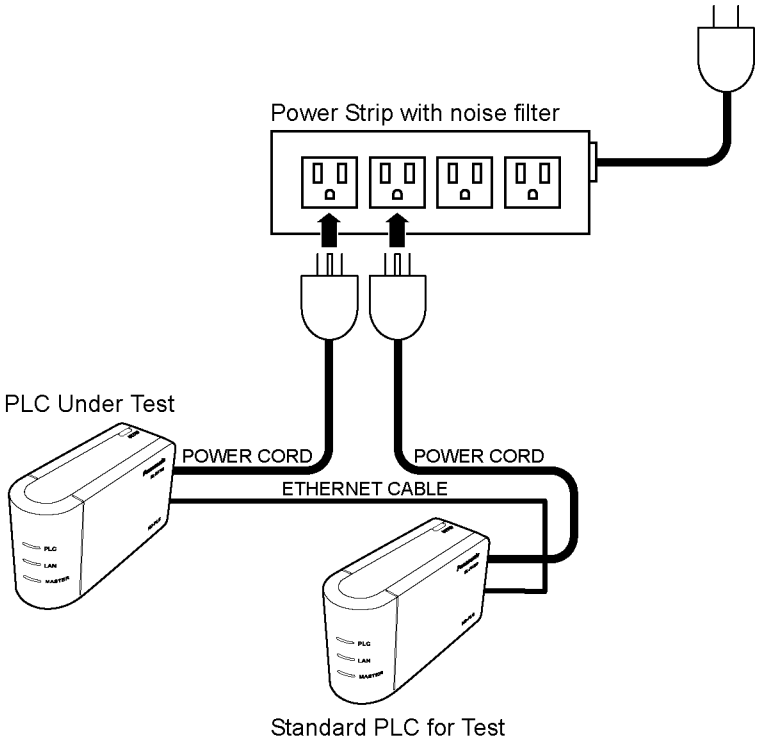
8.1.3. Check the transmitting and receiving function

8.1.3.1. Test equipment

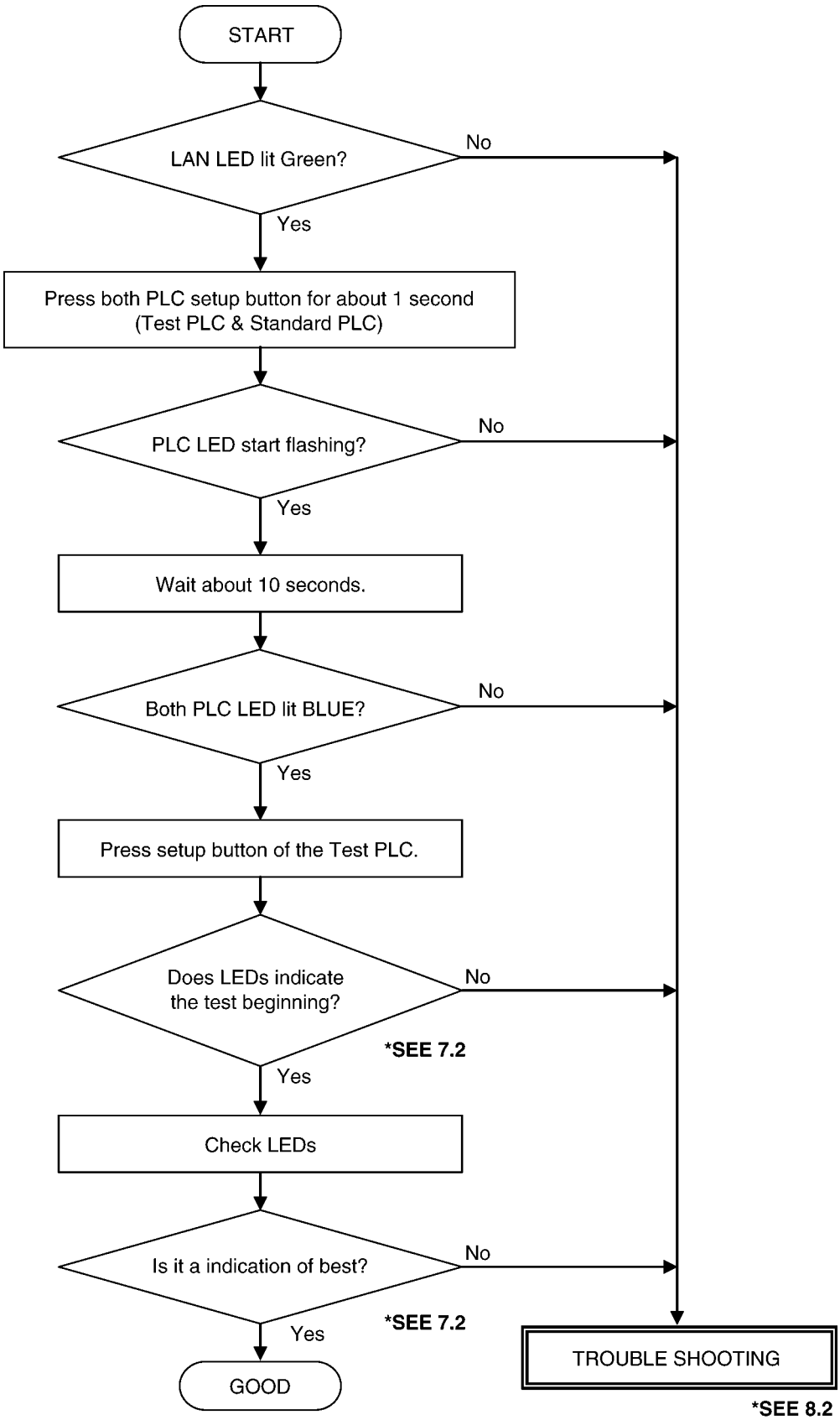
1) Standard PLC
2) Power Strip with noise filter
3) Ethernet Cable
4) Power cord

8.1.3.2. Connect Adaptors and Initializes

1) Set Standard PLC
   Mode Selector Switch is set to MASTER.
2) Set Test PLC
   Mode Selector Switch is set to TERMINAL.
3) LAN Jack
   Connect both LAN Jack with an ethernet cable
4) Power ON
   Plug the Power cord in the same side of the Power Strip.
5) Reset both PLC to factory default
   Push each FACTRY DEFAULT RESET Button of Standard PLC and the Test PLC for about two seconds.

