REJ10J1387-0100

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R0P0400LP0011RL

User's Manual

The power supply board for the RENESAS microcomputer evaluation KIT

User's Manual

Rev.1.00
July. 2006

Renesas Technology
www.renesas.com

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Do not attempt to use the product until you fully understand its mechanism.

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In this manual, this product points out the following product which Renesas Solutions Corporation manufactured.
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Purpose of the Product:

This product is a device to support the development of a system that uses the SuperH Risc engine Family SH7751R of Renesas 32-bit RISC MCUs. It provides support for system development in both software and hardware. Be sure to use this product correctly according to said purpose of use. Please avoid using this product for other than its intended purpose of use.

For those who use this product:

This product can only be used by those who have carefully read the user's manual and know how to use it. Use of this product requires the basic knowledge of electric circuits, logical circuits, and MCUs.

Precautions to be Taken when Using This Product:

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Figures:

Some figures in this user's manual may show items different from your actual system.

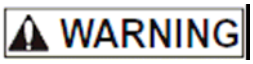
Precautions for Safety

Definitions of Signal Words

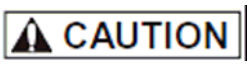
In both the General Information Manual and on the product itself, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.
This chapter describes the precautions which should be taken in order to use this product safely and properly.
Be sure to read this chapter before using this product.

This symbol represents a warning about safety. It is used to arouse caution about a potential danger that will possibly inflict an injury on persons. To avoid a possible injury or death, please be sure to observe the safety message that follows this symbol.

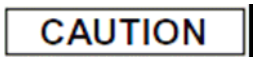
DANGER indicates an imminently dangerous situation that will cause death or heavy wound unless it is avoided. However, there are no instances of such danger for the product presented in this manual.



WARNING indicates a potentially dangerous situation that will cause death or heavy wound unless it is avoided.



CAUTION indicates a potentially dangerous situation that will cause a slight injury or a medium-degree injury unless it is avoided.



CAUTION with no safety warning symbols attached indicates a potentially dangerous situation that will cause property damage unless it is avoided.

NOTE emphasizes essential information.

In addition to the five above, the following are also used as appropriate.

△ means WARNING or CAUTION.
Example:

CAUTION AGAINST AN ELECTRIC SHOCK

⃠ means PROHIBITION.
Example:

DISASSEMBLY PROHIBITED

● means A FORCIBLE ACTION.
Example:

UNPLUG THE POWER CABLE FROM THE RECEPTACLE.

CAUTION

Warnings for AC Power Supply:

- If If the attached AC power cable does not fit the receptacle, do not alter the AC power cable and do not plug it forcibly. Failure to comply may cause electric shock and/or fire.
- Use an AC power cable which complies with the safety standard of the country.
- Do not touch the plug of the AC power cable when your hands are wet. This may cause electric shock.
- This product is connected signal ground with frame ground. If your developing product is transformless (not having isolation transformer of AC power), this may cause electric shock. Also, this may give an unrepairable damage to this product and your developing one.
- While developing, connect AC power of the product to commercial power through isolation transformer in order to avoid these dangers.
- If other equipment is connected to the same branch circuit, care should be taken not to overload the circuit.

- If you smell a strange odor, hear an unusual sound, or see smoke coming from this product, then disconnect power immediately by unplugging the AC power cable from the outlet.
- Do not use this as it is because of the danger of electric shock and/or fire. In this case, contact your local distributor.
- Before setting up this product and connecting it to other devices, turn off power or remove a power cable to prevent injury or product damage.

Warnings to Be Taken for This Product:

- Do not disassemble or modify this product. Personal injury due to electric shock may occur if this product is disassembled and modified.
- Make sure nothing falls into the cooling fan on the top panel, especially liquids, metal objects, or anything combustible.

Warning for Installation:

- Do not set this product in water or areas of high humidity. Make sure that the product does not get wet. Spilling water or some other liquid into the product may cause unrepairable damage.
- Please use this product indoors.

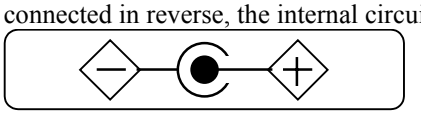
Warning for Use Environment:

- This equipment is to be used in an environment with a maximum ambient temperature of 35°C. Care should be taken that this temperature is not exceeded.

CAUTION

Note on Connecting the Power Supply:

- Do not use any power cable other than the one that is included with the product.
- At the time of connection with installation of this product or other equipments, please extract an AC/DC adaptor from a plug socket and prevent an injury and an accident.
- Pay attention to the polarities of the power supply. If its positive and negative poles are connected in reverse, the internal circuit may be broken.



Power supply injection :

- Once the power is turned off, wait for about 10 seconds before turning it back on again.

Cautions to Be Taken for Handling This Product:

- Handle the product with caution, taking care not to apply strong mechanical shock to the product by dropping or letting it fall down.
- Do not touch the communication interface connector pins or other connector pins directly with your hand. Static electricity from your body may break down the internal circuit of the product.
- Do not pull the product by the cable connecting to a board in it. Do not hold down a board while you pull the other end of it. The cable may break.

Contents

1. Outline

1.1. Package Components

This product is constituted by the following board and parts. When opened, please check whether it has gathered altogether.

Table 1.1.1 The contents list of packing

Item	Description	Quantity
R0P0400LP0011RL	The power supply board for platforms for the Renesas's microcomputers. (Two-sheet composition)	1
Knurling tool screw	The screw for front section connection add-in boards. (Being right and left one formula)	2
AC Adapter	DC12.0V 5.0A	1
CD-ROM	User's manual , Sample program etc.	1

* If there is any question or doubt about the packaged product, contact your local distributor.

