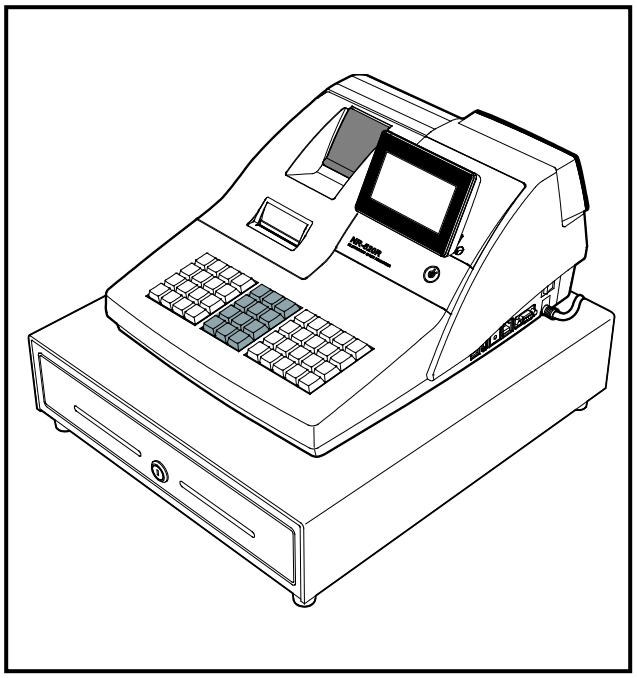
SAM4S

# ELECTRONIC CASH REGISTER

## NR-500 Series

# SERVICE Manual

## ELECTRONIC CASH REGISTER



## C O N T E N T S


1. Precaution Statements
2. Product Specifications
3. Installation and Operation
4. Disassembly and Assembly
5. Maintenance and Adjustment
6. Exploded Views and Parts List
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8. Troubleshooting
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## About this Manual

This service manual describes how to perform hardware service maintenance for the SAM4S NR-500 Series Electronic Cash Register.

### Notes

Notes may appear anywhere in the manual. They describe additional information about the item.

### Precaution symbols

⚠. Indicates a Safety Precaution that applies to this part component.

⚠. Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

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**SAM4S NR-500 SERIES**

# Overview of this ECR

This service manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center. Schematics and specifications provide the needed information for the accurate troubleshooting.

All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of Shin Heung Precision .

**Note:** Before using this Electronic Cash Register (ECR) for the first time, leave it powered on in the REG mode for at least twenty-four hours. This allows the MS Lithium battery, which maintains the memory of the ECR while the power is off, to charge completely.

"Proper disposal of batteries is required. Refer to your local codes for disposal requirements."

**Note:** The socket outlet shall be installed near the equipment and shall be easily accessible.

# 1 Precaution Statements

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

## 1-1 Safety Precautions

1. Be sure that all built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including nonmetallic control knobs and compartment covers.
3. Make sure there are no cabinet openings through which people - particularly children - might insert fingers and contact dangerous voltages.
   Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.
4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of the ECR. Unauthorized alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
5. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or over- heating, and correct any potential hazards.
6. Observe the original lead dress, especially near the following areas : sharp edges, and especially the AC and high voltage supplies.
   Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
7. Product Safety Notice:
   Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection.
   These safety features and the protection they give might be lost if the replacement component differs from the original - even if the replacement is rated for higher voltage, wattage, etc.

   Components that are critical for safety are indicated in the circuit diagram by shading, (⚠) or (⚠). Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

**CAUTION**

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose used batteries according to the manufacturer's instructions.

**ATTENTION**

ll y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

## 1-2 Servicing Precautions

**WARNING:** First read the-Safety Precautions-section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

**WARNING:** An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the units AC power cord from the AC power source before attempting to:
   (a) Remove or reinstall any component or assembly
   (b) Disconnect an electrical plug or connector
   (c) Connect a test component in parallel with an electrolytic capacitor
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples : metal panels and input terminals).
6. Insulation Checking Procedure:
   Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of AC plug.
   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 mega ohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead ; always remove the instrument's ground lead last.

## 1-3 Precautions for Electrostatic Sensitive Devices (ESDs)

1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatic Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power - this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

# 2 Product Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

## 2-1 General Specification

| Item | Description | Remark |
|---|---|---|
| Processor | • RENESAS CPU R5F5631ECDFB (RX-631 , 32-Bit) | |
| Memory | • RAM(DATA)<br>SRAM (R1LV0408DSP-5SI) : 4Mbits<br>SRAM (R1LV0408DSP-5SI) : 4Mbits (Option)<br>• ROM(PGM)<br>CPU ON CHIP FLASH ROM : 16Mbits<br>• FISCAL ROM<br>OTP-ROM(AT27LV020A) : 2Mbits (Default)<br>OTP-ROM(AT27LV040A) : 4Mbits (Option) | Selectable<br><br><br><br>Selectable |
| Backup Battery | • Type : MS Lithium, 3.0V 11mAh<br>• Part Name : MS920S<br>• Charging Time : 24 Hours<br>• Life : 3 Years | |
| Data Storage | • 180 Days | When battery is Full charged |
| Interface Serial<br>(RS-232C) | • Flow Control :<br>① DTR / DSR : H/W Flow Control<br>② XON / XOFF : S/W Flow Control<br>• Baud Rate : 1200 / 2400 / 4800 / 9600 / 19200 / 115200 Bps<br>• Connector : Serial#1 / DSUB9F (Female)<br>Serial#2 / RJ45<br>Serial#3 / RJ45<br>• Voltage Supply : +5V/150mA supplies at #9-Pin of DSUB9 Connector,<br>#1-pin RJ45 Connector. | |
| USB | • USB A-Type and USB B-Type (Default)<br>Transfer Type : BULK<br>Speed : 12 Mbps (Full-Speed)<br>Power : Self-Powered (A-Type Only) | Can not be used simultaneously |
| ETHERNET | • 10/100 base-T (Option) | |
| GPRS | • Built-in type (Option) | |
| SD CARD | • 1-Slot [ MICRO SD CARD (Internal) ] (Option)<br>• 1-Slot [ SD CARD (external) ] (Option) | |
| Printer | • Model : LTP01-245-11<br>• Print Speed : 70mm/sec, 15 Lines/sec<br>• Type : Thermal Dot Line Printing<br>• Resolution: W 8 dots/mm x H 16 dots/mm<br>• Paper End Sensor (Reflecting Photo Sensor) | Detail Spec refer to Next Page |
| Display | • Operator : 192 x 64 dot, Graphic LCD, Blue backlight(White LED)<br>• Customer : 16set x 2 line + Icon , Negative , Blue backlight(White LED) | |
| Key Board | • Raised Key : 48 key (with CAP), NR-500R<br>• Flat Key : 90 key (with water proof), NR-500 | |
| Drawer | • 24V / 15 Ω Solenoid (Recommend) | |
| Power Consumption | • Regularity : Approx. 10W | |
| Power Source | • AC/DC Adapter : 9V / 2.5A | |
| Environment Condition | • Temperature : 0℃ ~ 35℃<br>• humidity : 30% ~ 80% RH | |
| Dimensions(mm) | • 400(W) x 450(D) x 266(H) | with Drawer |
| Weight | • 11.5 Kg (Set Only) | |

Table2-1 General Specification

# 2-2 Appearance

## 2-2 A. Appearance Dimensions (mm)

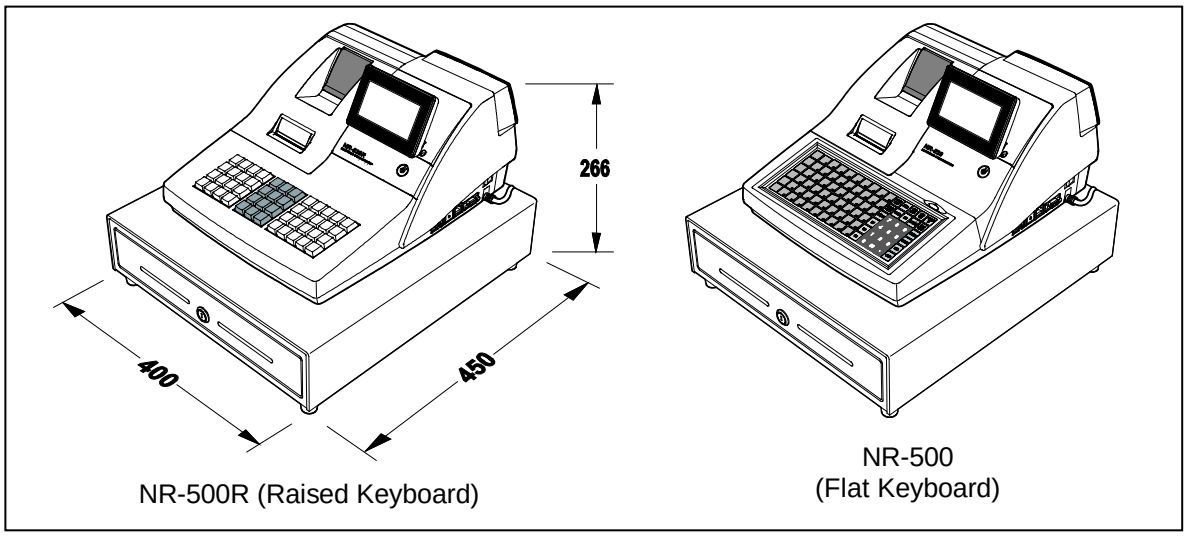



Figure2-1 Dimensions

## 2-2 B. Location Feature

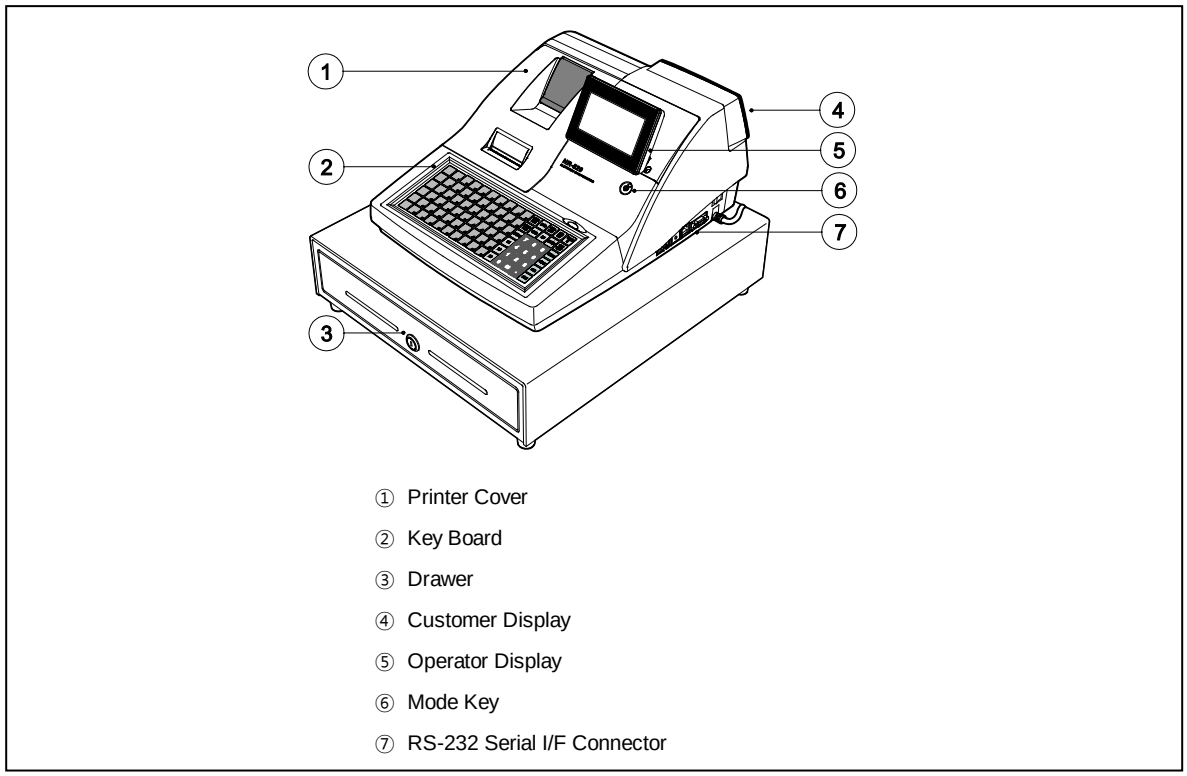



Figure2-2 Location Feature

# 2-3 Thermal Printer Specification

## 2-3 A. Printer Specification (58mm*1station or 2station)

| Item | | Description | Remark |
|---|---|---|---|
| Model | | • LTP01-245-11 | |
| Print Method | | • Thermal Dot Line Printing | |
| Printing Format | Total Dots Per Line | • 384 Dots | |
| | Dot Pitch | • Vertical : 0.125 mm<br>• Horizontal : 0.125 mm | |
| Printing Speed | | • 70mm/sec, 15 Lines/sec | |
| Printing Direction | | • Unidirectional Friction Feed | |
| Paper Feeding | Feeding Method | • Friction Feed | |
| | Minimum Feed Pitch | • 0.0625 mm | |
| | Maximum Feeding Speed | • 75 mm/sec (At 8.5V of Motor Voltage) | |
| Power Supply Volt | Power Voltage | • 4.2~9.5V (Recommend) | TPH / Motor |
| | Circuit Input Voltage | • 3.3V | Head Control / Sensor |
| Printer Head | Heat Element Density | • 8 Dots/mm (0.125mm/Dot) | (1step 0.0625mm) |
| | Total Head Elements | • 384 Dots/Dot Line | |
| | Available Printing Width | • 48 mm (384 Dots) | |
| Line Feed Motor | | • 1-2 Phase Bi-Polar Stepping Motor | |
| Sensor | Head Temperature | • Thermistor | |
| | Out-of-paper Detection | • Reflection type photo interrupter | |
| | Platen Position Detection | • Mechanical Switch | (Option) |
| Reliability | Life | • 50km or more | |
| Dimension (mm) | | • 70.3 (W) ×32.7 (D) ×15.3 (H) | |
| Weight | | • Approx. 44 g | |

Table2-2 Thermal Printer Specification

## 2-3 B. Paper Specification

| Item | Description | Remark |
|---|---|---|
| Paper Type | • Single-ply Thermal Paper Roll | |
| Paper Size | • 57.5 mm±0.5 (Width) × Ø 70 mm or less | |
| Specified Paper | • Original Paper No : HPK-110 (Hansol paper XT) | |

Table2-3 Paper Specifications

**Note:** The following paper can be used instead of the specified paper above.
TF50KS-E2D: Nippon paper industries Co.,Ltd.
PD 150R, PD160R-N : Oji paper Co.,Ltd.
F380 : Kansaki specialty papers, Inc. (USA)

## 2-3 C. Character Specification.

| Item | Description | Remark |
|---|---|---|
| Character Structure | • 12(W) × 24(H) Font | |
| Character Size | • 1.25 mm(W) ×3.0 mm(H) | |
| Column Pitch | • 1.5 mm | |
| Line Pitch | • 4mm (Including 8-dot line spacing)<br>• 3.75 mm (Including 6-dot line spacing) | SPEED 40mm/s<br>SPEED 30mm/s |
| Number of Column | • 32(12×24 Dots/Character) | |

Table2-4 Character Specification

# 2-4 Power Specification

| Item | Description | Remark |
|---|---|---|
| Input Voltage | • AC 100-240V, 50-60Hz (Min : 90V, Max : 265V) | |
| Power Consumption | • Regularity : Approx. 10W | |
| Output Voltage | • DC 9V / 2.5A | Power Adapter Output |

Table2-5 Power Specification

# 2-5 Interface Specification

## 2-5 A. RS-232C Serial Interface

### 2-5 A-(a) Specification

| Item | Description | Remark |
|---|---|---|
| Data Transmission | • Serial | |
| Synchronization | • Asynchronous | |
| Hand Shaking (Flow Control) | • H/W : DTR / DSR<br>• S/W : XON / XOFF | XON : ASC Code 11h<br>XOFF : ASC Code 13h |
| Signal Level | • Logic"1" (MARK) : -3V ~ -15V<br>• Logic"0" (SPACE) : +3V ~ +15V | |
| Baud Rate | • 1200 / 2400 / 4800 / 9600 / 115200 bps | |
| Data Word Length | • 8 Bit | |
| Parity | • None | |
| Connector | • DSUB9F (Female) / RJ45 | |
| Voltage Supply | • +5V/150mA is supplied at #9-Pin of D-SUB Connector,<br>#1-Pin of RJ45 Connector. | For Bar Code Reader or other devices |

Table2-11 RS-232C Specification

### 2-5 A-(b) Cable Connection

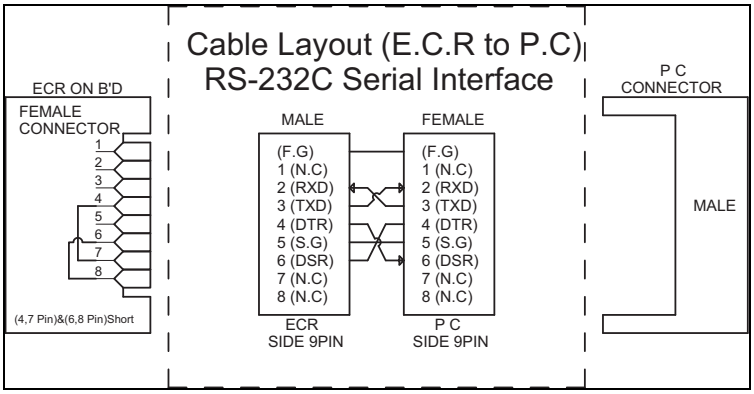



Figure2-4 RS232C Cable Connection (9Pin to 9Pin)

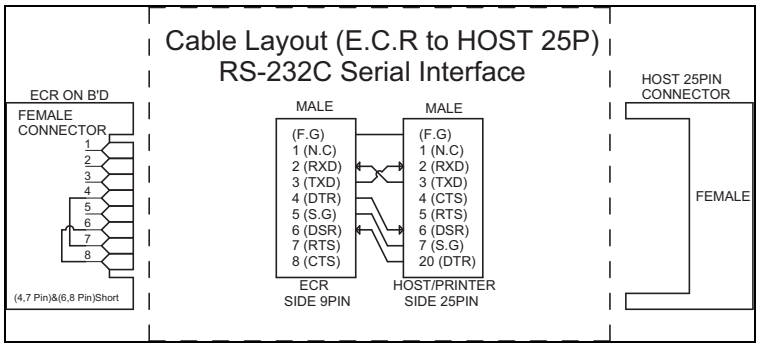



Figure2-5 RS232C Cable Connection (9Pin to 25Pin)

## 2-5 A-(c) RS-232C I/F Cable (DSUB 9 PIN MALE TYPE)

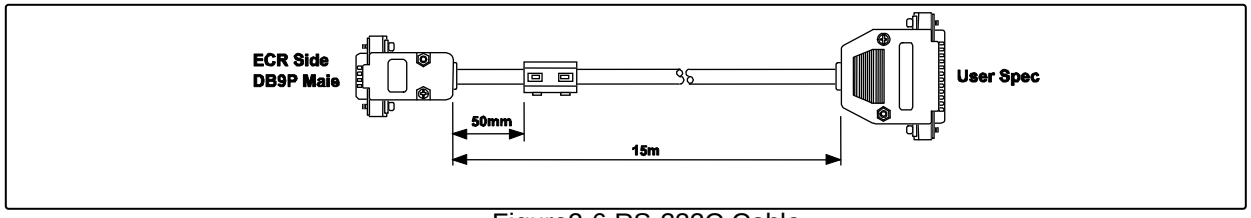



Figure2-6 RS-232C Cable

## 2-5 A-(d) Signal Description (DSUB Connector)

| Pin No. | Signal Name | Signal Direction | Function |
|---|---|---|---|
| BODY | Frame GND | - | Frame Ground |
| 2 | RXD | Input | Receive Data |
| 3 | TXD | Output | Transmit Data |
| 4 | DTR | Output | This Signal indicates whether the ECR(NR-500) is busy. (H/W flow control)<br>① MARK(Logic1) : The ECR is busy<br>② SPACE(Logic0) : The ECR is not busy<br>The host transmits a data to the ECR, after confirming this signal.<br>When XON/XOFF flow control is selected, the host does not check this signal. |
| 5 | Signal GND | - | Signal Ground |
| 6 | DSR | Input | This signal indicates whether the host computer or receipt printer can receive data. (H/W flow control)<br>① MARK(Logic1) : The host can receive a data.<br>② SPACE(Logic0) : The host can not receive a data<br>The ECR transmits a data to the host or receipt printer, after confirming this signal.<br>When XON/XOFF flow control is selected, the printer does not check this signal. |
| 9 | VCC | Output | VCC(+5V/150mA) is supplied at #9-Pin of DSUB9 Connector. ***CAUTION*** |

Table2-12 RS-232C Signal Description

## 2-5 A-(e) Signal Description (RJ-45 Connector)

| Pin No. | Signal Name | Signal Direction | Function |
|---|---|---|---|
| 1 | VCC | Output | VCC(+5V/150mA) is supplied at #1-Pin of RJ-45 Connector. ***CAUTION*** |
| 2 | DSR | Input | This signal indicates whether the host computer or receipt printer can receive data. (H/W flow control)<br>① MARK(Logic1) : The host can receive a data.<br>② SPACE(Logic0) : The host can not receive a data<br>The ECR transmits a data to the host or receipt printer, after confirming this signal. |
| 3 | TXD | Output | Transmit Data |
| 4 | RXD | Input | Receive Data |
| 7 | Signal GND | - | Signal Ground |
| 8 | DTR | Output | This Signal indicates whether the ECR(NR-500) is busy. (H/W flow control)<br>① MARK(Logic1) : The ECR is busy<br>② SPACE(Logic0) : The ECR is not busy<br>The host transmits a data to the ECR, after confirming this signal. |

Table2-13 RS-232C Signal Description

## 2-5 A-(f) RS-232C I/F Cable (RJ-45 CONNECTOR TYPE)

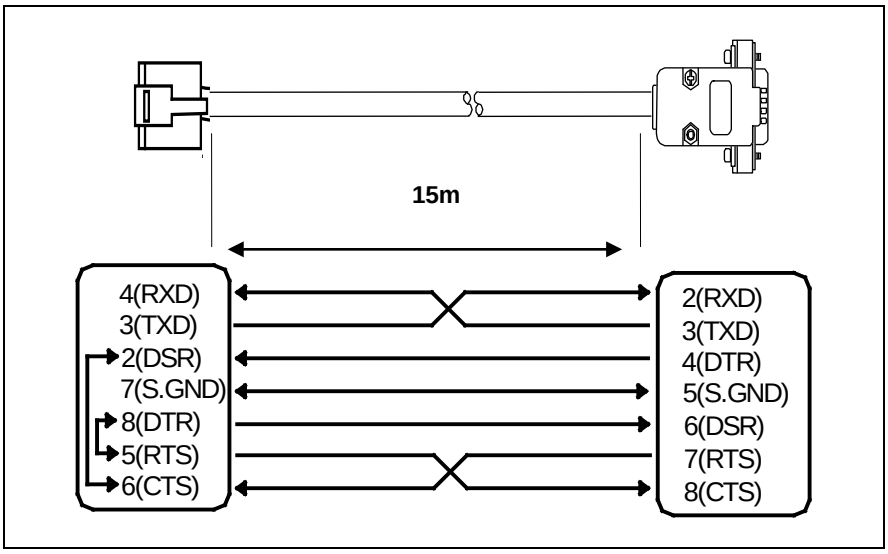



Figure2-7 RS232C Cable Connection (RJ-45 to DSUB 9Pin)

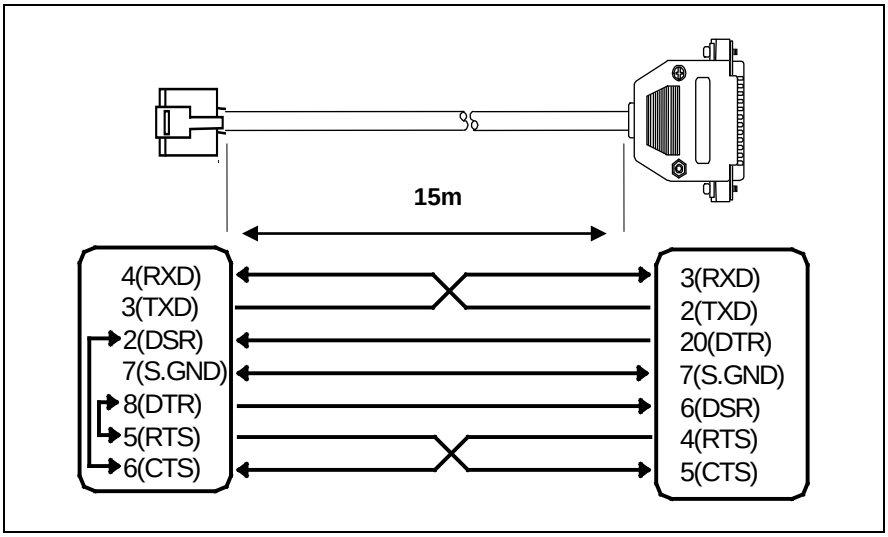



Figure2-8 RS232C Cable Connection (RJ-45 to DSUB 25Pin)

**Caution:** The VCC is supplied for the barcode or device power source. The Supply Current 150mA is total value including Serial #1 and Serial #2 Power Consumption. If the Total Power Consumption of the attached devices is exceeded the specification(150mA), the system stops the VCC of D-SUB & RJ45 Connector

**Caution:** If the device with 5V/150mA is connected to Serial #1, the VCC of Serial #2 can not use. If the device with 100mA is connected to Serial #1, Other device with 50mA can be connected to Serial #2 Port.

### 2-5 A-(g) H/W Flow Control Timing

When DTR/DSR flow control is select, before transmitting a data, the ECR checks whether the host is BUSY or not.

If the host is BUSY, ECR does not transmit a data to the host. If the host is not BUSY, ECR transmits a data to the Host. The host is the same. Refer to the Interface Part of Chapter 7(Special Circuit Diagrams).

### 2-5 A-(h) S/W Flow Control Timing

When XON/XOFF flow control is selected, the ECR transmits XON(ASCII 11h) or XOFF(ACSII 13h) signal through the Serial Data Line. If the ECR is busy, the printer transmits XOFF(ASCII 13h) to host through the Serial Data Line. Then the host recognizes that the ECR is busy. So, the host does not transmit a data to the ECR. If the ECR is released from busy, the ECR transmits XON(ASCII 11h) to host through the Serial Data Line. Then the host recognizes that the ECR is not busy. And the host transmits a data to the ECR.

# 2-5 Interface Specification

## 2-5 B. USB Interface

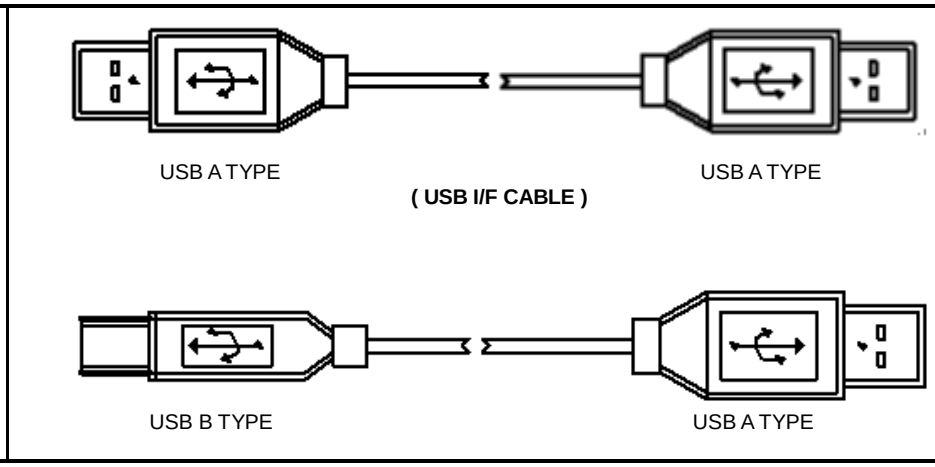
### 2-5 B-(a) USB Specification

| Item | Description | Remark |
|---|---|---|
| Transfer Type | ● BULK | |
| Data Signal | ● Bi-Direction, Half-Duplex<br>● Differential Signal Pair (D+ / D-) | |
| Data Format | ● NRZI Format<br>● Zero Bit Stuffing after 6 Ones | |
| Transceiver | ● Differential Common Mode Range : 0.8 ~ 2.5[V]<br>● Differential Receive Sensitivity : 200[mV]<br>● Single End Receive Threshold : 0.8 ~ 2.5[V] | |
| Speed | ● 12 Mbps | |
| Power | ● Supply Self Power | |
| Cable & Connector | ● Cable : 5m / 2m<br>● Connector : A-type and B-type | |
| Support Spec | ● USB Spec Version 2.0 | |

### 2-5 B-(b) USB Signal Description

| Pin No | Signal Name | Color | Function |
|---|---|---|---|
| SHELL | Shield | Drain Wire | Frame GND |
| 1 | VBUS | Red | - |
| 2 | D- | White | Differential Data Line |
| 3 | D+ | Green | Differential Data Line |
| 4 | GND | Black | Signal GND |

### 2-5 B-(c) USB Interface Cable



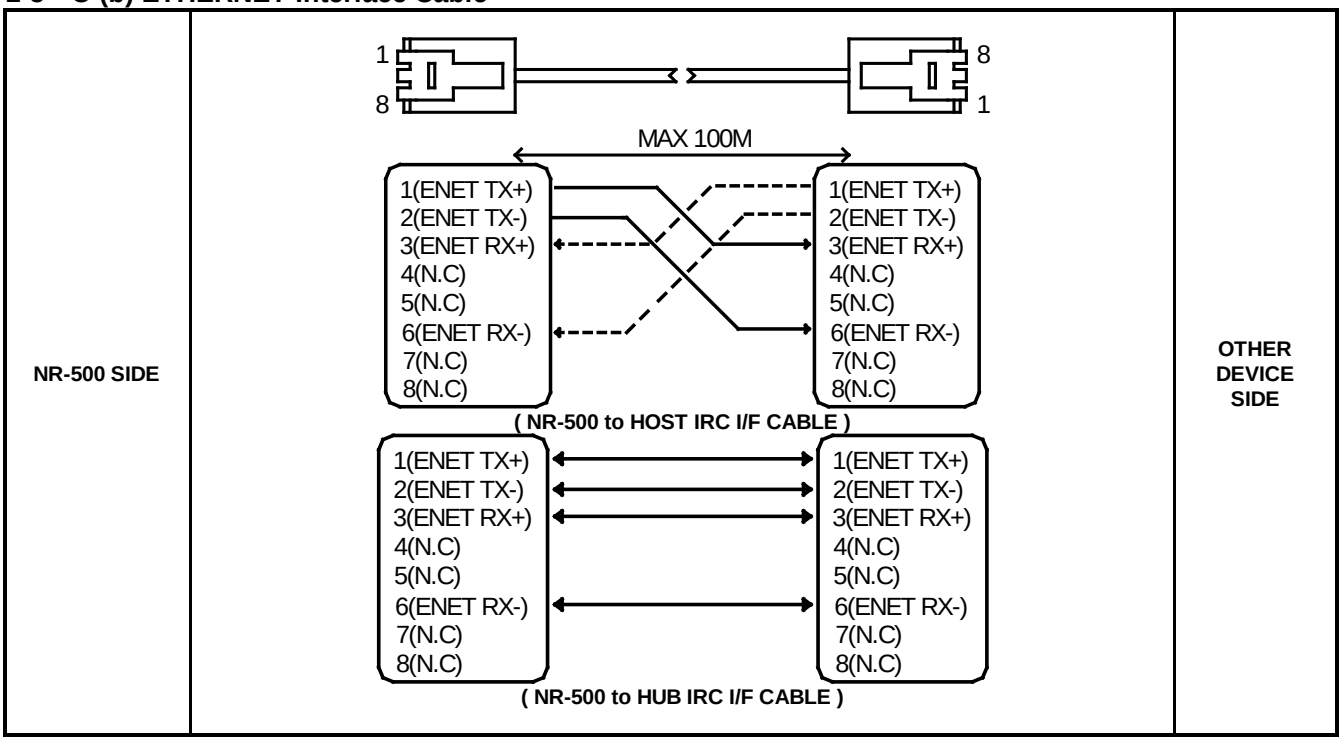
# 2-5 Interface Specification

## 2-5 C. ETHERNET Interface (Option)

### 2-5 C-(a) ETHERNET Signal Specification

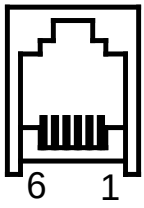
| Pin No | Signal Name | Signal Direction | Function |
|---|---|---|---|
| 1 | ENET TX+ | OUT | Ethernet Transmit Data Line(+) |
| 2 | ENET TX- | OUT | Ethernet Transmit Data Line(-) |
| 3 | ENET RX+ | IN | Ethernet Receive Data Line(+) |
| 4 | N.C | - | - |
| 5 | N.C | - | - |
| 6 | ENET RX- | IN | Ethernet Receive Data Line(-) |
| 7 | N.C | - | - |
| 8 | N.C | - | - |

### 2-5 C-(b) ETHERNET Interface Cable



# 2-6 Drawer Kick-Out Specification

## 2-6 A. Drawer Signal Description

| Pin No | Signal Name | Direction | Function |
|---|---|---|---|
| 1 | S.G | - | Signal GND |
| 2 | DRAWER | OUT | Drawer Kick-Out Driver Signal |
| 3 | DRA_COMP | IN | Drawer Open / Close Signal |
| 4 | +24V | - | Supply DC +24V |
| 5 | - | - | N.C |
| 6 | F.G | - | Frame GND |
|  **( DRAWER CONNECTOR )** | | | **Recommend : 24V/15Ω Solenoid** |

# MEMO

# 3 Installation and Operation

## 3-1 System Configuration

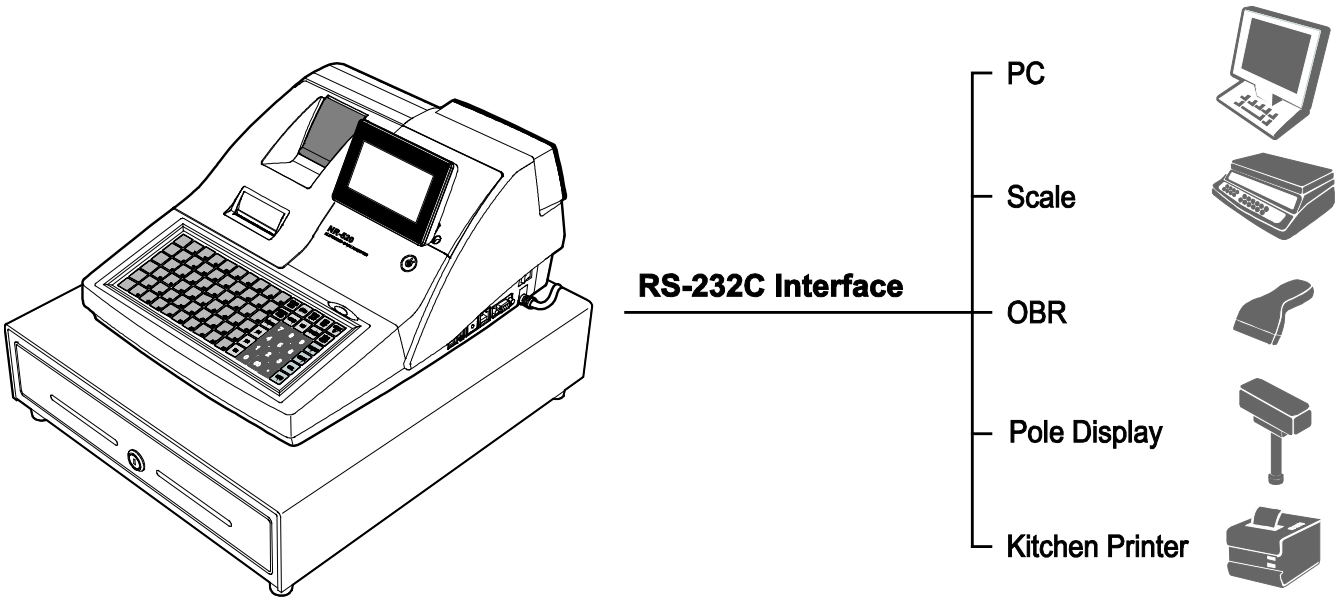



Figure 3-1 System Configuration

# 3-2 Installation

## 3-2 A. Paper Roll Installation

1. Remove the printer cover. (Fig 3-2 (A),(B))
2. Open the housing cover. (Fig 3-2 (C))
3. Insert the paper roll as shown. (Fig 3-2 (D))
4. Be sure to note the correct direction that the paper comes off the roll. (Fig 3-2 (D))
5. Pull out a small amount of paper as shown. Then close the housing cover. (Fig 3-2 (E))
6. Passing the leading edge of the paper through the cutter slot. Tear off the excess paper.(Fig 3-2(F))
7. In case of 2station feed the leading edge of the paper in about 150mm and fold the tip in 20mm. Insert the leading edge of the paper into the slot on the Spool Winding. (Fig 3-2(G))
8. Insert the Spool Winding in 2~3 turns and place it on the Paper Supply. If it loosen, turn to tighten it. (Fig 3-2(H))
9. Replace the printer cover. (Fig 3-2 (I))

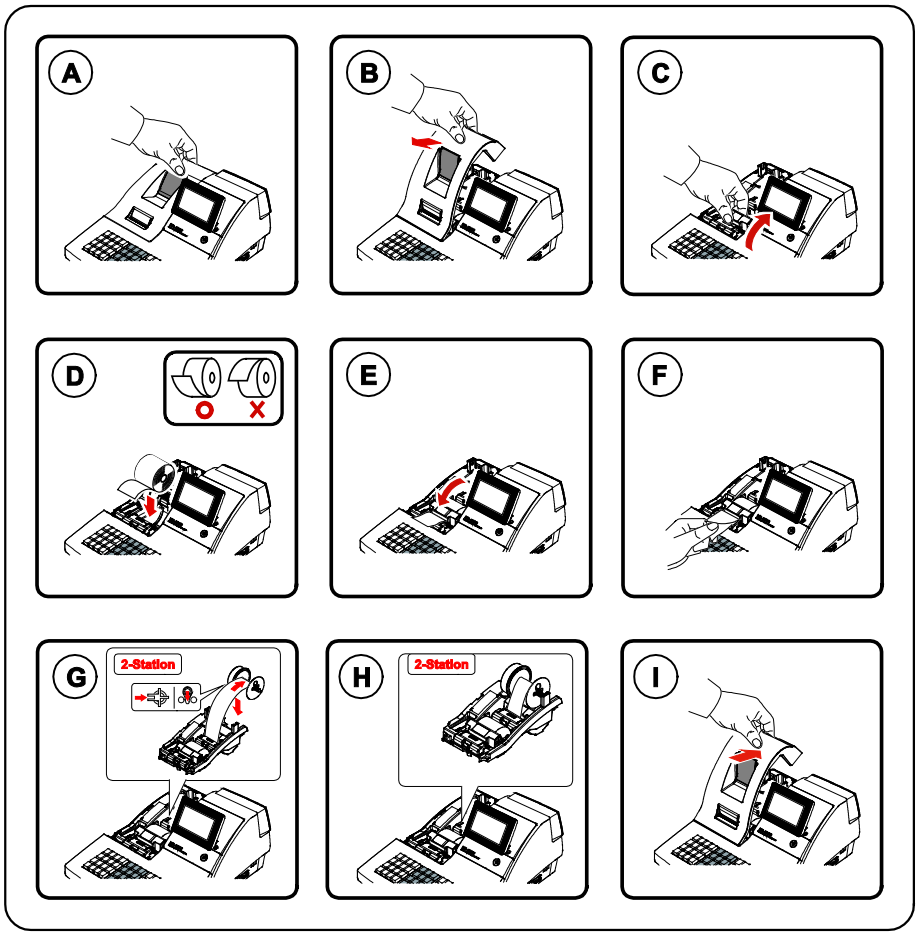



Figure 3-2 Paper Installation

## 3-2 B. RS-232C Serial Cable Installation

1. Connect the RS-232C serial cable to the RS-232C serial port on the right side of ECR.
2. Secure the serial cable with screws.
3. Connector the other end of the RS-232C serial Cable to your host computer.