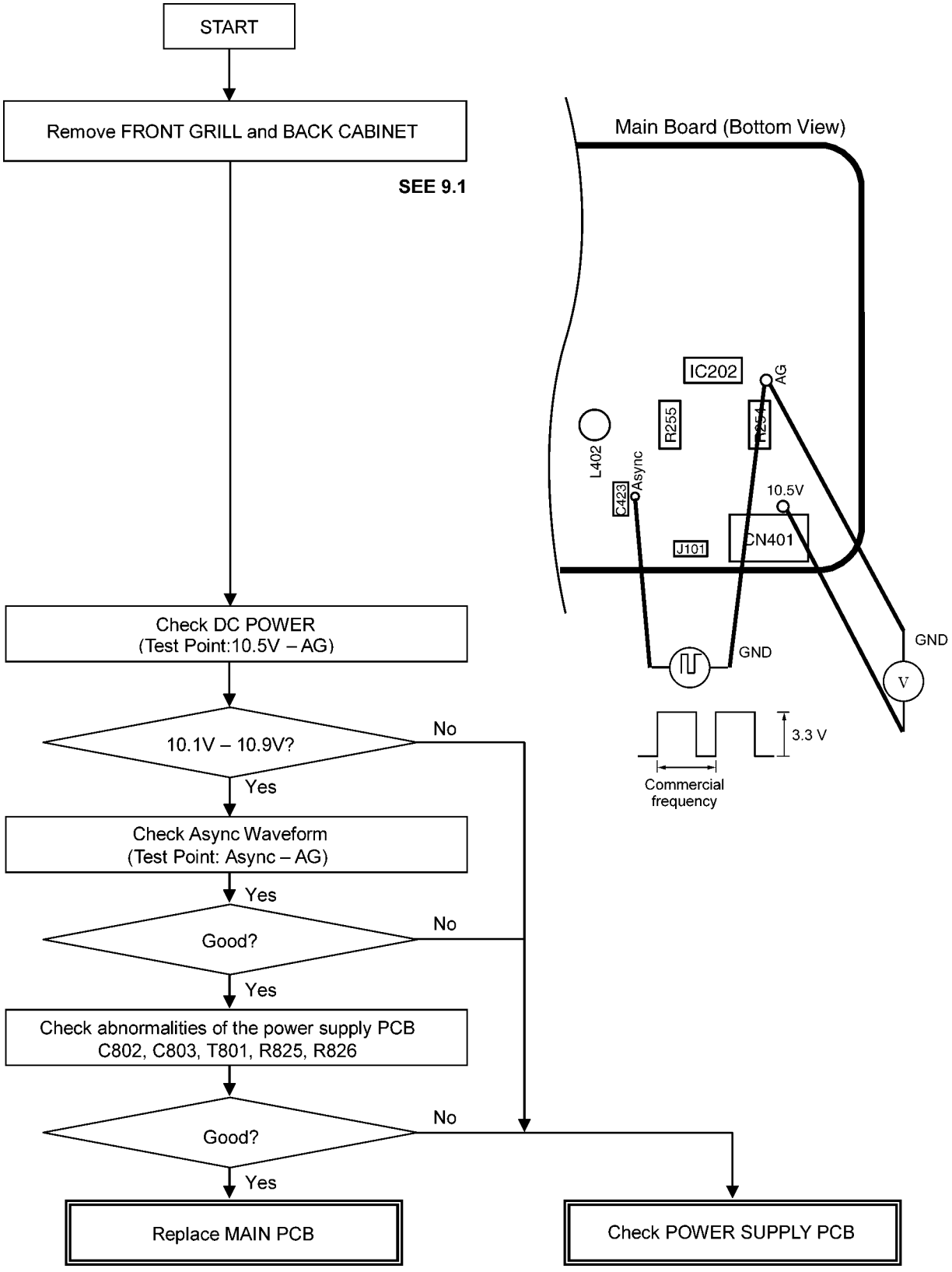


8.1.3.3. Function Check Flow Chart



8.2. Trouble Shooting Guide

8.2.1. Starting Up Operation Flow Chart



8.2.2. Power Supply PCB Check Flow Chart

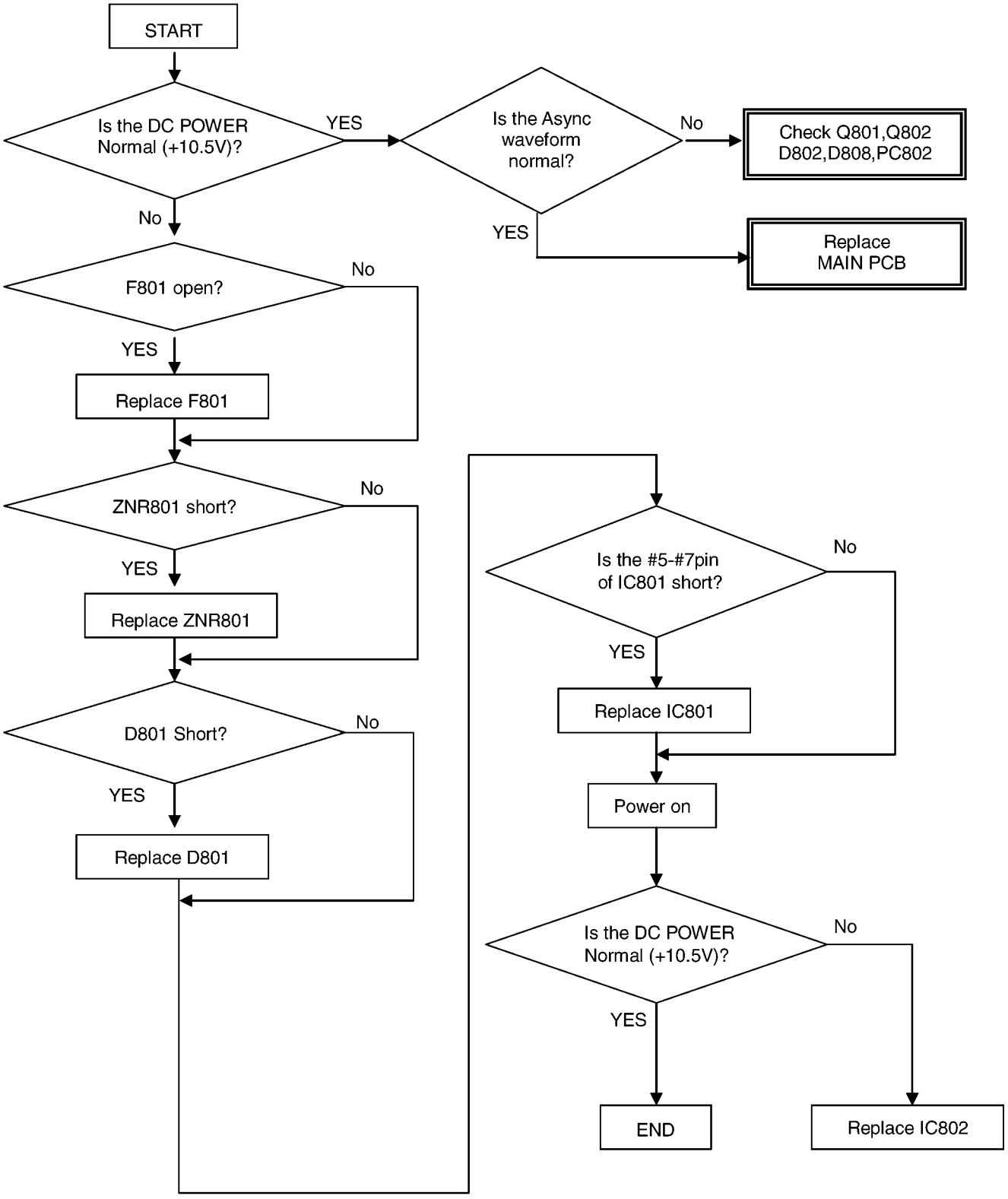
Check the following parts first: F801, ZNR801, IC801, D801, D802, Q801, T802 and IC802.

This comes from our experience with experimental tests. For example: power supply and lightning surge voltage test, withstanding voltage test, intentional short circuit test, etc.

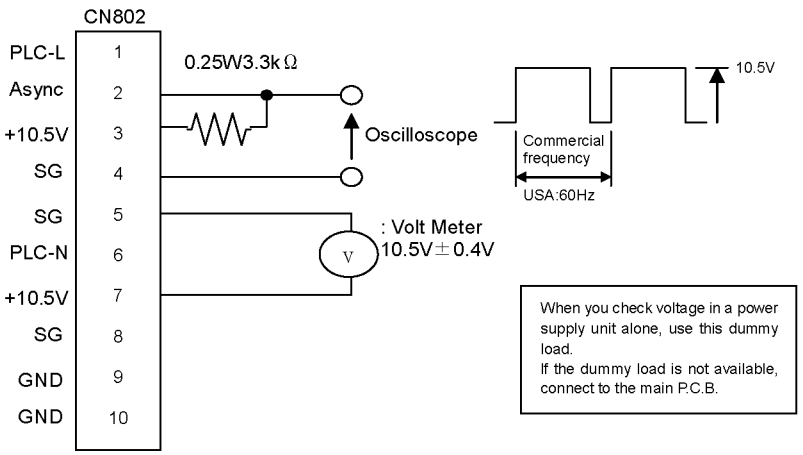
Caution:

If you find a opened fuse in the unit, do not turn on the power until you locate and repair the faulty parts (except for the fuse); otherwise the fuse will open again and you cannot pinpoint the faulty point.

In most cases, the symptom is that nothing is output. It is more likely that the fault is in the primary side rather than the secondary side. Check the primary side first.



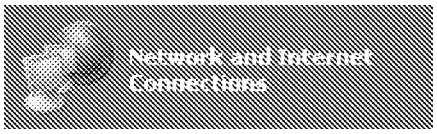
DUMMY LOAD


CN802
PLC-L 1
Async 2
+10.5V 3
SG 4
SG 5
PLC-N 6
+10.5V 7
SG 8
GND 9
GND 10
0.25W3.3kΩ
Oscilloscope
V
: Volt Meter
10.5V±0.4V
10.5V
Commercial frequency
USA:60Hz
When you check voltage in a power supply unit alone, use this dummy load.
If the dummy load is not available, connect to the main P.C.B.

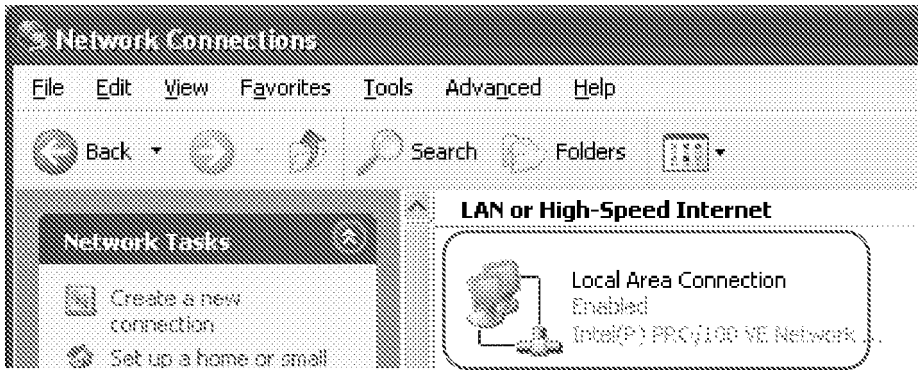
8.3. PC Operation

8.3.1. Configuring TCP/IP on your PC

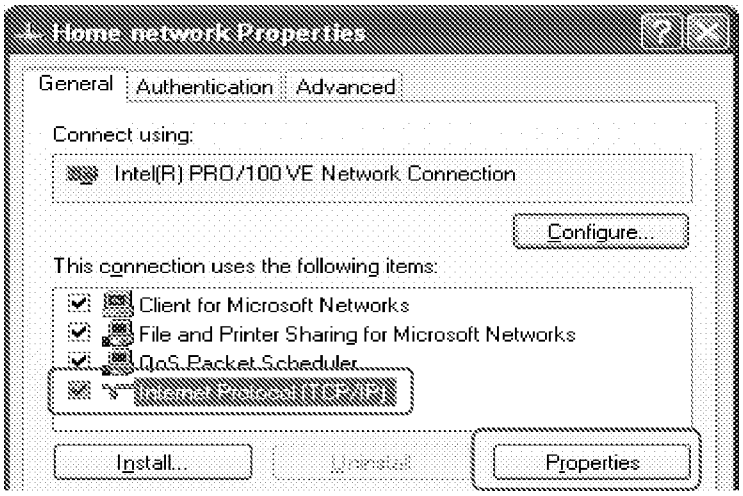
1. Click Start, → Control Panel, → Network and Internet Connections, and then click Network Connections.



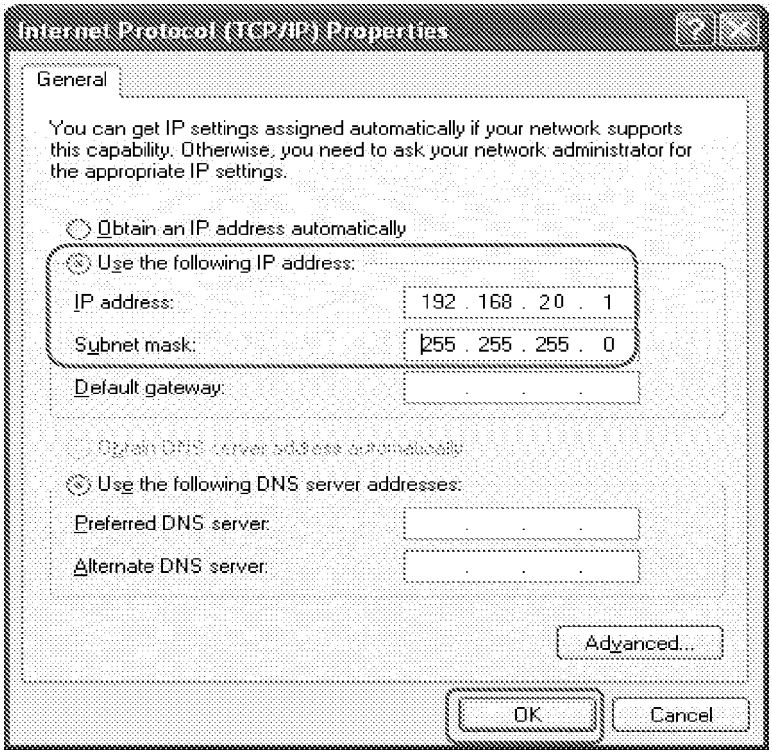
2. Right-click your LAN connection, and then click Properties.



3. Click Internet Protocol (TCP/IP), and then click Properties.



4. Click Use the following IP address, and then type the corresponding number combination.

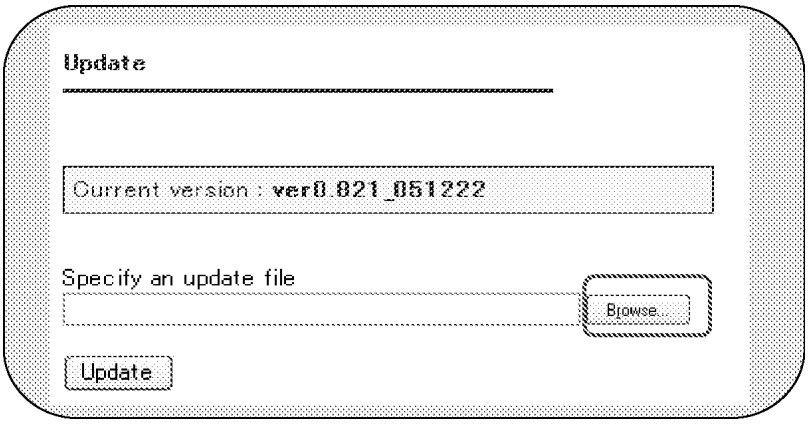


5. Click OK, and then click Close.

NOTE:
If your Brower (IE) uses Proxy, we recommend to disable it.