CAUTION

This product is used for R0P7780LC0011RL made from RENESAS. This product may be destroyed when the board which does not match this product is connected by force.

1.2. System Configuration

1.2.1. System Configuration

Figure 1.2.1 shows the system configuration.

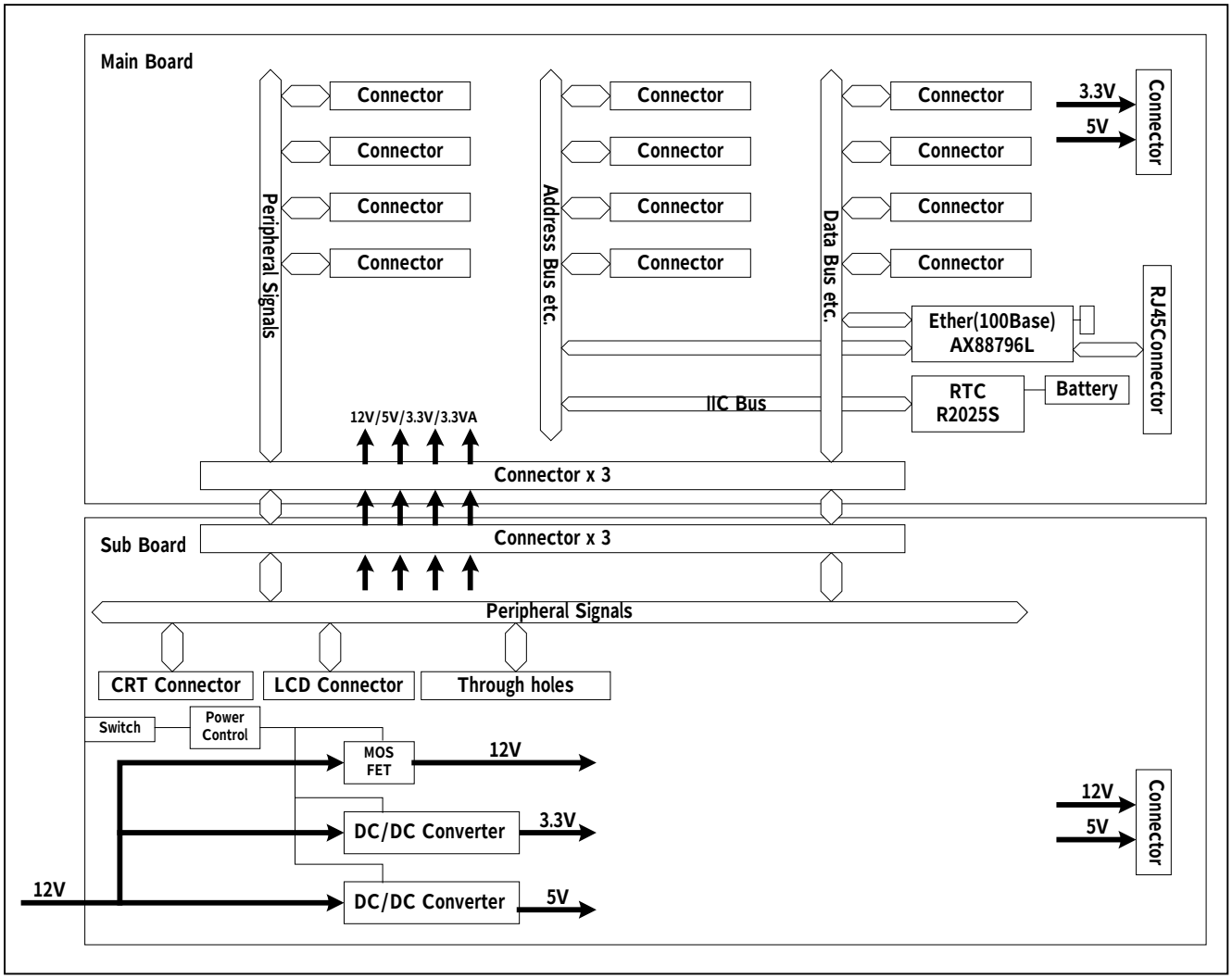


Figure 1.2.1 R0P0400LP0011RL system configuration

1.2.2. Names and Functions of each part of the System

Figure 1.2.2 and 1.2.3 shows the names of parts reference.