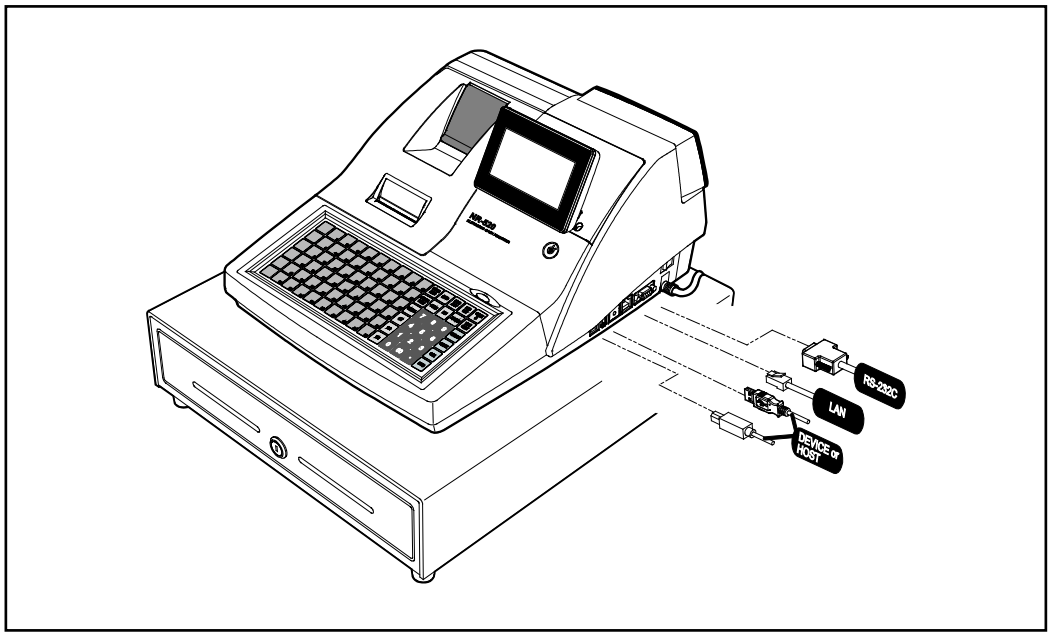



Figure 3-3 Cable Installation

## 3-2 C. Options

| No. | Item | Description | Remark |
|---|---|---|---|
| 1 | Water Proof | Raised Keyboard (Option) | |
| 2 | Memory | SRAM 4MBITs (4MBITs * 1) (On Main PBA) | Factory option |
| 3 | Pulley Winding | Spool motor & Pulley | Factory option |

Table 3-1 Option

## 3-2 D. Supplies

| No. | Item | Description | Remark |
|---|---|---|---|
| 1 | Paper Roll | 1 EA (1-station)<br>2 EA (2-station) | |
| 2 | Mode Key | VD, REG, Z, P, C | |
| 3 | User Manual | 1 EA | |
| 4 | Spool | 1 EA (2-station only) | |

Table 3-2 Supplies

# 3-3 Operation

**Note:** Before using this Electronic Cash Register (ECR) for the first time, leave it powered ON in the REG mode for a at least 24 hours. This allows the MS-Lithium Rechargeable battery, which maintains the ECR's memory while the power is OFF, to fully charge.

## 3-3 A. Mode Switch

The position of the Mode Key determines the action of the ECR. The modes are as shown in Table 3-3.

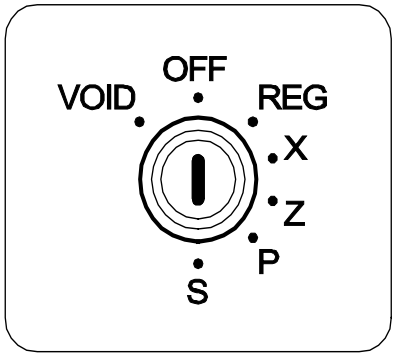



Figure3-4 Mode Switch

| Mode | Function |
|---|---|
| VOID | Use to void (correct) items outside of a sale. |
| OFF | The Register is inoperable. |
| REG | Use for normal registrations. |
| X | Use to read register reports and perform other manager functions. |
| Z | Use to read register reports and reset totals to zero. |
| PGM | Use to program the register. |
| S | Use for H/W tests and special setting. The S position is hidden position reserved for dealer access. |

Table3-3 Mode Switch Function

The mode switch can be used to access the following key lock positions.

| KEY | Accessible Position | Remark |
|---|---|---|
| VOID | VOID, OFF, Register(REG), Manager(X) | |
| REG | OFF, Register(REG) | |
| Z | VOID, OFF, Register(REG), Manager(X), Clear Totals(Z) | |
| P | VOID, OFF, Register(REG), Manager(X), Clear Totals(Z), Program(PGM) | |
| C | VOID, OFF, Register(REG), Manager(X), Clear Totals(Z), Program(PGM), Service Mode(S) | ALL POSITIONS |

Table3-4 Key Function

**Note :** The Key can be removed from the key lock in the OFF or REG position.

## 3-3 B. Key Board Matrix

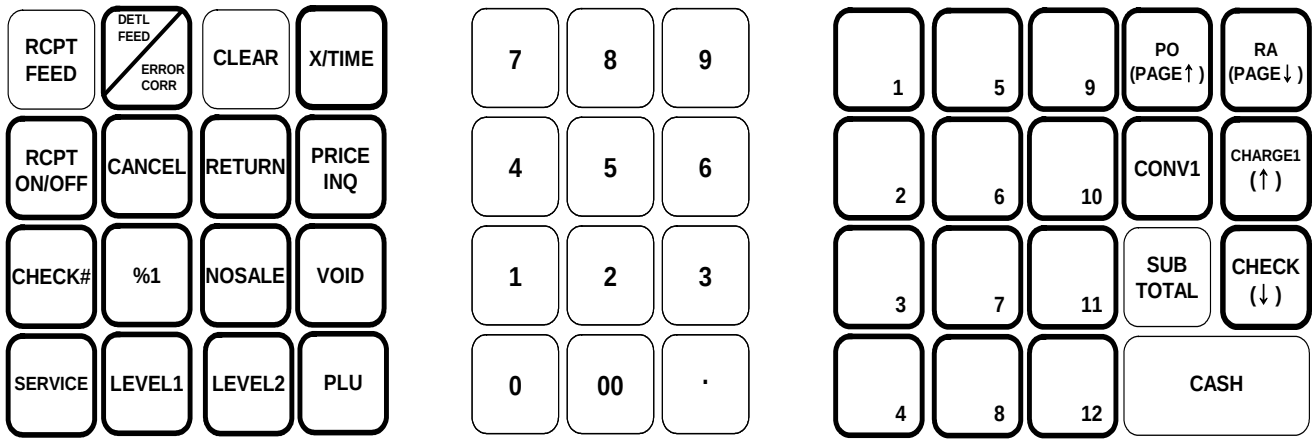



Figure3-5 Raised Keyboard (NR-510R / NR-520R)

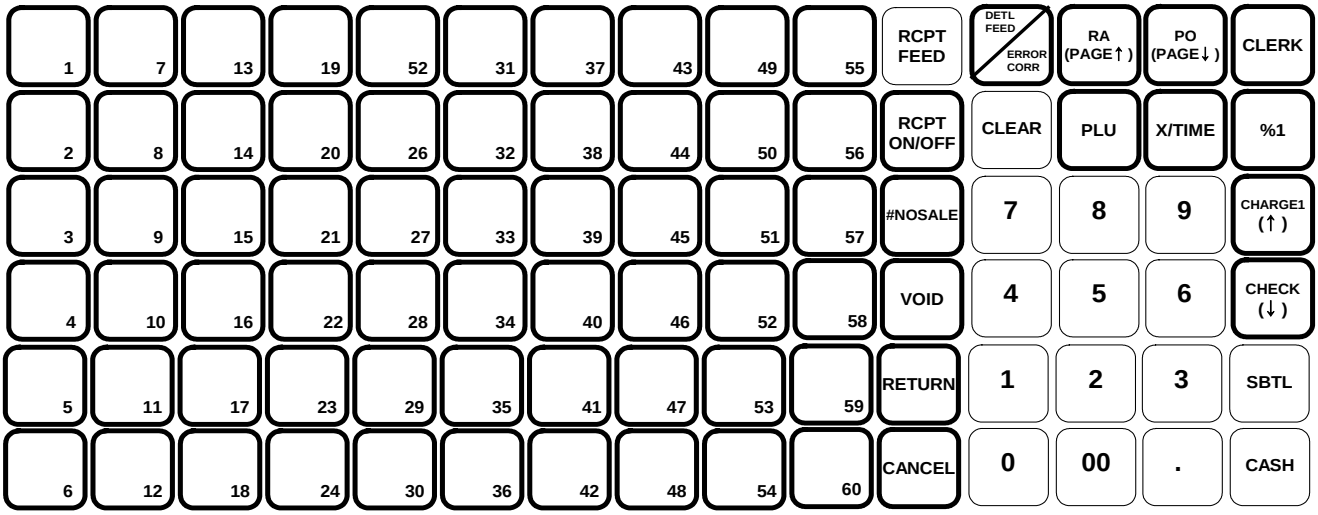



Figure3-6 Flat Keyboard (NR-510 / NR-520)

## 3-3 C. Initial Clear

The initial clear function allows you to exit any register activity and return to a beginning or cleared state. Any transaction that is in progress will be exited and totals for that transaction will not be updated.

1. Move to the **PROGRAM MODE**.
2. Turn the power switch located on the right side of the register to the **OFF** position.
3. Press and hold the key position where the **SUBTOTAL** key is located on the default keyboard layout.

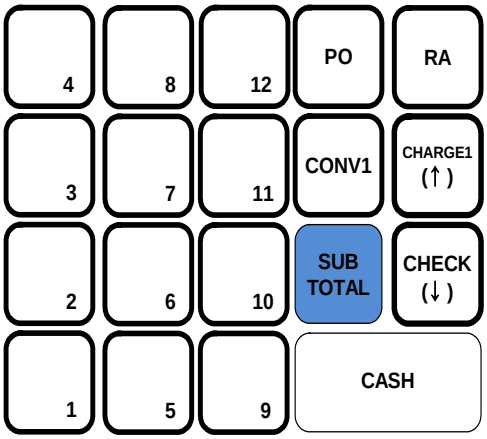



Figure3-7 Initial Clear Key for NR-510R/NR-520R

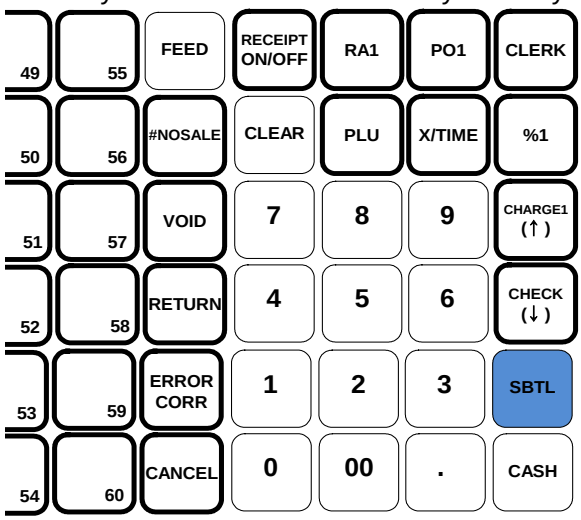



Figure3-8 Initial Clear Key for NR-510/NR-520

4. While continuing to hold the **SUBTOTAL** key, turn the power switch to the ON position. When the “INITIAL CLEAR” message displays release the **SUBTOTAL** key.

```
INITIAL CLEAR
ENTER CASH KEY
```

5. Press the **CASH** key.

```
ARE YOU SURE?
Y=CASH N=CLEAR
```

6. Press the **CASH** key. The message "INITIAL CLEAR OK” prints when the initial clear is complete. To resume operations, you will need to sign on a clerk.

## 3-3 D. All Clear

This step insures that the cash register is cleared of any totals or programming. After this procedure, the cash register is ready for programming and operation.

**WARNING: This is a one time procedure. Do not repeat this procedure after the cash register is programmed, it causes all programs and totals to be erased and to be default.**

**Note : You need " C Key " to execute a SERVICE MODE.**

1. Move to the **SERVICE MODE**.
2. Turn the power switch located on the right side of the register to the **OFF** position.
3. Press and hold the key position where the **A**(CHECK) key is located on the default keyboard layout.
4. Continue to hold the appropriate key while turning the power switch to the ON position. The message "RAM ALL CLEAR" displays.
5. Press the upper left key of the keyboard, then the lower left key, then the upper right key, and finally press the lower right key.

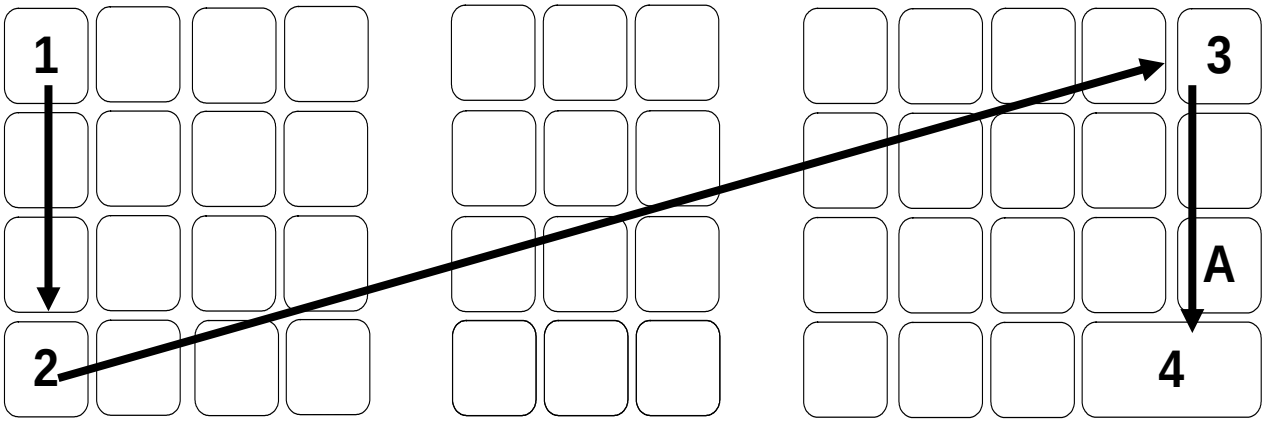



Figure3-9 <Raised Keyboard – NR-510R / NR-520R>

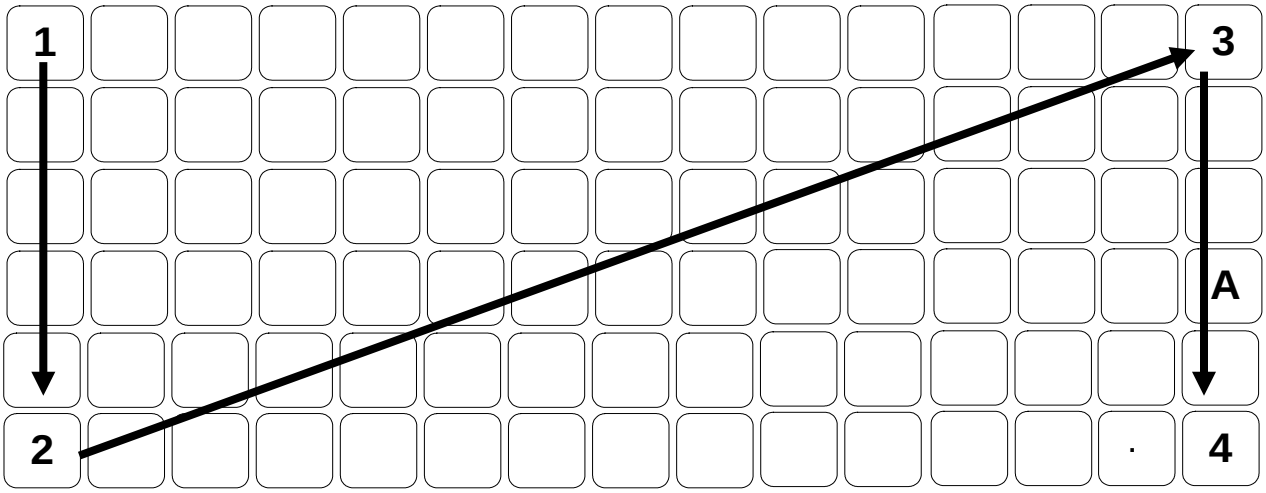
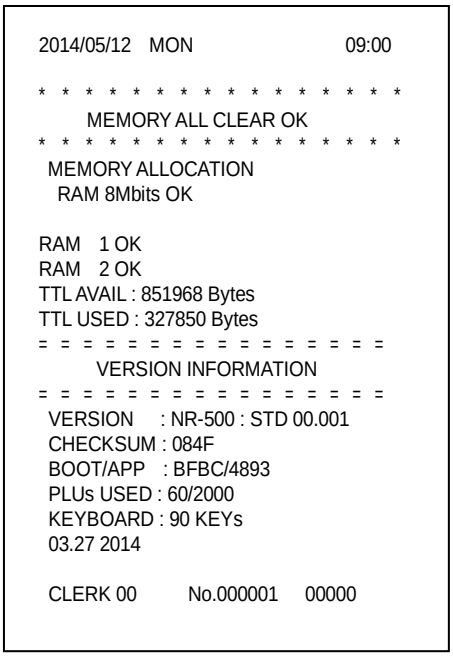



Figure3-10 <Flat Keyboard – NR-510 / NR-520>

6. The SERVICE MODE menu displays. The RAM Clear procedure is complete and the receipt prints.



2014/05/12 MON 09:00

* * * * * * * * * * * * * * * * * *
MEMORY ALL CLEAR OK
* * * * * * * * * * * * * * * * * *
MEMORY ALLOCATION
RAM 8Mbits OK

RAM 1 OK
RAM 2 OK
TTL AVAIL : 851968 Bytes
TTL USED : 327850 Bytes
= = = = = = = = = = = = = = = = = =
VERSION INFORMATION
= = = = = = = = = = = = = = = = = =
VERSION : NR-500 : STD 00.001
CHECKSUM : 084F
BOOT/APP : BFBC/4893
PLUs USED : 60/2000
KEYBOARD : 90 KEYs
03.27 2014

CLERK 00 No.000001 00000

Figure3-11 All Clear Key Sequence & Print Sheet

## 3-3 E. Self Test

### Before the test. You will find 'SELF TEST' menu.

1. Move to the **SERVICE MODE**.
2. Press the '**1**' to select 'SELF TEST'.

SELF TEST
1. BATCH TEST
2. PRINTER
3. DISPLAY
4.KEYBOARD
5.INTERFACE
6.RTC

Figure3-11 SELF TEST MENU

**3-3 E-(a) Test Printer**

1. From the SELF TEST menu, Press '**2**' to select PRINTER.
2. From the PRINTER menu, Press '**1**' to select PRINT TEST.
3. After printing, The drawer is opened. Then the printer test is finished.
4. Press the '**CLEAR'** key to return to SELF TEST menu.

**3-3 E-(b) Test Display**

1. From the SELF TEST menu, Press '**3**' to select DISPLAY.
2. From the DISPLAY menu, Press '**1**' to select LCD TEST.
3. Press the '**CASH**' key 2 times to finish LCD TEST.
4. Press the '**CLEAR**' key to return to SELF TEST menu.

**3-3 E-(c) Test Key Board**

1. From the SELF TEST menu, Press '**4**' to select KEYBOARD.
2. From the KEYBOARD menu, Press '**1**' to select KEYBOARD TEST.
3. Press any key you want on the key board.
4. The key name of pressed key will be showed on the LCD.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

**3-3 E-(d) Test Mode Switch**

1. From the SELF TEST menu, Press '**4**' to select KEYBOARD.
2. From the KEYBOARD menu, Press '**2**' to select MODE KEY TEST.
3. Turn the mode switch to any position.
4. The corresponding Mode name will be showed on the LCD.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

**3-3 E-(e) Test SERIAL1 (COM1)**

1. From the SELF TEST menu, Press '**5**' to select INTERFACE.
2. Install the serial loop back test jig. (Short "pin 2 , 3" , " pin 4 , 6" ) of DSUB connector.
3. From the INTERFACE menu, Press '**1**' to select SERIAL 1.
4. If error occurs, the message " ** NG ** " is displayed on LCD and the Buzzer beep.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

**3-3 E-(f) Test SERIAL2 (COM2)**

1. From the SELF TEST menu, Press '**5**' to select INTERFACE.
2. Install the serial loop back test jig. (Short "pin 3 , 4" , " pin 2 , 8" ) of RJ-45 connector.
3. From the INTERFACE menu, Press '**2**' to select SERIAL 2.
4. If error occurs, the message " ** NG ** " is displayed on LCD and the Buzzer beep.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

### 3-3 E-(g) Test SERIAL3 (COM3)

1. From the SELF TEST menu, Press '**5**' to select INTERFACE.
2. Install the serial loop back test jig. (Short "pin 3 , 4" , " pin 2 , 8" ) of RJ-45 connector.
3. From the INTERFACE menu, Press '3' to select SERIAL 3.
4. If error occurs, the message " ** NG ** " is displayed on LCD and the Buzzer beep.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

### 3-3 E-(h) USB HOST TEST

1. From the SELF TEST menu, Press '**5**' to select INTERFACE.
2. Put the USB Memory Stick to the USB Host port.
3. From the INTERFACE menu, Press '**3**' to select USB HOST.
4. If USB is OK, " ** OK ** " message will be displayed.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

**Note :** When the ports is unconnected with the cable , the Error occur.

### 3-3 E-(i) EXTERNAL SD TEST

1. From the SELF TEST menu, Press '**5**' to select INTERFACE.
2. Put the External SD card.
3. From the INTERFACE menu, Press '**4**' to select EXTERNAL SD.
4. If EXTERNAL SD card is OK, " ** OK ** " message will be displayed.
5. Press the '**CLEAR**' key to return to SELF TEST menu.

### 3-3 E-(j) MICRO SD TEST

1. From the SELF TEST menu, Press the '**5**' to select INTERFACE.
2. Put the MICRO SD card.
3. From the INTERFACE menu, Press '**5**' to select MICRO SD.
4. If MICRO SD card is OK, " ** OK ** " message will be displayed.
5. Press the 'CLEAR' key to return to SELF TEST menu.

## 3-3 F. Flash ROM Updated by SD

The NR-500 Series Flash ROM program is contained in a binary file. This file contains both the Boot program area and the Application program area.

1. Copy binary file to the root of the SD card. : SD:/update/
2. Insert the SD card into the register. (The SD slot is located inside the printer compartment. Remove the security screw and open the flap securing the SD slot. Insert the SD card until you hear a click sound and the SD card is locked in.)

### Boot Area Update

3. At the NR-500 Series, move to the **SERVICE MODE**.
4. Press the ↑ key and the ↓ key to select menu and press the CASH key to confirm. Select the **7.PROGRAM BACKUP** menu.
5. Select the **1.SD** menu.
6. Select the **6.BOOT UP SD** menu.
7. After a short pause, the register will display confirmation of the successful download with the message "DOWNLOAD 100 % FINISHED! !.
8. Turn the ECR power switch OFF/ON and proceed directly to the next step: Application Update.

### Program Area Update

9. Set the **SERVICE MODE**.
10. Press the upper right key and the lower right key. A rapid beep-beep-beep sound will be heard. Release the upper right key and the lower right key.
11. Press the ↑ key and the ↓ key to select menu and press the **CASH** key to confirm. Select the **2.SD CARD** menu.
12. The display will flash (Current program is being erased), after a few seconds, the display will continue to flash, but at a slower rate. This continues for about 1-minute while the new program is being loaded. When the load is complete, a rapid beep-beep-beep sound will be heard again the display will stop flashing and display a blue color to confirm update completion.
13. Power the register **OFF**. The FLASH ROM update is complete.
14. Remove the SD card from the register.
15. Perform a memory all clear on the ECR. The ECR is now ready to program or to load a previously saved end-user program.

## 3-3 G. Flash ROM Updated by PC

### Update Files

To complete the firmware update, you will be supplied with the following files:

- DownLoad.exe (The update utility program)
- Binary file

### PC Connection Cable

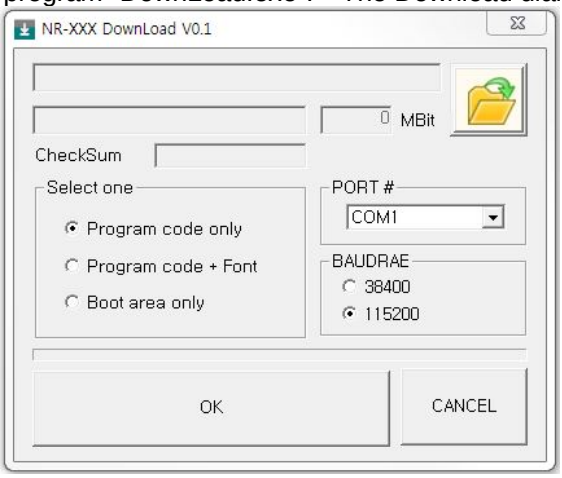
YOU MUST USE Port #1. Use the following cable:

- Part # 522120 (Register DB-9MF COM 1 to PC DB-9F)

### Boot Area Update

1. Connect the Serial Cable From ECR to PC.
2. At the register, move to the **SERVICE MODE**.

3. Press the ↓ key and the ↑ key to select menu and press the **CASH** key to confirm. Select the **7.PROGRAM BACKUP** menu.
4. Select the **1.SD** menu.
5. Select the **7.BOOT UP COM** menu.
6. At the PC, execute the program "DownLoad.exe". The Download dialog box displays.




7. Select the appropriate com port connection at your PC at the PORT# option buttons.
8. Click find the folder where the update files are located and select binary file.
9. Select **Boot Area Only** in the Select One option buttons.
10. Press **OK** Button. The download takes about 30 seconds; the scroll bar will track the progress of the download. At the ECR, the display will flash slowly while the update is taking place.
11. When complete, the message **Completed** displays on the PC. Click **OK** and the Download program will close. At the ECR, the display will change to a blue color indicating the update is complete. Turn the power switch to the OFF.

## Program Area Update

1. Connect the Serial Cable From ECR to PC.
2. At the register, move to the **SERVICE MODE**.
3. Turn the power switch to the **OFF** position.
4. Press the upper right key and the lower right key. A rapid beep-beep-beep sound will be heard. Release the upper right key and the lower right key.
5. Press the ↑ key and the ↓ key to select menu and press the **CASH** key to confirm. Select the **1.SERIAL1** menu.
6. At the PC, execute the program "Download.exe". The Download dialog box displays.
7. Select the appropriate com port connection at your PC at the PORT# option buttons.
8. Click find the folder where the update files are located and select binary file.
9. Select **Program code + Font** in the Select One option buttons.
10. Press **OK** Button. The download takes about 3 minutes. At the PC, the scroll bar will track the progress of the download. At the ECR, The display will flash (Current program is being erased), after a few seconds, the display will continue to flash, but at a slower rate. This continues for about 3 minutes while the new program is being loaded.
11. When complete, the message **Completed** displays at the PC. Click **OK** and the Download program will close. At the ECR, when the load is complete, a rapid beep-beep-beep will be heard, and the display will flash rapidly. Turn the power switch to **OFF**, the program update is complete.
12. Disconnect the PC cable.

13. Perform a memory all clear on the ECR. The ECR is now ready to program or to load a previously saved end-user program.

# 4 Disassembly and Assembly

**Caution :**
· Before installation, be sure to turn off the power switch.
· Use gloves to protect your hand from being cut by the angle and the chassis.
· Connect all the cables correctly. When connecting or disconnecting the cables, be careful not to apply stress to the cables. (It may cause disconnection)
· Be careful not to bind interface cables and AC power cord together.
**Note :** Before disassembling, first of all separate the ASS'Y CASE UPPER(B) from the ASS'Y CASE LOWER(E)

## 4-1 Disassembling the Case Upper Block

### 4-1 A. Ass'y Case Upper

1. Open the ASS'Y COVER PRINTER(A) and lift it off. (Page6-1,Page6-2)
2. Remove the four screws(B15:3pcs, B16:1pcs) from the ASS'Y CASE LOWER(E).(Page6-1, 6-3)
3. Separate the three harnesses(ⓐ,ⓑ,ⓒ) from the PBA-MAIN BOARD(E4). (Page6-1, 6-3, 6-13)
4. Lift off the ASS'Y CASE UPPER(B) from the ASS'Y CASE LOWER(E). (Page6-1, 6-3, 6-13)

### 4-1 B. Ass'y Front Display(LCD)

1. Separate the harness(ⓑ) from the PBA-MAIN BOARD(E4). (Page 6-13)
2. Remove the two screws(B29) from the ASS'Y CASE UPPER(B).(Page6-3)
3. Separate the ASS'Y LCD(B6) from the ASS'Y CASE UPPER(B).(Page6-3)
4. Remove the four screws(B7) from the ASS'Y LCD(B6).(Page6-3)
5. Separate the PMO-FRONT LCD(B15) and the LCD(B14) from the ASS'Y LCD(B6).(Page6-3)
6. Separate the harness(ⓑ) from the LCD(B14) .(Page6-3)
7. Remove the two screws(B11,B13) from ASS'Y LCD(B6). (Page6-3)
8. Separate the PMO-REAR LCD(B9), the PMO-HOLDER LCD(B17) and the HINGE(B12).(Page6-3)

### 4-1 C. Ass'y Rear (Turret) Display

1. Separate the harness(ⓒ) from the PBA-MAIN BOARD(E4). (Page 6-13)
2. Separate the PMO-TURRET BODY (B24) from the ASS'Y CASE UPPER (B). (Page6-3)
3. Remove the two screws(B20) PMO-HOLDER LCD REAR(B23).(Page6-3)
4. Separate the LCD(B21), PMO-HOLDER LCD REAR(B23) from the PMO-TURRET BODY (B24). (Page6-3)
5. Separate the harness(ⓑ) from the LCD(B21).(Page6-3)

### 4-1 D. Ass'y Cover Mode Switch

1. Separate the ASS'Y COVER MODE S/W(B1) from ASS'Y CASE UPPER(B).(Page6-3)
2. Remove the two screws(B5) on the ASS'Y COVER MODE S/W(B1) and separate the MODE KEY ASS'Y(B4) from the PMO-COVER MODE S/W(B1). (Page6-3)
3. Remove the two screws(B2) on the MODE KEY ASS'Y(B4) and separate the IPR-BRKT MODE S/W(B3) and the MODE KEY ASS'Y(B4). (Page6-3)

# 4-2 Disassembling the Case Lower Block

## 4-2 A. Ass'y Printer

1. Separate the two harnesses(ⓓ,ⓩ) from the PBA-MAIN BOARD(E4). (Page6-13)
2. Remove the four screws(E1,E2) from the PMO-CASE LOWER(E30).(Page6-13)
3. Separate the ASS'Y PRINTER(C) from the ASS'Y CASE LOWER(E). (Page6-13)

## 4-2 B. Ass'y Main PBA, I/F PBA

1. Separate the fourteen harnesses(ⓐ,ⓑ,ⓒ,ⓓ,ⓔ,ⓕ,ⓖ,ⓗ,ⓘ,ⓚ,ⓟ,ⓠ,ⓢ,ⓤ,ⓩ) and remove the three screws(E3). Lift up the PBA-MAIN BOARD(E4).(Page6-13)
2. Separate the harness(ⓚ) from the PBA-I/F BOARD(E21). (Page6-13)
3. Lift up the PBA-I/F BOARD(E21).(Page6-13)

## 4-2 C. Ass'y Adapter

1. Separate the harness(ⓤ) from the PBA-MAIN BOARD(E4). (Page6-13)
2. Remove the two screws(E15) from the IPR-BRKT TRANS(E25). (Page6-13)
3. Separate the PMO-HOLDER ADAPTER(E16) from the PMO-CASE LOWER(E30).(Page6-13)
4. Separate the harness(ⓙ) and Remove the ADAPTER(E16). (Page6-13)

# 5 Maintenance and Adjustment

## 5-1 Cleaning the Printer Head

Paper dust on the heating elements may lower the print quality. In this case, clean the print head as follows. After printing, the printer head can be very hot. Be careful not to touch it. Also let it cool before you clean it. Do not damage the printer head by touching it with your fingers or any hard object.

1. Turn power off.
2. Open the housing cover.
3. Clean the Printer Head Thermal Element with a cotton swab moistened with alcohol solvent. (ethanol, methanol or IPA )
4. After confirming that alcohol solvent has been dried up completely, close the housing cover.
5. If you don't use it for a long time, place a piece of paper between TPH and platen roller to protect the printer.

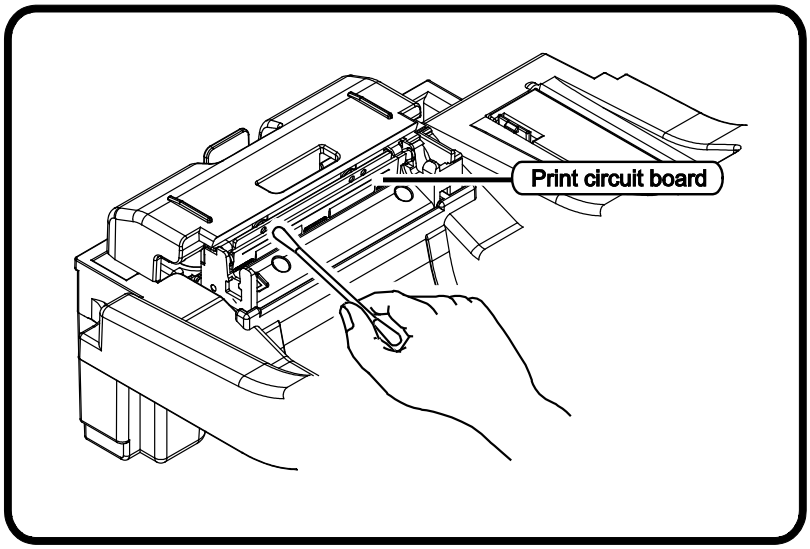



Figure 5-1 Clean the Printer Head

**Caution:** Note that the thermal head(Thermal Element and Radiation Plate) becomes very hot during normal operation. To prevent the danger of burn injury from thermal, be sure to wait for about 10 minutes after turning power off before beginning the cleaning.

### Warning

The products are designed for use in a standard environment and not in any special environments. Application of the products in a special environment can deteriorate product performance. Accordingly, verification and confirmation of product performance, prior to use, is recommended if used under the following conditions

- **a.** Use in various type of liquid, including water, oils, chemicals and organic solvents
- **b.** Use outdoors where the products are exposed to direct sunlight, or in dusty places.
- **c.** Use in places where the products are exposed to sea winds or corrosive gases, including $CL_2$, $H_2S$, $SO_2$, $NH_3$ and $NO_2$
- **d.** Use in places where the products are exposed to static electricity or electromagnetic waves
- **e.** Use of the products in places subject to dew condensation.