8.3.2. How to check the firmware of HD-PLC adaptor

1. Open the following web page by using IE.
   http://192.168.20.156/nca32/update.cgi



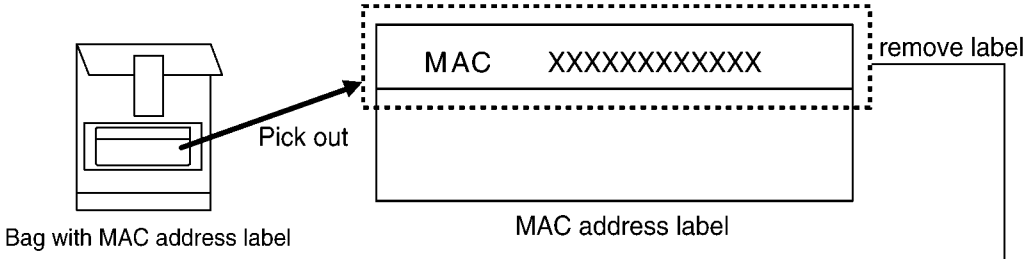
Note
If this page is not displayed execute “arp -d” by Dos prompt.

8.4. How to Change MAC Address Label

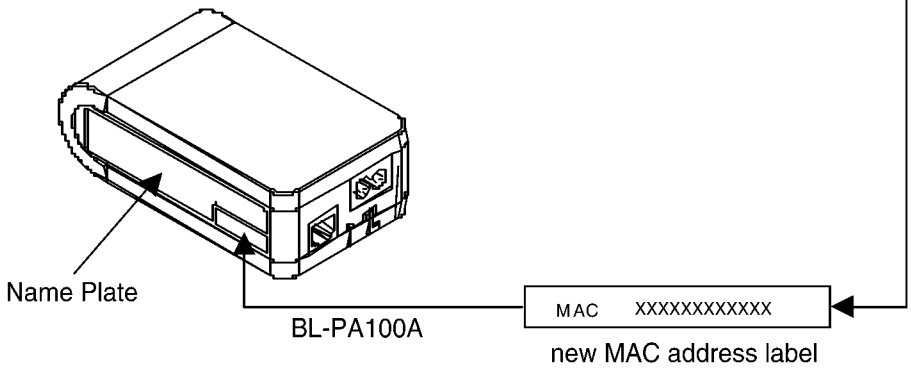
MAC address label caution

When you replace the main board, you must also attach the new MAC address label (included with the main board). Attach the new MAC address label to the unit by placing over the old MAC address label. Make sure the old address cannot be seen. Throw away the old main board. It cannot be reused.

1. Pick out new MAC address label from bag and remove new MAC address label.



2. Attach the new MAC address label to the unit by placing over the old MAC address label.



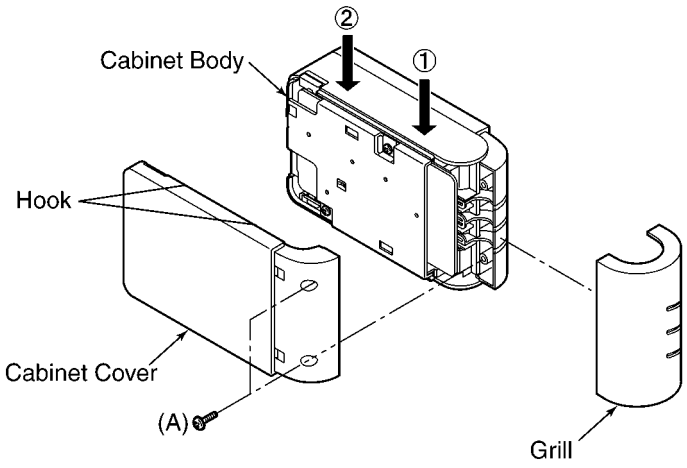
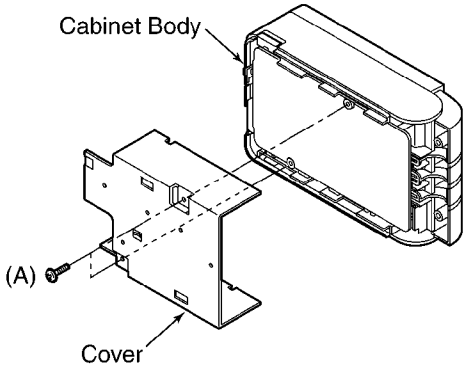
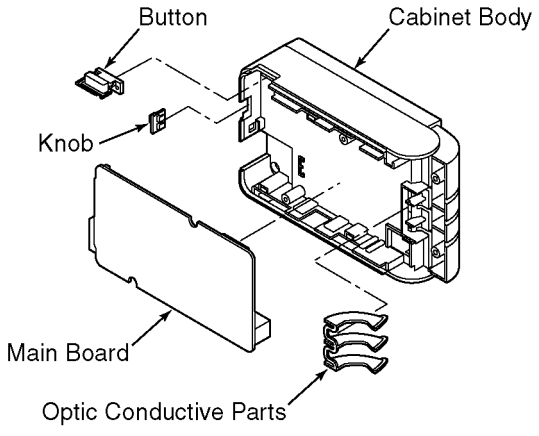
9 Disassembly and Assembly Instructions

9.1. Disassembly Instructions

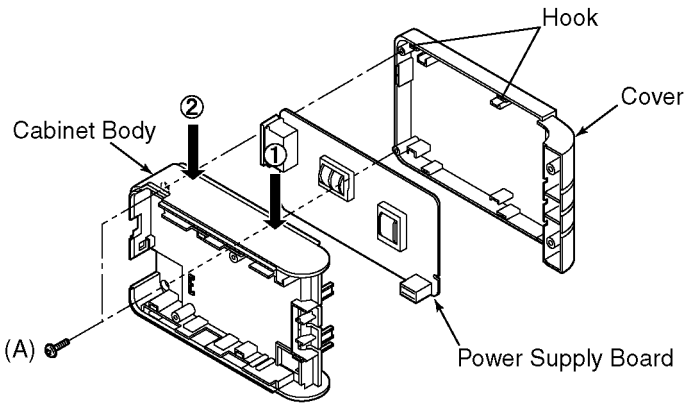
MAC address label caution

When you replace the main board, you must also attach the new MAC address label (included with the main board). Attach the new MAC address label to the unit by placing over the old MAC address label. Make sure the old address cannot be seen. Throw away the old main board. It cannot be reused.

(IF the MAC address of the old main board is already registered via DDNS and then used in a different camera, the camera cannot be used with DDNS service.)

1. Remove the Grill. 2. Remove the 2 screws (A). 3. Remove the Cabinet Cover.	 TO REMOVES THE CABINET COVER. PUSH THE SIDE (LEFT AND RIGHT TWO PLACE) TO DETACH HOOK. (ORDER OF ①→②)
4. Remove the 2 screws (A). 5. Remove the Cover.	
6. Remove the Main Board. 7. Remove the Optic Conductive Parts. 8. Remove the Knob. 9. Remove the Button.	

10. Remove the 2 screws (A).
11. Remove the Cover.
12. Remove the Power Supply Board.

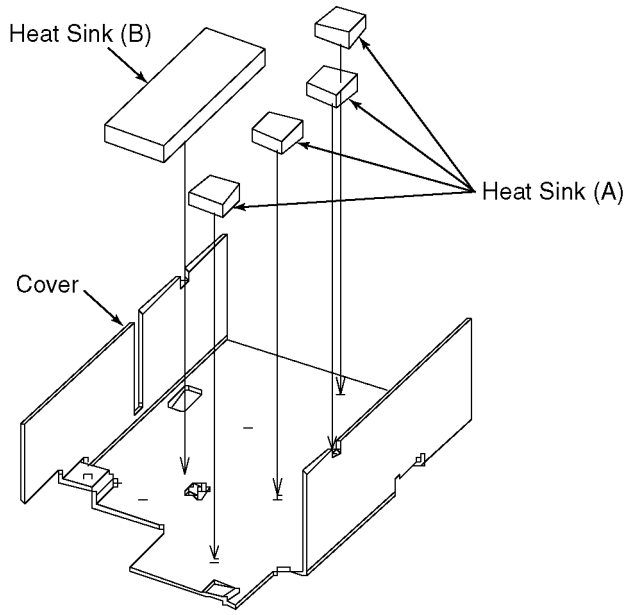


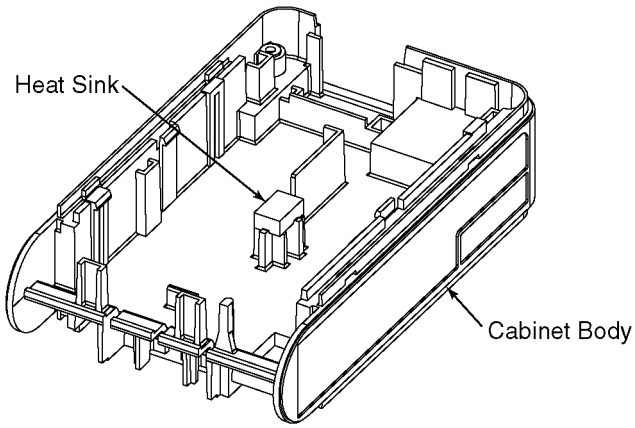
TO REMOVES THE COVER.
PUSH THE SIDE (LEFT AND RIGHT TWO PLACE)
TO DETACH HOOK. (ORDER OF ①→②)