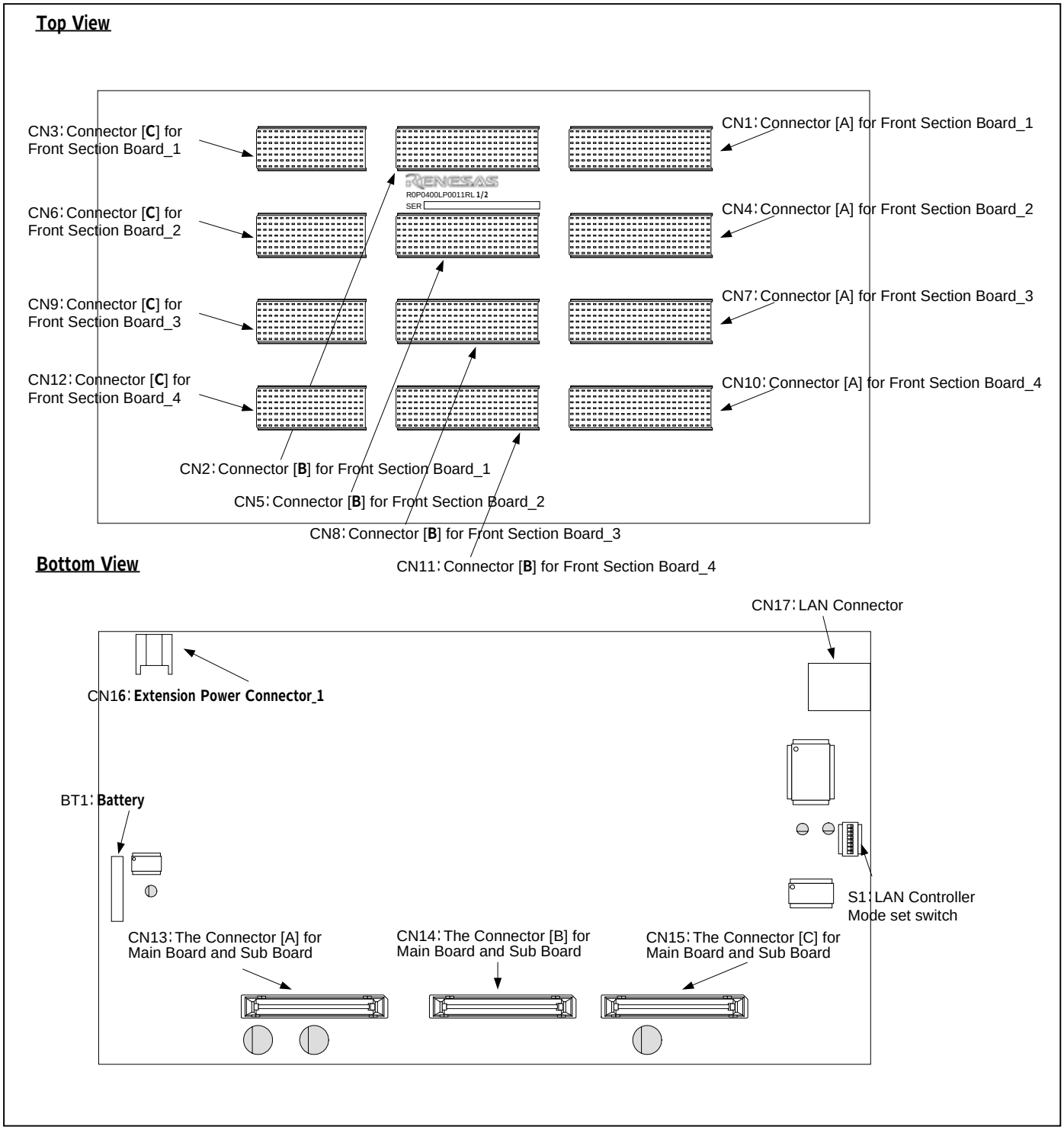


Figure 1.2.2 R0P0400LP0011RL Main Board's parts reference

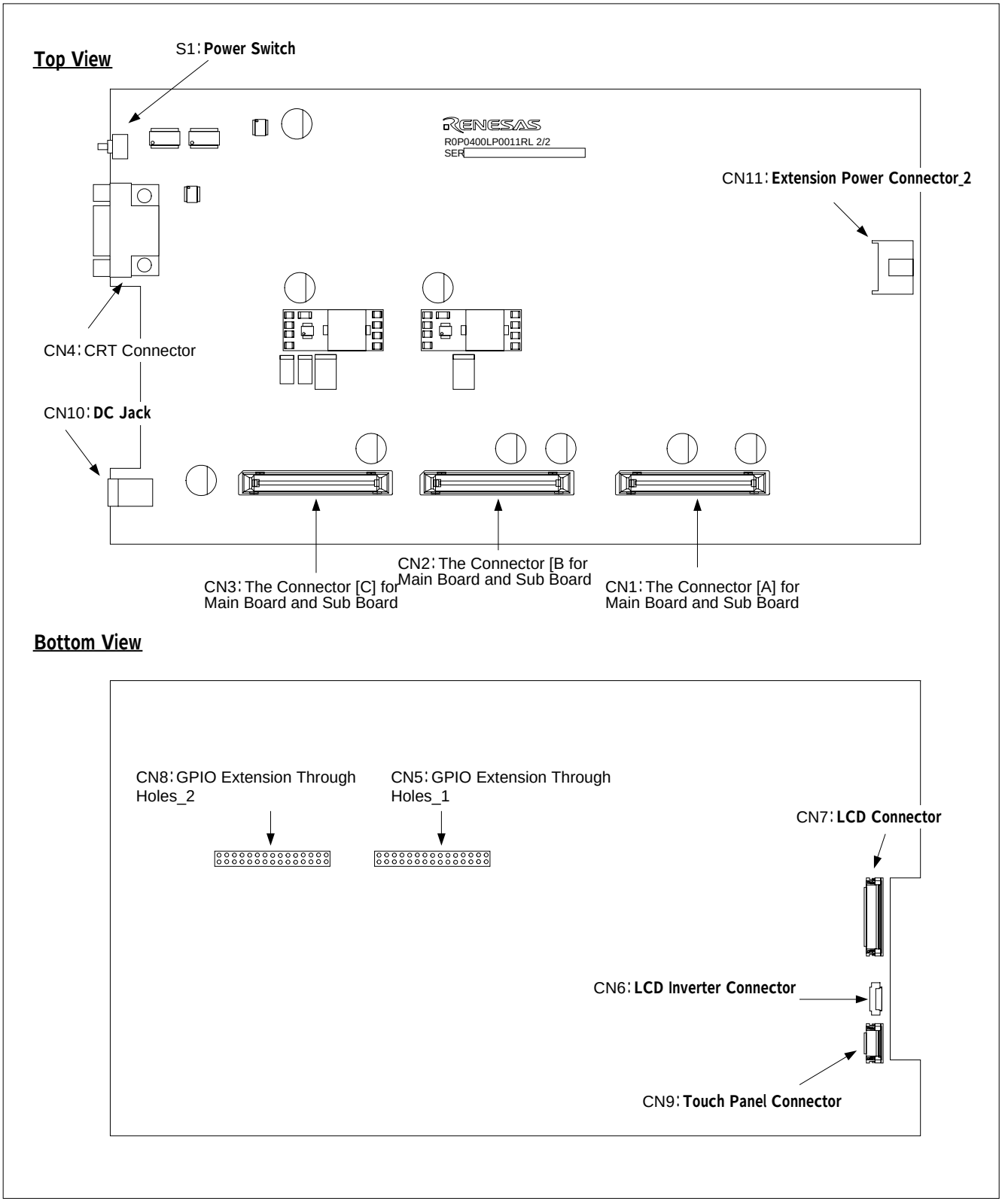


Figure 1.2.3 R0P0400LP0011RL Sub Board's parts reference

1.3. Setup Method

1.3.1. Junction of Main Board and Sub Board

Figure 1.3.1 shows Main Board – Sub Board connection diagram. A Main Board and a Sub Board are supplied in the state where it was joined.

When removed of a user, please re-join three connectors certainly.

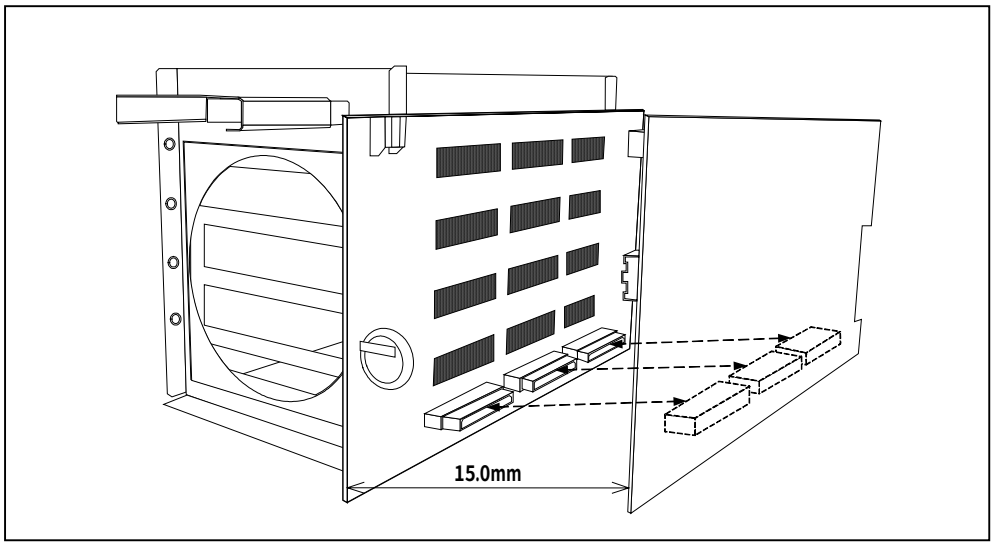


Figure 1.3.1 Main Board - Sub Board connection diagram

CAUTION
Please join a Main Board and a Sub Board certainly. When the connection section is loosening, normal operation may not be carried out by poor contact.

1.3.2. Insertion of Board to the Front Section

The insertion figure of the board to the front section is shown in Fig. 1.3.2. A board connectable with this product is only a board which suited the connector specification of this