# MEMO

# 6. Exploded Views and Parts List

## 6-1. Exploded View (NR-520R)

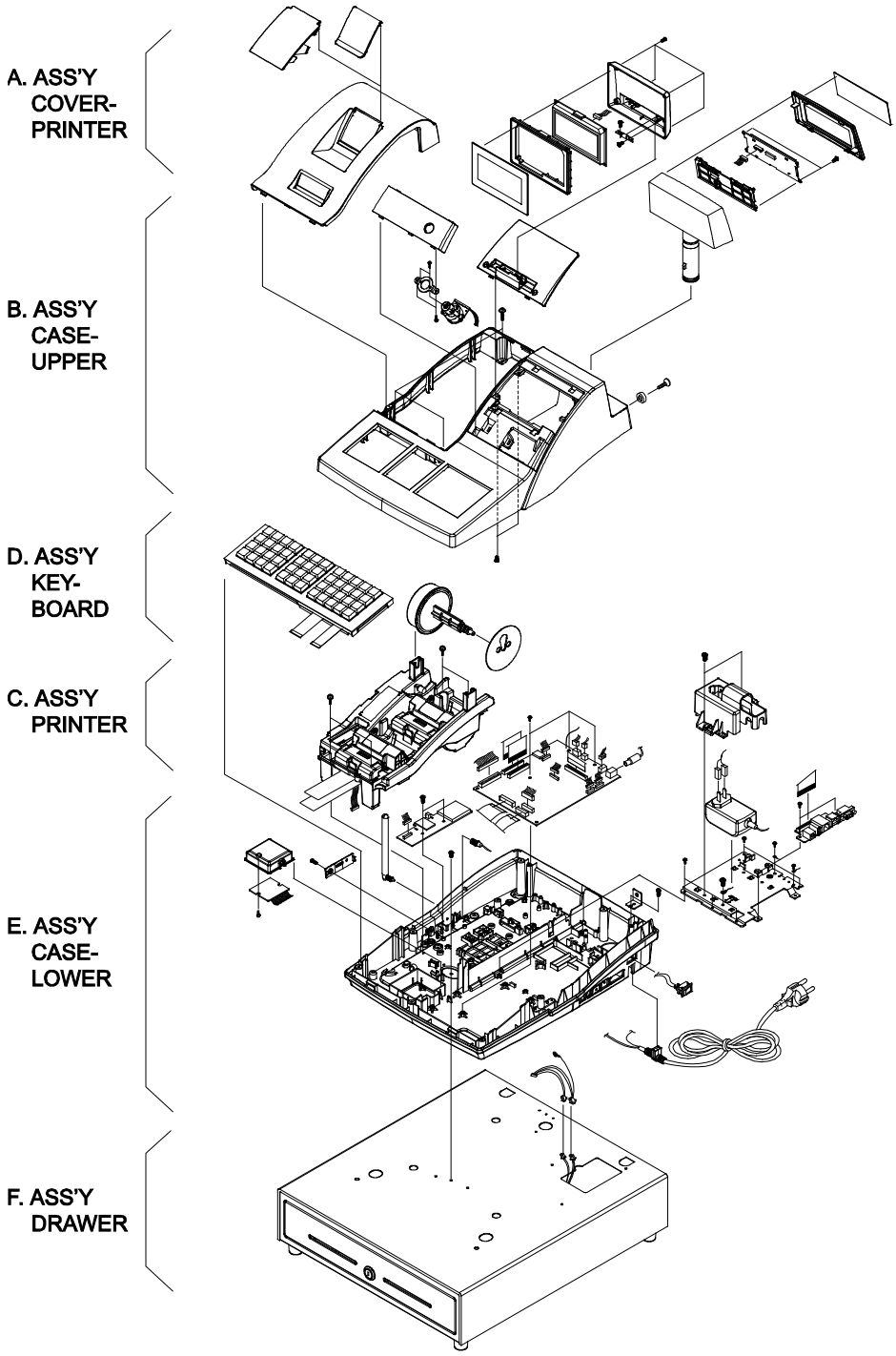



Figure 6-1 Total Disassembly (NR-520R)

## 6-1. Exploded View (NR-520)

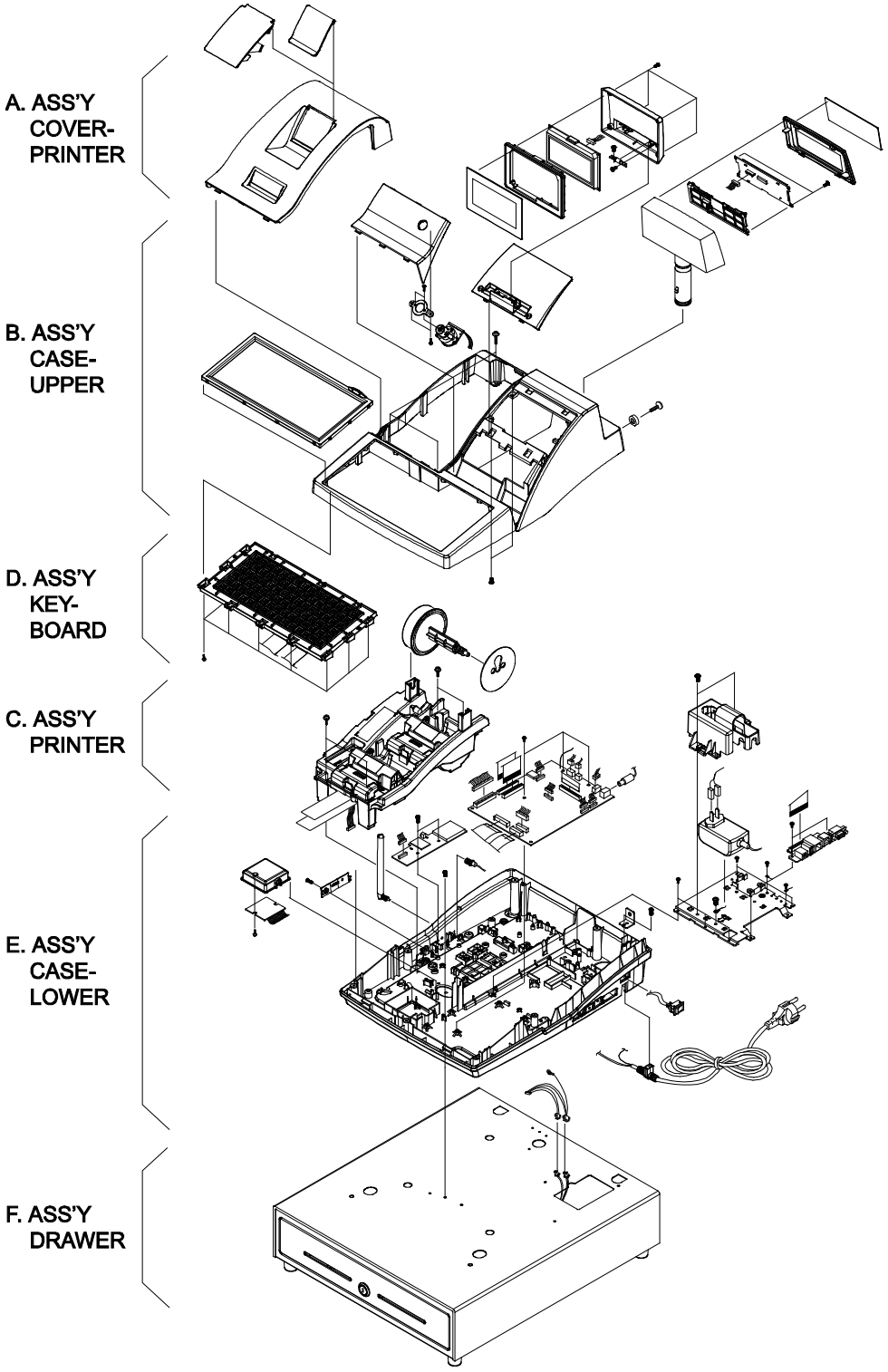



Figure 6-2 Total Disassembly (NR-520)

## 6-2 A. ASS'Y COVER-PRINTER

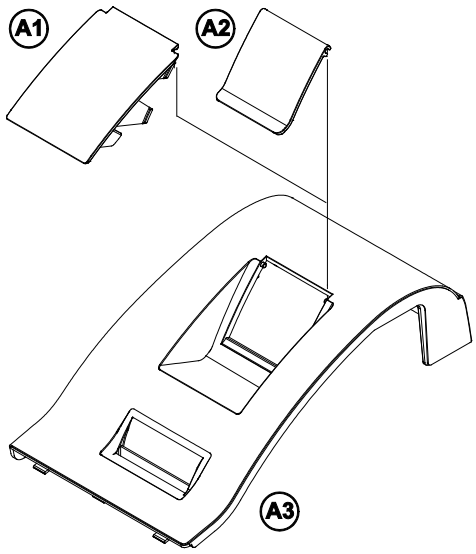



Figure 6-2 ASS'Y COVER-PRINTER

A. ASS'Y COVER-PRINTER

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| A | **JK95-70675A** | **MEA-COVER PRINTER:NR-510** | **1** | | **Y** | **IVORY** |
| | **JK95-70675B** | **MEA-COVER PRINTER:NR-520** | **1** | | **Y** | **IVORY** |
| | **JK95-70675C** | **MEA-COVER PRINTER:NR-510B** | **1** | | **Y** | **BLACK** |
| | **JK95-70675D** | **MEA-COVER PRINTER:NR-520B** | **1** | | **Y** | **BLACK** |
| A1 | JK72-20980A | PMO-COVER DUMMY | 1 | NR-510 | Y | IVORY |
| | JK72-20980B | PMO-COVER DUMMY | 1 | NR-510 | Y | BLACK |
| A2 | JK72-20026A | PMO WINDOW JOURNAL | 1 | NR-520 | Y | |
| A3 | JK72-20977A | PMO-COVER PRINTER | 1 | | Y | IVORY |
| | JK72-20977B | PMO-COVER PRINTER | 1 | | Y | BLACK |
| A4 | JK70-20304A | IPR-CUTTER PAPER | 1 | | N | |

## B. ASS'Y CASE-UPPER(NR-500R)

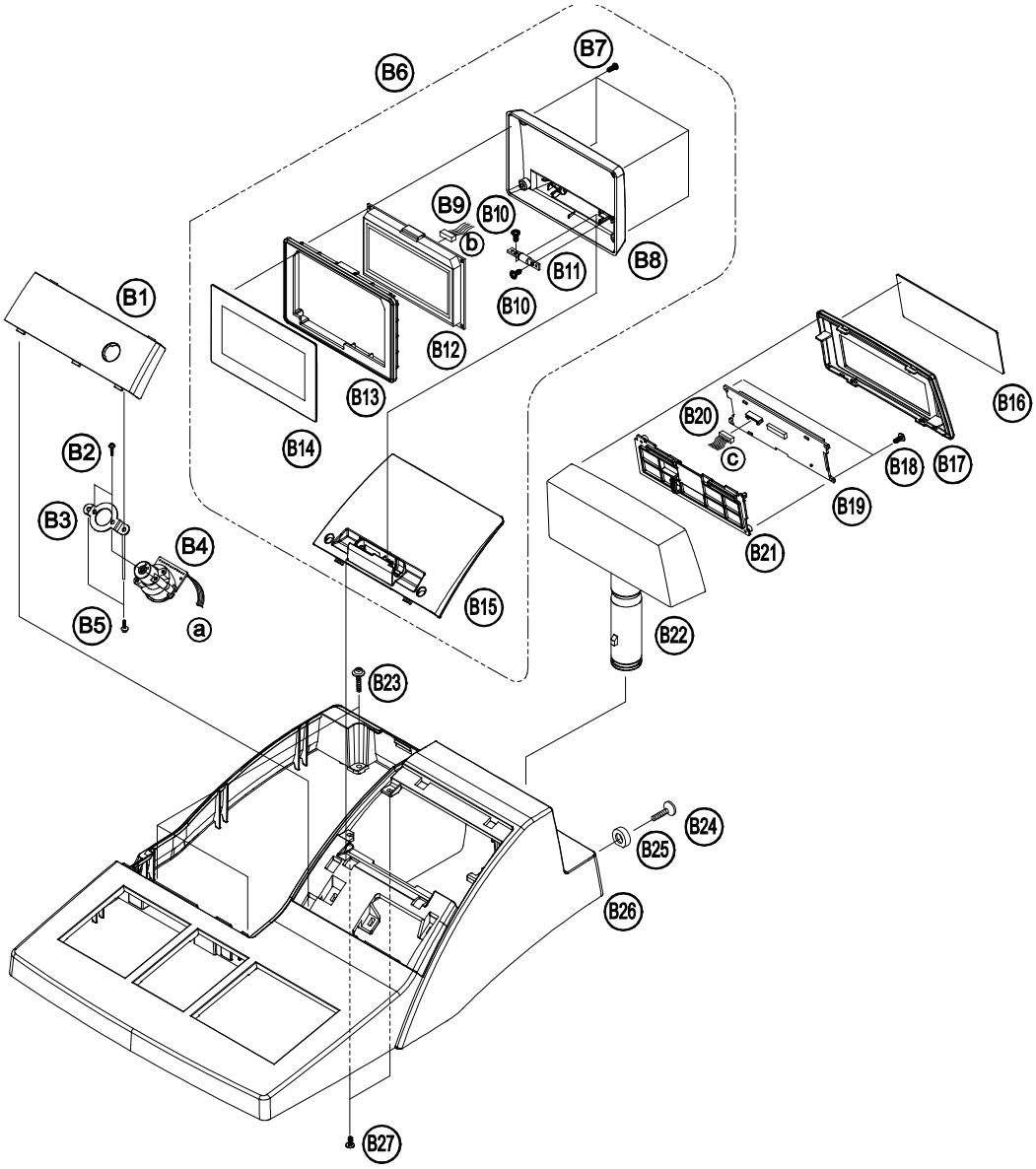



Figure 6-3 ASS'Y CASE-UPPER(NR-500R)

## 6-2. B. ASS'Y UPPER(NR-500R)

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| B1 | JK72-21005G | PMO-COVER MODE S/W:<br>NR-500RB,STD,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B2 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 2 | | Y | |
| B3 | JK70-20309A | IPR-BRKT MODE_S/W | 1 | | Y | |
| B4 | JK95-70098A | MODE KEY ASSY | 1 | | Y | |
| B5 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 2 | | Y | |
| B6 | JK95-70596C | ELA-LCD FRONT | 1 | | Y | IVORY |
| | JK95-70596D | ELA-LCD FRONT | 1 | | Y | BLACK |
| B7 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 4 | | Y | WHITE |
| | S600300020A | SCREW-TAPTITE:BH,+,M3,L10,BLK | 4 | | Y | BLACK |
| B8 | JK72-20337C | PMO-LCD REAR | 1 | | Y | IVORY |
| | JK72-20337D | PMO-LCD REAR:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B9 | JK39-40756F | HARNESS-LCD:NR-500,10P,450mm,AT TAPE | 1 | | Y | |
| B10 | S600300016A | SCREW-DELTA PT;M3X8(BH) | 2 | | Y | |
| B11 | JK75-40006A | MEC-HINGE ASS'Y | 1 | | Y | |
| B12 | JK07-70003A | LCD:NR-400,192*64,NEGATIVE | 1 | | Y | |
| B13 | JK72-20336C | PMO-LCD FRONT | 1 | | Y | IVORY |
| | JK72-20336D | PMO-LCD FRONT:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B14 | JK72-20825B | PMO-WINDOW VIEW | 1 | | Y | |
| B15 | JK72-20891A | PMO-HOLDER LCD | 1 | | Y | IVORY |
| | JK72-20891C | PMO-HOLDER LCD:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B16 | JK72-20349A | PMO-WINDOW VIEW_R | 1 | | Y | |
| B17 | JK72-20630A | MO-WINDOW TURRET | 1 | | Y | |
| B18 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | |
| B19 | JK07-70002A | DISPLAY-LCD:16Char*2line | 1 | | Y | |
| B20 | JK39-80007B | HARNESS-DISPLAY:8P,450mm | 1 | | Y | |
| B21 | JK72-20629A | PMO-HOLDER LCD REAR | 1 | | Y | |
| B22 | JK72-20703D | PMO-TURRET BODY | 1 | | Y | IVORY |
| | JK72-20703E | PMO-TURRET BODY:ER-350,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B23 | S600200004A | SCREW-TAPPING:PH,M4,L15 | 3 | | Y | WHITE |
| | S600200029A | SCREW-TAPPING:PH,M4,L14 | 3 | | Y | BLACK |
| B24 | S600100010A | SCREW-MACHINE:FH,M4,L10 | 1 | | Y | WHITE |
| | S600100040A | SCREW-MACHINE:FH,M4,L10 | 1 | | Y | BLACK |
| B25 | JK70-70073A | ICT-SHAFT MOLDING | 1 | | Y | |
| B26 | JK72-20963C | PMO-CASE UPPER:NR-500 | 1 | | Y | IVORY |
| | JK72-20963D | PMO-CASE UPPER:NR-500F | 1 | | Y | IVORY |
| | JK72-20963N | PMO-CASE UPPER:<br>ER-350II,2 차,48KEY,BLK,SPRAY | 1 | | Y | BLACK |
| | JK72-20963P | PMO-CASE UPPER:<br>ER-350IIF,2 차,48KEY,BLK,SPRAY | 1 | | Y | BLACK |
| B27 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | |

## 6-2 B. ASS'Y CASE-UPPER(NR-500)

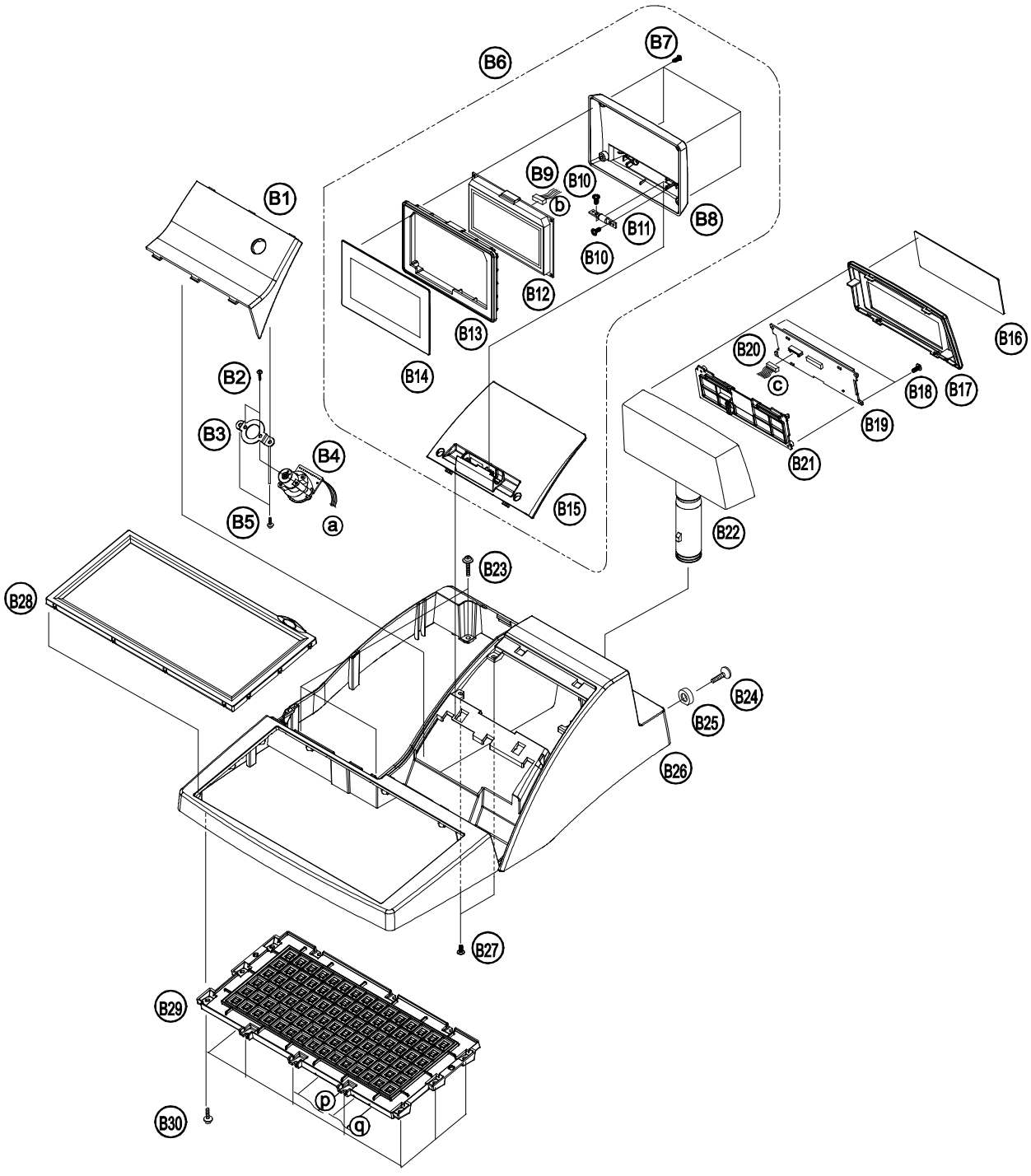



Figure 6-4 ASS'Y CASE-UPPER(NR-500)

## 6-2. B. ASS'Y UPPER(NR-500)

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| B1 | JK72-20214K | PMO-COVER MODE S/W:NR-510 | 1 | | Y | IVORY |
| | JK72-20214L | PMO-COVER MODE S/W:NR-520 | 1 | | Y | IVORY |
| | JK72-21005G | PMO-COVER MODE S/W:<br>NR-500RB,STD,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B2 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 2 | | Y | |
| B3 | JK70-20309A | IPR-BRKT MODE_S/W | 1 | | Y | |
| B4 | JK95-70098A | MODE KEY ASSY | 1 | | Y | |
| B5 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 2 | | Y | |
| B6 | JK95-70596C | ELA-LCD FRONT | 1 | | Y | IVORY |
| | JK95-70596D | ELA-LCD FRONT | 1 | | Y | BLACK |
| B7 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 4 | | Y | WHITE |
| | S600300017A | SCREW-TAPTITE:BH,M3,L8 | 4 | | Y | BLACK |
| B8 | JK72-20337C | PMO-LCD REAR | 1 | | Y | IVORY |
| | JK72-20337D | PMO-LCD REAR:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B9 | JK39-40756F | HARNESS-LCD:NR-500,10P,450mm,AT TAPE | 1 | | Y | |
| B10 | S600300016A | SCREW-DELTA PT;M3X8(BH) | 2 | | Y | |
| B11 | JK75-40006A | MEC-HINGE ASS'Y | 1 | | Y | |
| B12 | JK07-70003A | LCD:NR-400,192*64,NEGATIVE | 1 | | Y | |
| B13 | JK72-20336C | PMO-LCD FRONT | 1 | | Y | IVORY |
| | JK72-20336D | PMO-LCD FRONT:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B14 | JK72-20825B | PMO-WINDOW VIEW | 1 | | Y | |
| B15 | JK72-20891A | PMO-HOLDER LCD | 1 | | Y | IVORY |
| | JK72-20891C | PMO-HOLDER LCD:NR-500B,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B16 | JK72-20349A | PMO-WINDOW VIEW_R | 1 | | Y | |
| B17 | JK72-20630A | MO-WINDOW TURRET | 1 | | Y | |
| B18 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | |
| B19 | JK07-70002A | DISPLAY-LCD:16Char*2line | 1 | | Y | |
| B20 | JK39-80007B | HARNESS-DISPLAY:8P,450mm | 1 | | Y | |
| B21 | JK72-20629A | PMO-HOLDER LCD REAR | 1 | | Y | |
| B22 | JK72-20703D | PMO-TURRET BODY | 1 | | Y | IVORY |
| | JK72-20703E | PMO-TURRET BODY:ER-350,HIPS(V0),BLK,SPRAY | 1 | | Y | BLACK |
| B23 | S600200004A | SCREW-TAPPING:PH,M4,L15 | 3 | | Y | WHITE |
| | S600200029A | SCREW-TAPPING:PH,M4,L14 | 3 | | Y | BLACK |
| B24 | S600100010A | SCREW-MACHINE:FH,M4,L10 | 1 | | Y | WHITE |
| | S600100040A | SCREW-MACHINE:FH,M4,L10 | 1 | | Y | BLACK |
| B25 | JK70-70073A | ICT-SHAFT MOLDING | 1 | | Y | |
| B26 | JK72-20213A | PMO-CASE UPPER:NR-500 | 1 | | Y | IVORY |
| | JK72-20213B | PMO-CASE UPPER:NR-500F | 1 | | Y | IVORY |
| | JK72-20213F | PMO-CASE UPPER:ER-390B,BLK,SPRAY | 1 | | Y | BLACK |
| | JK72-20213G | PMO-CASE UPPER:ER-390BF,BLK,SPRAY | 1 | | Y | BLACK |
| B27 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | |
| B28 | JK75-20033A | ASSY-KBD HOUSING | 1 | | Y | IVORY |
| | JK75-20033C | ASSY-KBD HOUSING:90FLAT(WITH W/PO),<br>BLK,SPRAY | 1 | | Y | BLACK |
| B29 | JK59-30027A | UNIT-KEYBOARD:ER-390,90 KEY,FLAT,IVORY | 1 | | Y | IVORY |
| | JK59-30027B | UNIT-KEYBOARD:NR-510B/520B,<br>90 KEY,FLAT,BLACK | 1 | | Y | BLACK |
| B30 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 12 | | Y | |

## 6-2 C. ASS'Y PRINTER

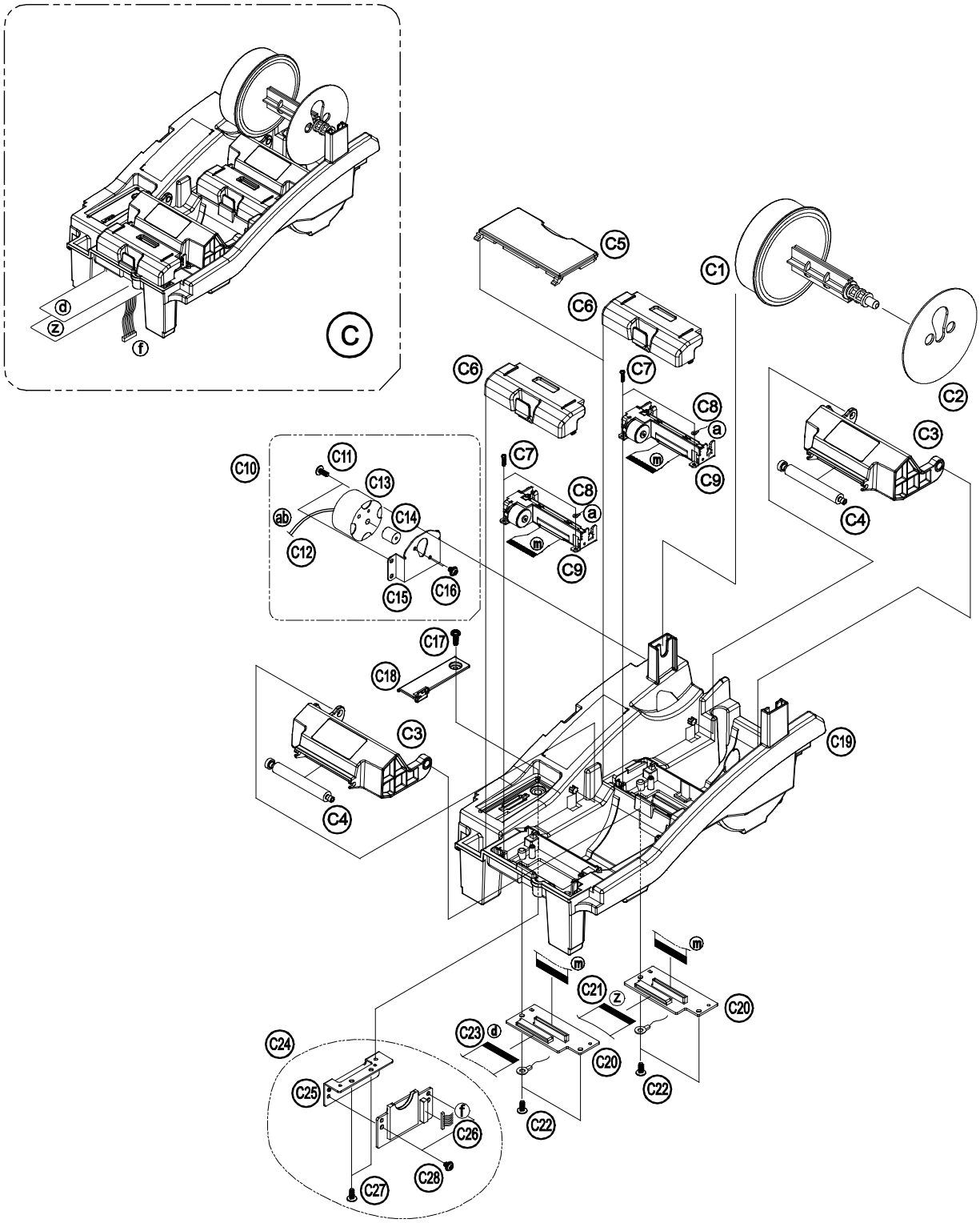



Figure 6-5 ASS'Y PRINTER

## 6-2. C. ASS'Y PRINTER

| No. | Code No. | Description / Specification | Q'TY | Design-Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| **C** | **JK95-70674A** | **ELA_UNIT-PRINTER:NR-510** | **1** | | **Y** | |
| | **JK95-70674B** | **ELA_UNIT-PRINTER:NR-520** | **1** | | **Y** | |
| C1 | JK72-20979A | PMO-SPOOL WINDING | 1 | | Y | |
| C2 | JK72-20093A | PMO-GUIDE WINDING | 1 | | Y | |
| C3 | JK72-20797B | PMO-HOUSING CLAM(2INCH):<br>NR-300,ABS+GF20%,NEW | 2 | | Y | |
| C4 | JK81-20004A | PLATEN-ROLLER:2INCH | 2 | | Y | |
| C5 | JK72-20234C | PMO-COVER 1STATION:NR-510,HIPS(V0),BLACK | 1 | | Y | NR-510 |
| C6 | JK72-20272A | PMO-CAP PRINTER | 2 | | Y | |
| C7 | S600200032A | SCREW-TAPPING:PH,M2,L8 | 4 | | Y | |
| C8 | JK39-50002B | GND-WIRE:ER-180T,150mm,UL1007,GRN,<br>RING-RING,2.7pi | 2 | | Y | |
| C9 | JK59-20003A | UNIT-PRINTER:LTP01-245-11(SII) | 2 | | Y | |
| C10 | JK95-70690A | ASSY SPOOL MOTOR | 1 | | Y | NR-520 |
| C11 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | NR-520 |
| C12 | JK39-40686C | HARNESS-SPOOL:NR-500,3P,400mm,AT TAPE | 1 | | Y | |
| C13 | S310100012A | MOTOR-DC | 1 | | Y | NR-520 |
| C14 | JK73-30200A | RCT-MOTOR | 1 | | Y | |
| C15 | JK70-20024A | IPR-BRKT SPOOL MOTOR | 1 | | Y | NR-520 |
| C16 | S600100023A | SCREW-MACHINE:BH,,M2.6,L3 | 2 | | Y | |
| C17 | S600100034A | SCREW-MACHINE:PWH,M3,L14 | 1 | | Y | |
| C18 | JK72-20316A | PMO-COVER_SD | 1 | | Y | |
| C19 | JK72-20978A | PMO-HOLDER PRINTER | 1 | | Y | |
| C20 | JK92-10059J | PBA PRT JOINT:NR-500,SVC | 2 | | Y | |
| C21 | JK39-40565A | CABLE-FFC:ER-260,30P,1.0mm,300mm | 1 | | Y | JOURNAL |
| C22 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 4 | | Y | |
| C23 | JK39-50005A | CABLE-FFC:ER-230,30P,1.0mm,160mm | 1 | | Y | RECEIPT |
| C24 | JK92-10039A | PBA SUB:SD CARD | 1 | | Y | |
| C25 | JK70-20122A | IPR-BRKT SD | 1 | | Y | |
| C26 | JK39-40756B | HARNESS-SD:ER-230,10P,220mm,AT TAPE | 1 | | Y | |
| C27 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 2 | | Y | |
| C28 | S600100016A | SCREW-MACHINE:PWH,M3,L4 | 2 | | Y | |

## 6-2 D. ASS'Y KBD(48KEY RAISED)

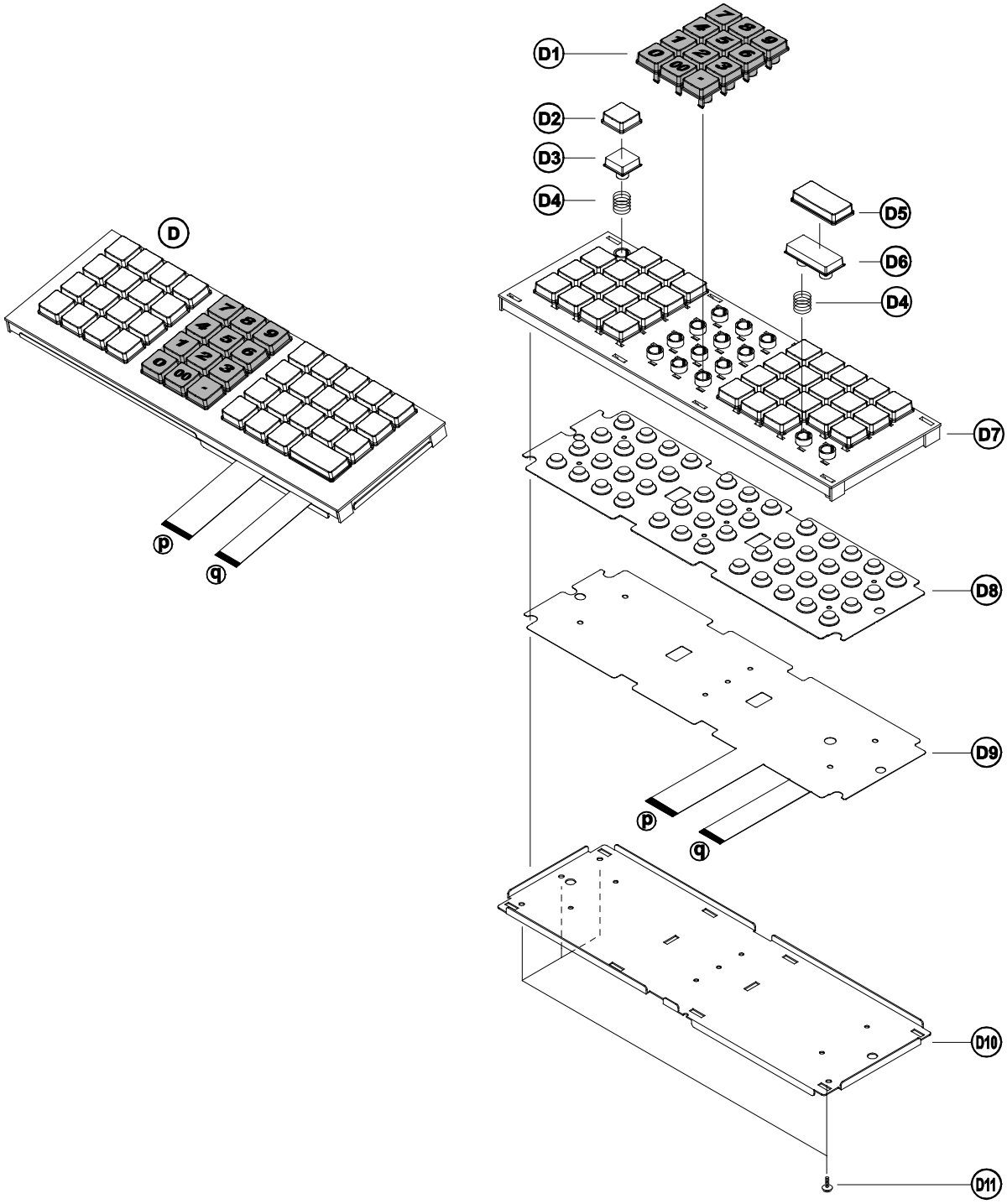



Figure 6-6 ASS'Y-KEYBOARD (48 Key)

## 6-2. D. ASS'Y KBD(48KEY RAISED)

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| D | **JK59-30077A** | **UNIT-KEYBOARD:NR-510R,RAISED,48KEY** | **1** | | **Y** | **IVORY** |
| | **JK59-30077B** | **UNIT-KEYBOARD:NR-510RB,RAISED,48KEY** | **1** | | **Y** | **BLACK** |
| | **JK59-30077C** | **UNIT-KEYBOARD:NR-520R,RAISED,48KEY** | **1** | | **Y** | **IVORY** |
| | **JK59-30077D** | **UNIT-KEYBOARD:NR-520RB,RAISED,48KEY** | **1** | | **Y** | **BLACK** |
| D1 | JK72-20483A | KEY NUMBER SET | 1 | | Y | |
| D2 | JK72-20476A | PMO-KEY CAP_1X1 | 32 | | Y | |
| D3 | JK72-20479A | PMO-KEY TOP_1X1 | 32 | | Y | |
| D4 | JK81-20061A | RETURN-SPRING | 36 | | Y | |
| D5 | JK72-20477A | PMO-KEY CAP_1X2 | 2 | | Y | |
| D6 | JK72-20480A | PMO-KEY TOP_1X2 | 1 | | Y | |
| D7 | JK81-20052A | PMO-KBD FRAME_48,RAISED | 1 | | Y | |
| D8 | JK81-20052D | CONTACT-RUBBER_48 | 1 | | Y | |
| D9 | JK81-20052C | ASSY-FPC,48KEY,RAISED | 1 | | Y | |
| D10 | JK81-20052B | IPR-BOTTOM PLATE_48 | 1 | | Y | |
| D11 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 4 | | Y | |