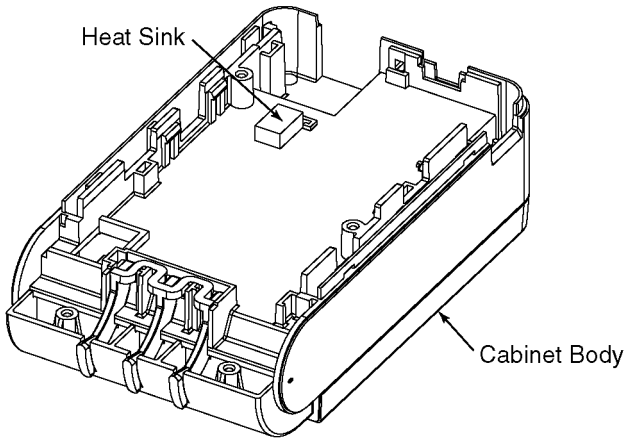
9.2. Assembly Instructions

9.2.1. Cautions for Heat Sink

1. Attach four Hear Sink (A) and Heat Sink (B) to Cover.







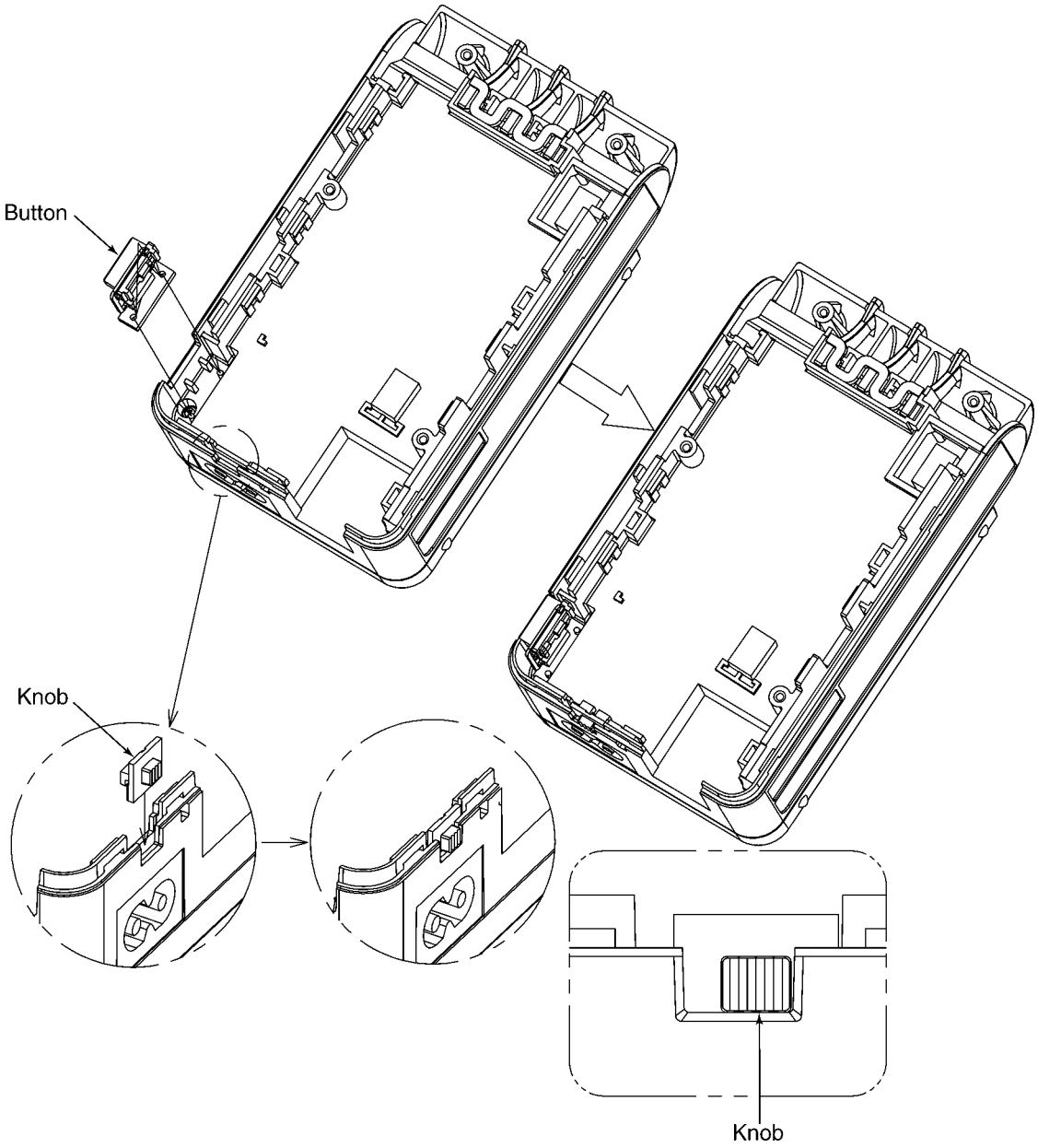
9.2.2. Cautions for Button and Knob

Button Caution

Push Button completely.

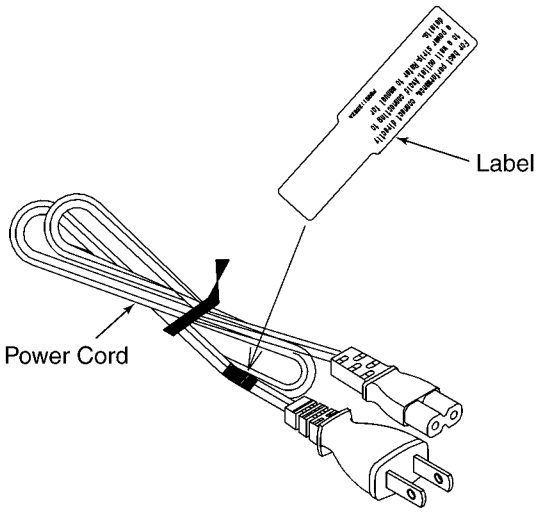
Knob Caution

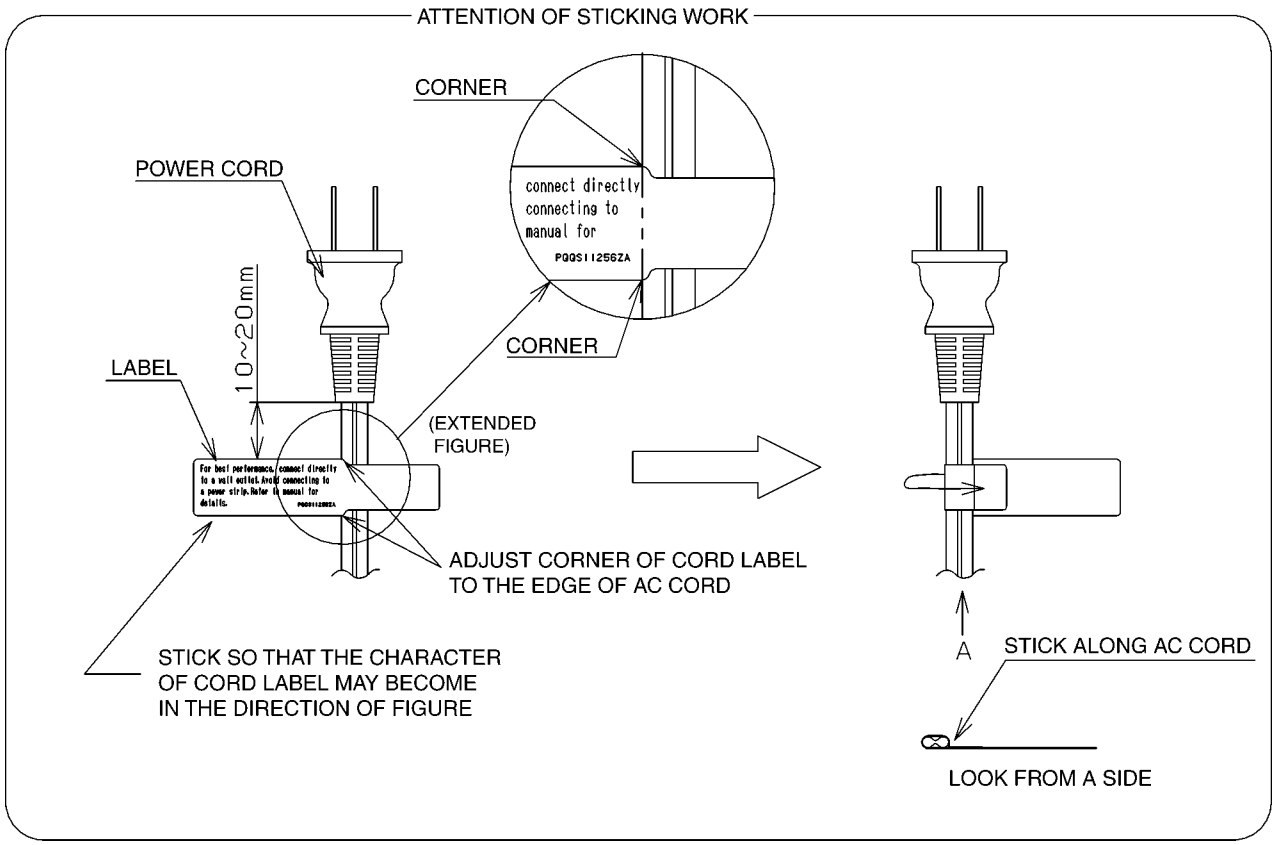
Attach Knob to right-head edge.



9.2.3. Cautions for Cord Label

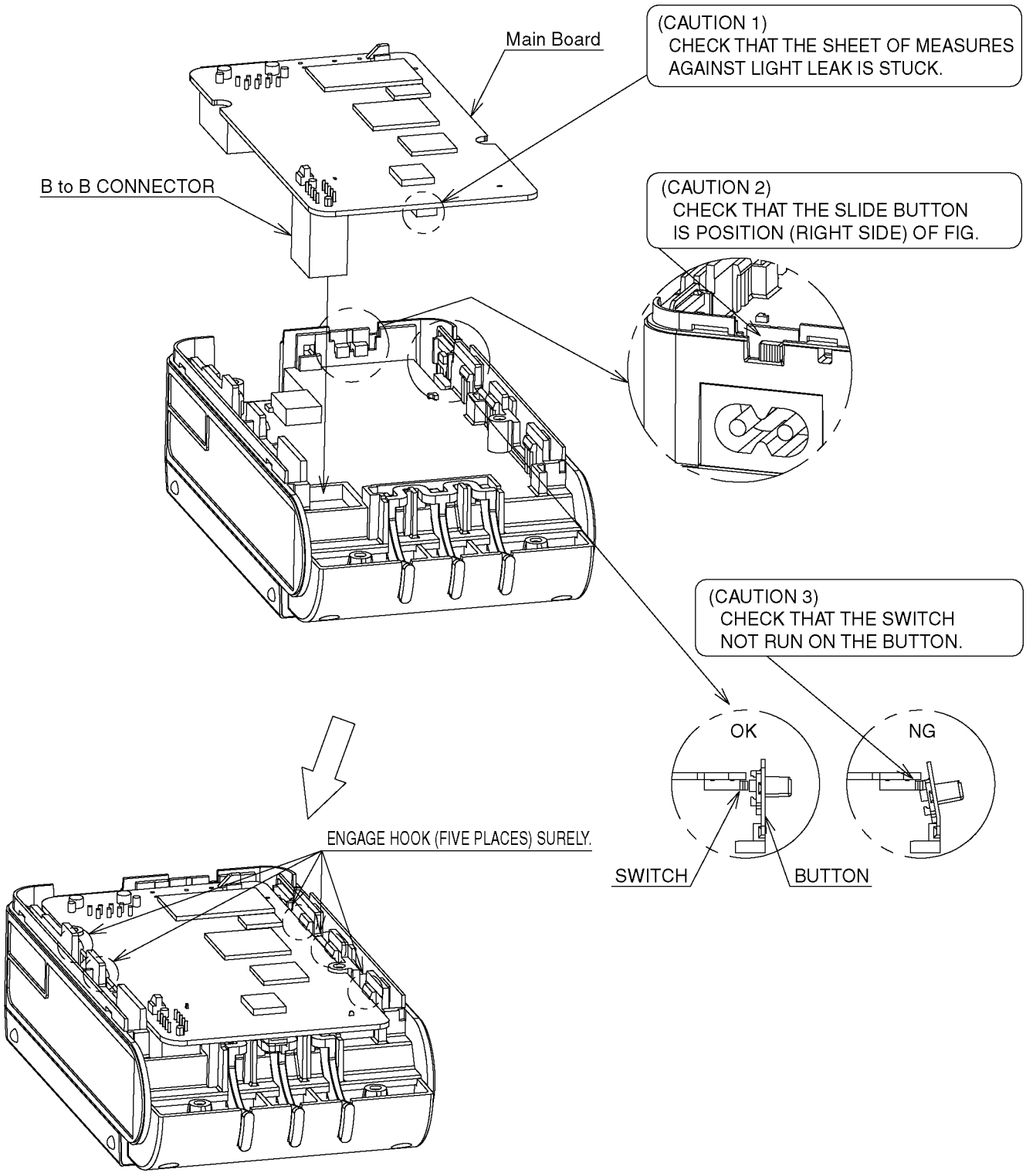
Attach power cord to label.