product. The product suits to R0P7780LC0011RL etc. made by RENESAS . Please insert along with a guide rail at the time of board insertion, and tighten a knurling tool screw on either side certainly using tools, such as a minus driver.

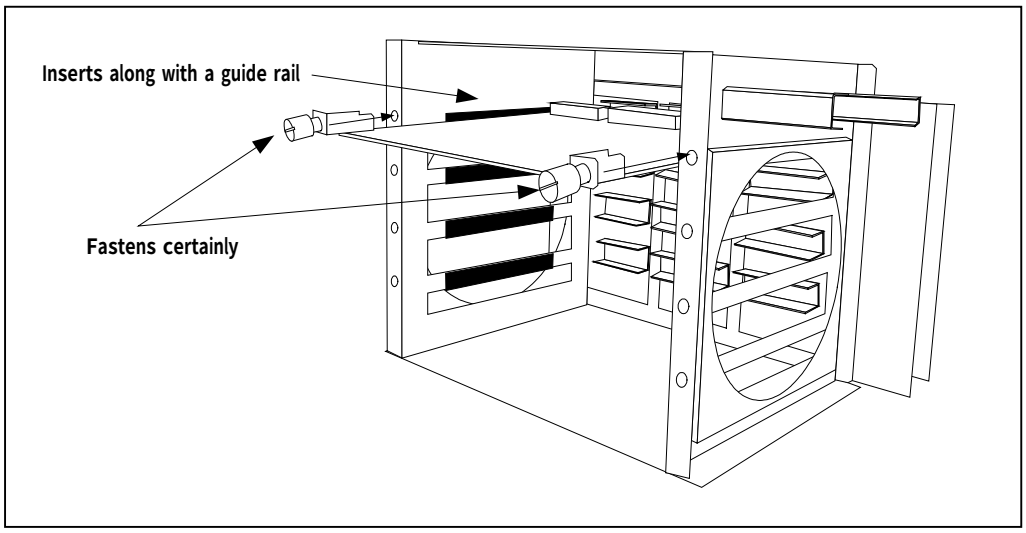


Figure 1.3.2 The insertion figure of the board to the front section

CAUTION
When you attach boards, such as R0P7780LC0011RL, please tighten a knurling tool screw certainly to the last using tools, such as a minus driver. When the connection section is loosening, normal operation may not be carried out by poor contact.

CAUTION
The product suits to R0P7780LC0011RL etc. made by RENESAS . **When the board which does not suit this product is connected by force, it leads to destruction of this product.**

CAUTION
Please intercept a power supply about board insertion in the front section. Moreover, be careful of the injury by metallic ornaments and others at the time of insertion.