## 6-2 D. ASS'Y KBD(90KEY FLAT)

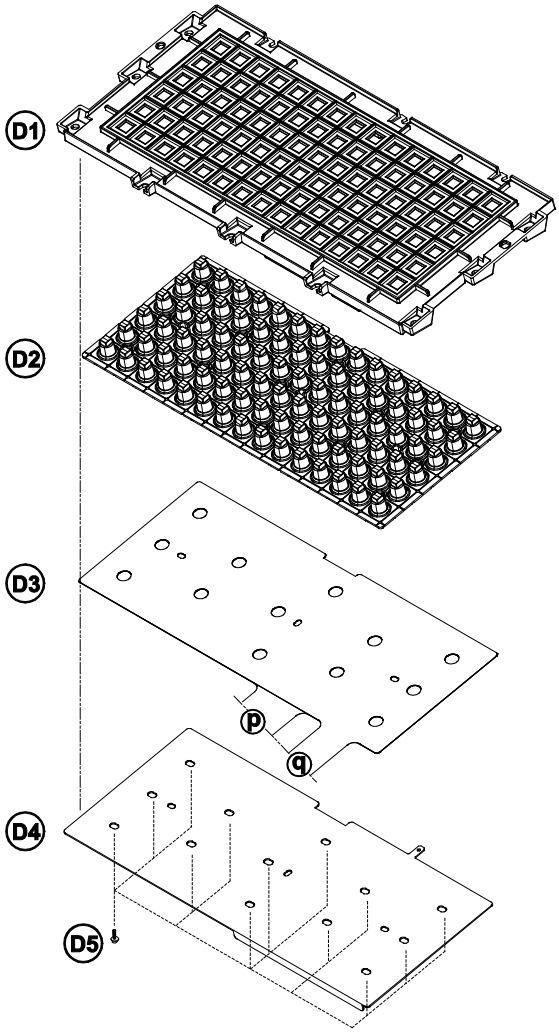



Figure 6-7 ASS'Y-KEYBOARD (90 Key)

## 6-2. D. ASS'Y KBD(90KEY FLAT)

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| **D** | **JK59-30027A** | **UNIT-KEYBOARD:ER-390,90 KEY,FLAT** | **1** | | **Y** | **IVORY** |
| | **JK59-30027B** | **UNIT-KEYBOARD:ER-390B,90 KEY,FLAT** | **1** | | **Y** | **BLACK** |
| D1 | JK81-20049A | FRAME:90 KEY | 1 | | N | |
| D2 | JK81-20049B | KEY-RUBBER:90 KEY | 1 | | N | |
| D3 | JK81-20049C | FPC-ASSY:90 KEY | 1 | | Y | |
| D4 | JK81-20049D | BASE-PLATE:90 KEY | 1 | | N | |
| D5 | JK81-20049E | SCREW-TAPPING:M2.6X8 | 13 | | N | |

## 6-2 E. ASS'Y CASE-LOWER

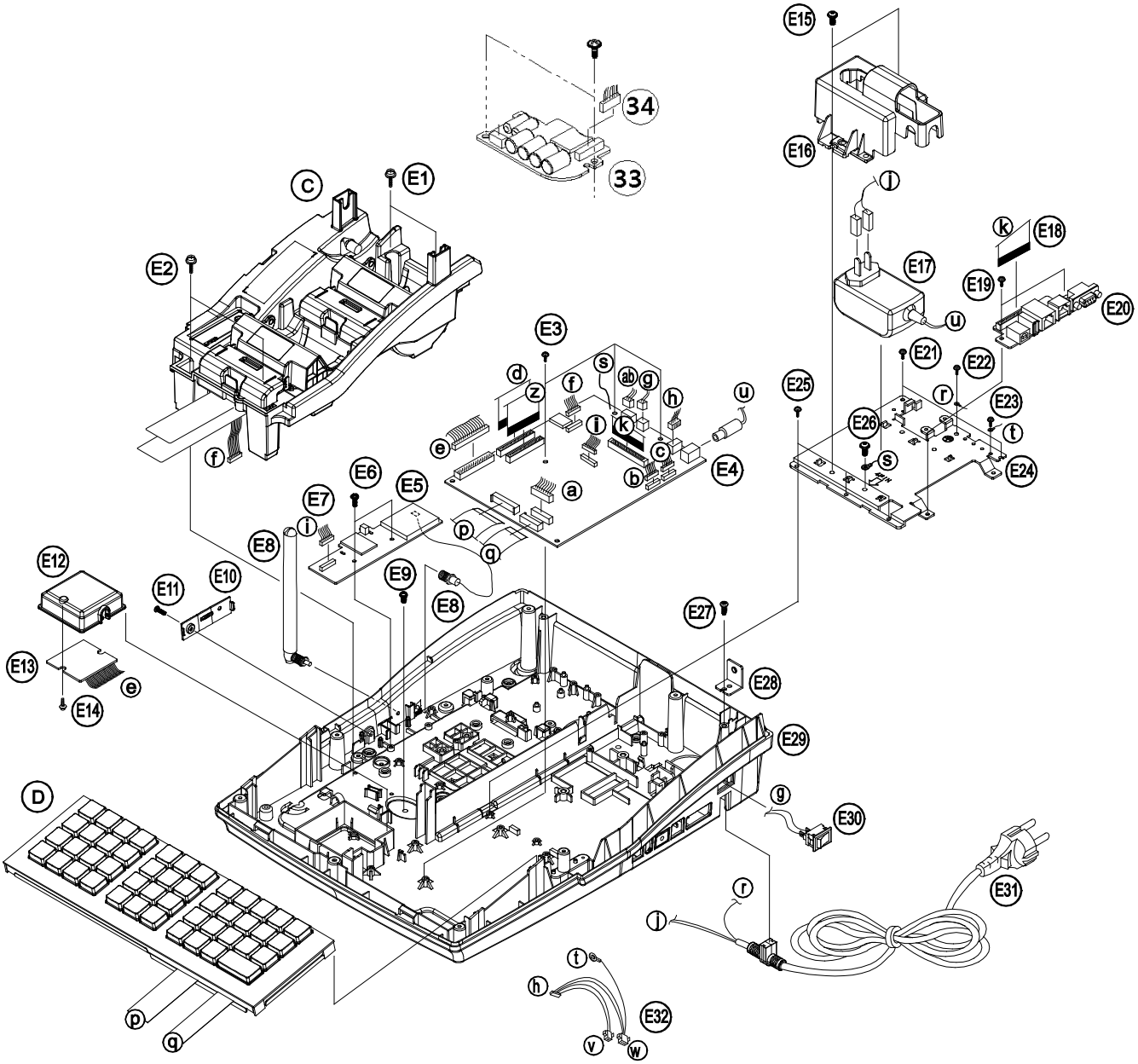



Figure 6-8 ASS'Y CASE-LOWER

## 6-2. E. ASS'Y CASE-LOWER

| No. | Parts No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| E1 | S600200005A | SCREW-TAPPING: PWH,M3,L10 | 2 | | Y | |
| E2 | S600200005A | SCREW-TAPPING: PWH,M3,L10 | 2 | | Y | |
| E3 | S600200005A | SCREW-TAPPING: PWH,M3,L10 | 3 | | Y | |
| E4 | JK92-10119A | PBA MAIN:NR-520,90KEY,8Mb,M/SD | 1 | | Y | 2-Station |
| | JK92-10146A | PBA MAIN:NR-510,90KEY,8Mb,M/SD,<br>W/O ETHERNET&FISCAL | 1 | | Y | 1-Station |
| | JK92-10146B | PBA MAIN:NR-510,90KEY,8Mb,ETHERNET,<br>W/O M/SD&FISCAL | 1 | | Y | 1-Station |
| | JK92-10146C | PBA MAIN:NR-510,90KEY,4Mb,<br>W/O M/SD&ETHERNET&FISCAL | 1 | | Y | 1-Station |
| | JK92-10146D | PBA MAIN:NR-510,90KEY,8Mb,M/SD&CARD,<br>W/O ETHERNET&FISCAL | 1 | | Y | 1-Station |
| | JK92-10146F | PBA MAIN:NR-510,90KEY,4Mb,ETHERNET,<br>W/O M/SD&FISCAL | 1 | | Y | 1-Station |
| E5 | JK92-10064A | PBA GPRS:ER-420EJ | 1 | | N | |
| E6 | S600200005A | SCREW-TAPPING: PWH,M3,L10 | 2 | | Y | |
| E7 | JK39-80007A | HARNESS-GPRS: 8P,200mm | 1 | | Y | |
| E8 | S421000001A | Dipole Antenna : GPRS, Quad Band, 900Mhz | 1 | ANTENA<br>CABLE<br>NUT<br>WASHER | Y | |
| E9 | S600300011A | SCREW-TAPTITE:PWH,M4,L10, | 1 | | Y | |
| E10 | JK72-20627A | PMO-COVER GPRS | 1 | | Y | IVORY |
| | JK72-20627B | PMO-COVER GPRS | 1 | | Y | BLACK |
| E11 | S600200011A | SCREW-TAPPING:PH,M3,L8 | 1 | | Y | WHITE |
| | S600300016A | SCREW-DELTA PT;M3X8(BH) | 1 | | Y | BLACK |
| E12 | JK72-20730A | PMO-CASE FISCAL BOARD | 1 | STD | Y | |
| | JK72-20118A | PMO-COVER FISCAL | 1 | GREECE | Y | |
| E13 | JK92-01284K | PBA SUB-FISCAL:ER-230,34P,2MBIT,3.3V | 1 | 2Mbit | N | |
| | JK92-10037A | PBA SUB-FISCAL:ER-230,34P,4MBIT,3.3V | 1 | 4Mbit | Y | |
| E14 | S600200028A | SCREW-TAPPING: PWH,M3,L6 | 1 | | Y | |
| E15 | S600600005A | SCREW-ASSY TAPT: BH,M4,L8 | 2 | | Y | |
| E16 | JK72-20628A | PMO-HOLDER ADAPTER | 1 | | Y | |
| E17 | JK95-70582A | ASSY-ADAPTOR: 9V/2.5A,USA | 1 | | Y | |
| E18 | JK39-50005A | CABLE-FFC: 30P,1.0mm,150mm | 1 | | Y | |
| E19 | S600100017A | SCREW-MACHINE:PWH, M3,L6, | 2 | | Y | |
| E20 | JK92-10059K | PBA INTERFACE:NR-500(2),232*2,<br>W/O ETHERNET,SVC | 1 | | Y | OLD |
| | JK92-10059Q | PBA INTERFACE:NR-500(3),232*2,<br>W/O ETHERNET,SVC | 1 | SERIAL 2-PORT | Y | NEW<br>(Jan.2016~) |
| | JK92-10059R | PBA INTERFACE:NR-500(3),232*3,<br>W/O ETHERNET,SVC | 1 | SERIAL 3-PORT | Y | |
| E21 | S600200005A | SCREW-TAPPING: PWH,M3,L10 | 2 | | Y | |
| E22 | S600600002A | SCREW-ASS'Y MACH:WT,BH,+,M4,L6 | 1 | | Y | |
| E23 | S600600006A | SCREW-ASSY TAPTITE:SWRCH18A,M3,L8 | 1 | | Y | |
| E24 | JK70-20018B | IPR-BRKT TRANS | 1 | | Y | |
| E25 | S600200006A | SCREW-TAPPING:PWH,M3,L8 | 3 | | Y | |
| E26 | S600600005A | SCREW-ASSY TAPT: BH,M4,L8 | 1 | | Y | |
| E27 | S600200003A | SCREW-TAPPING:PH,M4,L10 | 1 | | Y | |
| E28 | JK70-20307A | IPR-BRKT CASING | 1 | | Y | |
| E29 | JK72-20964P | PMO-CASE LOWER | 1 | | Y | IVORY |
| | JK72-20964W | PMO-CASE LOWER:NR-500,2SERIAL,<br>NO HOLE,BLK,SPRAY | 1 | | Y | BLACK |
| E30 | JK39-40688D | HARNESS-POWER S/W:NR-500,<br>2P,270mm,SOLTEAM,OR-L-11D,DOT MARK,DC | 1 | | Y | |
| E31 | JK39-30002A<br>JK39-30002B<br>JK39-30002C<br>JK39-30002D | POWER-CORD:NR-500,EUROPE,220V,IVORY<br>POWER-CORD:NR-500,USA,110V,IVORY<br>POWER-CORD:NR-500,AUSTRALIA,240V,IVORY<br>POWER-CORD:NR-500,UK,240V,IVORY | 1 | EUROPE<br>USA<br>AUSTRALIA<br>UK | Y | IVORY |
| | JK39-30001A | POWER-CORD:NR-500,EUROPE,220V,BLACK | 1 | EUROPE | Y | BLACK |

| | | | | | | |
|---|---|---|---|---|---|---|
| | JK39-30001B<br>JK39-30001C<br>JK39-30001D | POWER-CORD:NR-500,USA,110V,BLACK<br>POWER-CORD:NR-500,AUSTRALIA,240V,BLACK<br>POWER-CORD:NR-500,UK,240V,BLACK | | USA<br>AUSTRALIA<br>UK | | |
| E32 | JK39-40603A | HARNESS DRA/COM;4PIN,180mm | 1 | | Y | |
| E33 | JK92-10139A | PBA MICRO-SD:NR-300F,W/O STARCAP | 1 | | Y | |
| E34 | JK39-40756B | HARNESS-SD:ER-230,10P,220mm,AT TAPE | 1 | | Y | |

## 6-2 F. ASS'Y-DRAWER(G-DRAWER:4B8C,5B6C)

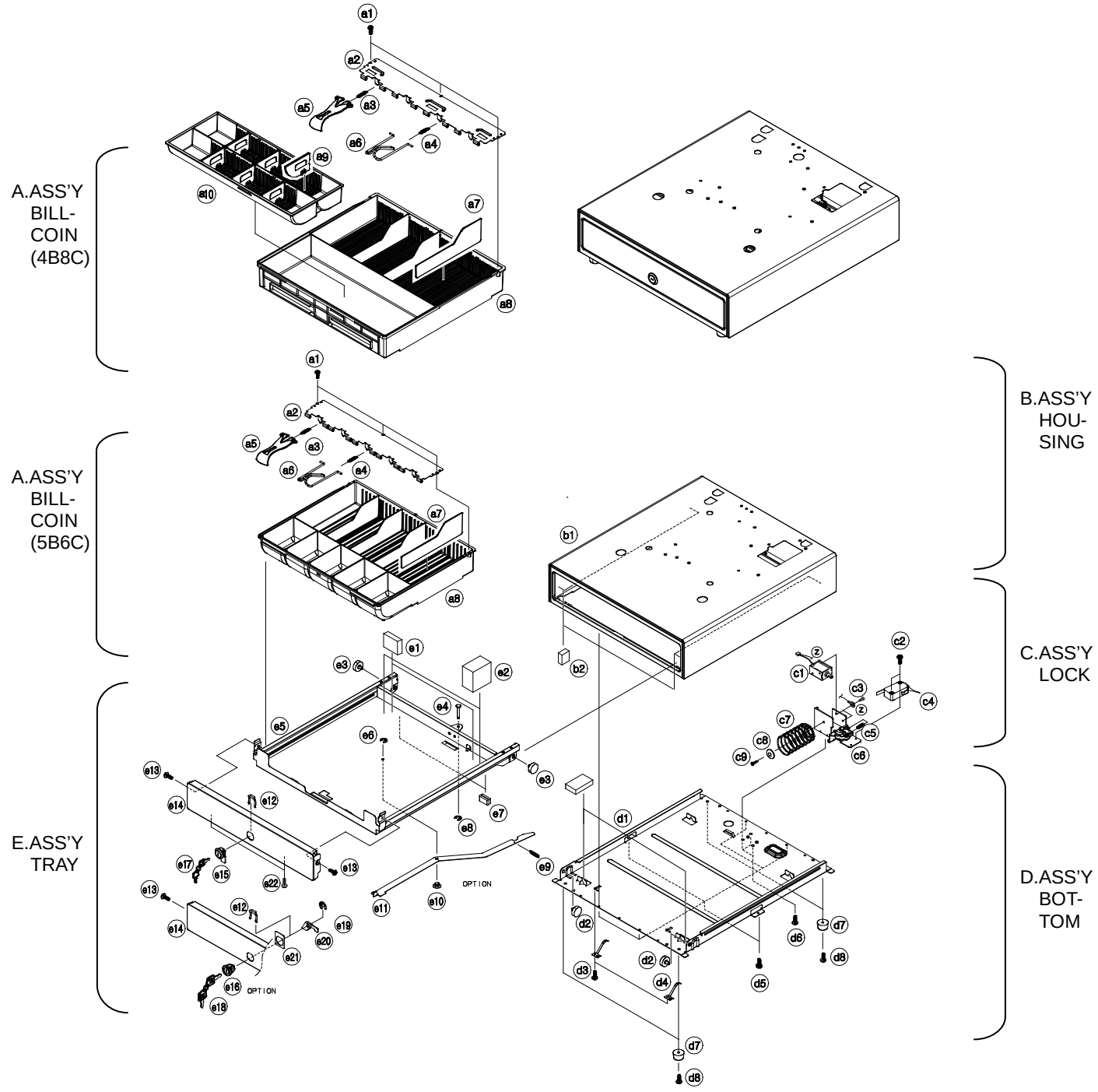



Figure 6-9 ASS'Y-DRAWER (G-DRAWER:4B8C,5B6C)

## 6-2 F. ASS'Y-DRAWER(G-DRAWER:4B8C,5B6C)

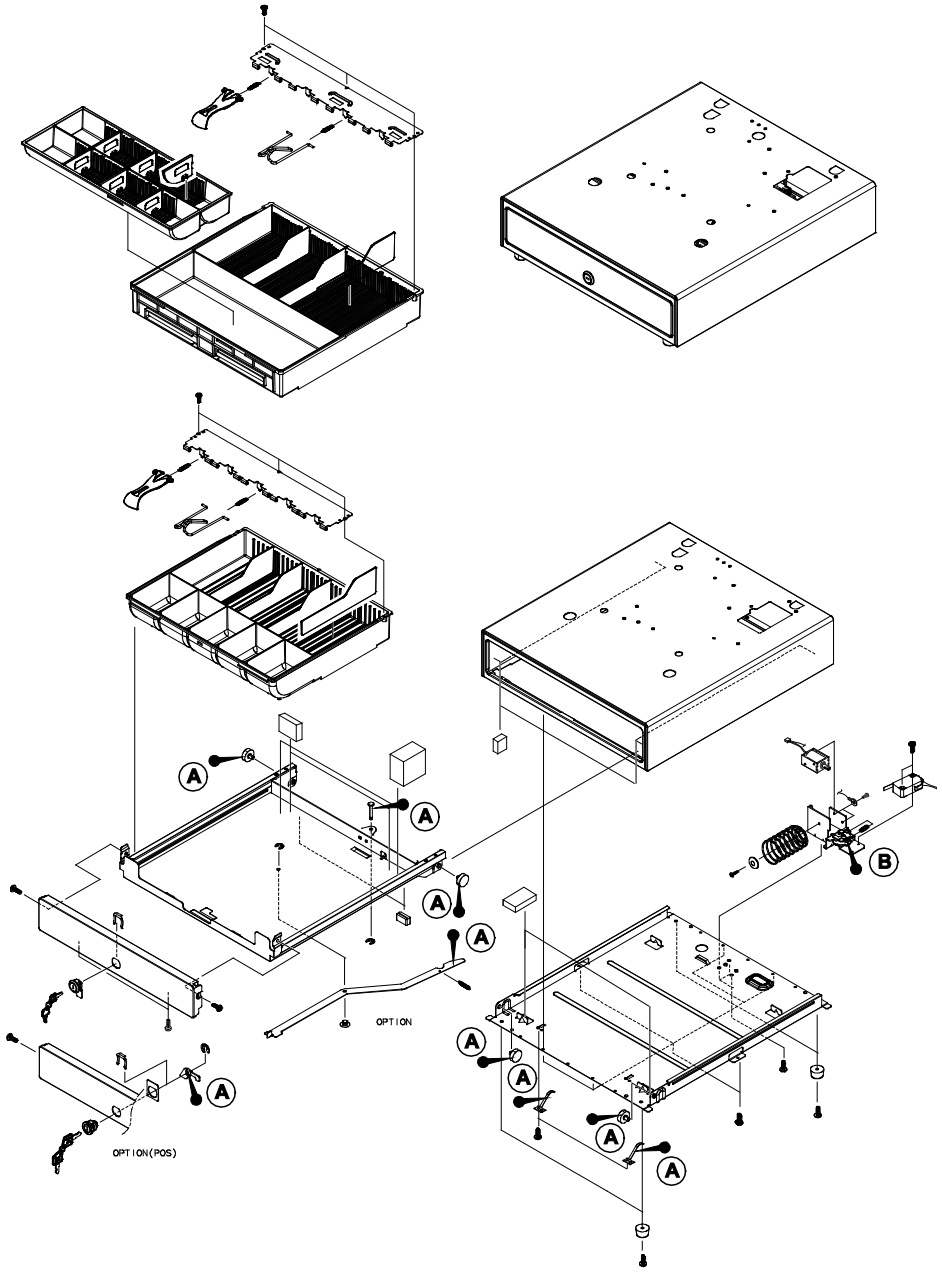



Figure 6-10 Lubrication Points of the G-Drawer(4B8C,5B6C)

| No. | Code No. | Description / Specification | Q`ty | Serviceable | Remark |
|---|---|---|---|---|---|
| A | 0201-002010 | GREASE-N2 | - | Y | Minimum Serviceable Packing Weight : 40g |
| B | 0201-002009 | GREASE-N1 | - | Y | Minimum Serviceable Packing Weight : 40g |

## 6-2 F. ASS'Y-DRAWER(G-DRAWER:4B8C,5B6C)

### a. ASS'Y BILL-COIN (4B8C)

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| a | JK97-20094B | MEA-UNIT BILL COIN(4B8C,PLASTIC) | 1 | | Y | |
| a1 | 6002-000175 | SCREW-TAPPING : M3,L8 | 3 | | Y | |
| a2 | JK70-20114A | IPR-HOLDER PLATE(4B8C) | 1 | | Y | |
| a3 | JK70-30014A | SPRING-LEVER PRESS(MD) | 4 | | Y | |
| a4 | JK70-30015A | SPRING-LEVER PRESS(PD) | 4 | | Y | OPTION |
| a5 | JK72-20259A | PMO-LEVER PRESS(PLASTIC) | 4 | | Y | |
| a6 | JK70-20067A | IPR-LEVER PRESS(STEEL) | 4 | | Y | OPTION |
| a7 | JK72-40269A | PMO-BILL PARTITION | 3 | | Y | |
| a8 | JK72-20088A | PMO-BILL COIN TILL : 4B8C | 1 | | Y | |
| a9 | JK72-20090A | PMO-COIN PARTITION | 6 | | Y | |
| a10 | JK72-20089A | PMO-COIN TILL | 1 | | Y | |

### a. ASS'Y BILL-COIN (5B6C)

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| a | JK97-20094A | MEA-UNIT BILL COIN(5B5C) | 1 | | Y | |
| a1 | 6002-000175 | SCREW-TAPTITE : M3,L8 | 3 | | Y | |
| a2 | JK70-20113A | IPR-HOLDER PLATE(5B5C) | 1 | | Y | |
| a3 | JK70-30014A | SPRING-LEVER PRESS(MD) | 5 | | Y | |
| a4 | JK70-30015A | SPRING-LEVER PRESS(PD) | 5 | | Y | OPTION |
| a5 | JK72-20259A | PMO-LEVER PRESS(PLASTIC) | 5 | | Y | |
| a6 | JK70-20067A | IPR-LEVER PRESS(STEEL) | 5 | | Y | OPTION |
| a7 | JK72-40269A | PMO-BILL PARTITION | 4 | | Y | |
| a8 | JK72-40268A | PMO-BILL COIN TILL : 5B5C | 1 | | Y | |

### b. ASS'Y HOUSING

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| b | JK97-20095A | MEA-UNIT HOUSING(STD,WHT) | 1 | | N | |
| | JK97-20095B | MEA-UNIT HOUSING(NON,WHT) | 1 | | N | |
| | JK97-20095E | MEA-UNIT HOUSING(STD,BLK) | 1 | | N | |
| | JK97-20095F | MEA-UNIT HOUSING(NON,BLK) | 1 | | N | |

### c. ASS'Y LOCK

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| c | JK97-20093C | MEA-UNIT LOCK(12V,COM) | 1 | | Y | |
| | JK97-20093D | MEA-UNIT LOCK(24V,COM) | 1 | | Y | |
| c1 | JK33-10500A | SOLENOID-DC: 24V | 1 | | Y | |
| | JK33-10500D | SOLENOID-DC: 12V | 1 | | Y | |
| c2 | 6001-000525 | SCREW-TAPTITE: M3,L14 | 2 | | Y | |
| c3 | JK70-50079A | SCREW-TAPTITE: M3,L5 | 2 | | Y | |
| c4 | JK39-40301R | CBF HARNESS : MICRO S/W | 1 | | Y | |
| c5 | 6107-001041 | SPRING-LOCK LEVER | 1 | | Y | |
| c6 | JK97-01080B | MEC-SUB LOCK | 1 | | N | |
| c7 | JK70-30019A | SPRING-PUSH | 1 | | Y | |
| c8 | JK70-50090A | PLAIN-WASHER | 1 | | Y | |
| c9 | JK70-50092A | SCREW-TAPTITE: M5,L10 | 1 | | Y | |

## 6-2 F. ASS'Y-DRAWER(G-DRAWER:4B8C,5B6C)

### d. ASS'Y BOTTOM

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| d | JK97-20096C | MEA-UNIT BOTTOM(5B5C,UNV) | 1 | | N | |
| d1 | JK70-20115B | IPR-BOTTOM PLATE | 1 | | N | |
| d2 | JK75-20068A | MEC-ROLLER(Φ 22) | 2 | | Y | |
| d3 | 6003-000266 | SCREW-TAPTITE: M3,L6 | 2 | | Y | |
| d4 | JK70-10401A | IPR-PLATE GROUND | 2 | | Y | |
| d5 | 6003-000266 | SCREW-TAPTITE: M3,L6 | 6 | | Y | |
| d6 | JK70-50092A | SCREW-TAPTITE: M5,L10 | 3 | | Y | |
| d7 | JK61-40200A | FOOT-RUBBER:WHITE | 4 | | Y | |
| | JK61-40200B | FOOT-RUBBER: BALCK | 4 | | Y | |
| d8 | 6002-000234 | SCREW-TAPTITE: M4,L16 | 4 | | Y | |

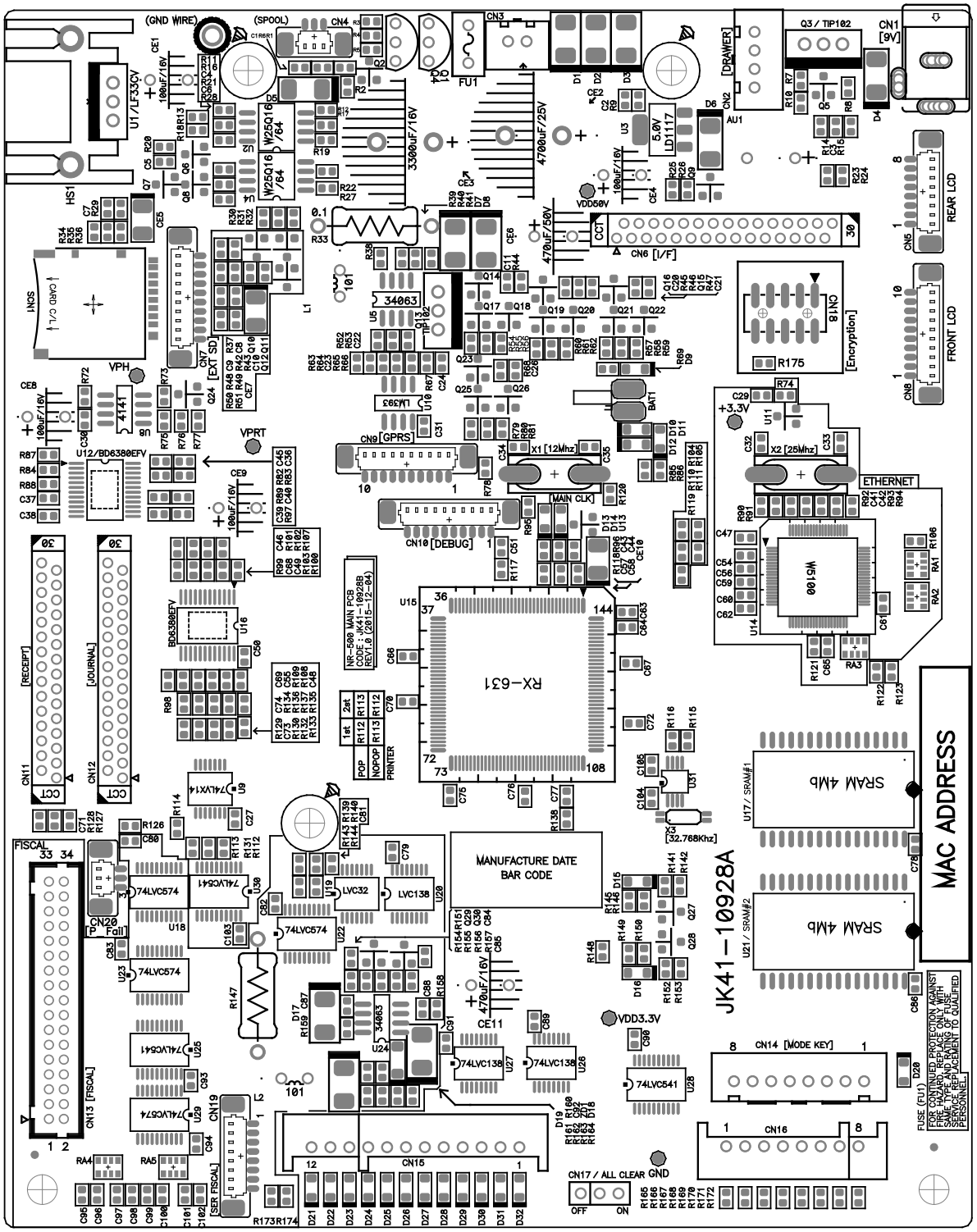
### e. ASS'Y TRAY

| No. | Code No. | Description / Specification | Q`ty | Design-Location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| e | Jk97-20097E | MEA-UNIT TRAY TILL(BLK,UNV) | 1 | | N | |
| | Jk97-20097F | MEA-UNIT TRAY TILL(BLK,PUSH,UNV) | 1 | | N | |
| e1 | JK70-60041A | RMO-RUBBER STOPPER | 2 | | Y | |
| e2 | JK70-60042A | RMO-PAD UNIVERSAL | 2 | | Y | |
| e3 | JK75-20068A | MEC-ROLLER | 2 | | Y | |
| e4 | JK70-40302A | ICT-SHAFT PIN | 1 | | Y | |
| e5 | JK97-20100A | MEA-TRAY TILL | 1 | | N | |
| e6 | 6044-000124 | RING-E: ID3 | 1 | | Y | |
| e7 | JK70-60041A | RMO-RUBBER STOPPER | 2 | | Y | |
| e8 | 6044-000124 | RING-E: ID3 | 1 | | Y | |
| e9 | JK70-30020A | SPRING-LEVER PUSH | 1 | | Y | |
| e10 | JK70-40905A | ICT-SHAFT LEVER PUSH | 1 | | Y | |
| e11 | JK70-20116A | IPR-LEVER PUSH | 1 | | Y | |
| e12 | JK70-10323A | IPR-PLATE CLIP | 1 | | Y | |
| e13 | 6003-000266 | SCREW-TAPTITE: M3,L6 | 2 | | Y | |
| e14 | JK70-20108A | IPR-FRONT PANEL(5B5C,WHT) | 1 | | Y | |
| | JK70-20108B | IPR-FRONT PANEL(5B5C,BLK) | 1 | | Y | |
| | JK70-20108C | IPR-FRONT PANEL(4B8C,WHT) | 1 | | Y | |
| | JK70-20108D | IPR-FRONT PANEL(4B8C,BLK) | 1 | | Y | |
| e15 | Jk75-20067A | MEC-KEY LOCK | 1 | | Y | |
| e16 | JK75-20041A | MEC-KEY LOCK: #2424 | 1 | | Y | OPTION |
| e17 | JK70-20025B | IPR-KEY DRAWER | 1SET | | Y | |
| e18 | JK70-20075A | IPR-KEY DRAWER: #2424 | 1SET | | Y | OPTION |
| e19 | 6044-000231 | RING-E: ID5 | 1 | | Y | |
| e20 | JK70-20074A | IPR-LEVER LOCK | 1 | | Y | |
| e21 | JK70-20120A | IPR-DUMMY KEY | 1 | | Y | |
| e22 | JK70-50094A | SCREW-TAPTITE: M3,L8 | 2 | | Y | |