9.2.4. Cautions for Main Board Assembly

(CAUTION) AFTER CONNECTING B to B CONNECTOR, ENGAGE PCB.

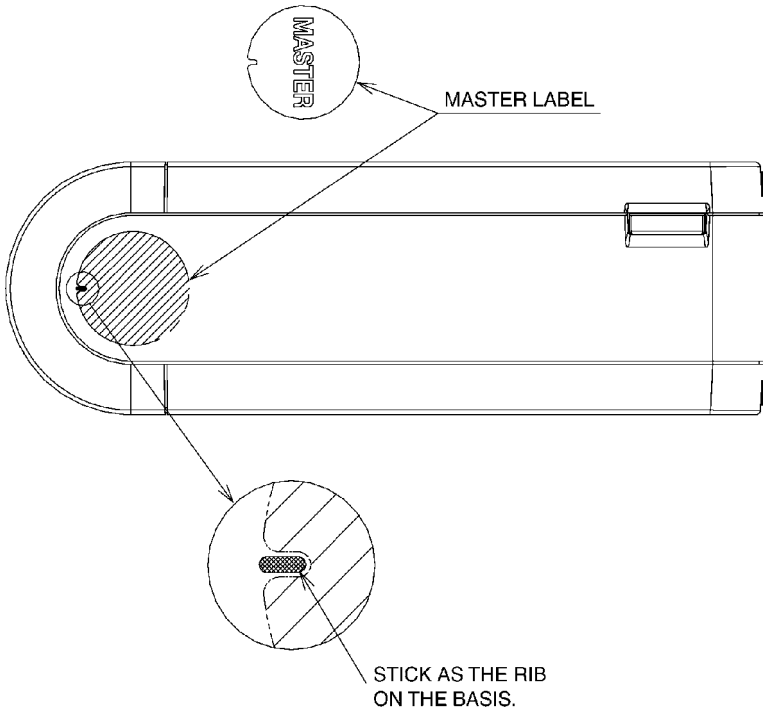


9.2.5. Cautions for Affixing Master Label

< NOTES WHEN LABEL/MASTER IS AFFIXED. >

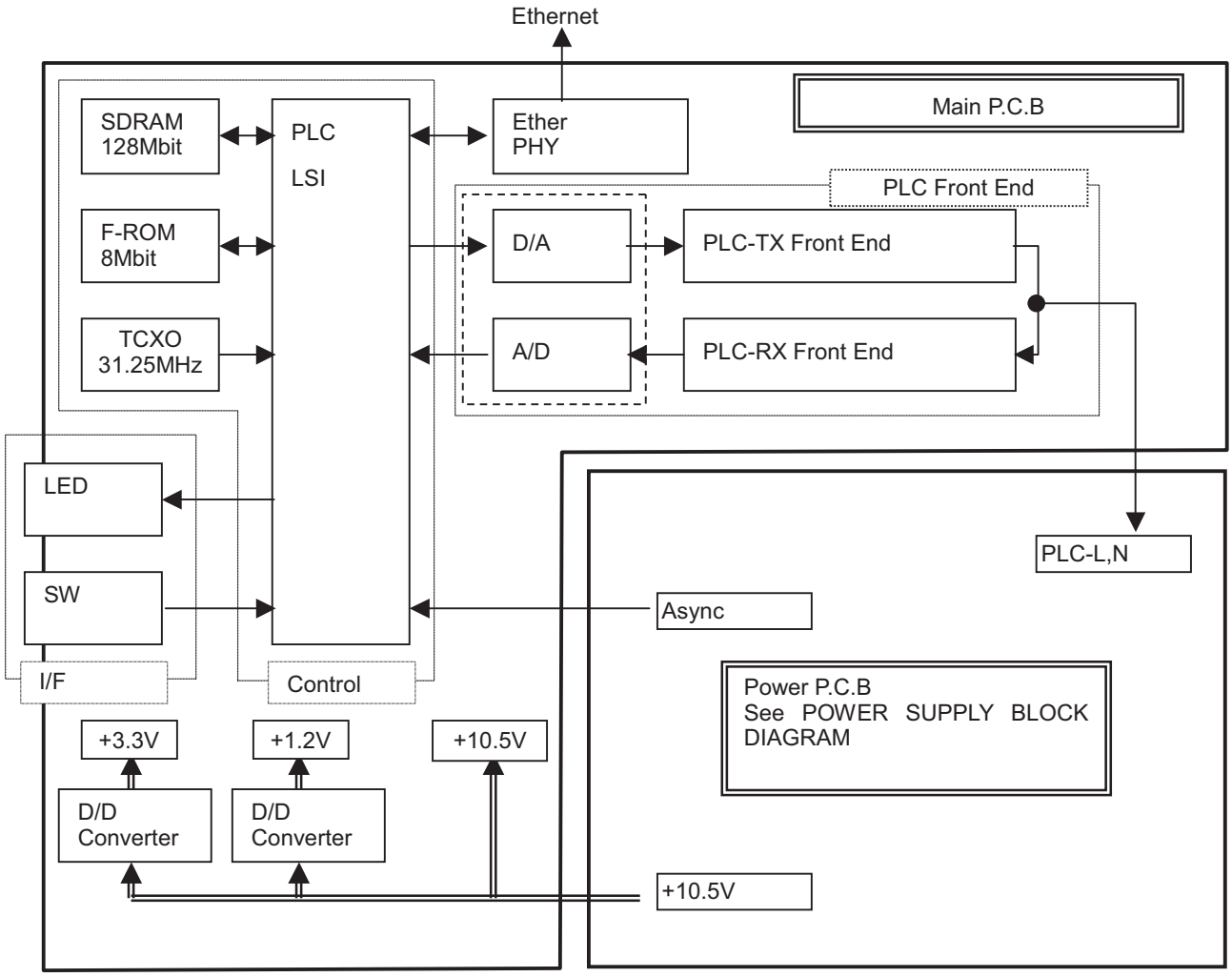
NO THINGS SUCH AS THE FOREIGN BODY ADHESION AND DIRT AT THE POSITION WHERE THE MAIN BODY IS AFFIXED ARE CONFIRMED.

AFTER AFFIXING LABEL/MASTER, CONFIRM THAT THERE IS NO AIR GETTING SULKY OR TURNING OVER THE EDGE SIDE.



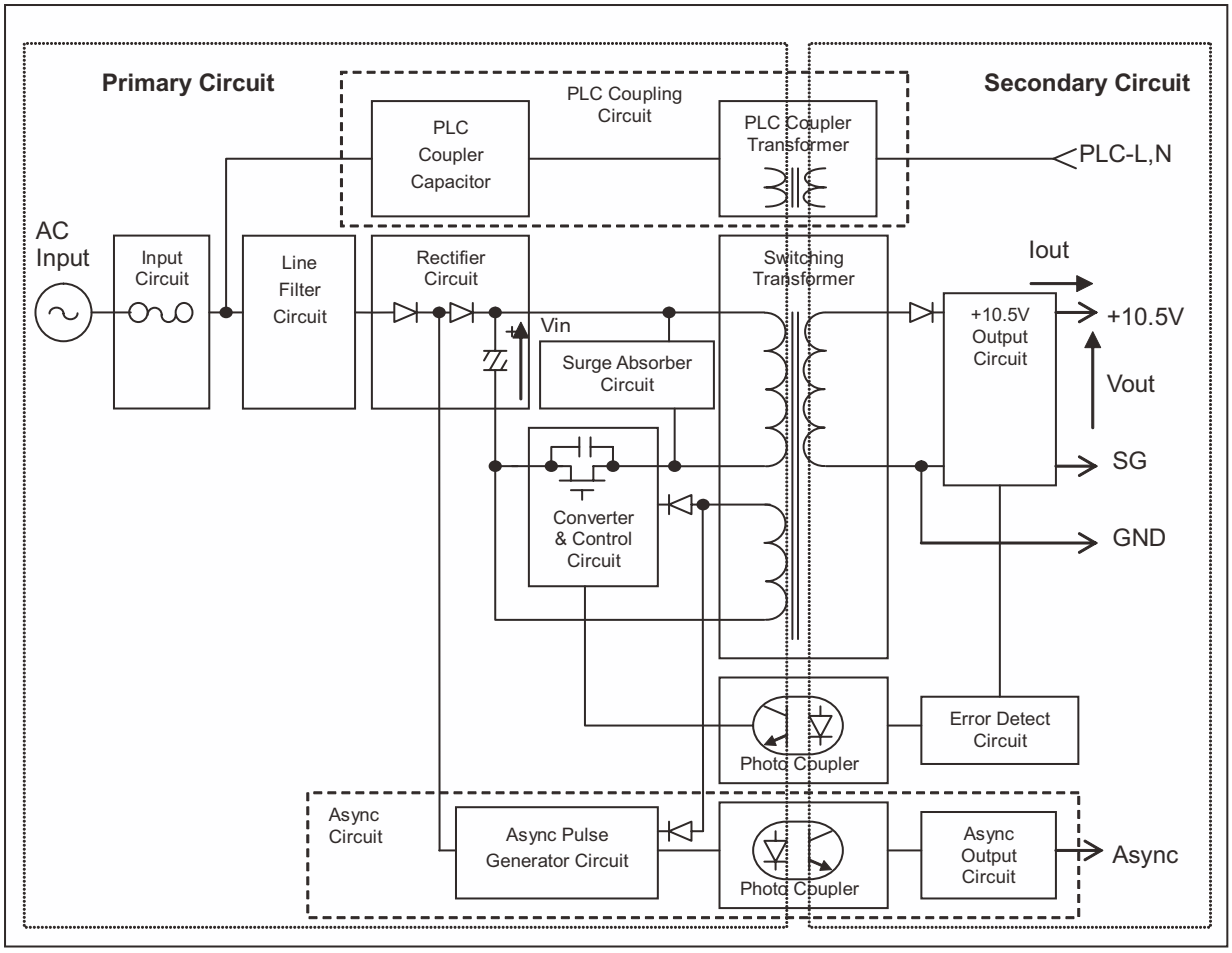
10 Block Diagram

10.1. BL-PA100A/BL-PA100KTA BLOCK DIAGRAM



BL-PA100A/BL-PA100KTA BLOCK DIAGRAM

10.2. POWER SUPPLY BLOCK DIAGRAM



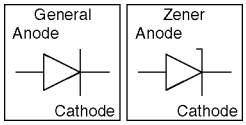
POWER SUPPLY BLOCK DIAGRAM

11 Schematic Diagram

11.1. For The Schematic Diagram

Note:

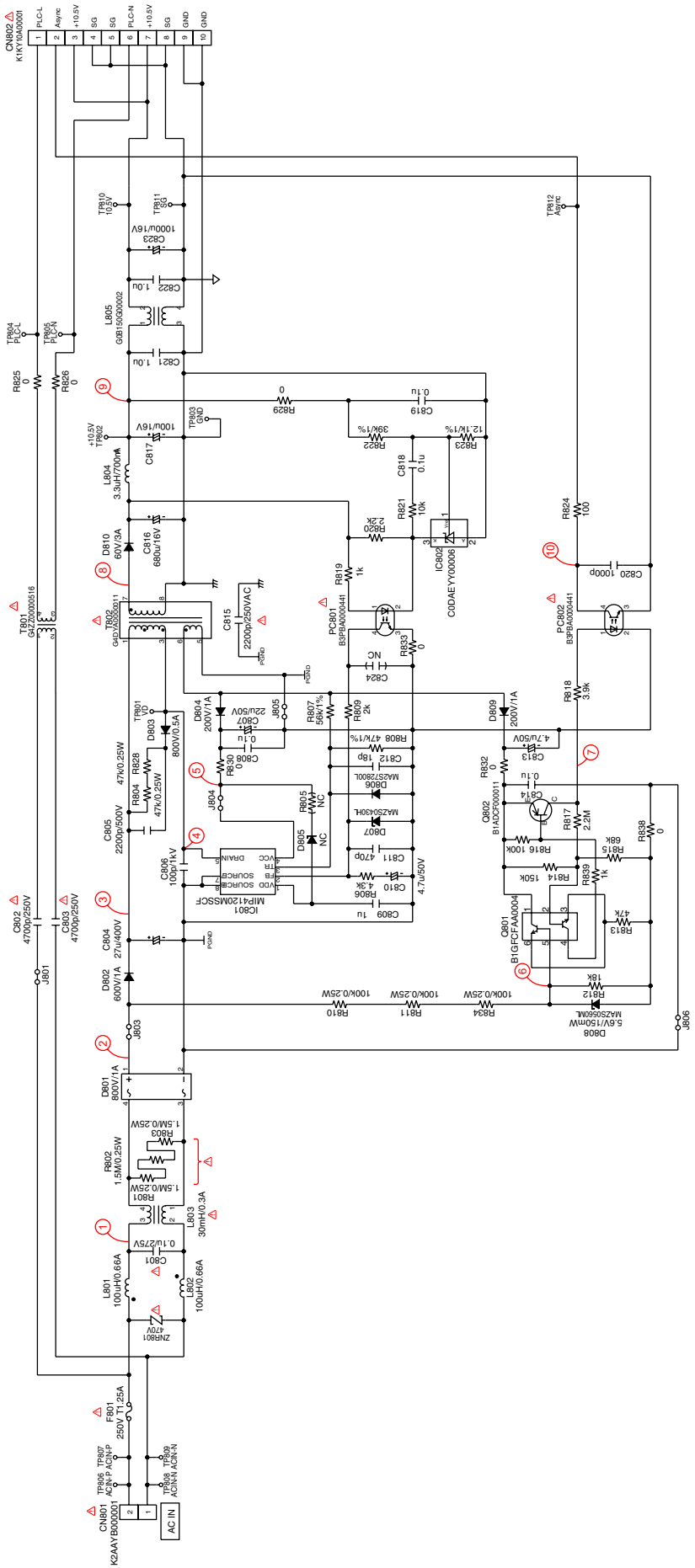
1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.



Important Safety Notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacture's specified parts.