1.4. Specification List

Table 1.4.1 shows a list of specifications.

Table 1.4.1 R0P0400LP0011RL Specifications

Item	Description
LAN Controller	AX88796LF (Asix) LANConnector:LU1S041C-43-LF(BOTHHAND)
Real Time Clock	R2025S-F (RICOH) ・IIC Bus connection
LED	・Power status (x 4)
Switch	・Power Switch(x 1) ・Mode Setting switch for LAN Controller (8bit x 1)
Connector	Address,Data Bus Extension Connector:PCN21A-125SB-2PF-G (HIROSE)
	Peripheral Signal Extension Connector:PCN21A-95SB-2PF-G (HIROSE)
	Main Board Connector: TX24-60R-12ST-H1E (JAE)
	Sub Board Connector:TX25-60P-12ST-H1E (JAE)
	CRT connector:XM4L-1542-132 (Omron)
	LCD connector:40FLH-SM1-TB(LF)(SN) (JST)
	LCD backlight connector:53261-0590 (Molex)
	Touchpanel interface connector: 14FLH-SM1-TB (LF)(SN) (JST)
	LAN Connector:LU1S041C-43 LF (BOTHHAND)
	Extension Power Connector_1: DF1E-4P-2.5DS(05) (Hirose)
	Extension Power Connector_2: DF1E-6P-2.5DS (Hirose)

Item	Description
Power IN	2.5mmSocket Center Plus ・From AC/DC Adapter
Size	・Size: 267mm × 150mm
Operating temperature	5 to 35°C (no dew)
Storage temperature	-10 to 60°C (no dew)

2. Functional Specification

2.1. DC Jack Input Power Supply

The input power supply specification from DC jack of this board is shown.

Please choose the power supply which suits the specification shown in Table 2.1.1 in the case of use of except for an attached AC/DC adaptor.

Table 2.1.1 DC jack input specification.

Item	Specification
Plug	Φ2.5mm
Plug Polarity	Outside: Minus, inner side:Plus. 
Input voltage	12.0V
Supply current	More than 5.0A

CAUTION

Keep in mind that near DC jack becomes high temperature very much at the time of this product operation.

WARNING

When an AC/DC adaptor with the reverse polarity of a plug is used, it leads to destruction of this product.
Moreover, keep in mind that there is possibility of emitting smoke and ignition.

2.2. Realtime Clock

This product mounts "R2025 S-F" as an object for time management. This product supports the IIC interface. Please access using the connector for front section connection. Please refer to the datasheet of [R2025 S-F] about the usage.

A battery back-up should insert a button battery in BT1. When a button battery is exchanged, please use a product (2032 sizes) with voltage 3V, a diameter of 20mm, and a height of 3.2mm.

2.3. LAN Controller

This product mounts AX88796LF. Please access to this device using the connector for front section connection. It accesses using an address bus, a data bus, and other control signals. Please refer to the datasheet of AX88796LF about the usage.

2.4. Switches Specification

A push switche and a DIP switche are mounted in this board.

2.4.1. Power On Switch

S1 of a sub board is a power supply injection switch. After inserting an enclosed AC/DC adaptor in the sub board CN10, a power supply is turned on if a switch is pushed. A power supply will be shut off if S1 is pushed at the operation.

2.4.2. Dip switch of AX88796LF Mode Set

S1 of a main board is the switch for a mode setup of operation of AX88796LF. The appearance of a S1 is shown in Fig. 2.2.2 and the specification of a S1 is shown in Table 2.2.2.

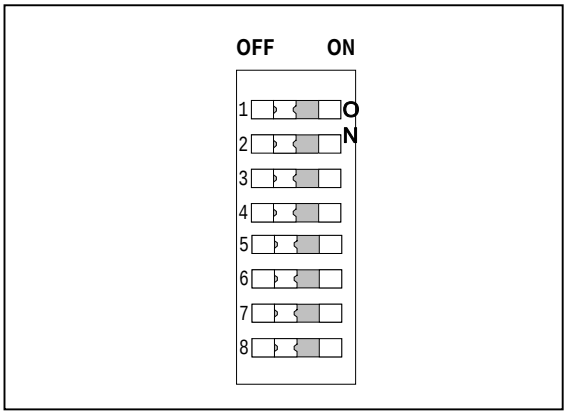


Figure 2.2.2 S1 appearance figure

Table 2.2.2 S1 specification.

Switch	Connection terminal	ON	OFF	Function
S1-1	CPU1	H	L	ISA Bus Mode
S1-2	CPU0	H	L	
S1-3	IO_BASE2	H	L	IO Base Address 200h(Default)
S1-4	IO_BASE1	H	L	
S1-5	IO_BASE0	H	L	
S1-6	NC	-	-	Not Use
S1-7	NC	-	-	Not Use
S1-8	NC	-	-	Not Use

2.5. Connectors Specification

2.5.1. Front Panel Connector A

CN1, 4, 7 and 10 are connectors for board connection. The data buses are mainly connected.

The general-view figure of connector [A] for board connection is shown in Fig. 2.5.1, and signal arrangement is shown in Table 2.5.1.

The f and z sequence are GND connection.