## MEMO

# 7 PCB Layout and Parts List

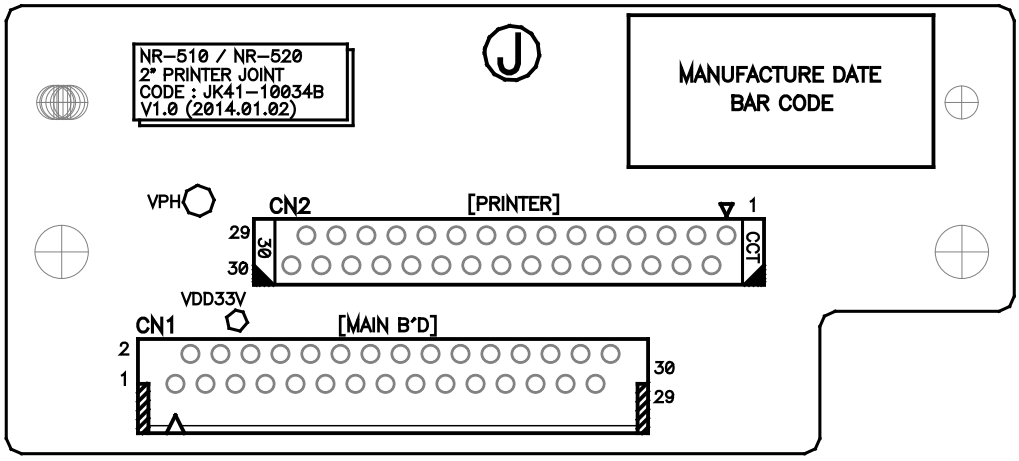
## 7-1 Main PCB Layout



| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| - | JK92-10119A | PBA MAIN:NR-520,90KEY,8Mb,MICRO SD SOCKET, W/O ETHERNET&FISCAL | 1 | ASSY | Y | |
| - | JK27-60101A | COIL-CHOCK:100uH,10mmXϕ 8,DIP,5mm PIT | 1 | L1 | Y | |
| - | JK39-40541C | CBF HARNESS-GND:ER-850,UL1015#18,60mm | 1 | GND-WIRE | Y | |
| - | S0501000294 | TR-SMALL SIGNAL:KSA708Y,PNP,800mW,TO-92 | 2 | Q1,Q4 | Y | |
| - | S0502000401 | TR-POWER:TIP102,DARLINGTON,NPN,TO-220 | 2 | Q3,Q13 | Y | |
| - | S1203001752 | IC-REGULATOR:LF33CV,TO-220,3P,DIP,RoHS | 1 | U1 | Y | |
| - | S2005001001 | R-WIRE WOUND:0.1ohm,5%,1W,WRIT1W0.1Ω -J | 1 | R33 | Y | |
| - | S2401000042 | C-AL:100uF,16V,RADIAL,ϕ 6.3*7L,RoHS | 4 | CE1,CE4,CE8,CE9 | Y | |
| - | S2401001049 | C-AL:3300uF,16V,RADIAL,ϕ 16*25L,RoHS | 1 | CE3 | Y | |
| - | S2401001314 | C-AL:4700uF,20%,25V,RADIAL,ϕ 16*25L,RoHS | 1 | CE2 | Y | |
| - | S2401001429 | C-AL:470uF,20%,50V,RADIAL,Ø10×20L | 1 | CE6 | Y | |
| - | S3002001027 | BUZZER-PIEZO:85dB,1.5V,24mA,2.048KHz,BK | 1 | AU1 | Y | |
| - | S3601000420 | FUSE:250V,4A,SS-5,DIP,2P | 1 | FU1 | Y | |
| - | S3708000147 | CONNECTOR-FFC:12P,1R,2.54mm,ST,BLACK | 1 | CN15 | Y | |
| - | S3708000327 | CONNECTOR-FFC:8P,1R,2.54mm,ST,BLACK | 1 | CN16 | Y | |
| - | S3708001395 | CONNECTOR-FPC/FFC/PIC:30P,1mm,ST,DIP,TOP | 3 | CN6,CN11,CN12 | Y | |
| - | S3711004100 | WAFER;BOX-HEADER,1R,2P,2.5mm,ST,WHITE, | 1 | CN3 | Y | |
| - | S3711004105 | WAFER;BOX-HEADER,1R,4P,2.5mm,ST,WHITE, | 1 | CN2 | Y | |
| - | S3711004109 | WAFER;BOX-HEADER,1R,8P,2.5mm,ST,WHITE | 1 | CN14 | Y | |
| - | S3722001035 | JACK-DC POWER:3P,6.3mm,NOLOCK,AN | 1 | CN1 | Y | |
| - | S4301000121 | BATTERY:3.0V,11mAh,MS920S-FL27E | 1 | BAT1 | Y | |
| - | S620300002A | HEAT SINK:NONE,T2,W17,L22,H45,DEGRE,AL60 | 1 | HS1 | Y | |
| - | S0402001189 | DIODE-RECTIFIER:S1G-E3,M4,400V | 3 | D4,D5,D6 | Y | |
| - | S0404001051 | DIODE-SCHOTTKY:SK14,40V,1A,DO-214AA, | 5 | D1,D2,D3,D7,D8 | Y | |
| - | S0404001052 | DIODE-SCHOTTKY:BAT43WS,BAT54WS,30V | 20 | D10,D11,D12,D13,D14,D15,D16,D20,D21,D22,D23,D24,D25,D26,D27,D28,D29,D30,D31,D32 | Y | |
| - | S0501000279 | TR-SMALL SIGNAL:KSA1182Y,PNP,150mW,SOT23 | 10 | Q7,Q8,Q11,Q12,Q14,Q15,Q16,Q17,Q19,Q21 | Y | |
| - | S0501000457 | TR-SMALL SIGNAL:MMBT2222A,NPN,350MW,SOT- | 11 | Q2,Q5,Q6,Q9,Q10,Q18,Q20,Q22,Q24,Q27,Q28 | Y | |
| - | S0505000148 | POWER MOSFET:FDS4141,SOIC,8P | 1 | U8 | Y | |
| - | S0801001105 | IC-CMOS;SN74LVC138A,DECODER,TSOP,16P | 3 | U20,U26,U27 | Y | |
| - | S0801001110 | IC-CMOS;74LV14A,INVERTER,TSOP,14P | 1 | U9 | Y | |
| - | S0801001123 | IC-CMOS LOGIC:74LVC541AP,BUFFER,TSSOP20P | 2 | U28,U30 | Y | |
| - | S0903001181 | IC-CPU:R5F5631ECDFB,LQFP144P | 1 | U15 | Y | |
| - | S0909000138 | IC-REAL TIME CLOCK:PCF8563,I2C,TSSOP,8P | 1 | U31 | Y | |
| - | S1003001237 | IC-MOTOR DRIVER;BD6380EFV,TSSOP,24P | 2 | U12,U16 | Y | |
| - | S1106000247 | IC-SRAM:BS62LV4006,512Kx8BIT,SOP,32P,4M | 2 | U17,U21 | Y | |
| - | S1202000164 | IC-VOLTAGE COMPARATOR:KA393,SOP,8P,1.27m | 1 | U10 | Y | |
| - | S1203000404 | IC-DC/DC CONVERTER:34063,SOP,8P,150MIL,P | 1 | U5 | Y | |
| - | S1203000500 | IC-RESET;AME8500AEETAE29Z,SOT-23,3P,3.3V | 1 | U13 | Y | |
| - | S1203001774 | IC-REGULATOR;SE1117-5.0V,SOT-223,4P | 1 | U3 | Y | |
| - | S2008000001 | R-CHIP:0 OHM,5%,1/10W,1608 | 1 | R114 | N | |
| - | S2008000005 | R-CHIP:33 OHM,5%,1/10W,1608 | 2 | R104,R105 | N | |
| - | S2008000008 | R-CHIP:100 OHM,5%,1/10W,1608 | 1 | R38 | N | |
| - | S2008000012 | R-CHIP:200 OHM,5%,1/10W,1608 | 4 | R4,R5,R23,R24 | N | |
| - | S2008000013 | R-CHIP:220 OHM,5%,1/10W,1608 | 2 | R127,R130 | N | |
| - | S2008000016 | R-CHIP:300 OHM,5%,1/10W,1608 | 10 | R15,R28,R32,R54,R57,R60,R85,R86,R101,R134 | N | |
| - | S2008000020 | R-CHIP:470 OHM,5%,1/10W,1608 | 2 | R146,R150 | N | |
| - | S2008000026 | R-CHIP:1KOHM,1%,1/10W,1608,1% | 16 | R2,R10,R13,R25,R31,R44,R56,R58,R61,R77,R115,R116,R141,R145,R149,R152 | N | |
| - | S2008000028 | R-CHIP:1.5KOHM,1%,1/10W,1608,1% | 1 | R111 | N | |
| - | S2008000030 | R-CHIP:2KOHM,5%,1/10W,1608 | 2 | R52,R53 | N | |
| - | S2008000031 | R-CHIP:2.2KOHM,5%,1/10W,1608 | 2 | R83,R107 | N | |
| - | S2008000037 | R-CHIP:4.7KOHM,1%,1/10W,1608,1% | 13 | R73,R78,R87,R100,R118,R165,R166,R167,R168,R169,R170,R171,R172 | N | |

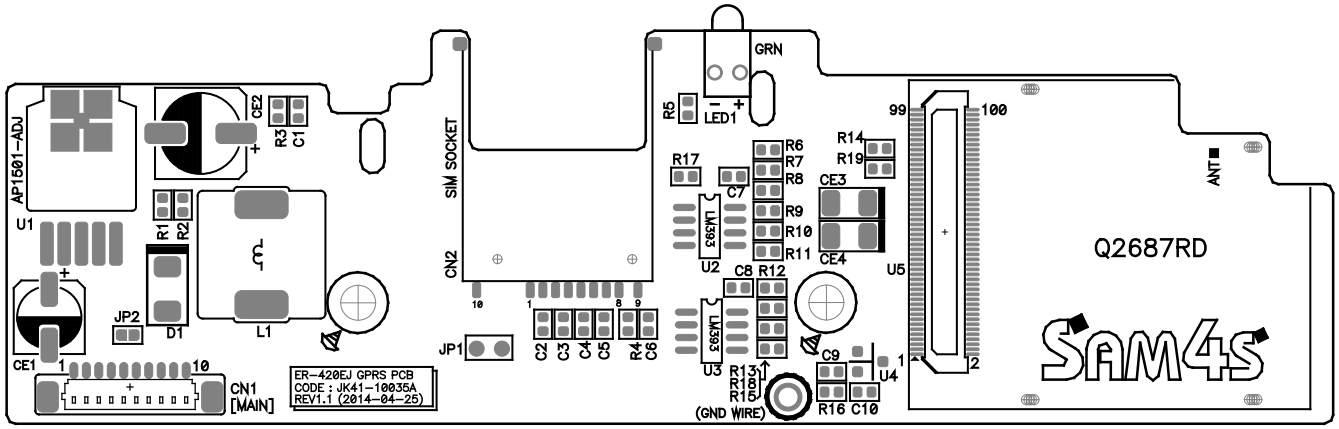
| | | | | | | |
|---|---|---|---|---|---|---|
| - | S2008000044 | R-CHIP:10KOHM,1%,1/10W,1608,1% | 44 | R1,R6,R7,R9,R11,R12,R14,R16,R17,R18,R19,R20,R21,R22,R26,R27,R30,R37,R42,R43,R45,R46,R55,R59,R62,R65,R66,R67,R72,R76,R82,R96,R102,R108,R113,R117,R120,R122,R123,R126,R131,R136,R142,R153 | N | |
| - | S2008000045 | R-CHIP:12KOHM,1%,1/10W,1608,1% | 1 | R64 | N | |
| - | S2008000046 | R-CHIP:15KOHM,5%,1/10W,1608 | 6 | R8,R39,R110,R119,R132,R137 | N | |
| - | S2008000047 | R-CHIP:18KOHM,1%,1/10W,1608,1% | 5 | R40,R88,R89,R103,R109 | N | |
| - | S2008000049 | R-CHIP:22KOHM,1%,1/10W,1608,1% | 1 | R63 | N | |
| - | S2008000056 | R-CHIP:47KOHM,1%,1/10W,1608,1% | 12 | R29,R34,R35,R36,R47,R48,R49,R50,R51,R75,R128,R129 | N | |
| - | S2008000065 | R-CHIP:150KOHM,1%,1/10W,1608,1% | 3 | R41,R133,R135 | N | |
| - | S2008000074 | R-CHIP:1MOHM,5%,1/10W,1608 | 1 | R95 | N | |
| - | S2008000082 | R-CHIP:0.5 OHM,1%,1/10W,1608 (0603±1%) | 4 | R84,R97,R98,R99 | N | |
| - | S2204000003 | C-CERAMIC,CHIP:15pF,5%,50V,1608 | 1 | C104 | N | |
| - | S2204000004 | C-CERAMIC,CHIP:22pF,5%,50V,1608 | 2 | C34,C35 | N | |
| - | S2204000010 | C-CERAMIC,CHIP:100pF,5%,50V,1608 | 6 | C1,C22,C38,C39,C68,C69 | N | |
| - | S2204000015 | C-CERAMIC,CHIP:470pF,5%,50V,1608 | 2 | C71,C73 | N | |
| - | S2204000016 | C-CERAMIC,CHIP:680pF,5%,50V,1608 | 4 | C37,C40,C49,C55 | N | |
| - | S2204000028 | C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,1608 | 45 | C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C20,C21,C23,C24,C27,C30,C31,C36,C43,C44,C45,C46,C48,C50,C51,C57,C58,C63,C64,C66,C67,C70,C72,C74,C75,C76,C77,C78,C79,C86,C89,C90,C91,C103,C105 | N | |
| - | S2205000002 | C-TANTAL:10uF,16V,3528 | 3 | CE5,CE7,CE10 | Y | |
| - | S280100018A | CRYSTAL-SMD:32.768KHz,20PPM,MC-146 | 1 | X3 | Y | |
| - | S2801003388 | CRYSTAL-SMD:12MHz,SX-1,16pF | 1 | X1 | Y | |
| - | S3711004118 | WAFER;BOX-HEADER,1R, 3P,1.25mm,SMD | 1 | CN4 | Y | |
| - | S3711004123 | WAFER;BOX-HEADER,1R, 8P,1.25mm,SMD | 1 | CN5 | Y | |
| - | S3711004125 | WAFER;BOX-HEADER,1R,10P,1.25mm,SMD | 4 | CN7,CN8,CN9,CN10 | Y | |
| - | S371200009A | CONNECTOR-MICRO SD:9P,PUSH PUSH,DM3AT-SF-PEJM5,HIROSE | 1 | SCN1 | Y | |
| - | JK41-10928B | PCB-MAIN:NR-500,3SERIAL,FR-4,2L,T1.6mm | 1 | PCB | N | |
| - | JK39-40541C | CBF HARNESS-GND:ER-850,UL1015#18,60mm | 1 | GND-WIRE | Y | |

# 7-2 Printer Joint PCB Layout



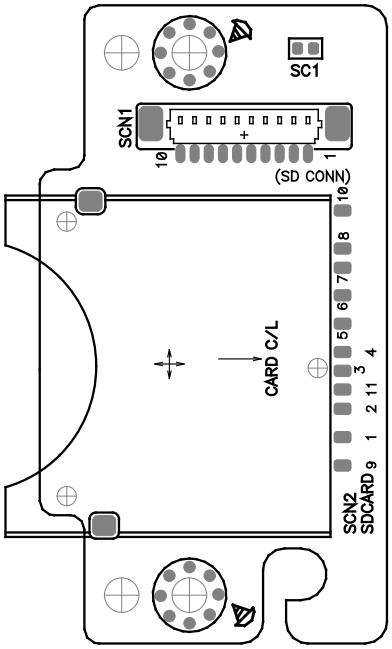

| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| - | **JK92-10059J** | **PBA PRT JOINT:NR-500,SVC** | **1** | **ASSY** | **Y** | |
| - | S3708001395 | CONNECTOR-FPC/FFC/PIC:30P,1mm,ST,DIP,TOP | 1 | JCN2 | Y | |
| - | S3708001397 | CONNECTOR-FPC/FFC/PIC:30P,1mmAN,DIP,SIDE | 1 | JCN1 | Y | |
| - | JK41-10034B | PCB-I/F & PRT JOINT:NR-500,FR-4,2L,T1.6 | 1 | PCB | N | |

# 7-3 GPRS PCB Layout



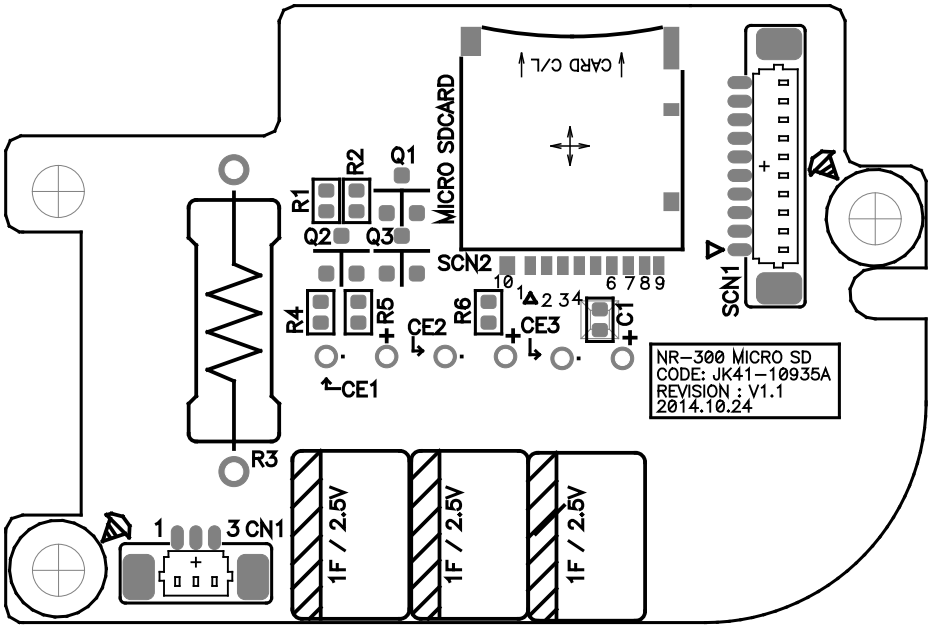

| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| - | **JK92-10064A** | **PBA GPRS:ER-420EJ,STD** | **1** | **ASSY** | **N** | |
| - | JK39-80007A | HARNESS-GPRS:ER-230F,8P,200mm | 1 | HARNESS (CN1) | Y | |
| - | S0601000277 | LED;3PI,2P,DIP,ANGLE,GREEN,BA2-G01 | 1 | LED1 | Y | |
| - | S480100020A | MODULE_Q2687RD_GSM | 1 | U5 | Y | |
| - | JK27-60102A | L-COIL:BDS-1055R,33uH,SMD,IND-330M-SM-12 | 1 | L1 | Y | |
| - | S0404001051 | DIODE-SCHOTTKY:SK14,40V,1A,DO-214AA, | 1 | D1 | Y | |
| - | S1202000164 | IC-VOLTAGE COMPARATOR:KA393,SOP,8P | 2 | U2,U3 | Y | |
| - | S1203000500 | IC-RESET;AME8500AEETAE29Z,SOT-23,3P | 1 | U4 | Y | |
| - | S1203001776 | IC-REGULATOR:AP1501-K5L,TO263-5L,ADJ | 1 | U1 | Y | |
| - | S2008000017 | R-CHIP:330 OHM,5%,1/10W,1608 | 1 | R5 | N | |
| - | S2008000026 | R-CHIP:1KOHM,1%,1/10W,1608,1% | 5 | R1,R10,R11,R14,R15 | N | |
| - | S2008000030 | R-CHIP:2KOHM,5%,1/10W,1608 | 1 | R2 | N | |
| - | S2008000037 | R-CHIP:4.7KOHM,1%,1/10W,1608,1% | 4 | R8,R9,R12,R13 | N | |
| - | S2008000044 | R-CHIP:10KOHM,1%,1/10W,1608,1% | 3 | R3,R6,R16 | N | |
| - | S2008000063 | R-CHIP:100KOHM,5%,1/10W,1608 | 1 | R4 | N | |
| - | S2204000004 | C-CERAMIC,CHIP:22pF,5%,50V,1608 | 2 | C4,C5 | N | |
| - | S2204000018 | C-CERAMIC,CHIP:1nF,10%,50V,X7R,1608 | 1 | C3 | N | |
| - | S2204000028 | C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,1608 | 7 | C1,C2,C6,C7,C8,C9,C10 | N | |
| - | S2205000002 | C-TANTAL:10uF,16V,3528 | 2 | CE3,CE4 | Y | |
| - | S2402000168 | C-AL,SMD:100uF,20%,16V,F60,Ø6.3×5.7L | 1 | CE1 | Y | |
| - | S2402000180 | C-AL;SMD,470uF,16V,MVG | 1 | CE2 | Y | |
| - | S370400001A | SOCKET-SIM CARD:SMD,8P | 1 | CN2 | Y | |
| - | S371200035A | SMD_CONNECTOR_AXK500147YG_100PIN | 1 | U5 | Y | |
| - | S3711004123 | WAFER;BOX-HEADER,1R, 8P,1.25mm,SMD | 1 | CN1 | Y | |
| - | JK41-10035A | PCB-GPRS:ER-420EJ,FR-4,2L,T1.6 | 1 | PCB | N | |

# 7-4 SD CARD PCB Layout



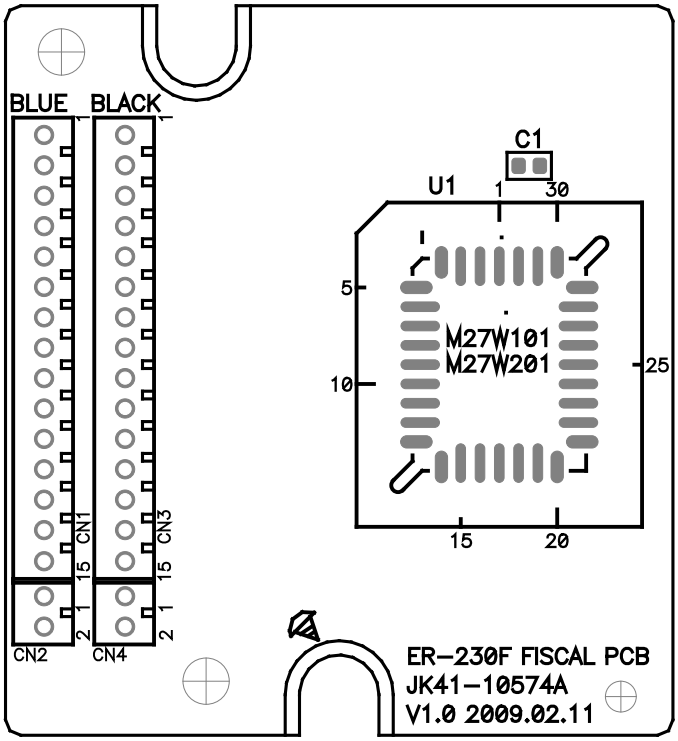

| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| **-** | **JK92-10039A** | **PBA SUB:NR-300,SD CARD** | **1** | **ASSY** | **Y** | |
| - | JK46-00016C | UNIT-SDHC CARD:<br>ER-230EJ,4GB,SANDISK,MLC,CLASS4 | 1 | SD CARD | Y | SD CARD |
| - | JK39-40756D | HARNESS-SD:NR-300/ER-230EJ,10P,220mm | 1 | HARNESS | Y | |
| - | JK70-20122A | IPR-BRKT SD;NEX1,SECC T1.0 | 1 | BRACKET | Y | |
| - | S2204000004 | C-CERAMIC,CHIP:22pF,5%,50V,1608 | 1 | SC1 | N | |
| - | S3711004125 | WAFER;BOX-HEADER,1R,10P,1.25mm,SMD | 1 | SCN1 | Y | |
| - | S3712000060 | CONNECTOR-SD CARD:SMD,12P,RoHS | 1 | SCN2 | Y | |
| - | JK41-10019A | PCB-SD CARD:NR-300,FR-4,2L,T1.6 | 1 | PCB | N | |

# 7-5 MICRO SD CARD PCB Layout




| No | Part-No | Description / Specification | Q'TY | Design-location | Serviceable | Remark |
|---|---|---|---|---|---|---|
| **-** | **JK92-10139A** | **PBA MICRO-SD:NR-300F,W/O STARCAP** | **1** | **MICRO SD B'D** | **Y** | |
| - | JK39-40756B | HARNESS-SD:ER-230,10P,150mm,AT TAPE | 1 | SCN1 (SD HARNESS) | Y | |
| - | S110900004A | UNIT-MICRO SD CARD:SDHC,4GB,SANDISK,CLASS4,MLC | 1 | MICRO SD 4GB | Y | |
| - | S3711004125 | WAFER;BOX-HEADER,1R,10P,1.25mm,SMD | 1 | SCN1 | Y | |
| - | S371200009A | CONNECTOR-MICRO SD:9P,PUSH PUSH | 1 | SCN2 | Y | |
| - | JK41-10935A | PCB-MICRO SD:NR-300(SER),FR-4,2L,T1.6mm | 1 | PCB | N | |

# 7-6 Fiscal PCB Layout



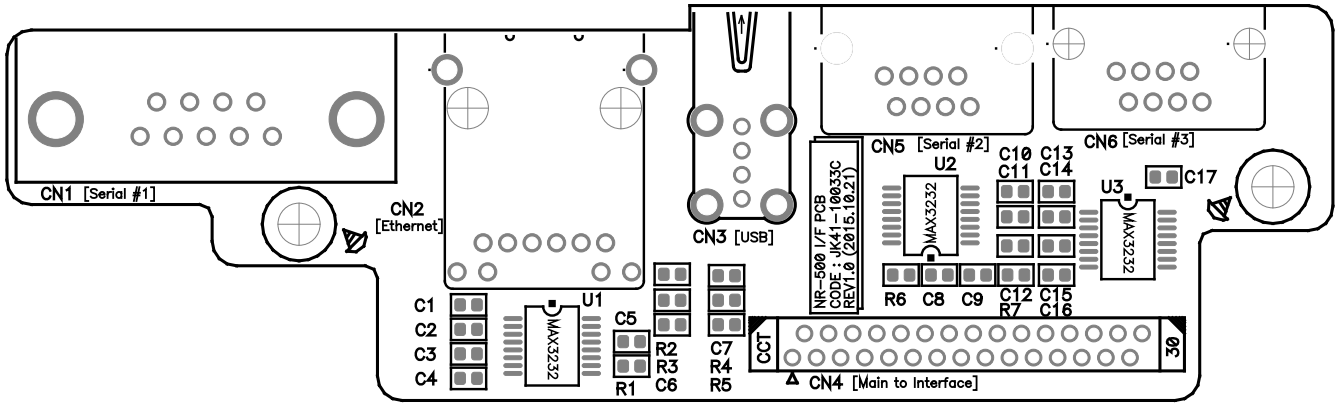

### 7-6-1 Memory Size = 2MBITs

| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| - | **JK92-01284K** | **PBA SUB-FISCAL:ER-230,34P,2MBIT,3.3V** | **1** | **ASS'Y** | **N** | |
| - | S110200001A | IC-OTP ROM:AT27LV020A-12JU,256Kx8BIT | 1 | U1 (2MBITs) | Y | |
| - | JK39-40771A | HARNESS-FISCAL:34P,130mm,2mm,AT TAPE | 1 | HARNESS | Y | |
| - | S2204000028 | C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,1608 | 1 | C1 | N | |
| - | JK41-10574A | PCB-FISCAL:PLCC32,34P,FR-4,2L,BOARD-IN | 1 | PCB | N | |

### 7-6-2 Memory Size = 4MBITs

| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| - | **JK92-10037A** | **PBA SUB-FISCAL:ER-230,34P,4MBIT,3.3V** | **1** | **ASS'Y** | **Y** | |
| - | S110200002A | IC-OTP ROM:AT27LV040A-90JU,512Kx8BIT | 1 | U1 (4MBITs) | Y | |
| - | JK39-40771A | HARNESS-FISCAL:34P,130mm,2mm,AT TAPE | 1 | HARNESS | Y | |
| - | S2204000028 | C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,1608 | 1 | C1 | N | |
| - | JK41-10574A | PCB-FISCAL:PLCC32,34P,FR-4,2L,BOARD-IN | 1 | PCB | N | |

# 7-7 Interface PCB Layout




## 7-7-1 NEW SERIAL 2-PORT (Jan. 2016~) Max. 3-PORT

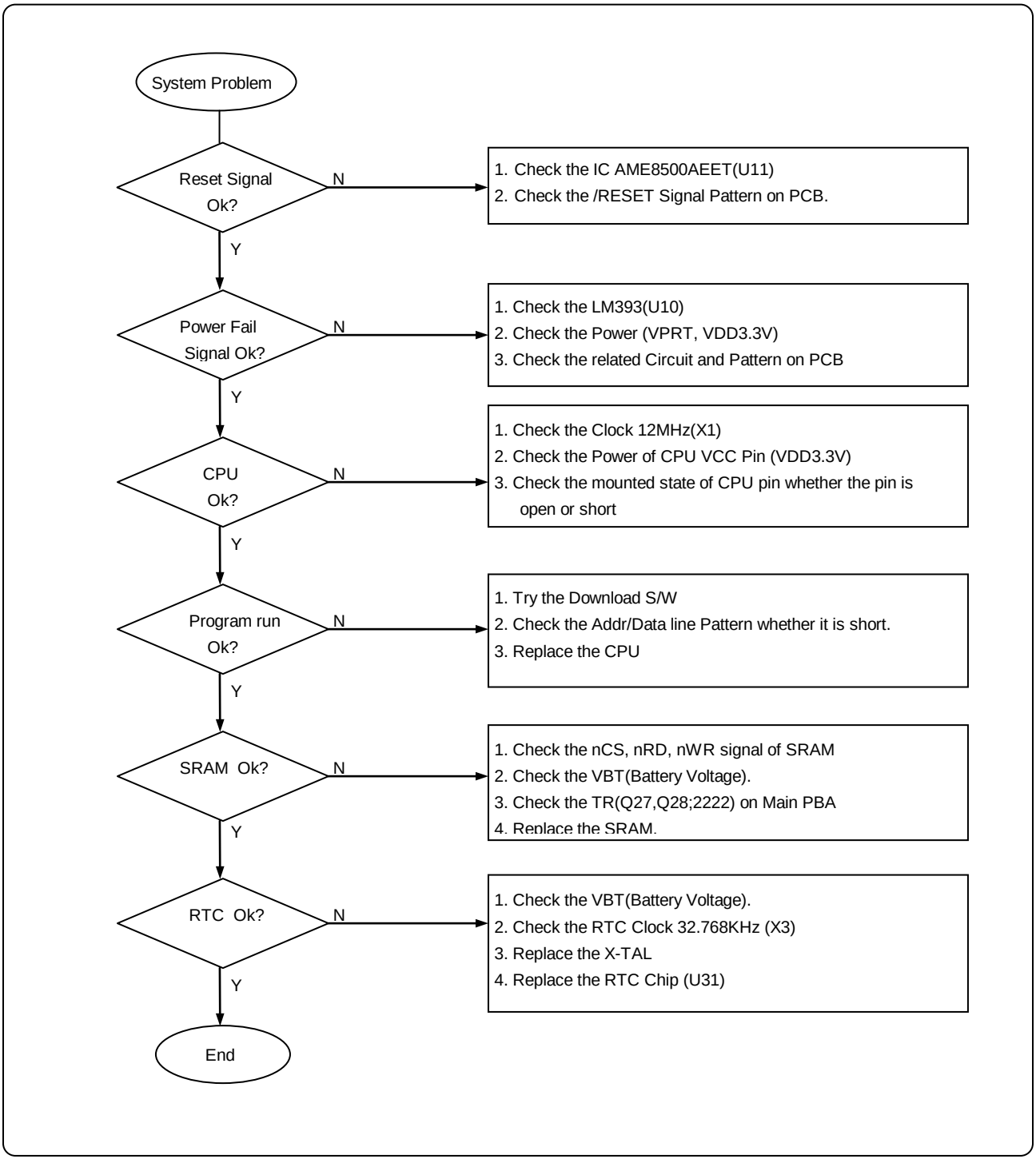
| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| **-** | **JK92-10059Q** | **PBA INTERFACE:NR-500(3),232*2,W/O ETHERNET,SVC** | **1** | **ASSY** | **Y** | |
| - | S3701000232 | CONNECTOR-DSUB:9P,2R,FEMALE,ANGLE,AUF | 1 | CN1 | Y | |
| - | S3708001395 | CONNECTOR-FPC/FFC/PIC:30P,1mm,ST,DIP,TOP | 1 | CN4 | Y | |
| - | S3712000048 | CONNECTOR-USB HOST:USB A TYPE,DIP,AN | 1 | CN3 | Y | |
| - | S3722000212 | JACK-MODULAR:8P/8C,-,N,ANGLE,-,N,GRY,AU5 | 1 | CN5 | Y | |
| - | S1006000134 | IC-DRIVER/RECEIVER:3232,TSSOP,16P,26MIL | 2 | U1,U2 | Y | |
| - | S2008000044 | R-CHIP:10KOHM,1%,1/10W,1608,1% | 2 | R1,R6 | N | |
| - | S2204000028 | C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,1608 | 10 | C1,C2,C3,C4,C5, C8,C9,C10,C11,C12 | N | |
| - | JK41-10033C | PCB-INTERFACE&JOINT:NR-500,3SERIAL,FR-4,2L,T1.6 | 1 | PCB | N | |

## 7-7-2 OLD SERIAL 2-PORT (~Dec. 2015) Max. 2-PORT (SVC only)

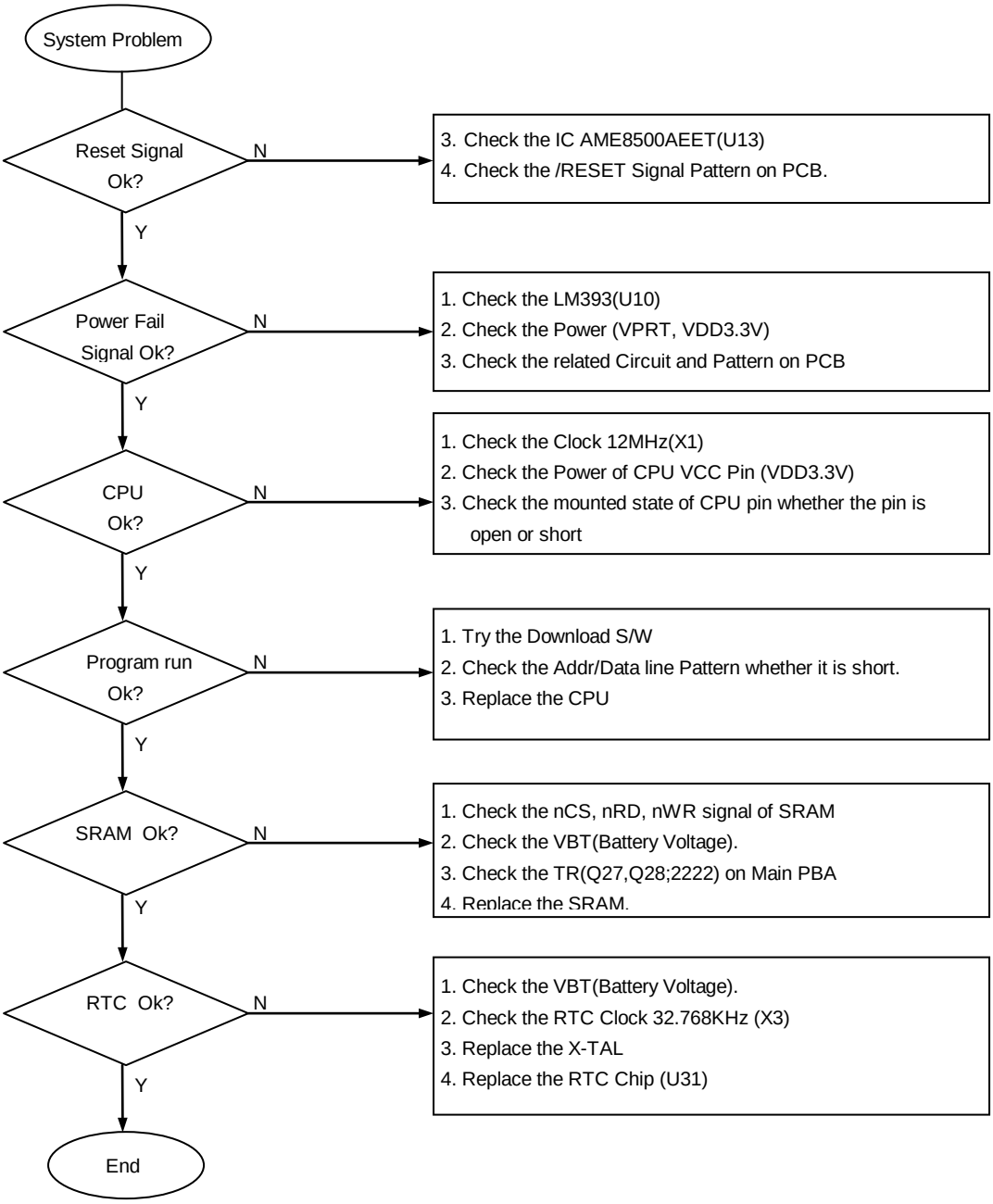
| No | Part-No | Description / Specification | Q'TY | Design Location | Serviceable | Remarks |
|---|---|---|---|---|---|---|
| **-** | **JK92-10059K** | **PBA INTERFACE:NR-500(2),232*2,W/O ETHERNET,SVC** | **1** | **ASSY** | **Y** | |
| - | S3701000232 | CONNECTOR-DSUB:9P,2R,FEMALE,ANGLE,AUF | 1 | CN4 | Y | |
| - | S3708001395 | CONNECTOR-FPC/FFC/PIC:30P,1mm,ST,DIP,TOP | 1 | CN1 | Y | |
| - | S3712000048 | CONNECTOR-USB HOST:USB A TYPE,DIP,AN | 1 | CN3 | Y | |
| - | S3712000051 | CONNECTOR-USB;B-TYPE,4P,2R,AN,DIP | 1 | CN5 | Y | |
| - | S3722000212 | JACK-MODULAR:8P/8C,-,N,ANGLE,-,N,GRY,AU5 | 1 | CN6 | Y | |
| - | JK41-10033B | PCB-INTERFACE:NR-500,FR-4,2L,T1.6 | 1 | PCB | N | |