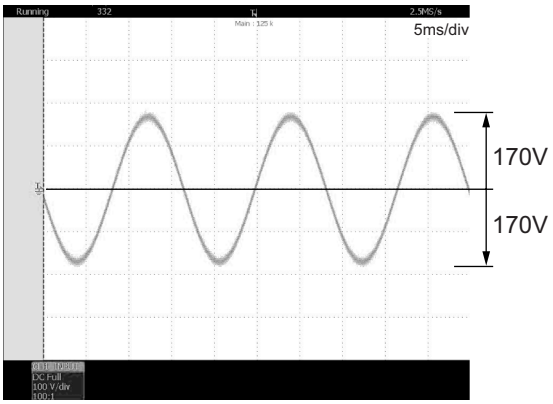
①～⑩ waveform point

11.2. Schematic Diagram

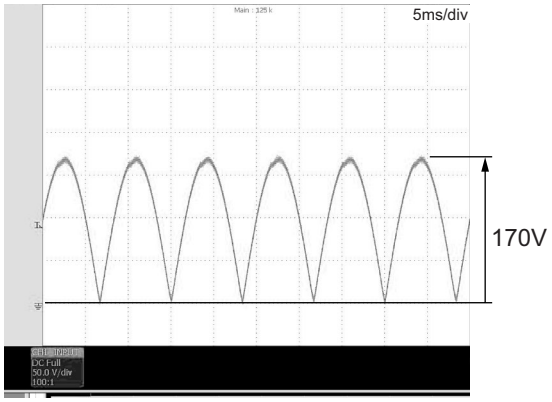


11.3. Waveform

① ZNR801

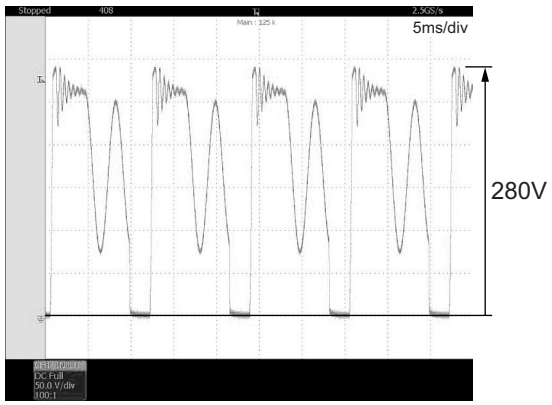


② D801

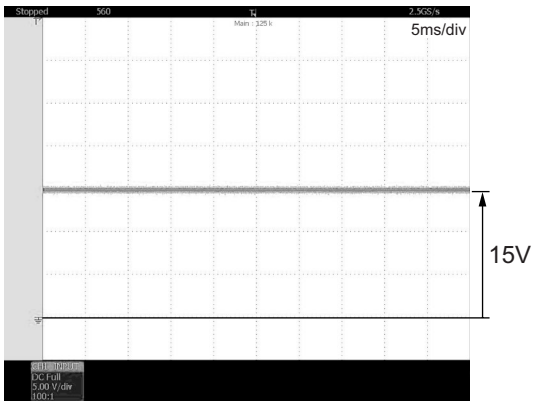


③ D802

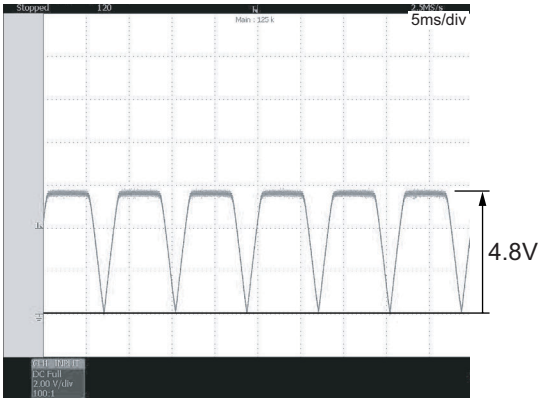
④ IC801-5



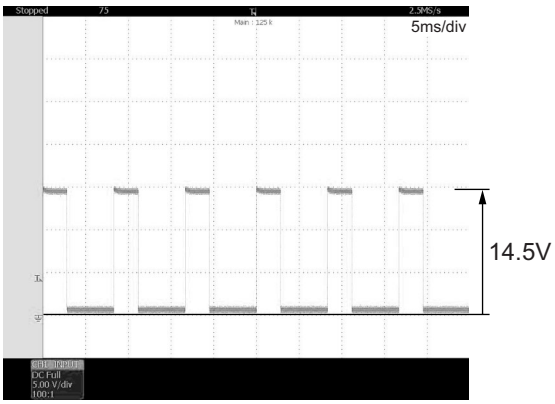
⑤ IC801-4



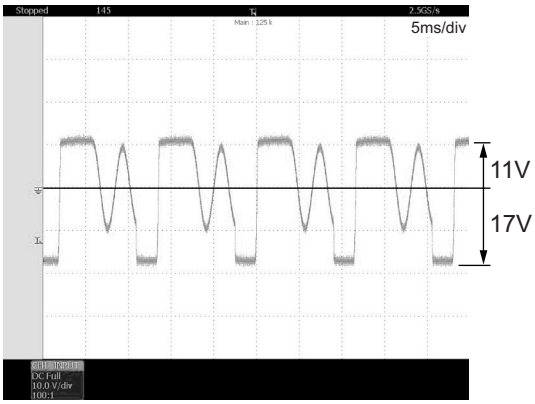
⑥ Q801



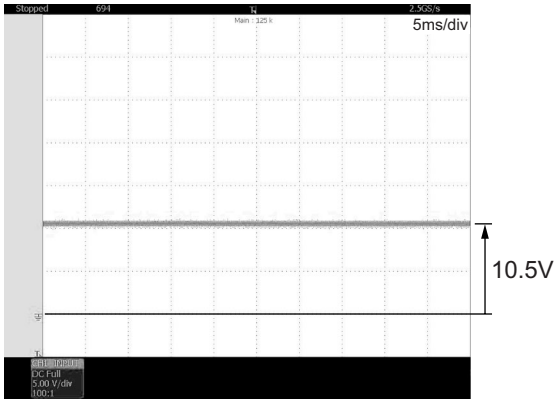
⑦ Q802-C



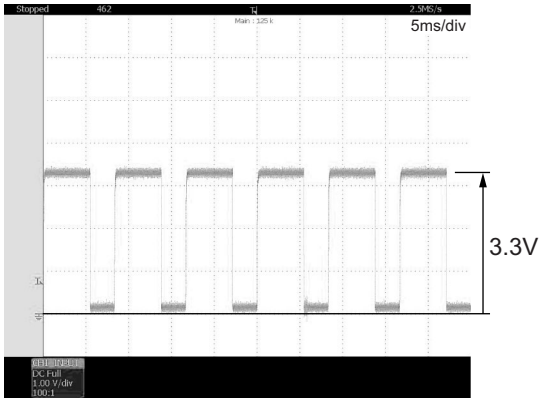
⑧ T802-7



⑨ +10.5V

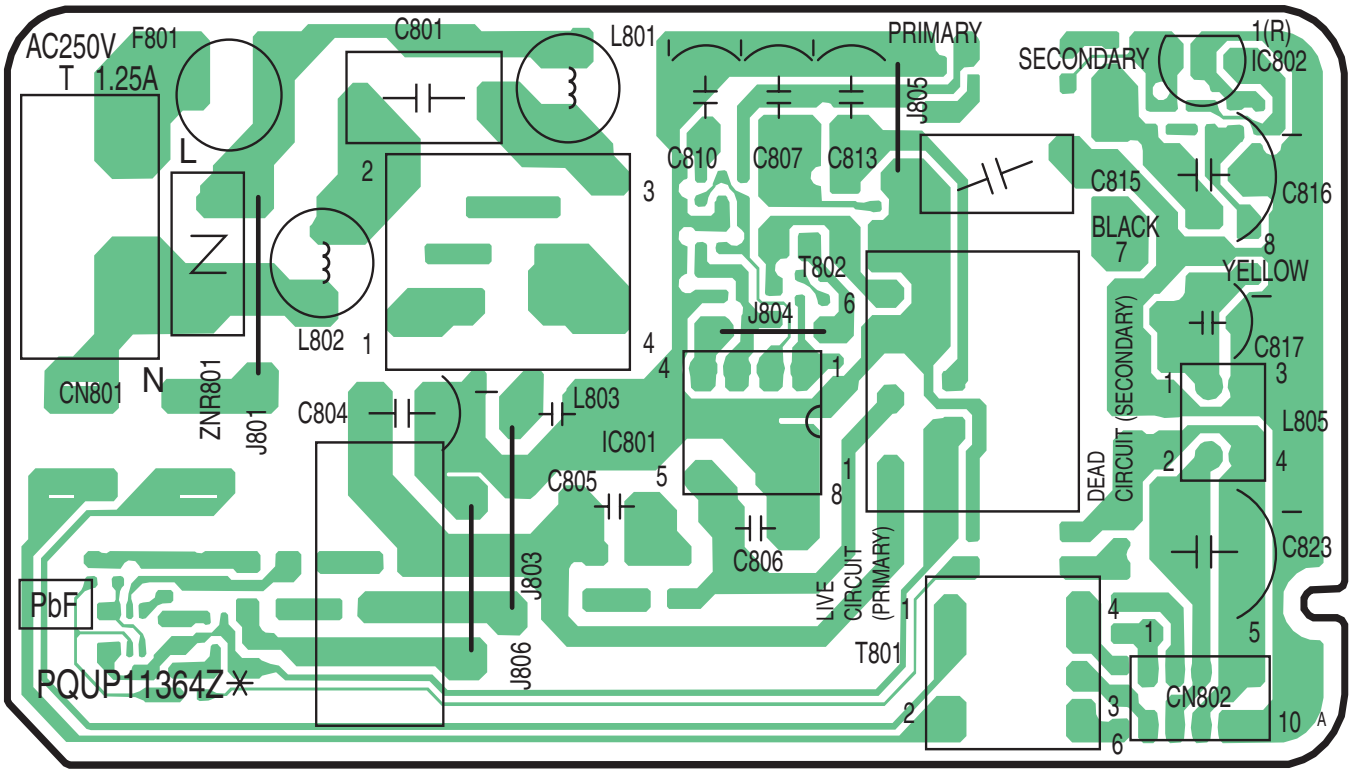


⑩ PC802



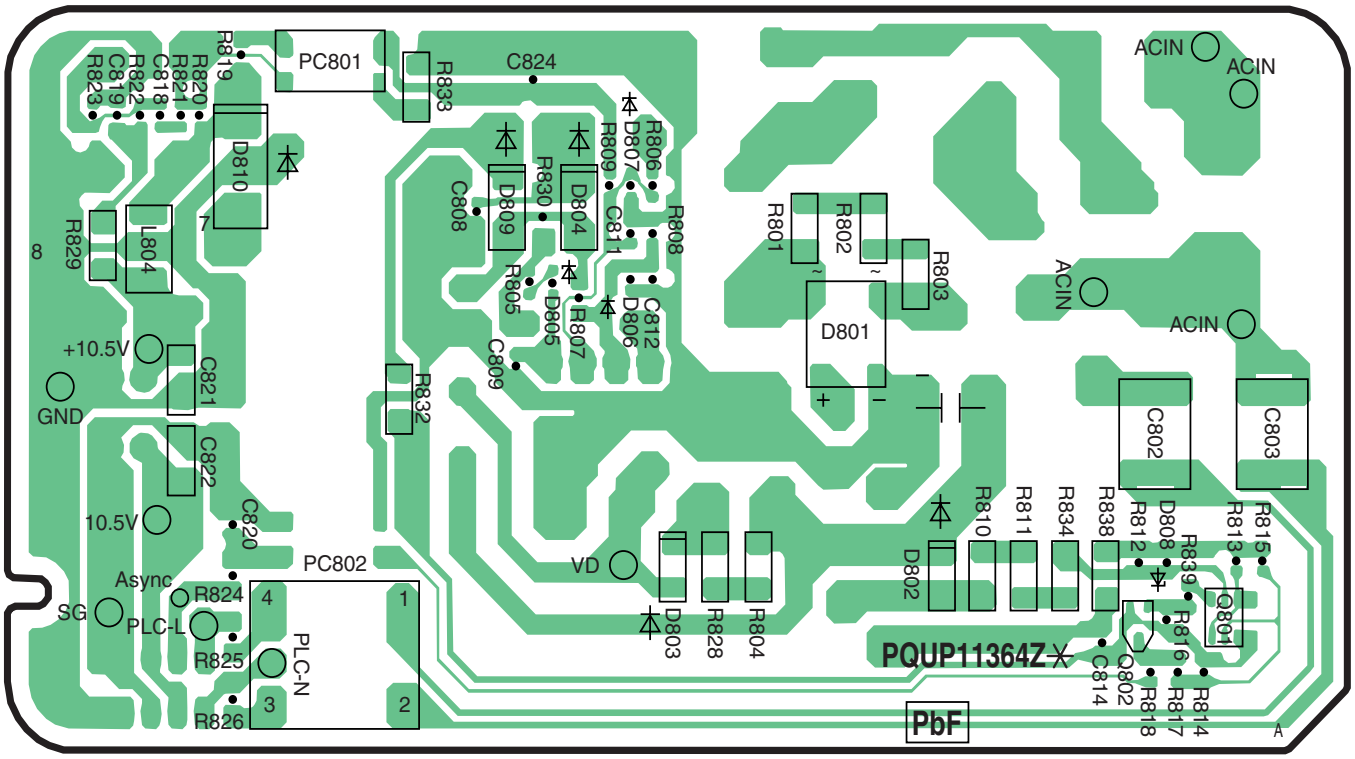
12 Printed Circuit Board

12.1. Power Supply Board (Component View)



BL-PA100A POWER SUPPLY BOARD (Component View)

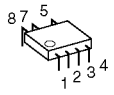
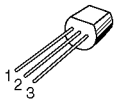
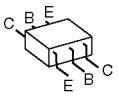
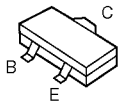
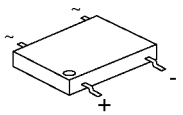
12.2. Power Supply Board (Bottom View)

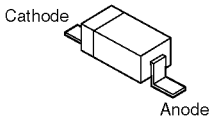
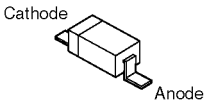


BL-PA100A POWER SUPPLY BOARD (Bottom View)

13 Appendix Information of Schematic Diagram

13.1. Terminal Guide of ICS, Transistors and Diodes

				
M1P4120MSSCF	C0DAEYY00006	B1GFCFAA0004	2SA1576Q	B0EDKT000007

 B0ECKR000028, B0ECET000002 B0HCMM000013, B0JCPG000015	 MA2S72800L MAZS0430H MAZS0560M

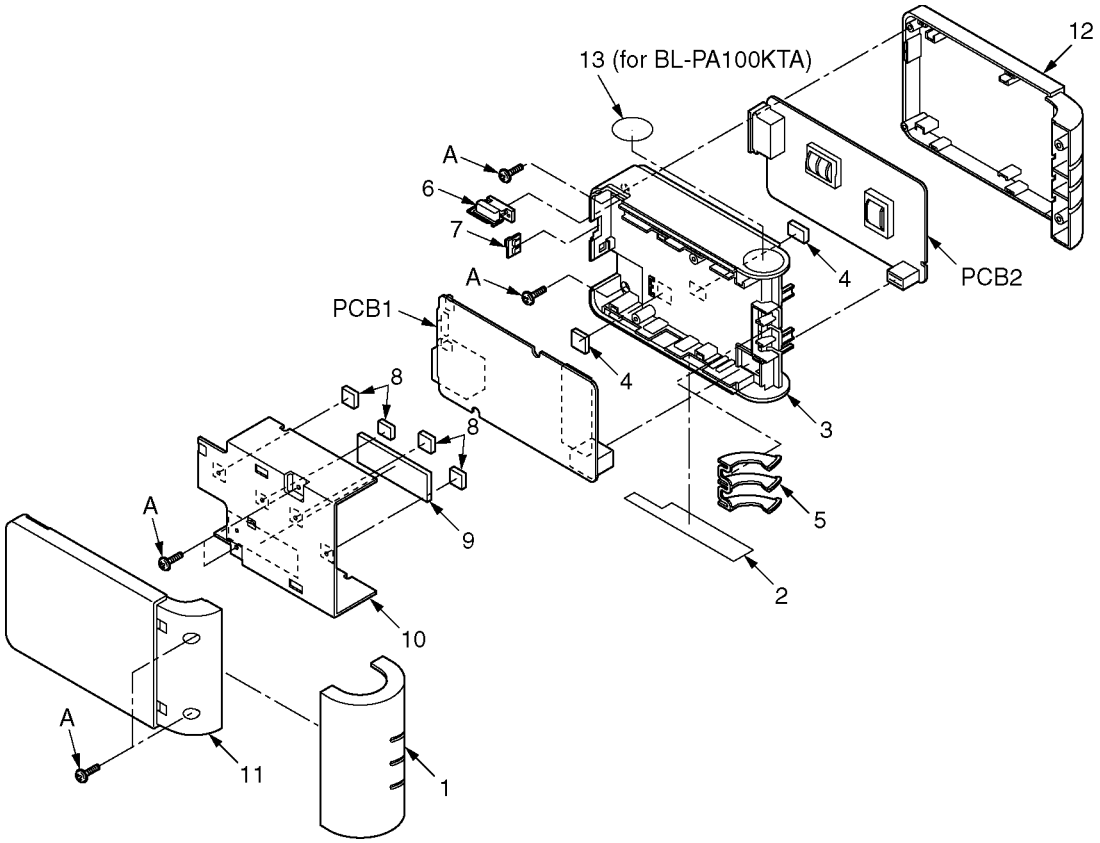
14 Exploded View and Replacement Parts List

14.1. Cabinet and Electrical Parts Location

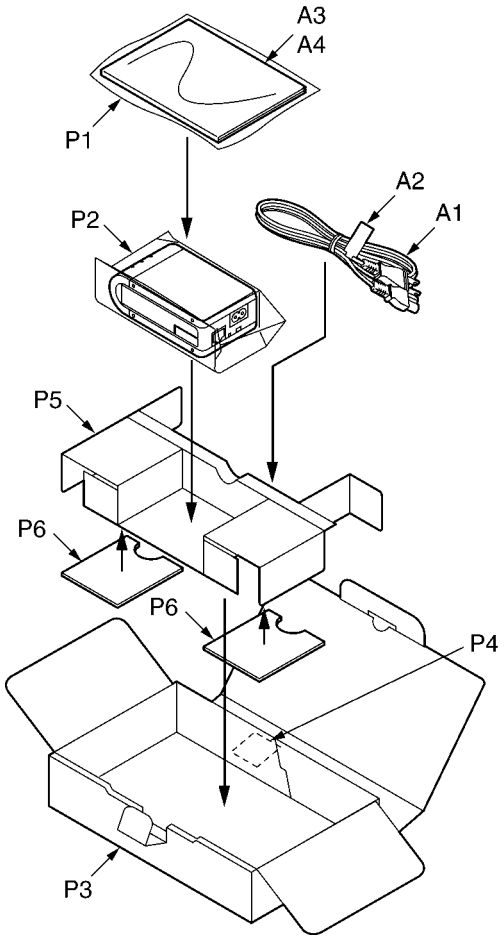
MAC address label caution

When you replace the main board, you must also attach the new MAC address label (included with the main board). Attach the new MAC address label to the unit by placing over the old MAC address label. Make sure the old address cannot be seen. Throw away the old main board. It cannot be reused.