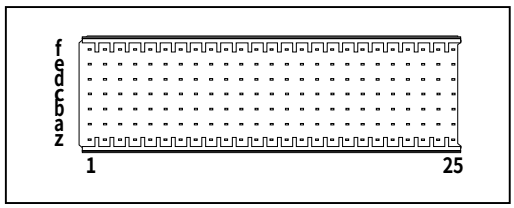


Figure 2.5.1 Connector [A] appearance figure

Table 2.5.1 Signal arrangement of connector [A] for board connection (CN1, 4, 7, 10)

Pin number	Signal name	Function	Note
1a	+5.0V	Power Supply	
2a	+5.0V	Power Supply	
3a	GND	Ground	
4a	D4	Data Bus 4	
5a	GND	Ground	
6a	D9	Data Bus 9	
7a	GND	Ground	
8a	D14	Data Bus 14	
9a	D19	Data Bus 19	
10a	GND	Ground	
11a	D24	Data Bus 24	
12a	D29	Data Bus 29	
13a	GND	Ground	
14a	EX_GPIO01	FPGA extension connector GPIO port 1	
15a	EX_GPIO03	FPGA extension connector GPIO port 3	
16a	EX_GPIO05	FPGA extension connector GPIO port 5	
17a	EX_GPIO07	FPGA extension connector GPIO port 7	
18a	HAC_RESET#	HAC Reset	
19a	GND	Ground	
20a	R.S.V11	Reserved 11	
21a	R.S.V12	Reserved 12	
22a	R.S.V17	Reserved 17	
23a	R.S.V22	Reserved 22	
24a	GND	Ground	
25a	GND	Ground	

Pin number	Signal name	Function	Note
1b	+5.0V	Power Supply	
2b	+5.0V	Power Supply	
3b	GND	Ground	
4b	D3	Data Bus 3	
5b	GND	Ground	
6b	D8	Data Bus 8	
7b	GND	Ground	
8b	D13	Data Bus 13	
9b	D18	Data Bus 18	
10b	GND	Ground	
11b	D23	Data Bus 23	
12b	D28	Data Bus 28	
13b	GND	Ground	
14b	EX_GPIO00	FPGA extension connector GPIO port 0	
15b	EX_GPIO02	FPGA extension connector GPIO port 2	
16b	EX_GPIO04	FPGA extension connector GPIO port 4	
17b	EX_GPIO06	FPGA extension connector GPIO port 6	
18b	GND	Ground	
19b	GND	Ground	
20b	HAC_BITCLK	HAC bit clock	
21b	SSI_CLK	SSI serial bit clock	
22b	R.S.V16	Reserved 16	
23b	R.S.V21	Reserved 21	
24b	R.S.V24	Reserved 24	
25b	GND	Ground	

Pin number	Signal name	Function	Note
1c	+5.0V	Power Supply	
2c	+5.0V	Power Supply	
3c	GND	Ground	
4c	D2	Data Bus 2	
5c	GND	Ground	
6c	D7	Data Bus 7	
7c	GND	Ground	
8c	D12	Data Bus 12	
9c	D17	Data Bus 17	
10c	GND	Ground	
11c	D22	Data Bus 22	
12c	D27	Data Bus 27	
13c	GND	Ground	
14c	EXT_CS0#	External Chip Select 0	
15c	EXT_CS1#	External Chip Select 1	
16c	EX_IRQn	External Interrupt	
17c	RDY#	Ready	
18c	IIC_SDA	IIC Data	
19c	GND	Ground	
20c	HAC_SYNC	HAC Frame Sync	
21c	SSI_SDATA	SSI Data	
22c	R.S.V15	Reserved 15	
23c	R.S.V20	Reserved 20	
24c	R.S.V23	Reserved 23	
25c	GND	Ground	

Pin number	Signal name	Function	Note
1d	+5.0V	Power Supply	
2d	+5.0V	Power Supply	
3d	GND	Ground	
4d	D1	Data Bus 1	
5d	GND	Ground	
6d	D6	Data Bus 6	
7d	GND	Ground	
8d	D11	Data Bus 11	
9d	D16	Data Bus 16	
10d	GND	Ground	
11d	D21	Data Bus 21	
12d	D26	Data Bus 26	
13d	D31	Data Bus 31	
14d	BREQ0#	Bus Request 0	
15d	GND	Ground	
16d	BACK0	Bus Acknowledge 0	
17d	GND	Ground	
18d	IIC_SCL	IIC clock	
19d	GND	Ground	
20d	HAC_SDATAI	HAC Data Input	
21d	SSI_WS	SSI Word Select	
22d	R.S.V14	Reserved 14	
23d	R.S.V19	Reserved 19	
24d	GND	Ground	
25d	+12V	Power Supply	

Pin number	Signal name	Function	Note
1e	+5.0V	Power Supply	
2e	+5.0V	Power Supply	
3e	GND	Ground	
4e	D0	Data Bus 0	
5e	GND	Ground	
6e	D5	Data Bus 5	
7e	GND	Ground	
8e	D10	Data Bus 10	
9e	D15	Data Bus 15	
10e	GND	Ground	
11e	D20	Data Bus 20	
12e	D25	Data Bus 25	
13e	D30	Data Bus 30	
14e	GND	Ground	
15e	CKIO	SH CKIO	
16e	GND	Ground	
17e	CLKIN	External Clock Input	
18e	GND	Ground	
19e	GND	Ground	
20e	HAC_SDATAO	HAC Data Output	
21e	SSI_SCK	SSI serial bit clock	
22e	R.S.V13	Reserved 13	
23e	R.S.V18	Reserved 18	
24e	GND	Ground	
25e	+12V	Power Supply	

2.5.2. Front Panel Connector B

CN2, 5, 8 and 11 are connectors for board connection. The address buses are mainly connected.

The general-view figure of connector [B] for board connection is shown in Fig. 2.5.2, and signal arrangement is shown in Table 2.5.2.

The f and z sequence are GND connection.