# 8 Troubleshooting

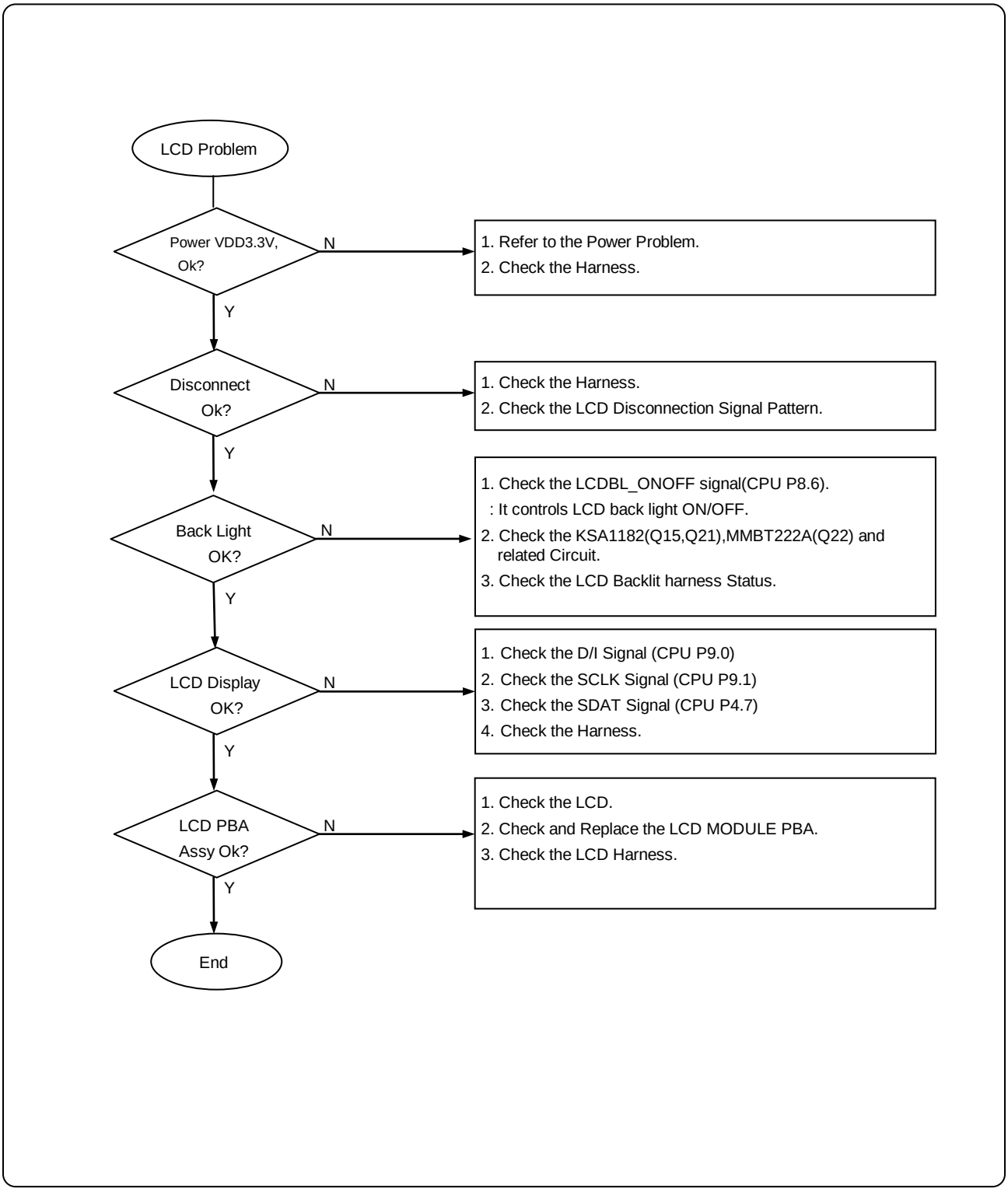
## 8-1. Power Problem



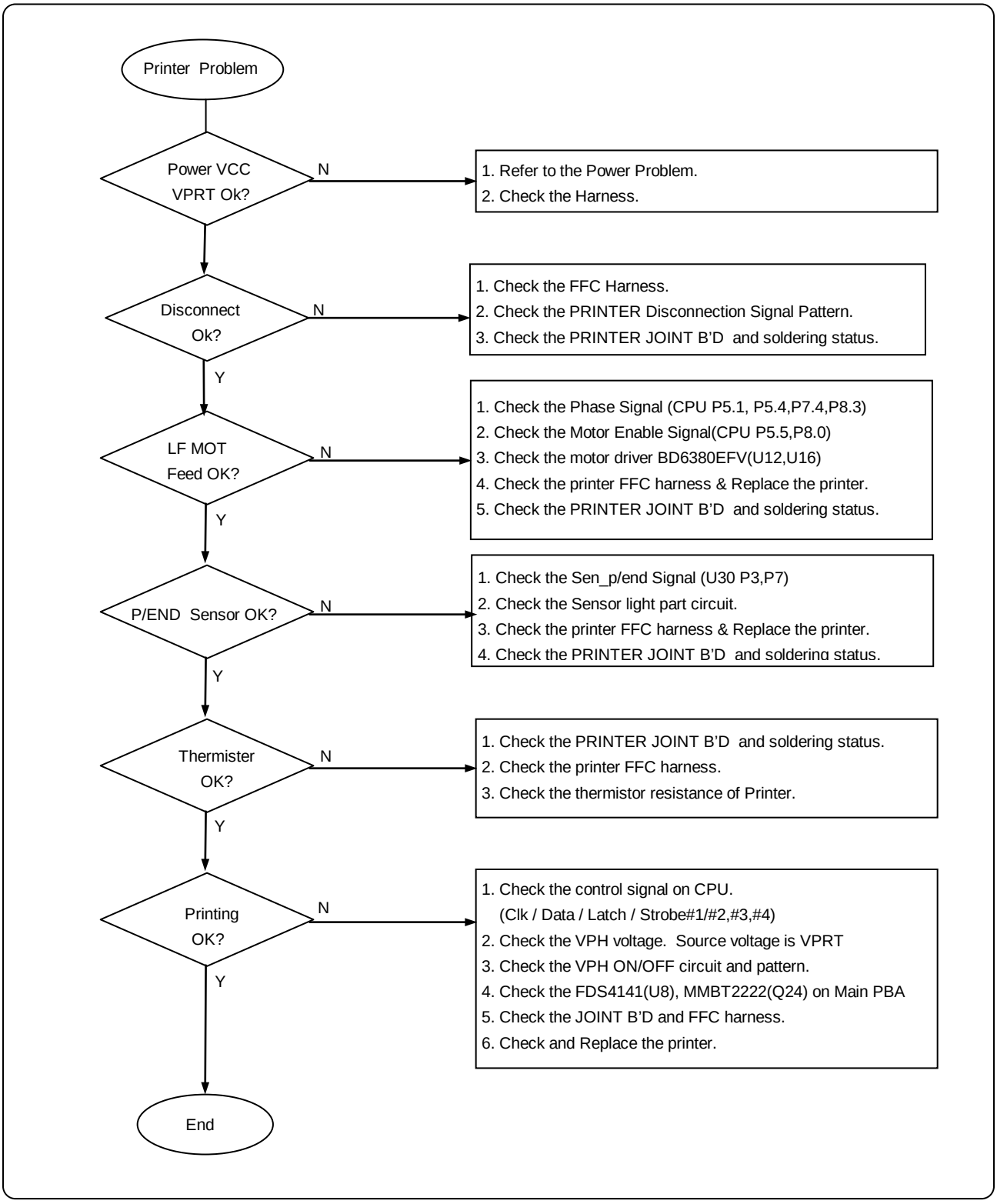
# 8-2 System Problem



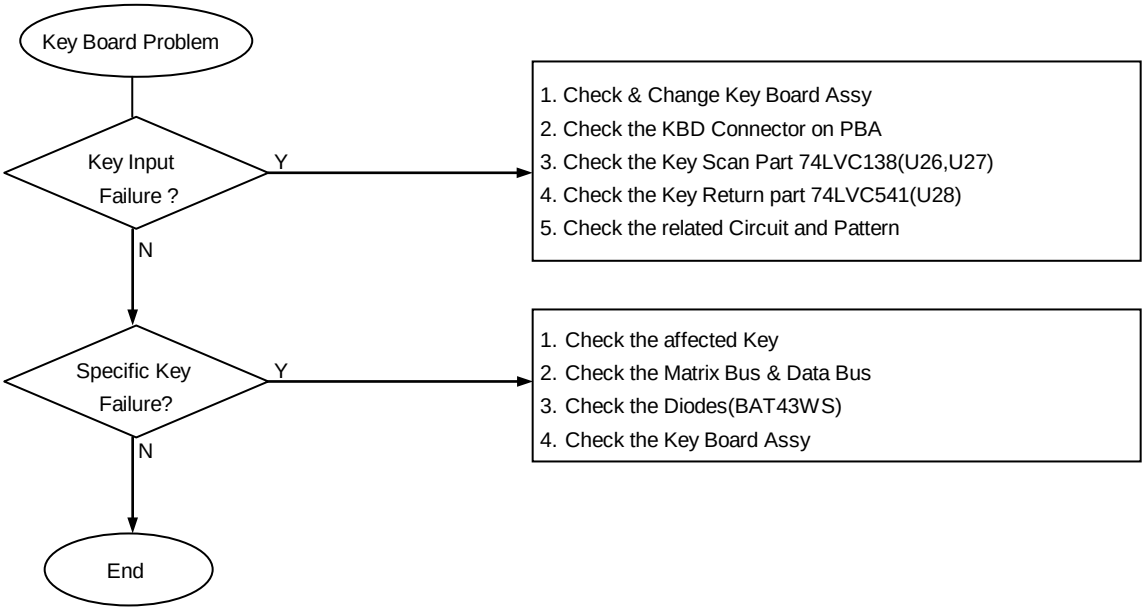
# 8-3 LCD Display Problem



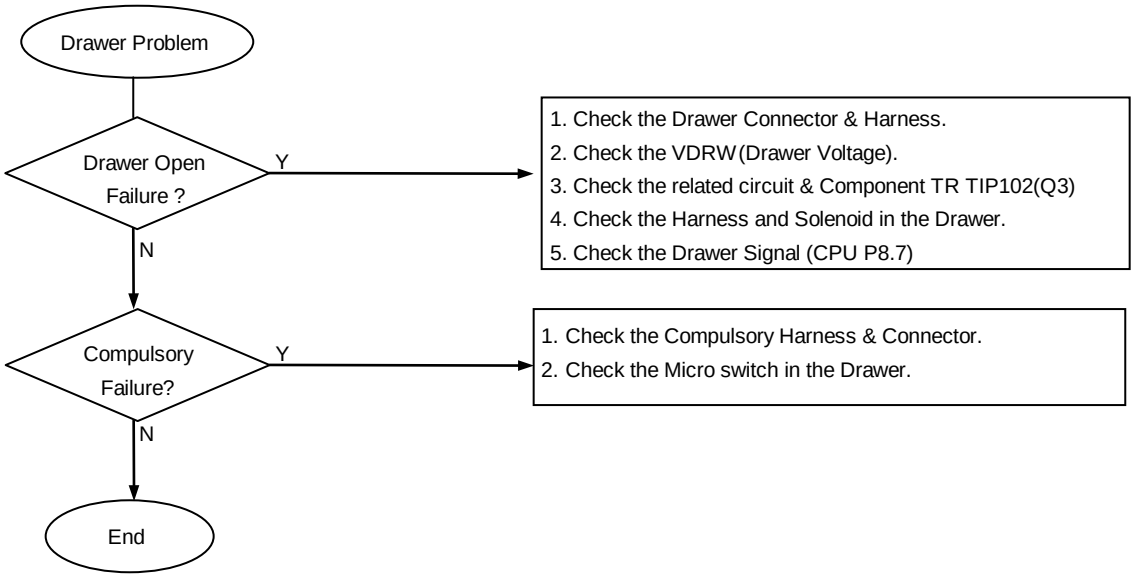
# 8-4 Thermal Printer Problem



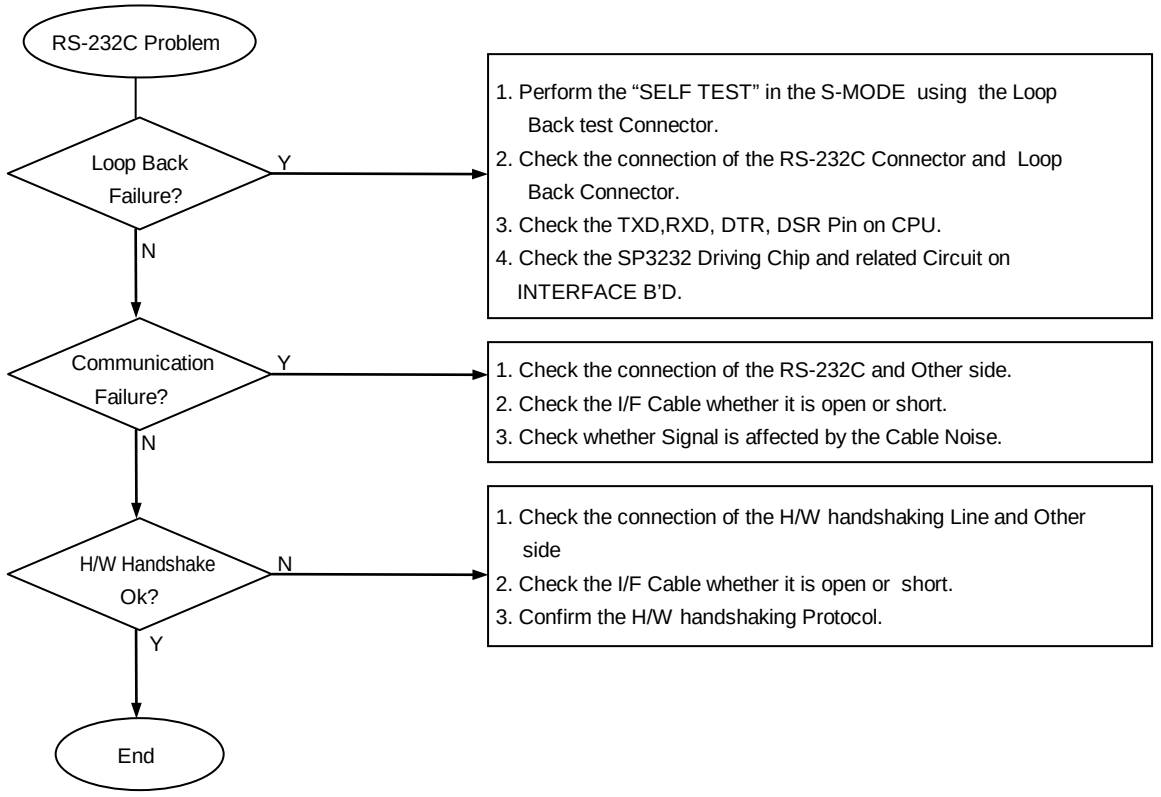
# 8-5 Key Board Problem



# 8-6 Drawer Problem

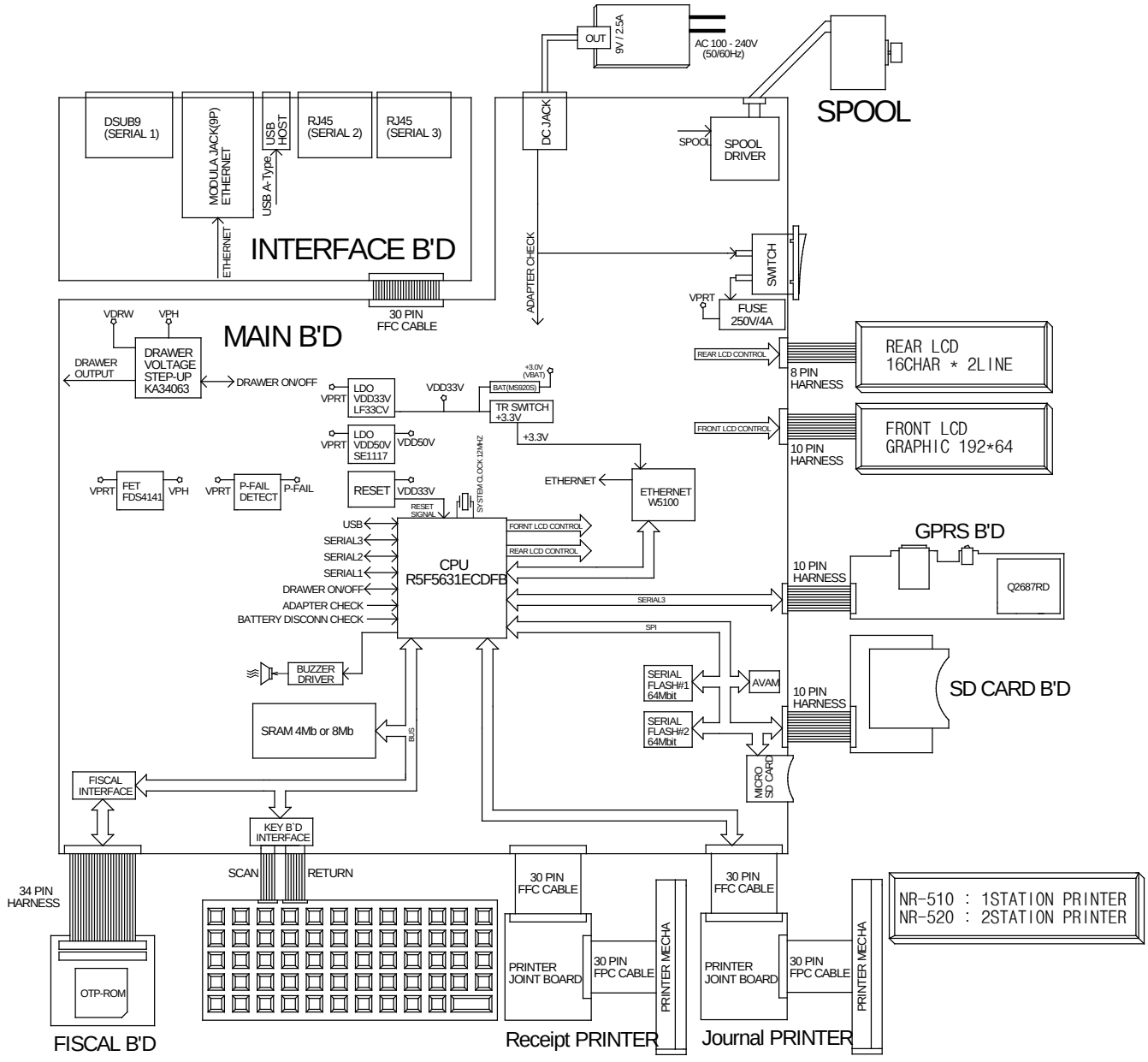


# 8-7 RS-232C Serial Communication Problem



# MEMO

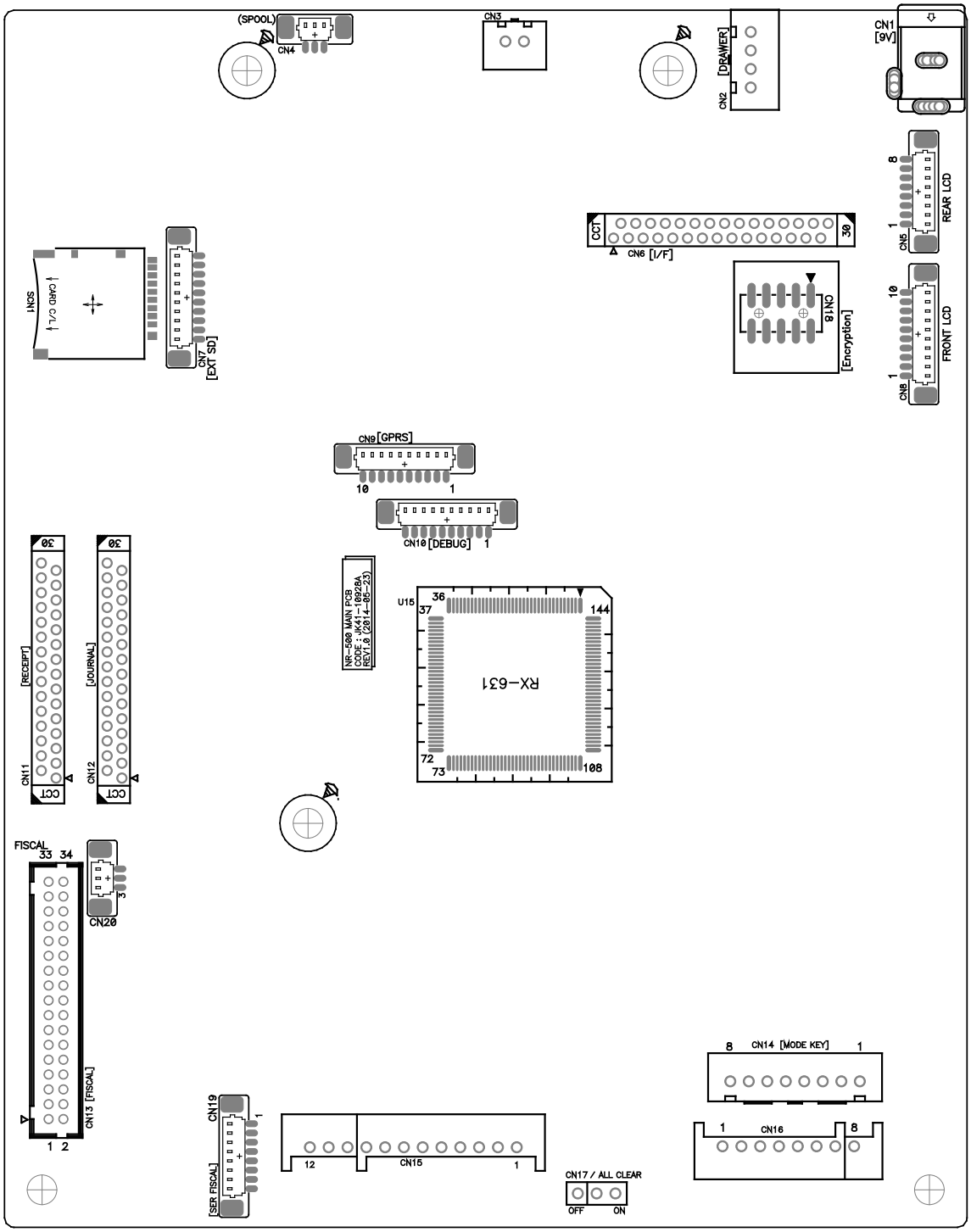
# 9 Block Diagram



# MEMO

# 10 Wiring Diagram

## 10-1 Wiring Pin Connection



| No. | Signal Name |
|---|---|
| **CN4 = Spool motor** | |
| 1 | SPOOL_MOT |
| 2 | NC |
| 3 | VPRT |
| | |
| **CN1 = DC Jack** | |
| 1 | +9V (VADP) |
| 2 | GND |
| 3 | GND |
| **CN2 = Drawer** | |
| 1 | GND |
| 2 | SEN_DWRCOMP |
| 3 | DRAWER OUTPUT |
| 4 | +24V (VDRW) |
| **CN5 = Rear display** | |
| 1 | GND |
| 2 | REAR_LCD_RESET |
| 3 | 2LINE_REAR_LCD_EN |
| 4 | LCD_D/I |
| 5 | LCD_SDAT |
| 6 | LCD_SCLK |
| 7 | VLCD (3.3V) |
| 8 | VDD33V |
| **CN6 = Interface Connector** | |
| 1 | NC |
| 2 | NC |
| 3 | NC |
| 4 | NC |
| 5 | VSERIAL (+5V) |
| 6 | VSERIAL (+5V) |
| 7 | NC |
| 8 | GND |
| 9 | TX+ |
| 10 | TX- |
| 11 | GND |
| 12 | RX+ |
| 13 | RX- |
| 14 | GND |
| 15 | SPD_LED |
| 16 | LINK_LED |
| 17 | +3.3V |
| 18 | NC |
| 19 | DSR0_IN |
| 20 | TXD0_OUT |
| 21 | RXD0_IN |
| 22 | DTR0_OUT |
| 23 | DSR1_IN |
| 24 | TXD1_OUT |
| 25 | RXD1_IN |
| 26 | DTR1_OUT |
| 27 | VUSB |
| 28 | GND |
| 29 | USB_DM / USB_DRPD |
| 30 | USB_DP / USB_DPRPD / USB_DPUPE |
| | |
| | |
| | |

| No. | Signal Name |
|---|---|
| **CN8 = Front display** | |
| 1 | GND |
| 2 | NC |
| 3 | GND |
| 4 | FRONT_LCD_RESET |
| 5 | 2LINE_FRONT_LCD_EN |
| 6 | LCD_D/I |
| 7 | LCD_SDAT |
| 8 | LCD_SCLK |
| 9 | VLCD (+3.3V) |
| 10 | VDD33V |
| **CN7 = SD card Board** | |
| 1 | GND |
| 2 | SDC_/CD2 |
| 3 | - |
| 4 | - |
| 5 | SPI1_DI |
| 6 | SPI1_CLK |
| 7 | VSDCARD2 (+3.3V) |
| 8 | SPI1_DO |
| 9 | SPI1_CS_OUTSD |
| 10 | - |
| **CN9 = GPRS Board** | |
| 1 | DTR |
| 2 | RI |
| 3 | VPRT |
| 4 | GND |
| 5 | TRSTN |
| 6 | TDI (RXD) |
| 7 | TDO (TXD) |
| 8 | TMS |
| 9 | GND |
| 10 | GND |
| **CN10 = Emulator Connector** | |
| 1 | VDD33V |
| 2 | EMLE |
| 3 | NC |
| 4 | /RESET |
| 5 | TRSTN |
| 6 | TMS |
| 7 | TDI |
| 8 | TCK |
| 9 | TDO |
| 10 | GND |
| **CN11 / CN12 = Printer Connector** | |
| 1 | TPH_STB(J)# |
| 2 | TPH_STB(J)#1 |
| 3 | SEN_THERMIST_IN |
| 4 | TPH_STB(R)#2 |
| 5 | TPH_STB(R)#1 |
| 6 | TPH_LAT |
| 7 | SEN_PEND_2INCH |
| 8 | SEN_PRTDISCON |
| 9 | SEN_PEND_PS |
| | |
| | |
| | |

| No. | Signal Name |
|---|---|
| **CN11 = Printer Connector** | |
| 10 | TPH_CLK |
| 11 | TPH_DATA |
| 12 | VPH |
| 13 | OTOUT_B |
| 14 | VPH |
| 15 | OTOUT_/B |
| 16 | VPH |
| 17 | OTOUT_/A |
| 18 | VPH |
| 19 | OTOUT_A |
| 20 | VPH |
| 21 | SEN_COVEROPEN_IN |
| 22 | VPH |
| 23 | VDD33V (+3.3V) |
| 24 | GND |
| 25 | GND |
| 26 | GND |
| 27 | GND |
| 28 | GND |
| 29 | GND |
| 30 | GND |
| **CN13 = Fiscal board Connector** | |
| 1 | EPROM VCC |
| 2 | FISEPROM_PGM |
| 3 | GND |
| 4 | FISEPROM_OE |
| 5 | FD(2) |
| 6 | FD(1) |
| 7 | FD(7) |
| 8 | FD(0) |
| 9 | FD(6) |
| 10 | FA(11) |
| 11 | FD(5) |
| 12 | FA(10) |
| 13 | FD(4) |
| 14 | FA(9) |
| 15 | FD(3) |
| 16 | FA(8) |
| 17 | EPROM VPP (+12.75V) |
| 18 | FA(12) |
| 19 | EPROM VCC |
| 20 | FA(13) |
| 21 | GND |
| 22 | FA(14) |
| 23 | FISEPROM_CE |
| 24 | FA(15) |
| 25 | FA(4) |
| 26 | FA(0) |
| 27 | FA(5) |
| 28 | FA(1) |
| 29 | FA(6) |
| 30 | FA(2) |
| 31 | FA(7) |
| 32 | FA(3) |
| 33 | FA(17) |
| 34 | FA(16) |

| No. | Signal Name | No. | Signal Name | No. | Signal Name |
|---|---|---|---|---|---|
| **CN14 = MODE Switch Connector** | | **CN15 = KEY Board (Scan)** | | **CN17 = All clear Switch** | |
| 1 | MODESCAN_COMMON | 1 | SCAN-1 | 1 | NC |
| 2 | RETURN-7 | 2 | SCAN-2 | 2 | ALL_CLEAR |
| 3 | RETURN-6 | 3 | SCAN-3 | 3 | GND |
| 4 | RETURN-5 | 4 | SCAN-4 | **CN18 = Encryption Connector** | |
| 5 | RETURN-4 | 5 | SCAN-5 | 1 | VAULT_SDA&GPRS_TXD |
| 6 | RETURN-3 | 6 | SCAN-6 | 2 | VAULT_SDA&GPRS_TXD |
| 7 | RETURN-2 | 7 | SCAN-7 | 3 | VAULT_SCL&GPRS_RXD |
| 8 | RETURN-1 | 8 | SCAN-8 | 4 | VAULT_SCL&GPRS_RXD |
| **CN3 = Power Switch Connector** | | 9 | SCAN-9 | 5 | GND |
| 1 | VADAP(9V) | 10 | SCAN-10 | 6 | GND |
| 2 | VPRT | 11 | SCAN-11 | 7 | EXT_RESET |
| | | 12 | SCAN-12 | 8 | EXT_RESET |
| | | **CN16 = KEY Board (Return)** | | 9 | VDD33V |
| | | 1 | RETURN-1 | 10 | VDD33V |
| | | 2 | RETURN-2 | **CN19 = Flash memory Connector** | |
| | | 3 | RETURN-3 | 1 | VDD33V |
| | | 4 | RETURN-4 | 2 | SPI0_SF_CS1 |
| | | 5 | RETURN-5 | 3 | SPI1_DO |
| | | 6 | RETURN-6 | 4 | SPI1_CLK |
| | | 7 | RETURN-7 | 5 | SPI1_DI |
| | | 8 | RETURN-8 | 6 | SERIAL FLASH WP (Pull up) |
| | | | | 7 | SERIAL FLASH HOLD (Pull up) |
| | | | | 8 | GND |
| | | | | **CN20 = Power fail Connector** | |
| | | | | 1 | VDD33V |
| | | | | 2 | GND |
| | | | | 3 | Not connection |

# MEMO

# 11 Schematic Diagrams

## [ Schematics Sheet Content ]


**1. Main PCB Schematics.**

1) CPU Block ---------- 11-2
2) Memory, SD, MICRO SD Block ---------- 11-3
3) Key Scan, Buzzer, Battery Block ---------- 11-4
4) Drawer, USB Block ---------- 11-5
5) LCD Display Block ---------- 11-6
6) Printer Block ---------- 11-7
7) Ethernet Controller Block ---------- 11-8
8) Fiscal Logic Block ---------- 11-9
9) Fiscal I/F Block ---------- 11-10
10) Power, Power fail Block ---------- 11-11
11) Adaptor input, VPH Block ---------- 11-12
12) Serial Interface Block ---------- 11-13

**2. Fiscal PCB Schematics.** ---------- 11-14

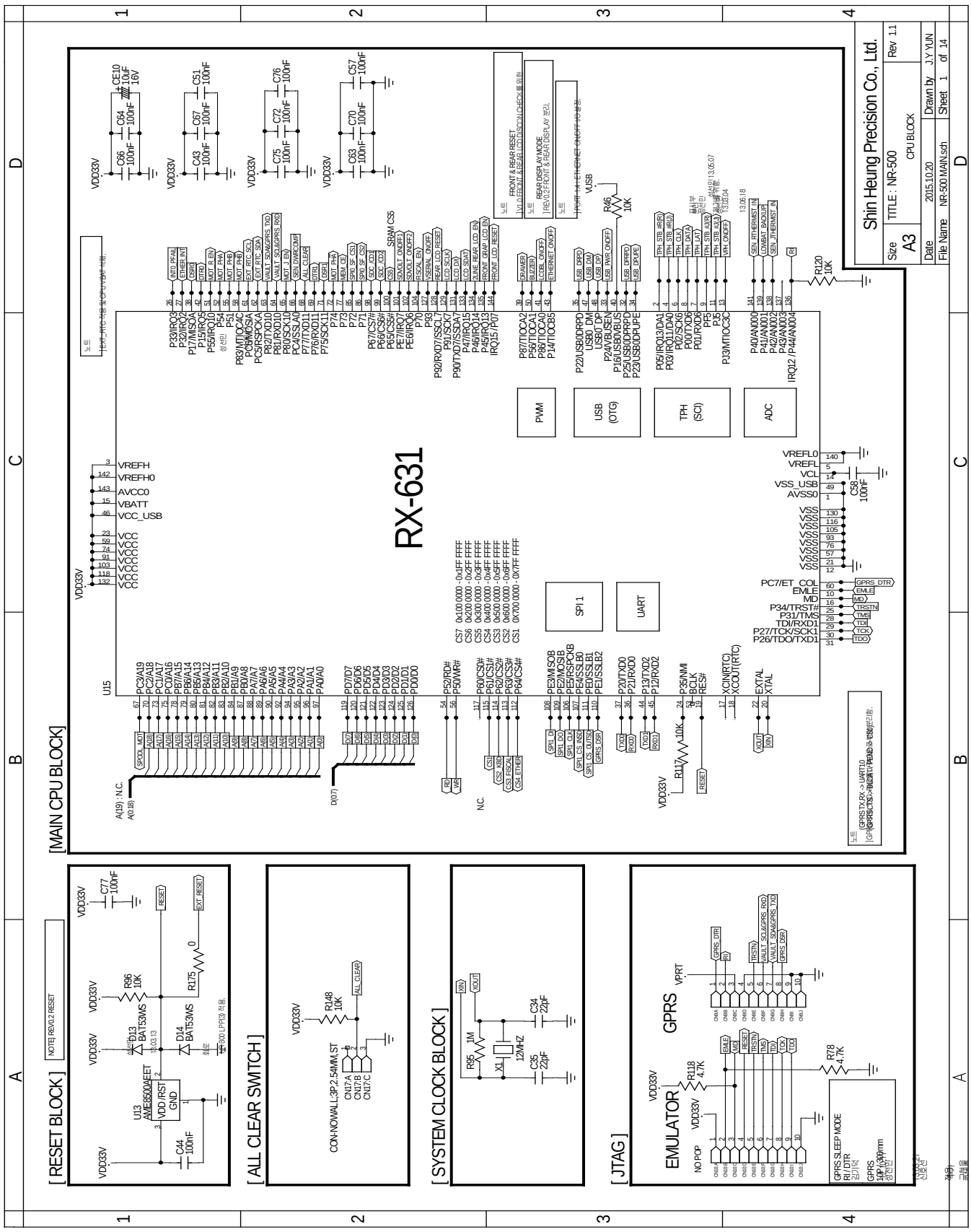
**3. Printer Joint PCB Schematics.** ---------- 11-15

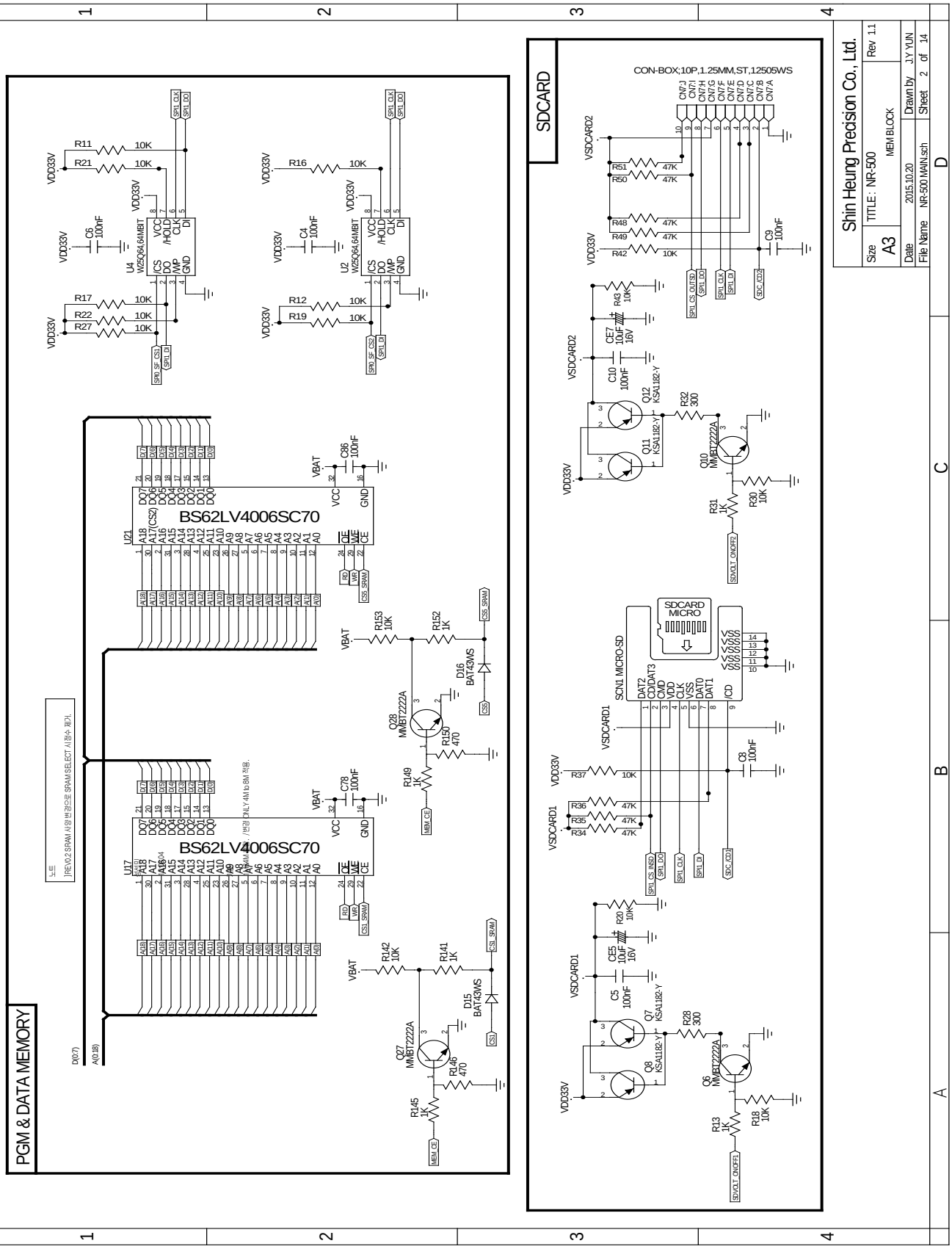
**4. Serial Interface PCB Schematics.** ---------- 11-16

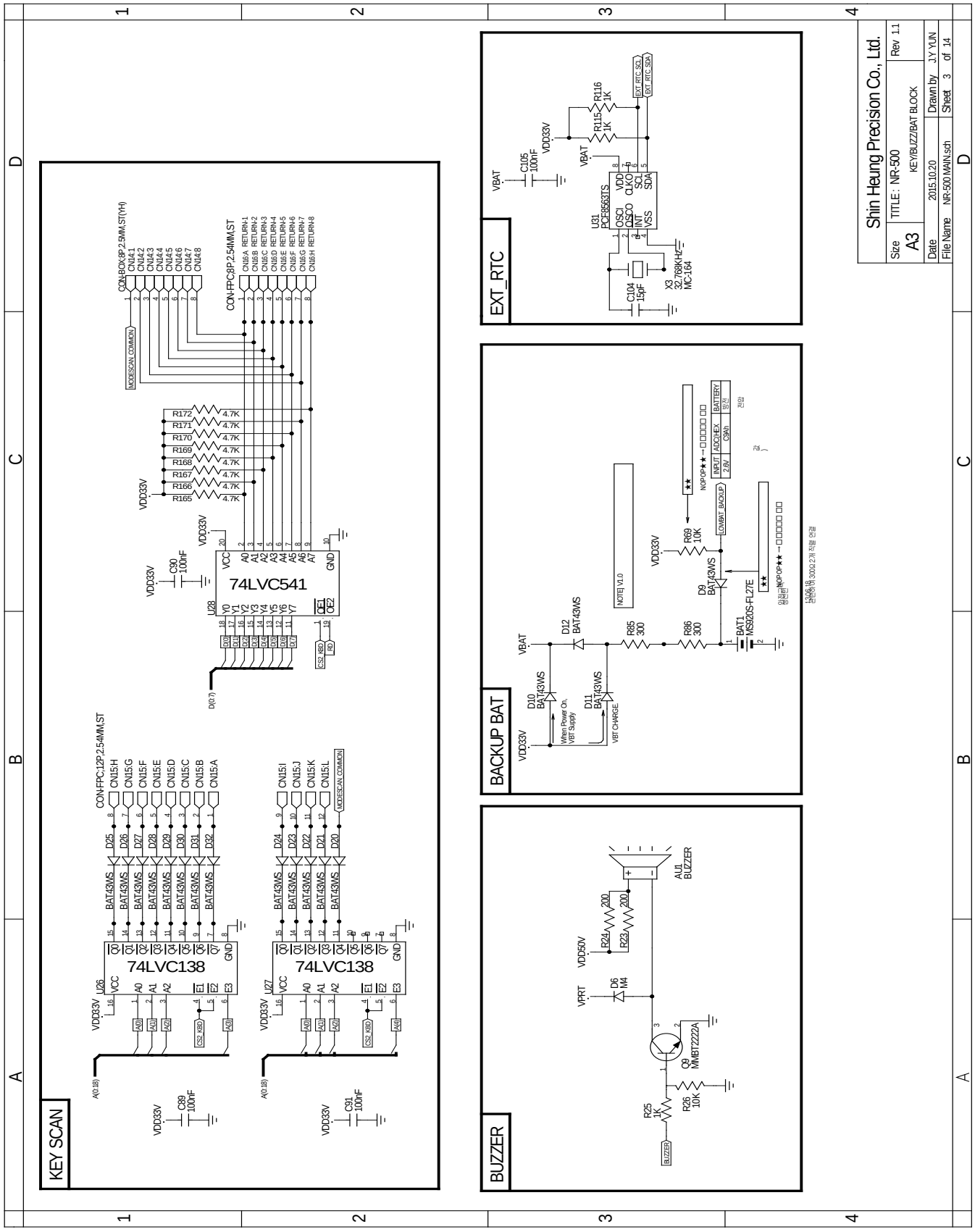
**5. GPRS PCB Schematics.** ---------- 11-17