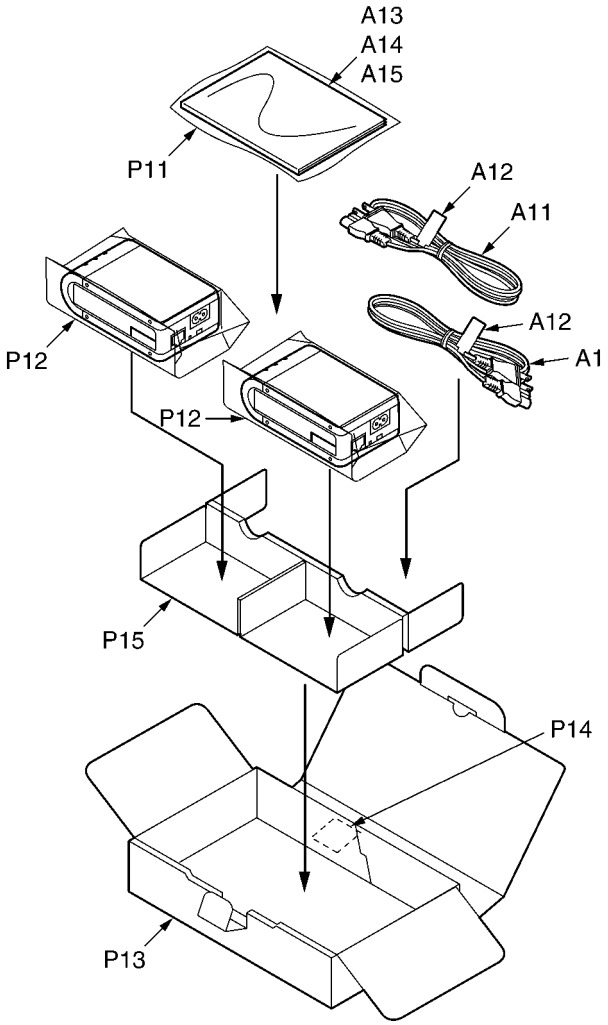
(IF the MAC address of the old main board is already registered via DDNS and then used in a different camera, the camera cannot be used with DDNS service.)



14.2. Accessories and Packing Materials (BL-PA100A)



14.3. Accessories and Packing Materials (BL-PA100KTA)



14.4. 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-94HB) 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)
   *Type & Wattage of 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

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 1V : 35V OJ : 6.3V	OJ : 6.3V 1A : 10V 1C : 16V 1E,25 : 25V	1V : 35V 50,1H : 50V 1J : 63V 2A : 100V

14.4.1. Cabinet and Electrical Parts

Safety	Ref No.	Part No.	Part Name & Description	Remarks
	1	PQGG10409Z1	GRILLE	ABS-V0
	2	PQGT18322Z	NAME PLATE	
	3	PQKM10705Z1	CABINET BODY	ABS-V0
	4	PQMY10029Y	HEAT SINK	
	5	PQHR11190Z	OPTIC CONDUCTIVE PARTS	PC-HB
	6	PQBC10457Z1	BUTTON	ABS-V0
	7	PQBD10041Z1	KNOB	ABS-V0
	8	PQMY10035Z	HEAT SINK A	
	9	PQMY10036Z	HEAT SINK B	
	10	PQMH10488Z	COVER	
	11	PQKF10697Z1	CABINET COVER	ABS-V0
	12	PQKV10053Z1	COVER	ABS-V0
	13	PQQS11231Z	LABEL,MASTER(BL-PA100KTA ONLY)	
	A	XTW2+R6PFJ	SCREW	

14.4.2. Accessories and Packing Materials

(BL-PA100A)

Safety	Ref No.	Part No.	Part Name & Description	Remarks
⚠	A1	PSJA1069Z	POWER CORD	
	A2	PQQS11256Z	LABEL	
	A3	PQQX15015Y	INSTRUCTION BOOK	
	A4	PQQW15388Z	LEAFLET	
	P1	XZB20X35A04	PROTECTION COVER	
	P2	PFPH1013Z	PROTECTION COVER	
	P3	PQPK15010Z	GIFT BOX	
	P4	PQXDDS400-8	LABEL	
	P5	PQPD10676Z	CUSHION	
	P6	PQPD10748Z	CUSHION	

(BL-PA100KTA)

Safety	Ref No.	Part No.	Part Name & Description	Remarks
⚠	A11	PSJA1069Z	POWER CORD	
	A12	PQQS11256Z	LABEL	
	A13	PQQX15017Z	INSTRUCTION BOOK	
	A14	PQQX15524Y	INSTRUCTION BOOK	
	A15	PQQW15388Z	LEAFLET	
	P11	XZB20X35A04	PROTECTION COVER	
	P12	PFPH1013Z	PROTECTION COVER	
	P13	PQPK15152Z	GIFT BOX	
	P14	PQXDDS400-8	LABEL	
	P15	PQPD10708Z	CUSHION	

14.4.3. Main Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PQWP1PA100A	MAIN BOARD ASS'Y	

14.4.4. Power Supply Board Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB2	PQWP2PA100A	POWER SUPPLY BOARD ASS'Y(RTL)	
			(ICS)	
	IC801	MIP4120MSSCF	IC	
	IC802	C0DAEYY00006	IC	
			(TRANSISTORS)	
	Q801	B1GFCFAA0004	TRANSISTOR(SI)	
	Q802	2SA1576Q	TRANSISTOR(SI)	S
			(DIODES)	
	D801	B0EDKT000007	DIODE(SI)	
	D802	B0ECKR000028	DIODE(SI)	
	D803	B0ECET000002	DIODE(SI)	
	D804	B0HCMM000013	DIODE(SI)	
	D806	MA2S72800L	DIODE(SI)	
	D807	MAZS0430H	DIODE(SI)	
	D808	MAZS0560M	DIODE(SI)	
	D809	B0HCMM000013	DIODE(SI)	
	D810	B0JCPG000015	DIODE(SI)	
			(CAPACITORS)	
⚠	C801	F0CAF1040007	0.1	
⚠	C802	F1LAF472A004	4700p	
⚠	C803	F1LAF472A004	4700p	
	C804	There is no supply of only this parts Please order PCB2.		
	C805	ECKNHT222KB	0.0022	
	C806	ECKN3A101KBP	100p	
	C807	F2A1H2200050	22	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C808	ECJ1VF1H104Z	0.1	
	C809	ECJ1VB1C105K	1	
	C810	F2A1H4R70054	4.7	
	C811	ECJ1VC1H471J	470p	
	C812	ECJ1VC1H180J	18p	
	C813	F2A1H4R70054	4.7	
	C814	PQCUV1H104KB	0.1	S
	C815	There is no supply of only this parts Please order PCB2.		
	C816	There is no supply of only this parts Please order PCB2.		
	C817	There is no supply of only this parts Please order PCB2.		
	C818	ECJ1VB1C104K	0.1	
	C819	PQCUV1H104KB	0.1	S
	C820	ECJ1VB1H102K	0.001	
	C821	ECUV1E105ZF	1	S
	C822	ECUV1E105ZF	1	S
	C823	F2A1C1020090	1000	
			(CONNECTORS AND JACK)	
⚠	CN801	K2AAYB000001	JACK	
⚠	CN802	K1KY10A00001	CONNECTOR,10P	
			(FUSE)	
⚠	F801	K5G132Y00001	FUSE	
			COILS	
	L801	G0C101K00051	COIL	
	L802	G0C101K00051	COIL	
⚠	L803	G0B303C00002	COIL	
	L804	G1C3R3KA0086	COIL	
	L805	G0B150G00002	COIL	
			(PHOTO ELECTRIC TRANS-DUCERS)	
⚠	PC801	B3PBA0000441	PHOTO COUPLER	
⚠	PC802	B3PBA0000441	PHOTO COUPLER	
	R801	PQ4R18XJ155	1.5M	S
	R802	PQ4R18XJ155	1.5M	S
	R803	PQ4R18XJ155	1.5M	S
	R804	PQ4R18XJ473	47k	S
	R807	ERJ6ENF5602	56k	
	R808	ERJ3EKF4702	56k	
	R809	ERJ3GEYJ202	2k	
	R810	PQ4R18XJ104	100k	S
	R811	PQ4R18XJ104	100k	S
	R812	ERJ3GEYJ183	18k	
	R813	ERJ3GEYJ473	47k	
	R814	ERJ3GEYJ154	150k	
	R815	ERJ3GEYJ683	68k	
	R816	ERJ3GEYJ104	100k	
	R817	ERJ3GEYJ225	2.2M	
	R818	ERJ3GEYJ392	3.9k	
	R819	PQ4R10XJ102	1k	S
	R820	ERJ3GEYJ222	2.2k	
	R821	ERJ3GEYJ103	10k	
	R822	ERJ3GEYF393	39k	S
	R823	ERJ3EKF1212	1.21k	
	R824	PQ4R10XJ101	100	S
	R825	ERJ6GEY0R00	0	
	R826	ERJ6GEY0R00	0	
	R828	PQ4R18XJ473	47k	S
	R829	ERJ8GEY0R00	0	
	R830	ERJ8GEY0R00	0	
	R832	ERJ8GEY0R00	0	
	R833	ERJ8GEY0R00	0	
	R834	PQ4R18XJ104	100k	S
	R838	ERJ8GEY0R00	0	
	R839	ERJ3GEYJ102	1k	
			(TRANSFORMER)	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	T801	There is no supply of only this parts Please order PCB2.		
	T802	There is no supply of only this parts Please order PCB2.		
			(VARISTORS)	
⚠	ZNR801	ERZV10D471CS	VARISTOR	

A.
BLPA100A
BLPA100KTA