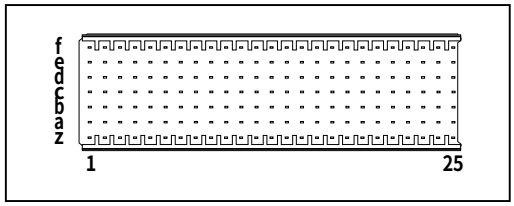


Figure 2.5.2 Connector [B] appearance figure

Table 2.5.2 Signal arrangement of connector [A] for board connection (CN2, 5, 8, 11)

Pin number	Signal name	Function	Note
1a	+3.3V	Power Supply	
2a	+3.3V	Power Supply	
3a	GND	Ground	
4a	A25	Address Bus 25	
5a	A20	Address Bus 20	
6a	A15	Address Bus 15	
7a	GND	Ground	
8a	A10	Address Bus 10	
9a	A5	Address Bus 5	
10a	R.S.V0	Reserved0	
11a	R.S.V3	Reserved3	
12a	R.S.V7	Reserved7	
13a	GND	Ground	
14a	CS3#	Chip Select 3	
15a	GND	Ground	
16a	GND	Ground	
17a	GND	Ground	
18a	DREQ0#	DMA Request 0	
19a	DACK0	DMA Acknowledge 0	
20a	WAIT0#	External wait 0	
21a	WAIT4#	External wait 4	
22a	GND	Ground	
23a	IRQ0#	External Interrupt 0	
24a	IRQ4#	External Interrupt 4	
25a	GND	Ground	

Pin number	Signal name	Function	Note
1b	+3.3V	Power Supply	
2b	+3.3V	Power Supply	
3b	GND	Ground	
4b	A24	Address Bus 24	
5b	A19	Address Bus 19	
6b	A14	Address Bus 14	
7b	GND	Ground	
8b	A9	Address Bus 9	
9b	A4	Address Bus 4	
10b	R.S.V1	Reserved1	
11b	R.S.V4	Reserved4	
12b	WE0#	Write Enable 0	
13b	GND	Ground	
14b	CS2#	Chip Select 2	
15b	CS6#	Chip Select 6	
16b	PRESET#	Power On Reset	
17b	GND	Ground	
18b	DREQ1#	DMA Request 1	
19b	DACK1	DMA Acknowledge 1	
20b	WAIT1#	External wait 1	
21b	WAIT5#	External wait 5	
22b	GND	Ground	
23b	IRQ1#	External Interrupt 1	
24b	IRQ5#	External Interrupt 5	
25b	GND	Ground	

Pin number	Signal name	Function	Note
1c	+3.3V	Power Supply	
2c	+3.3V	Power Supply	
3c	GND	Ground	
4c	A23	Address Bus 23	
5c	A18	Address Bus 18	
6c	A13	Address Bus 13	
7c	GND	Ground	
8c	A8	Address Bus 8	
9c	A3	Address Bus 3	
10c	R.S.V2	Reserved2	
11c	R.S.V5	Reserved5	
12c	WE1#	Write Enable 1	
13c	GND	Ground	
14c	CS1#	Chip Select 1	
15c	CS5#	Chip Select 5	
16c	GND	Ground	
17c	GND	Ground	
18c	DREQ2#	DMA Request 2	
19c	DACK2	DMA Acknowledge 2	
20c	WAIT2#	External wait 2	
21c	WAIT6#	External wait 6	
22c	GND	Ground	
23c	IRQ2#	External Interrupt 2	
24c	IRQ6#	External Interrupt 6	
25c	GND	Ground	

Pin number	Signal name	Function	Note
1d	+3.3V	Power Supply	
2d	+3.3V	Power Supply	
3d	GND	Ground	
4d	A22	Address Bus 22	
5d	A17	Address Bus 17	
6d	A12	Address Bus 12	
7d	GND	Ground	
8d	A7	Address Bus 7	
9d	A2	Address Bus 2	
10d	GND	Ground	
11d	R.S.V6	Reserved6	
12d	WE2#	Write Enable 2	
13d	GND	Ground	
14d	CS0#	Chip Select 0	
15d	CS4#	Chip Select 4	
16d	RD/WR#	Read/Write Enable	
17d	GND	Ground	
18d	DREQ3#	DMA Request 3	
19d	DACK3	DMA Acknowledge 3	
20d	WAIT3#	External wait 3	
21d	WAIT7#	External wait 7	
22d	GND	Ground	
23d	IRQ3#	External Interrupt 3	
24d	IRQ7#	External Interrupt 7	
25d	GND	Ground	

Pin number	Signal name	Function	Note
1e	+3.3V	Power Supply	
2e	+3.3V	Power Supply	
3e	GND	Ground	
4e	A21	Address Bus 21	
5e	A16	Address Bus 16	
6e	A11	Address Bus 11	
7e	GND	Ground	
8e	A6	Address Bus 6	
9e	A1	Address Bus 1	
10e	A0	Address Bus 0	
11e	GND	Ground	
12e	WE3#	Write Enable 3	
13e	GND	Ground	
14e	BS#	Bus Start	
15e	GND	Ground	
16e	RD#	Read Enable	
17e	GND	Ground	
18e	GND	Ground	
19e	DRAK0	DMAC0 Request Acknowledge	
20e	GND	Ground	
21e	POW_OFF#	System Power OFF	
22e	SYS_RESET#	System Reset	
23e	R.S.V8	Reserved 8	
24e	R.S.V9	Reserved 9	
25e	R.S.V10	Reserved 10	

2.5.3. Front Panel Connector C

CN3, 6, 9 and 12 are connectors for board connection. The peripheral buses are mainly connected.

The general-view figure of connector [C] for board connection is shown in Fig. 2.5.3, and signal arrangement is shown in Table 2.5.3.The f and z sequence are GND connection.