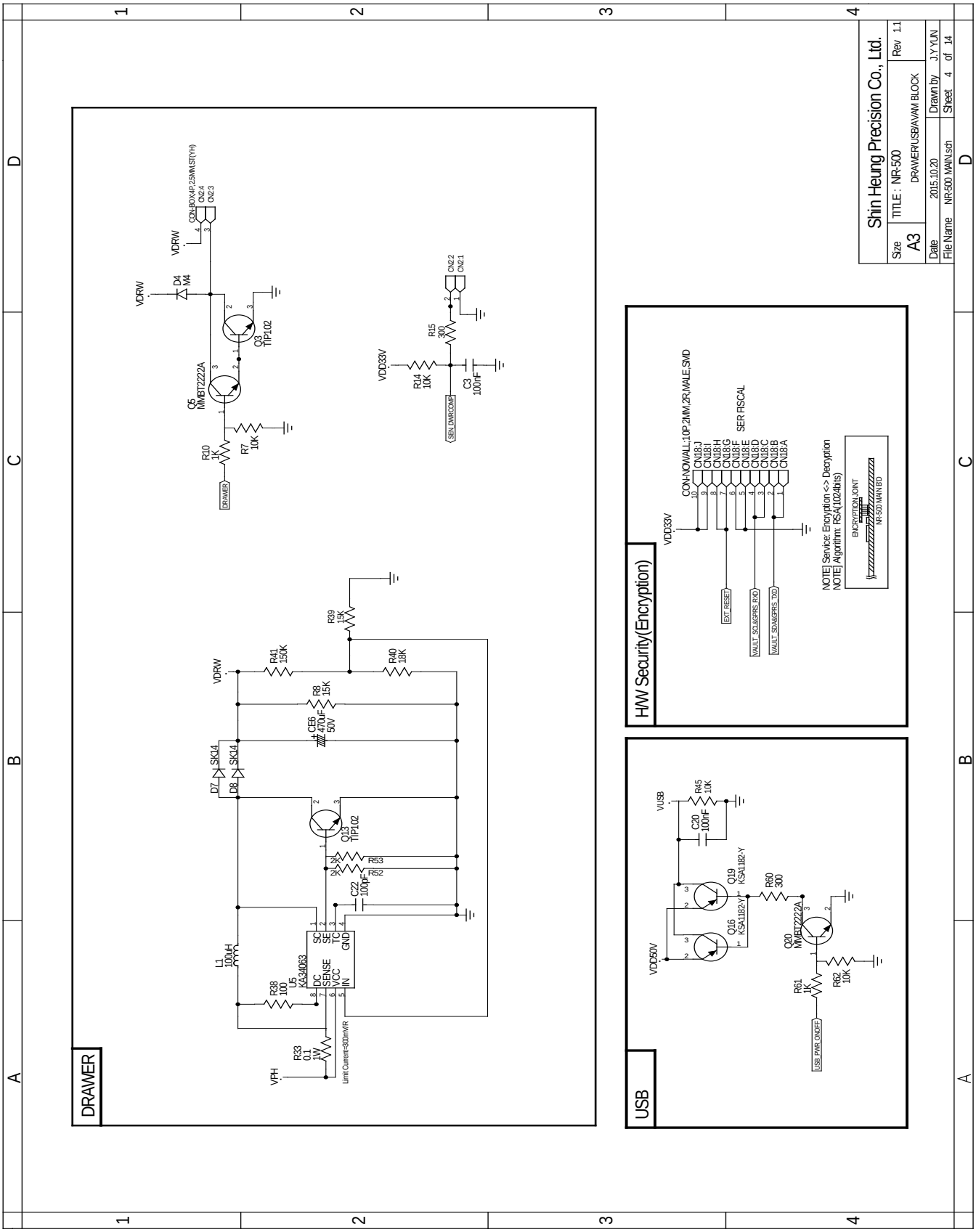
**6. External SD Card PCB Schematics.** ---------- 11-18

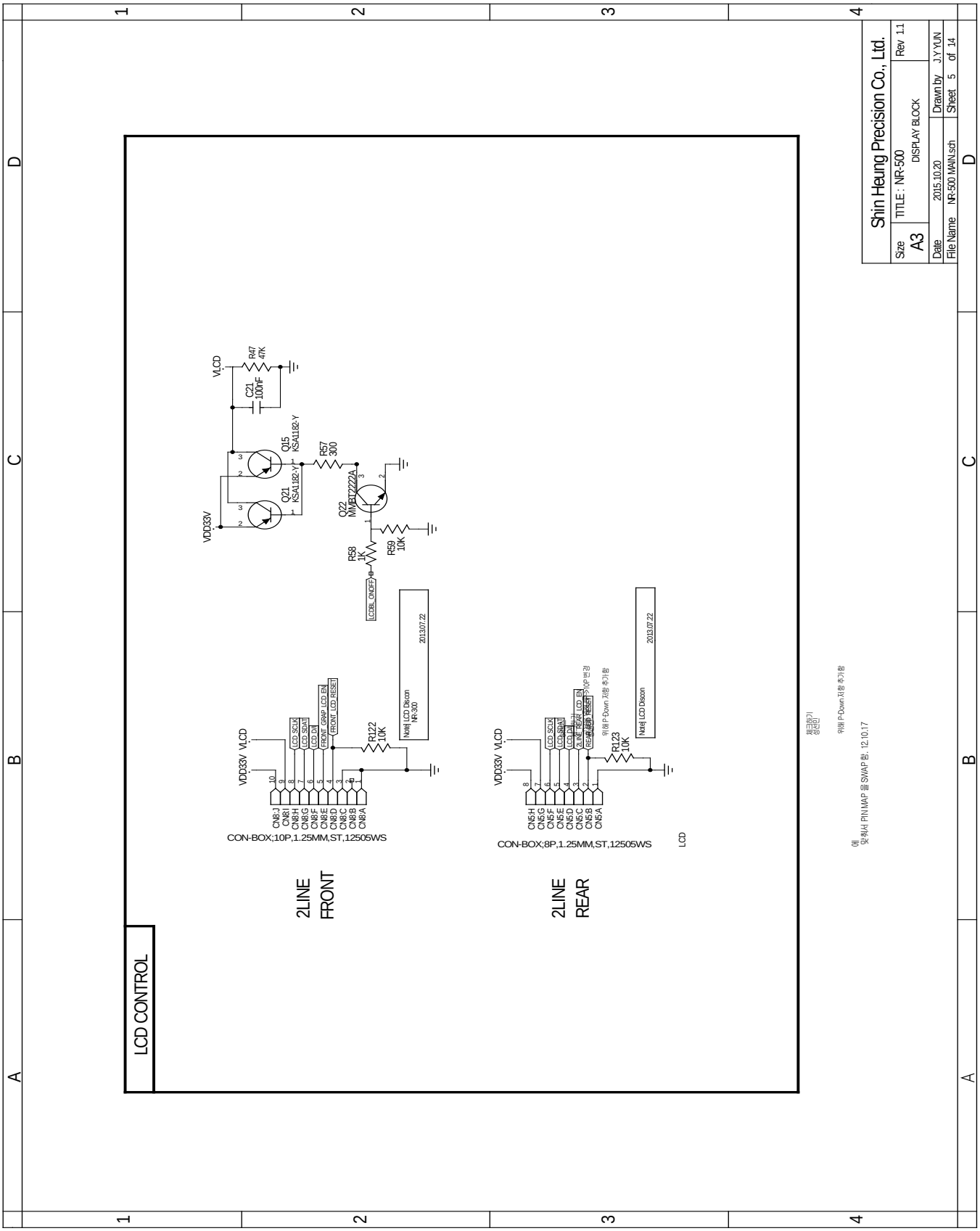
**7. Micro SD Card PCB Schematics.** ---------- 11-19

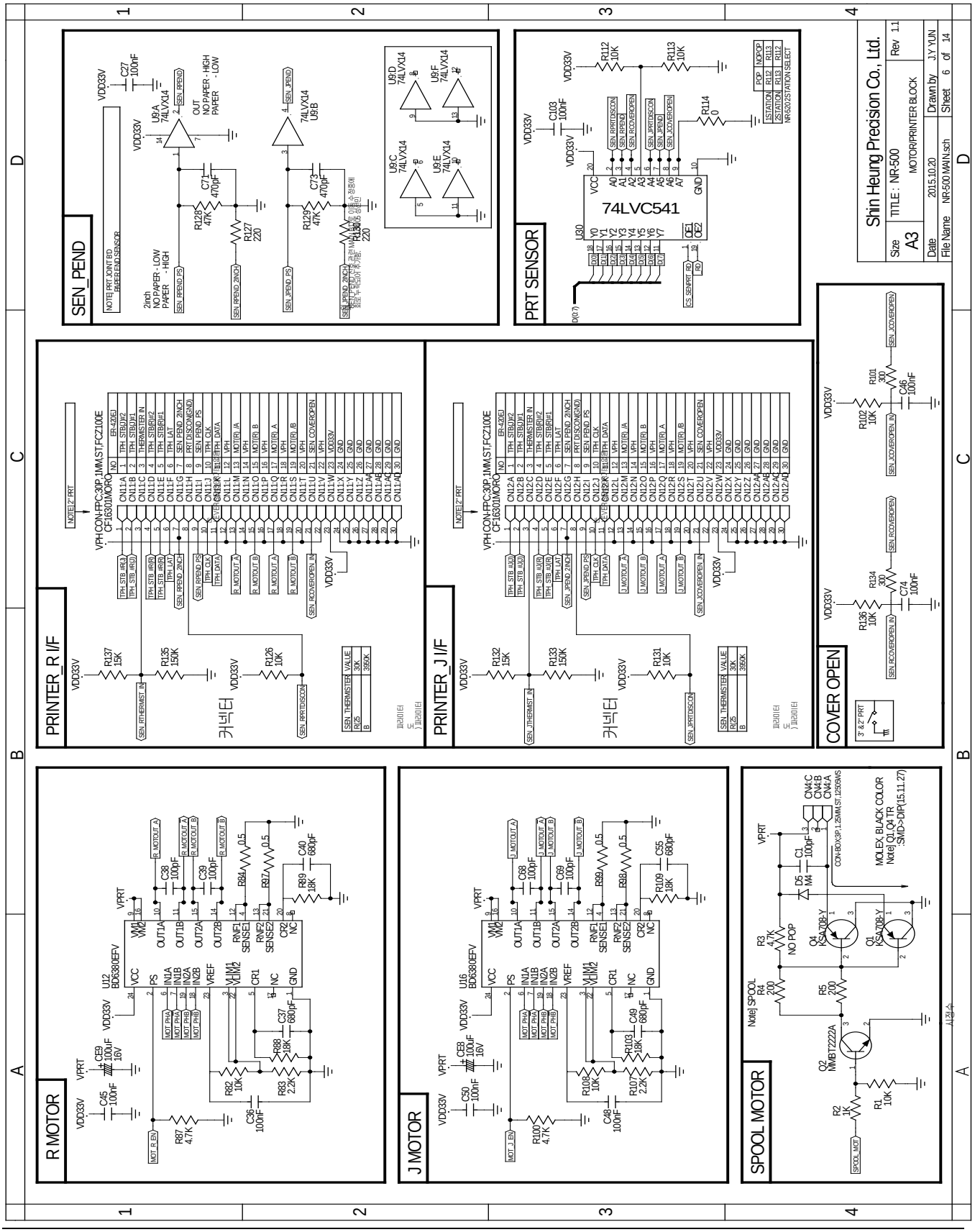

[ MAIN CPU BLOCK ]
RX-631
[ RESET BLOCK ]
[ ALL CLEAR SWITCH ]
[ SYSTEM CLOCK BLOCK ]
[ JTAG ]
EMULATOR
GPRS
Shin Heung Precision Co., Ltd.
TITLE : NR-500
CPU BLOCK
Size A3
Rev 1.1
Drawn by J.Y YUN
Sheet 1 of 14
File Name NR-500 MAIN.sch
PWM
USB (OTG)
TPH (SCI)
ADC
SPI 1
UART

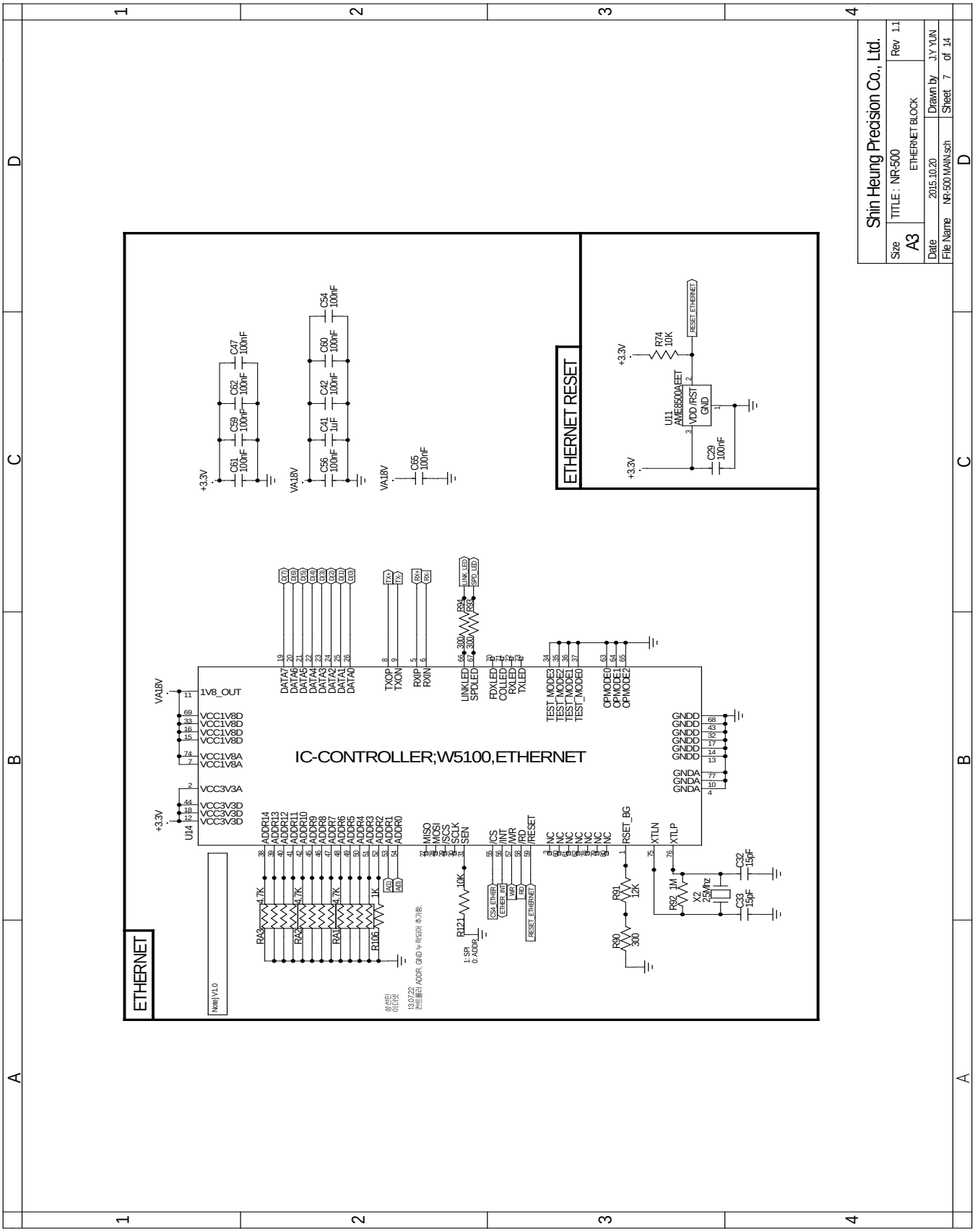

PGM & DATA MEMORY
SDCARD
BS62LV4006SC70
U4 W25Q64.6AMBIT
U2 W25Q64.6AMBIT
U21
U17
SCN1 MICRO-SD
SDCARD MICRO
CON-BOX;10P,1.25MM,ST,12505WS
Shin Heung Precision Co., Ltd.
TITLE : NR-500
MEM BLOCK
Size A3
Rev 1.1
Date 2015.10.20
Drawn by J.Y YUN
File Name NR-500 MAIN.sch
Sheet 2 of 14

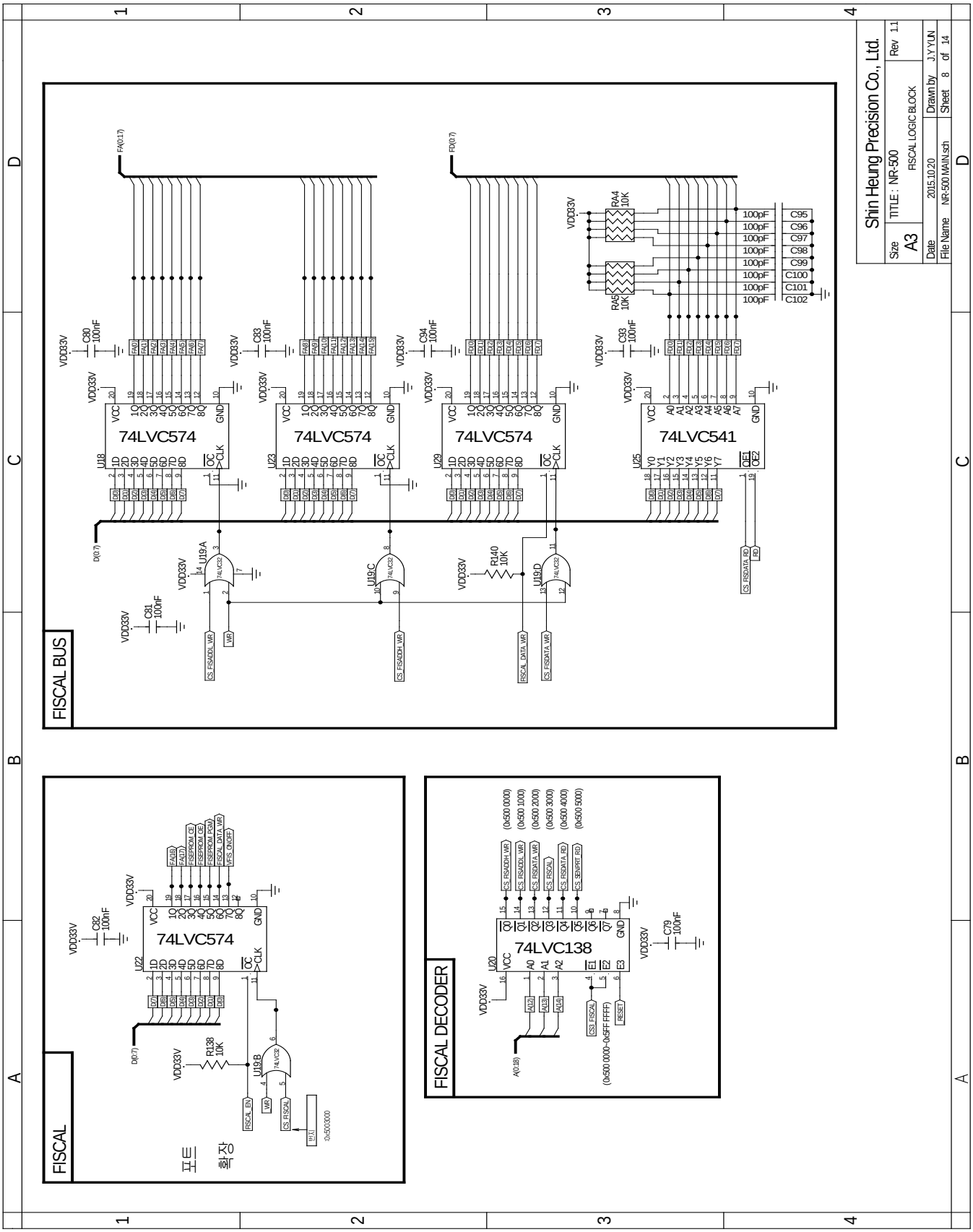

KEY SCAN
BUZZER
BACKUP BAT
EXT_RTC
74LVC138
74LVC541
CON-FPC;12P;2.54MM,ST
CON-FPC;8P;2.54MM,ST
CON-BOX;8P;2.5MM,ST(YH)
BAT43WS
MODESCAN_COMMON
VDD33V
VDD50V
VBAT
VRRT
BUZZER
MMBT2222A
BAT1
MS920S-FL27E
PCF8563TS
MC-164
Shin Heung Precision Co., Ltd.
TITLE : NR-500
KEY/BUZZ/BAT BLOCK
Rev 1.1
A3
2015.10.20
J.Y YUN
NR-500 MAIN.sch
3 of 14

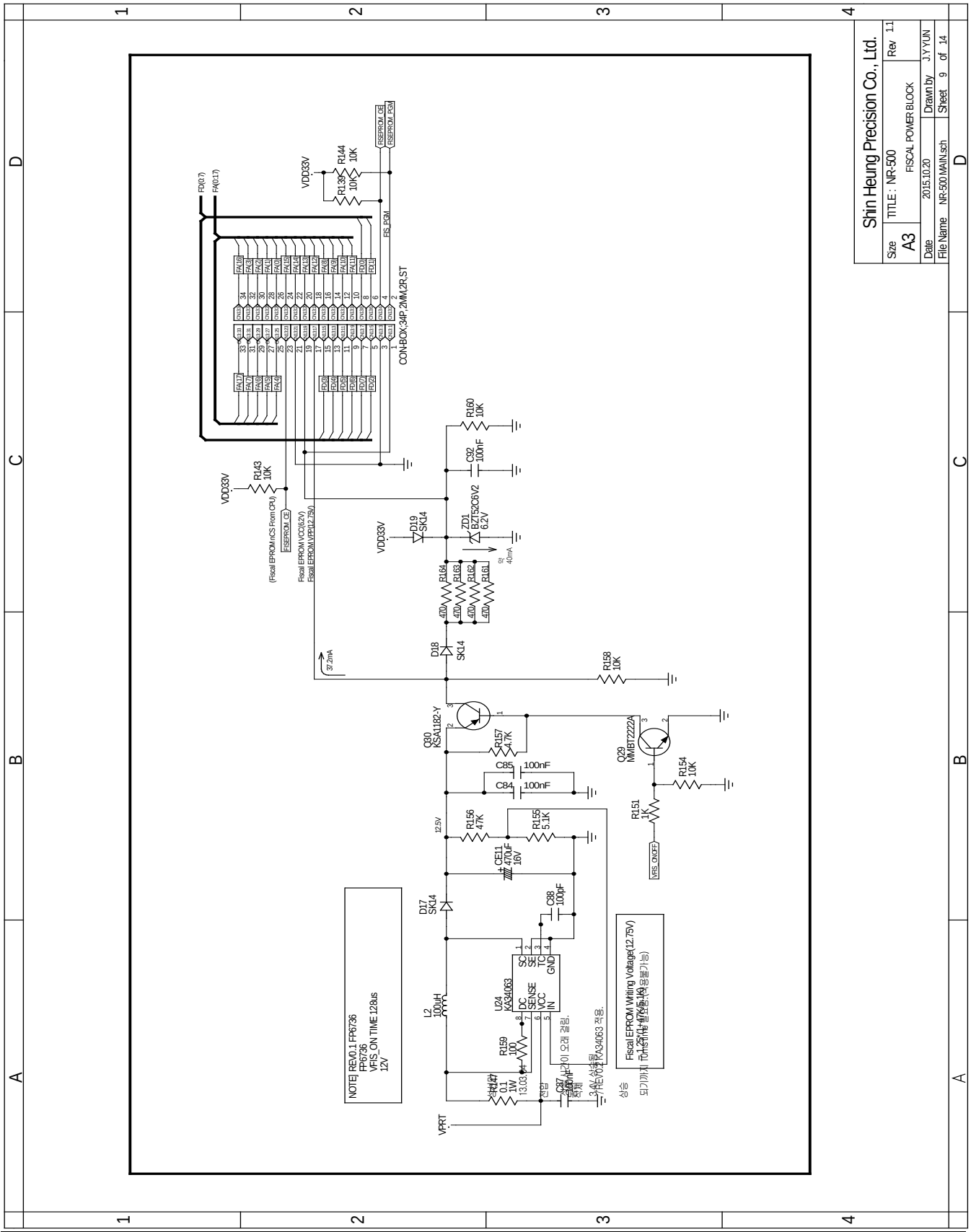

DRAWER
USB
H/W Security(Encryption)
Shin Heung Precision Co., Ltd.
TITLE : NR-500
DRAWER/USB/AVAM BLOCK
Size A3
Rev 1.1
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500 MAIN.sch
Sheet 4 of 14
VDRW
VPH
VDD33V
VDD50V
VUSB
CON-BOX4P-2.5MM,ST(YH)
CN2:4
CN2:3
CN2:2
CN2:1
D4 M4
Q3 TIP102
Q5 MMBT2222A
R10 1K
R7 10K
R14 10K
R15 330
C3 100nF
SEN_DMRCOUNT
DRAWER
R39 15K
R41 150K
R40 18K
R8 15K
CE9 470uF 50V
D7 SK14
D8 SK14
Q13 TIP102
R51 2K
R53
R52
C22 100nF
L1 100uH
U5 KA34063
R38 100
R33 0.1 1W
Limit Current=930mA/R
R45 10K
C20 100nF
Q19 KSA1182-Y
Q16 KSA1182-Y
R60 300
Q20 MMBT2222A
R61 1K
R62 10K
USB_PWR_ONOFF
CON-NOWALL:10P,2MM,2R,MALE,SMD
CN18:J
CN18:I
CN18:H
CN18:G
CN18:F
CN18:E
CN18:D
CN18:C
CN18:B
CN18:A
SER RSCAL
EXT_RESET
VAULT_SCL/GPRS_RXD
VAULT_SDA/GPRS_TXD
NOTE] Service: Encryption <-> Decryption
NOTE] Algorithm: RSA(1024bits)
ENCRYPTION JOINT
NR-500 MAIN BD

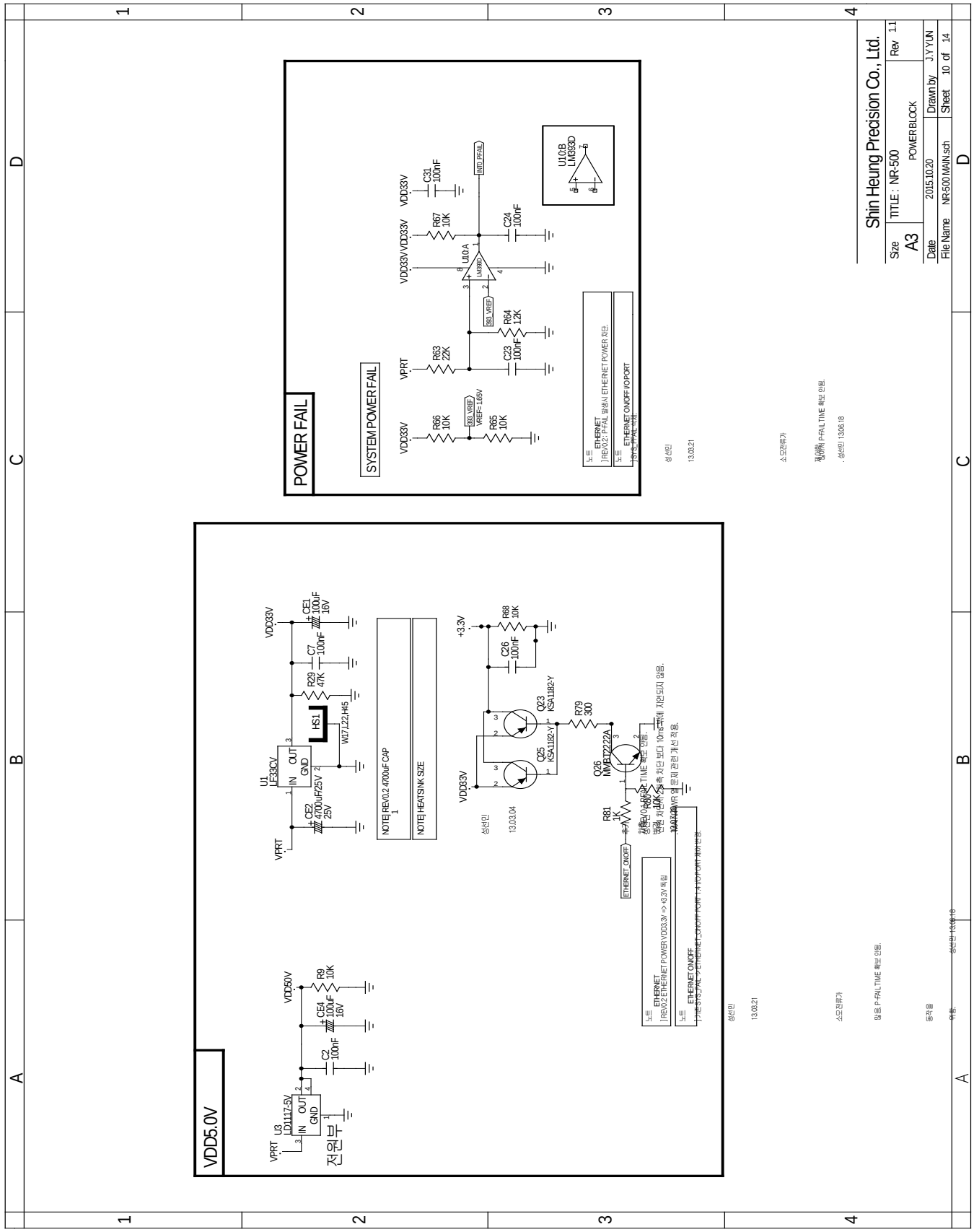

Shin Heung Precision Co., Ltd.
TITLE : NR-500
DISPLAY BLOCK
Size A3
Rev 1.1
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500 MAIN.sch
Sheet 5 of 14
LCD CONTROL
2LINE FRONT
2LINE REAR
CON-BOX;10P,1.25MM,ST,12505WS
CON-BOX;8P,1.25MM,ST,12505WS
Nokia LCD Discon NR-300
2013.07.22
VLCD
VDD33V
R47 47K
C21 100nF
Q15 KSA1182-Y
Q21 KSA1182-Y
Q22 MMBT2222A
R57 300
R58 1K
R59 10K
R122 10K
R123 10K
LCDBL_ON/OFF
LCD SCLK
LCD SDAT
LCD DAT
FRONT_GRAP_LCD_EN
FRONT_LCD_RESET
REAR_GRAP_LCD_EN
REAR_LCD_RESET
CN8:J
CN8:I
CN8:H
CN8:G
CN8:F
CN8:E
CN8:D
CN8:C
CN8:B
CN8:A
CN5:H
CN5:G
CN5:F
CN5:E
CN5:D
CN5:C
CN5:B
CN5:A
LCD

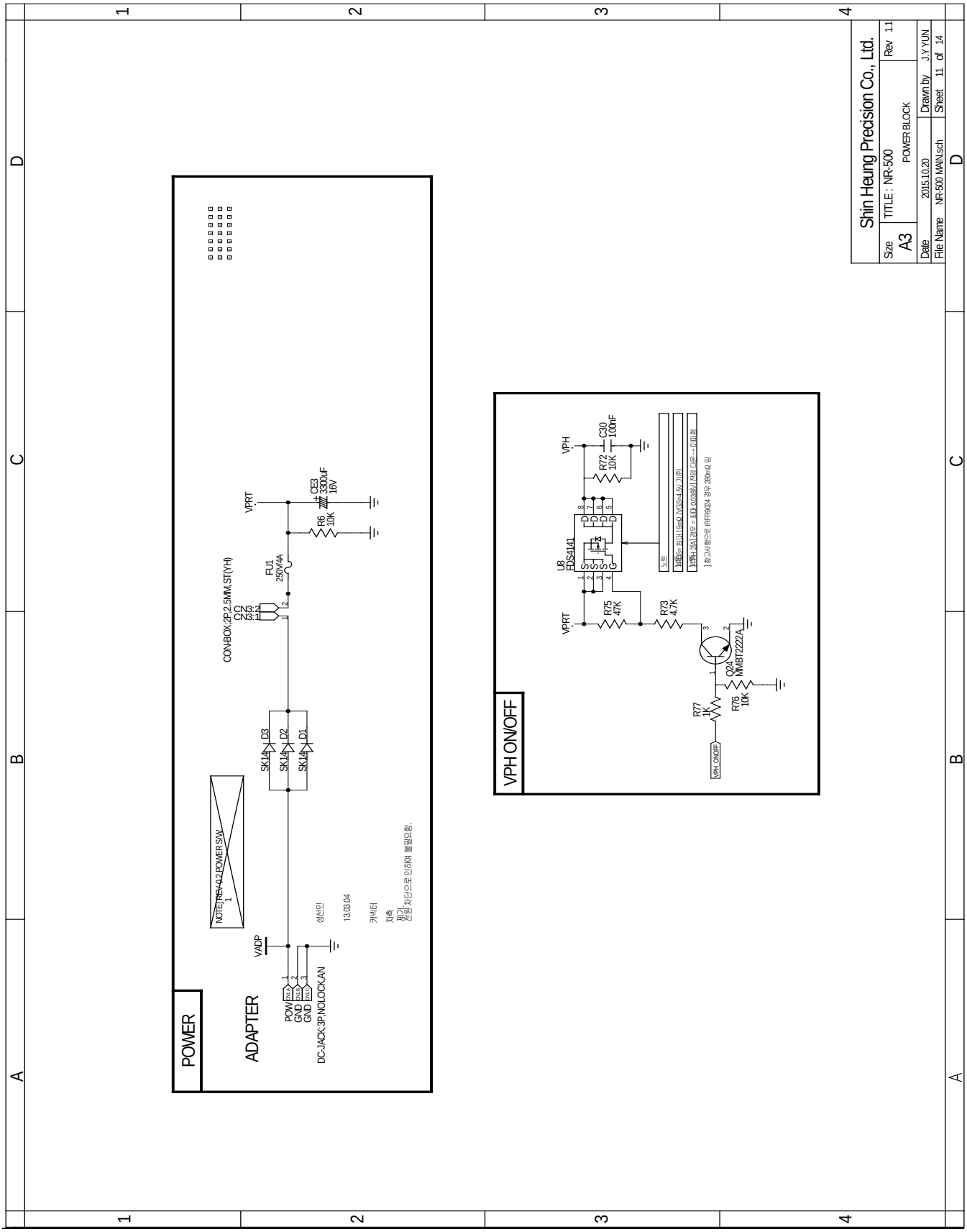

SEN_PEND
PRT SENSOR
PRINTER_R I/F
PRINTER_J I/F
COVER OPEN
R MOTOR
J MOTOR
SPOOL MOTOR
74LVC541
Shin Heung Precision Co., Ltd.
TITLE : NR-500
MOTOR/PRINTER BLOCK
Size A3
Date 2015.10.20
Drawn by JY YUN
File Name NR-500 MAIN.sch
Sheet 6 of 14
Rev 1.1

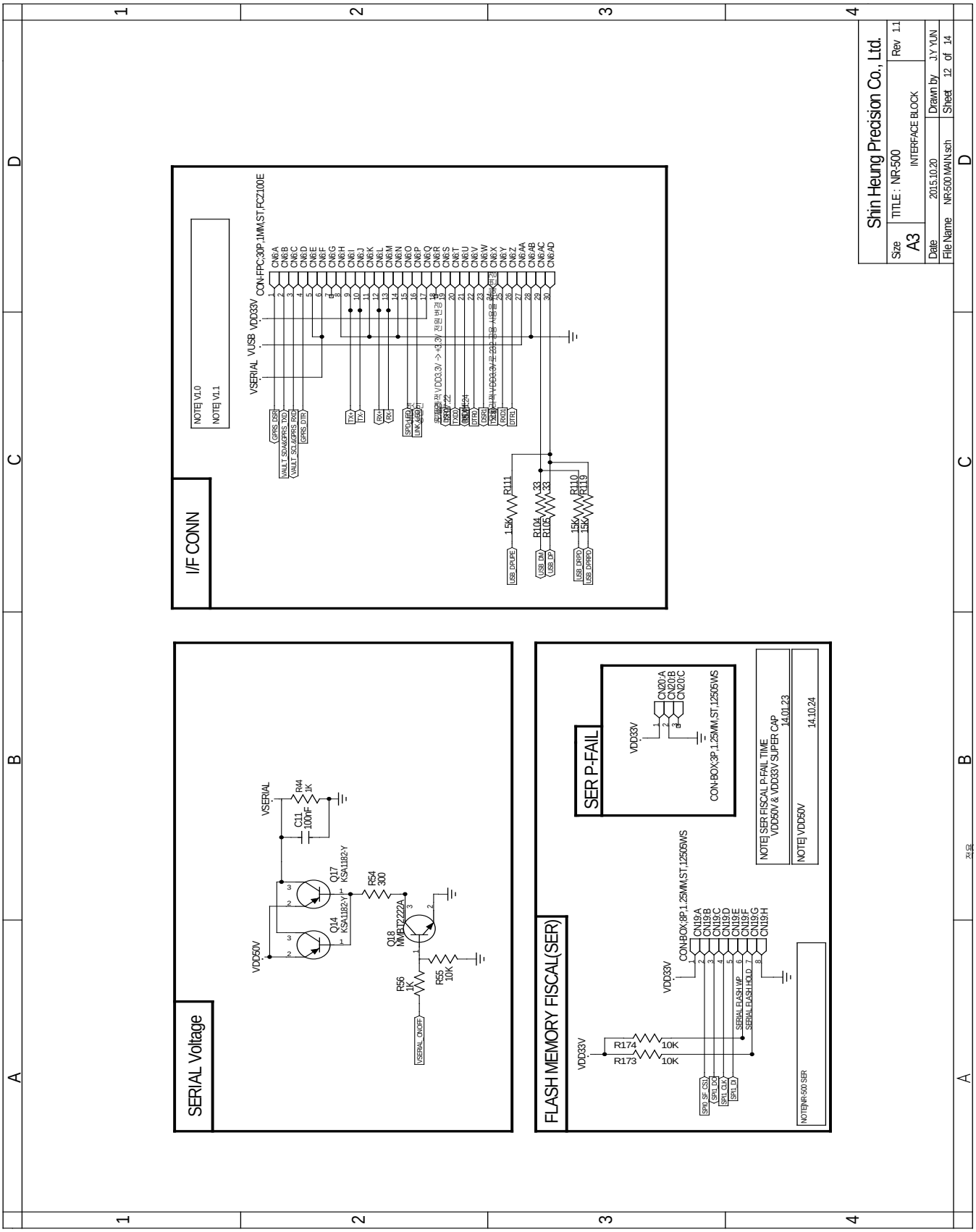

Shin Heung Precision Co., Ltd.
Size A3
TITLE : NR-500
ETHERNET BLOCK
Rev 1.1
Date 2015.10.20
Drawn by J.Y YUN
File Name NR-500 MAIN.sch
Sheet 7 of 14
ETHERNET
ETHERNET RESET
IC-CONTROLLER;W5100,ETHERNET
U14
1V8_OUT
VCC1V8D
VCC1V8A
VCC3V3A
VCC3V3D
ADDR14
ADDR13
ADDR12
ADDR11
ADDR10
ADDR9
ADDR8
ADDR7
ADDR6
ADDR5
ADDR4
ADDR3
ADDR2
ADDR1
ADDR0
DATA7
DATA6
DATA5
DATA4
DATA3
DATA2
DATA1
DATA0
TXOP
TXON
RXIP
RXIN
LINKLED
SPDLED
FDXLED
COLLED
RXLED
TXLED
TEST_MODE3
TEST_MODE2
TEST_MODE1
TEST_MODE0
OPMODE0
OPMODE1
OPMODE2
MISO
MOSI
/SCS
SCLK
SEN
/CS
/INT
/WR
/RD
/RESET
NC
RSET_BG
XTLN
XTLP
GNDD
GNDA
RA3
RA2
RA1
R106
4.7K
1K
R121
10K
R91
12K
R90
300
R92
1M
X2
25Mhz
C32
15pF
C33
15pF
R84
330
R85
330
LINK LED
SPD LED
RESET ETHERNET
U11
AME8800AEET
VDD /RST
GND
R74
10K
C29
100nF
C47
100nF
C62
100nF
C59
100nF
C61
100nF
C54
100nF
C60
100nF
C42
100nF
C41
1uF
C56
100nF
C65
100nF
+3.3V
VA18V
Note[V1.0
1:SPI
0:ADDR

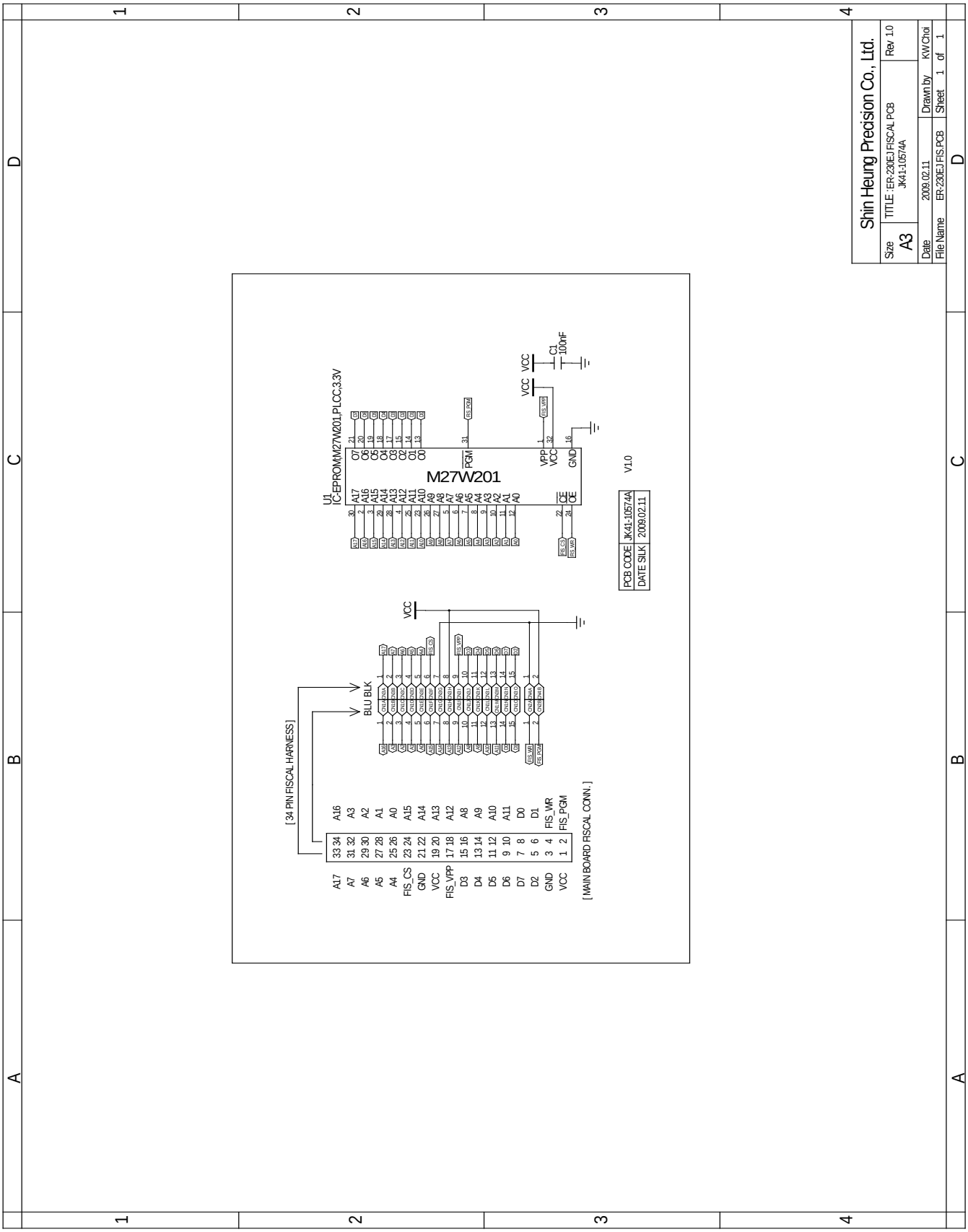

Shin Heung Precision Co., Ltd.
Size A3
TITLE : NR-500
RSCAL LOGIC BLOCK
Rev 11
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500 MAIN.sch
Sheet 8 of 14
FISCAL BUS
FISCAL
FISCAL DECODER
74LVC574
74LVC541
74LVC138
74LVC32
VDD33V
C80 100nF
C81 100nF
C82 100nF
C83 100nF
C93 100nF
C94 100nF
C79 100nF
RA4 10K
RA5 10K
R138 10K
R140 10K
100pF C95
100pF C96
100pF C97
100pF C98
100pF C99
100pF C100
100pF C101
100pF C102
U18
U23
U29
U25
U22
U20
U19A
U19B
U19C
U19D
FA(0:17)
FD(0:7)
D(0:7)
A(0:18)
CS_FISADDL_WR
CS_FISADDH_WR
CS_FISDATA_WR
CS_FISDATA_RD
CS_FISCAL
CS_SENPRT_RD
FISCAL_DATA_WR
FISCAL_EN
RESET
포트 확장

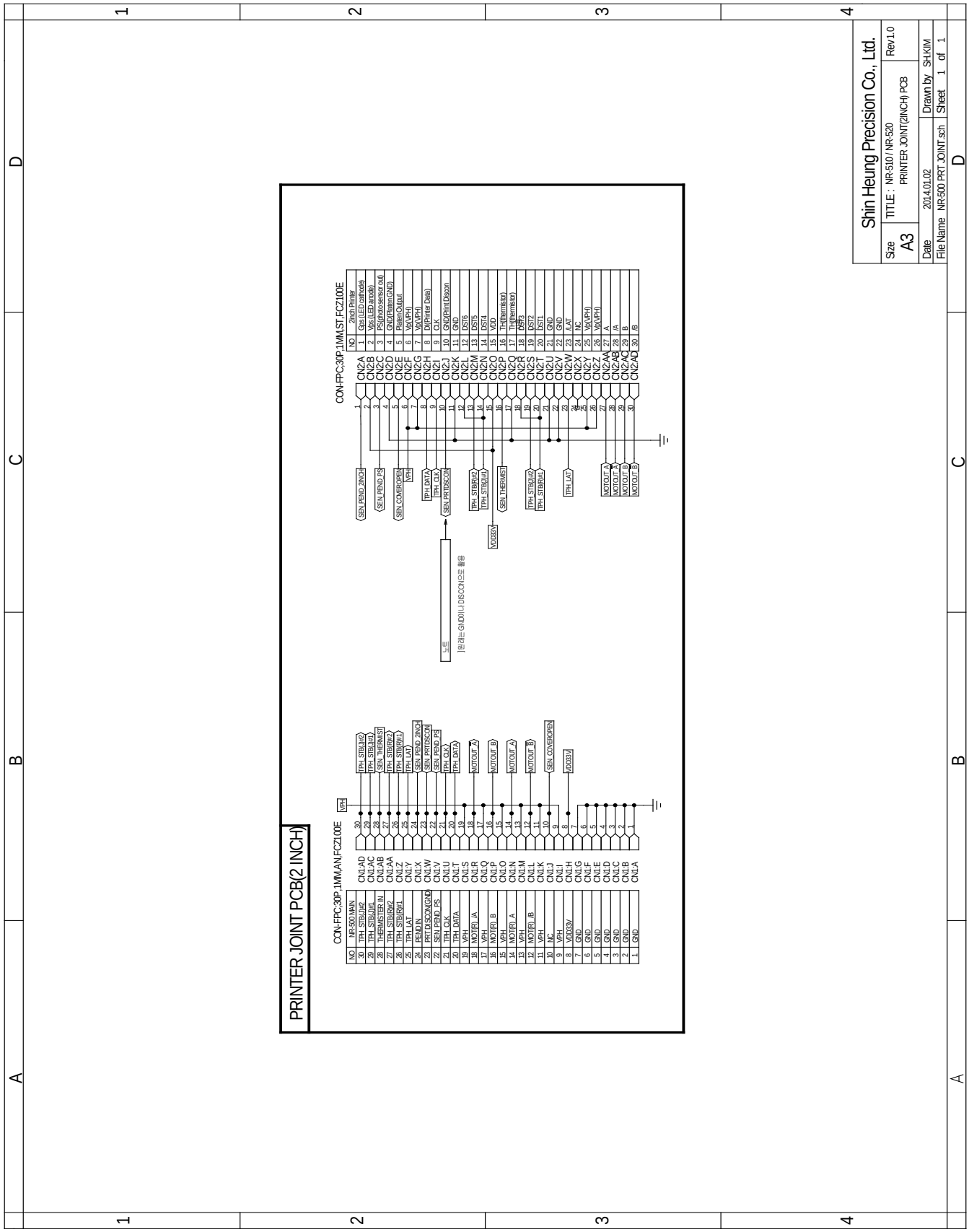

Shin Heung Precision Co., Ltd.
TITLE : NR-500
FISCAL POWER BLOCK
Rev 1.1
Size A3
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500.MAIN.sch
Sheet 9 of 14
CON-BOX;34P;2MM;2R;ST
R144 10K
R143 10K
R160 10K
C92 100nF
ZD1 BZT52C6V2 6.2V
D19 SK14
D18 SK14
D17 SK14
R164 470
R163 470
R162 470
R161 470
R158 10K
Q30 KSA1182-Y
R157 4.7K
C85 100nF
C84 100nF
Q29 MMBT2222A
R154 10K
R151 1K
R156 47K
R155 5.1K
CE11 470UF 16V
C88 100pF
L2 100uH
U24 KA34063
R159 100
R147 0.1 1W
C87 3300pF
VPRT
VDD33V
FD(0:7)
FA(0:17)
FISEPROM_OE
FISEPROM_PGM
FIS_PGM
(Fiscal EPROM nCS From CPU)
Fiscal EPROM VCC(6.2V)
Fiscal EPROM VPP(12.75V)
37.2mA
12.5V
VFIS_ON/OFF
NOTE] REV0.1 FP6736
FP6736
VFIS_ON TIME 128us
12V
Fiscal EPROM Writing Voltage(12.75V)
되기까지 약 1.25V(1.47K/5.1K)
삼성 KA34063 적용.

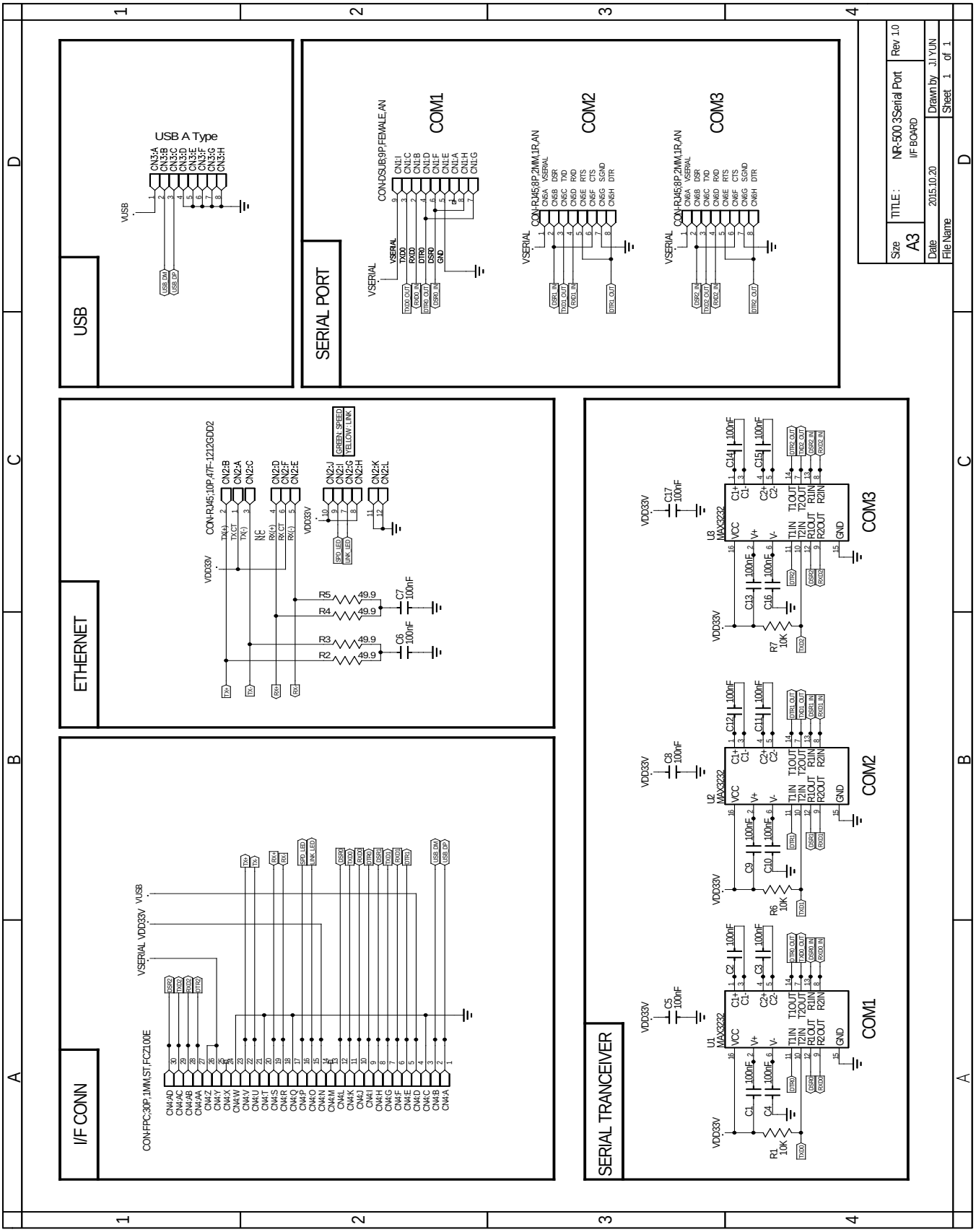

POWER FAIL
SYSTEM POWER FAIL
VDD33V
VPRT
R63 22K
R66 10K
R65 10K
R64 12K
C23 100nF
C24 100nF
C31 100nF
R67 10K
U10.A
U10.B
LM393D
VDD33V
VDD5.0V
VPRT
U3
LD1117-5V
IN
OUT
GND
C2 100nF
CE4 100uF 16V
R9 10K
전원부
U1
F33CV
CE2 4700uF/25V 25V
C7 100nF
CE1 100uF 16V
R29 47K
HS1
W17.122.H45
NOTE) REV0.2 4700uF CAP
NOTE) HEATSINK SIZE
+3.3V
R68 10K
C26 100nF
Q23 KSA1182-Y
Q25 KSA1182-Y
R79 300
Q26 MMBT2222A
R81 1K
ETHERNET_ON/OFF
ETHERNET ON/OFF I/O PORT
ETHERNET
Shin Heung Precision Co., Ltd.
TITLE : NR-500
POWER BLOCK
Size A3
Rev 1.1
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500 MAIN.sch
Sheet 10 of 14

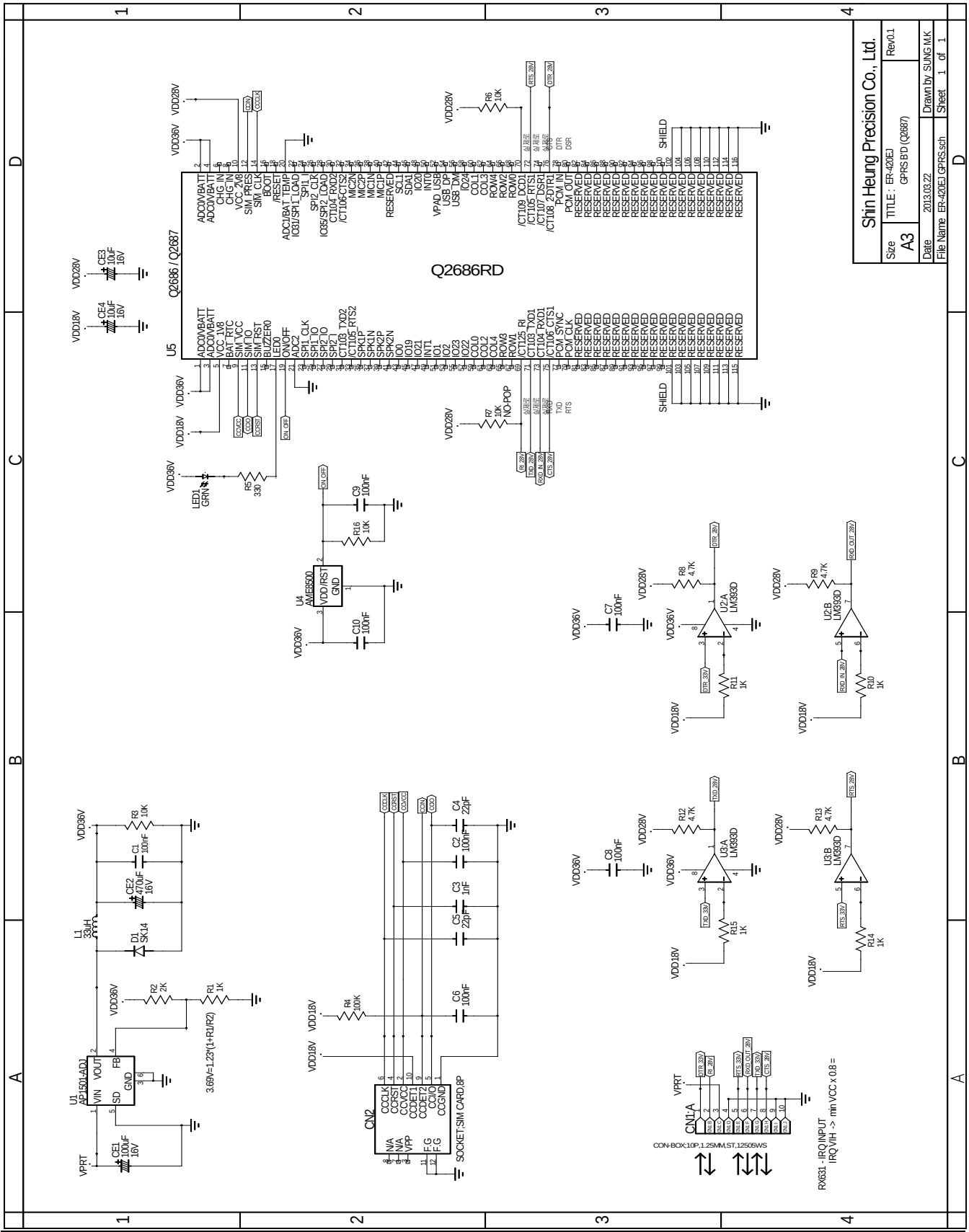

POWER
ADAPTER
DC-JACK;3P;NOLOCK,AN
POW
GND
GND
VADP
NOTE) RE-A2-POWER SW
CON-BOX;2P;2.5MM,ST(YH)
CN3:2
CN3:1
FU1
250V/4A
VPRT
R6
10K
CE3
3300uF
16V
SK14
D3
SK14
D2
SK14
D1
VPH ON/OFF
VPH
R72
10K
C30
100nF
U8
FDS4141
R75
47K
R73
4.7K
Q24
MMBT2222A
R77
1K
R76
10K
VPH ON/OFF
Shin Heung Precision Co., Ltd.
Size
A3
TITLE : NR-500
POWER BLOCK
Rev 1.1
Date 2015.10.20
Drawn by J.Y.YUN
File Name NR-500 MAIN.sch
Sheet 11 of 14

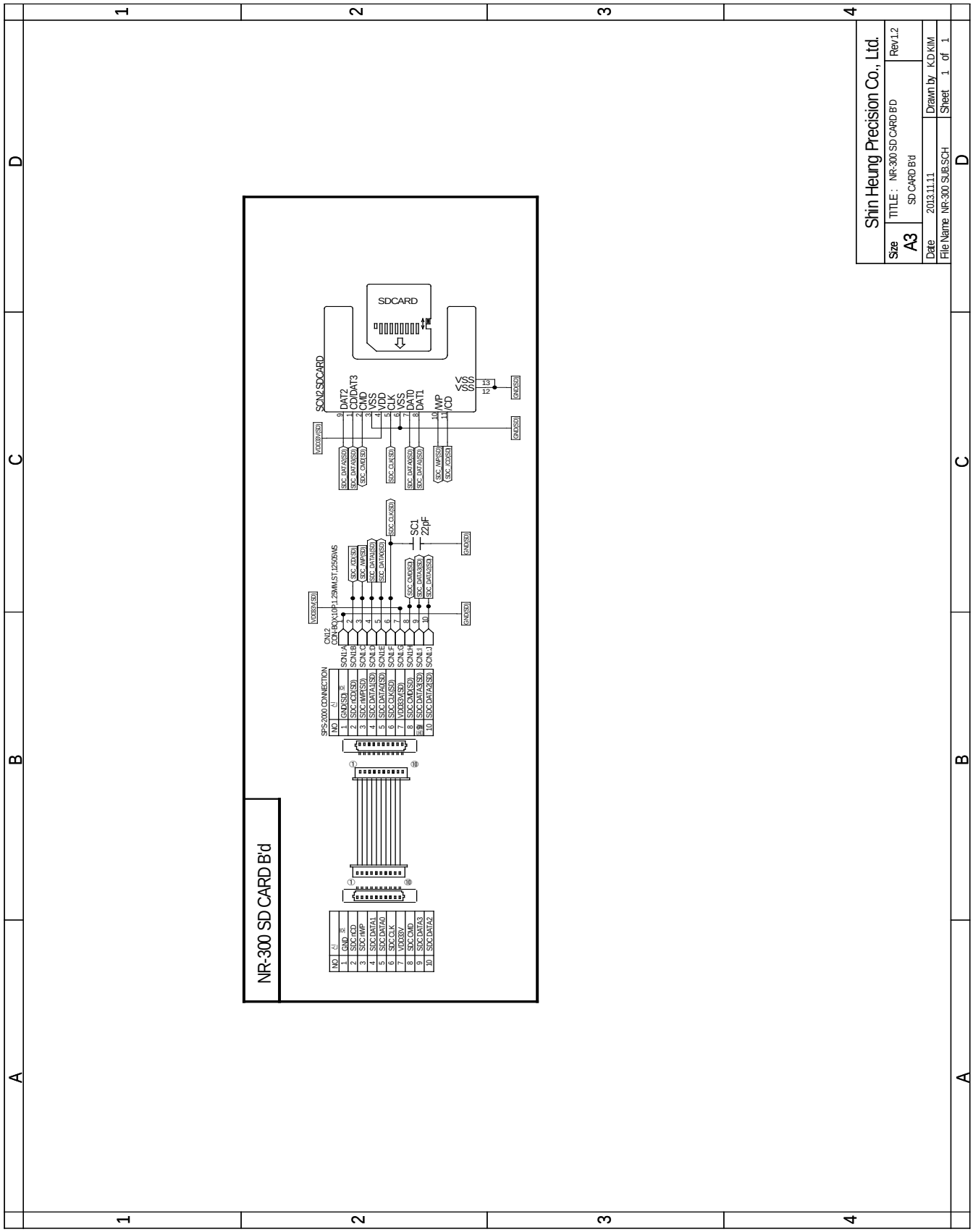

I/F CONN
SERIAL Voltage
FLASH MEMORY FISCAL(SER)
SER P-FAIL
Shin Heung Precision Co., Ltd.
TITLE : NR-500
INTERFACE BLOCK
Size A3
Rev 11
Date 2015.10.20
Drawn by J.Y YUN
File Name NR-500 MAIN.sch
Sheet 12 of 14
CON-FPC;30P,1MM,ST,FCZ100E
CON-BOX;3P,1.25MM,ST,12505WS
CON-BOX;8P,1.25MM,ST,12505WS
VDD33V
VDD50V
VUSB
VSERIAL
NOTE) V1.0
NOTE) V1.1
NOTE) SER FISCAL P-FAIL TIME
VDD50V & VDD33V SUPER CAP
14.01.23
NOTE) VDD50V
14.10.24
NOTE)NR-500 SER

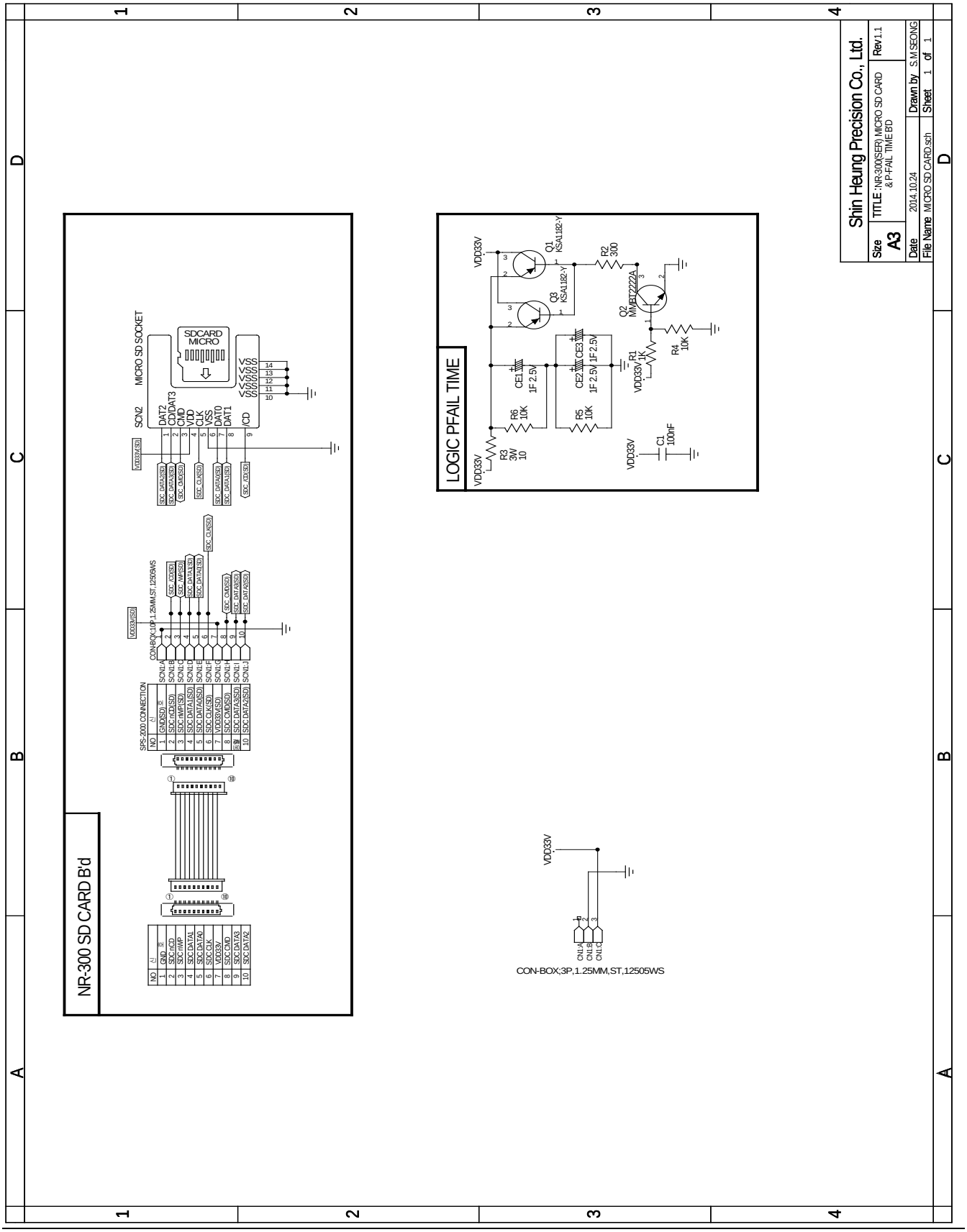

Shin Heung Precision Co., Ltd.
Size A3
TITLE : ER-230EJ FISCAL PCB
JK41-10574A
Rev. 1.0
Date 2009.02.11
Drawn by KW.Choi
File Name ER-230EJ FIS.PCB
Sheet 1 of 1
U1
IC-EPROM,M27W201,PLCC,3.3V
M27W201
PGM
VPP
VCC
GND
OE
C1
100nF
V1.0
PCB CODE JK41-10574A
DATE SILK 2009.02.11
[ 34 PIN FISCAL HARNESS ]
BLU BLK
[ MAIN BOARD FISCAL CONN. ]
A17
A7
A6
A5
A4
FIS_CS
GND
VCC
FIS_VPP
D3
D4
D5
D6
D7
D2
GND
VCC
A16
A3
A2
A1
A0
A15
A14
A13
A12
A8
A9
A10
A11
D0
D1
FIS_WR
FIS_PGM


PRINTER JOINT PCB(2 INCH)
CON-FPC;30P,1MM,ANI,FCZ100E
CON-FPC;30P,1MM,ST,FCZ100E
Shin Heung Precision Co., Ltd.
TITLE : NR-510 / NR-520
PRINTER JOINT(2INCH) PCB
Rev1.0
Size A3
Date 2014.01.02
Drawn by SH.KIM
File Name NR-500 PRT JOINT.sch
Sheet 1 of 1


USB
SERIAL PORT
ETHERNET
I/F CONN
SERIAL TRANCEIVER
USB A Type
CON-DSUB9P.FEMALE.AN
COM1
COM2
COM3
CON-RJ45:8P.2MM.1R.AN
CON-RJ45;10P.47F-1212GDD2
CON-FPC;30P.1MM;ST.FCZ100E
MAX3232
Size A3
TITLE : NR-500 3Serial Port I/F BOARD
Rev 1.0
Date 2015.10.20
Drawn by J.I YUN
File Name
Sheet 1 of 1


Shin Heung Precision Co., Ltd.
Size A3
TITLE : ER-420EJ
GPRS B'D (Q2687)
Rev0.1
Date 2013.03.22
Drawn by SUNG M.K
File Name ER-420EJ GPRS.sch
Sheet 1 of 1
Q2686RD
Q2686 / Q2687
U5
U1 AP1501-ADJ
U2A LM393D
U2B LM393D
U3A LM393D
U3B LM393D
U4 AME8800
CN1:A
CN2
SOCKET,SIM CARD,8P
CON-BOX;10P,1.25MM,ST,12505WS
RX631 - IRQ INPUT
IRQ VIH -> min VCC x 0.8 =
3.69V=1.23*(1+R1/R2)


Shin Heung Precision Co., Ltd.
Size A3
TITLE : NR-300 SD CARD B'D
SD CARD B'd
Rev1.2
Date 2013.11.11
Drawn by K.D KIM
File Name NR-300 SUB.SCH
Sheet 1 of 1
NR-300 SD CARD B'd
SDCARD
SDN2 SDCARD
DAT2
CD/DAT3
CMD
VSS
VDD
CLK
VSS
DAT0
DAT1
/WP
/CD
VSS
VSS
SC1
22pF
CN12
CON-HDX-10P-1.25MM-ST-12505WS
3PS-2000 CONNECTION
NO
GND
SDC nCD
SDC nWP
SDC DAT1
SDC DAT0
SDC CLK
VDD
SDC CMD
SDC DAT3
SDC DAT2


Shin Heung Precision Co., Ltd.
Size A3
TITLE : NR-300(SER) MICRO SD CARD & P-FAIL TIME B'D
Rev 1.1
Date 2014.10.24
Drawn by S.M.SEONG
File Name MICRO SD CARD.sch
Sheet 1 of 1
NR-300 SD CARD B'd
MICRO SD SOCKET
SDCARD MICRO
SCN2
DAT2
CD/DAT3
CMD
VDD
CLK
VSS
DAT0
DAT1
/CD
LOGIC PFAIL TIME
VDD33V
Q1 KSA1182-Y
Q3 KSA1182-Y
Q2 MMBT2222A
R2 300
R1 1K
R4 10K
R5 10K
R6 10K
R3 3W 10
CE1 1F 2.5V
CE2 1F 2.5V
CE3 1F 2.5V
C1 100nF
CON-BOX;3P,1.25MM,ST,12505WS
CON-BOX;10P,1.25MM,ST,12505WS
SPS-2000 CONNECTION
GND(SD)
SDC nCD(SD)
SDC nWP(SD)
SDC DAT1A(SD)
SDC DAT4(SD)
SDC CLK(SD)
VDD33V(SD)
SDC CMD(SD)
SDC DAT3A(SD)
SDC DAT2(SD)
GND
SDC nCD
SDC nWP
SDC DAT1A
SDC DAT4
SDC CLK
VDD33V
SDC CMD
SDC DAT3A
SDC DAT2

# UPDATE LOG

| Application Date | Page | Part # | Notes (Cause & Solution) | S/Bulletin |
|---|---|---|---|---|
| 2014.06.12<br>2nd Edition | 4 Page | Overview | Add comment.<br>"The socket outlet shall be installed near the equipment and shall be easily accessible" | - |
| 2014.06.12<br>2nd Edition | 2-1 | Environment Condition | Temperature<br>Before: 45℃<br>After: 35℃ | - |
| 2014.09.26<br>3rd Edition | 6-9 | C4 | Before : JK59-20003D UNIT-PRINTER<br>After : JK81-20004A PLATEN-ROLLER: 2INCH | - |
| 2014.09.26<br>3rd Edition | 6-13 | D | Add<br>JK59-30027B UNIT-KEYBOARD: ER-390B,90 KEY,FLAT | - |
| 2015.07.21<br>4th Edition | 3-1 | Figure 3-1 | Before : MSR<br>After : Pole Display | - |
| 2016.07.04<br>5th Edition | Many page | Interface Board | (SAECN-15-0071_HW) Notification of New Interface for NR-500_151124 | SAECN-15-0071_HW |
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Use this page to record any special servicing information such as Service Bulletins or Supplements.
When possible, record changes to Code numbers directly on the actual Parts List.
Always records Service Bulletin numbers and Application Dates on this log to ensure that your data is as current as possible.

SAM4S

ⓒShin Heung Precision. Jul. 2016

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V1.5