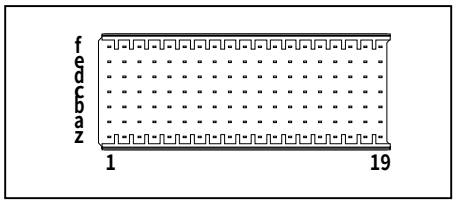


Figure 2.5.3 Connector [C] appearance figure

Table 2.5.3 Signal arrangement of connector [C] for board connection (CN3, 6, 9, 12)

Pin number	Signal name	Function	Note
1a	A_3.3V	Analog 3.3V Power Supply	
2a	AN0	Analog Input 0	
3a	AN2	Analog Input 2	
4a	AN3	Analog Input 3	
5a	GND	Ground	
6a	D_R4	LCD Data Bus Red 4	
7a	D_G2	LCD Data Bus Green 2	
8a	D_B0	LCD Data Bus Blue 0	
9a	D_B5	LCD Data Bus Blue 5	
10a	GND	Ground	
11a	RTC_32K	RTC Clock 32KHz	
12a	RTC_IRQA#	RTC Interrupt A	
13a	RTC_IRQB#	RTC Interrupt B	
14a	TP_DOUT	Touch Panel Data Output	
15a	CAN_ERR#	CAN Bus Error	
16a	POW_INT#	Interrupt for Amperometries	
17a	POW_D1	Data Bus 1 for Amperometries	
18a	GND	Ground	
19a	GND	Ground	

Pin number	Signal name	Function	Note
1b	A_3.3V	Analog 3.3V Power Supply	
2b	AN_GND	Analog Ground	
3b	AN1	Analog Input 1	
4b	D_CDE	Digital color detection	
5b	D_DOTCLK	LCD Dot Clock	
6b	D_R3	LCD Data Bus Red 3	
7b	D_G1	LCD Data Bus Green 1	
8b	GND	Ground	
9b	D_B4	LCD Data Bus Blue 4	
10b	RESET_LED	Reset Led Control	
11b	AX_RDY#	AX88796 Ready	
12b	GND	Ground	
13b	GND	Ground	
14b	TP_DIN	Touch Panel Data Input	
15b	CAN_RX	CAN Bus RXD	
16b	POW_CS#	Chip Select for Amperometries	
17b	POW_D0	Data Bus 0 for Amperometries	
18b	POW_D5	Data Bus 5 for Amperometries	
19b	POW_D9	Data Bus 9 for Amperometries	

Pin number	Signal name	Function	Note
1c	A_3.3V	Analog 3.3V Power Supply	
2c	A_B	Analog Blue（CRT）	
3c	AN_GND	Analog Ground	
4c	D_CLAMP	Digital CLAMP	
5c	D_DISP	Digital DISP	
6c	D_R2	LCD Data Bus Red 2	
7c	D_G0	LCD Data Bus Green 0	
8c	D_G5	LCD Data Bus Green 5	
9c	D_B3	LCD Data Bus Blue 3	
10c	DASP_LED	CF Sccess LED Control	
11c	AX_IRQ	AX88796 Interrupt	
12c	SCI0_SCK	SCIF0 Clock	
13c	SCI1_SCK	SCIF1 Clock	
14c	TP_CS#	Touch Panel Chip Select	
15c	CAN_TX	CAN Bus Transmit Data	
16c	GND	Ground	
17c	POW_S0	for Amperometries	
18c	POW_D4	Data Bus 4 for Amperometries	
19c	POW_D8	Data Bus 8 for Amperometries	

Pin number	Signal name	Function	Note
1d	AN_GND	Analog Ground	
2d	A_G	Analog Green (CRT)	
3d	AN_GND	Analog Ground	
4d	A_HSYNC	Analog HSYNC	
5d	D_HSYNC	Analog HSYNC	
6d	D_R1	LCD Data Bus Red 1	
7d	GND	Ground	
8d	D_G4	LCD Data Bus Green 4	
9d	D_B2	LCD Data Bus Blue 2	
10d	LCD_VDD_ENB	LCD Power Enable	
11d	AX_CSn	AX88796 Chip Select	
12d	SCI0_RXD	SCIF0 Receive Data	
13d	SCI1_RXD	SCIF1 Receive Data	
14d	TP_CLK	Touch Panel Clock	
15d	TP_IRQn	Touch Panel Interrupt	
16d	GPS_CLK	GPS Clock	
17d	POW_RDn	Read Enable for Amperometries	
18d	POW_D3	Data Bus 3 for Amperometries	
19d	POW_D7	Data Bus 7 for Amperometries	

Pin number	Signal name	Function	Note
1e	AN_GND	Analog Ground	
2e	A_R	Analog Red（CRT）	
3e	AN_GND	Analog Ground	
4e	A_VSYNC	Analog VSYNC	
5e	D_VSYNC	Analog VSYNC	
6e	D_R0	LCD Data Bus Red 0	
7e	D_R5	LCD Data Bus Red 5	
8e	D_G3	LCD Data Bus Green 3	
9e	D_B1	LCD Data Bus Blue 1	
10e	LCD_LIGHT_ENB	LCD Back Light Enable	
11e	AX_RESET	AS88796 Reset	
12e	SCI0_TXD	SCIF0 Transmit Data	
13e	SCI1_TXD	SCIF1 Transmit Data	
14e	GND	Ground	
15e	TP_BUSY	Touch Panel Busy	
16e	GPS_IN	GPS Data	
17e	GND	Ground	
18e	POW_D2	Data Bus 2 for Amperometries	
19e	POW_D6	Data Bus 6 for Amperometries	

2.5.4. CRT Connector

CN4 is a connector for CRT connection. Please connect using the connector for front section connection. Signal arrangement of the connector for CRT interfaces is shown in Table 2.5.4.

Table 2.5.4 Signal arrangement of connector for CRT interfaces

Pin number	Signal name
1	R
2	G
3	B
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	NC
13	CRTHS
14	CRTVS
15	NC

2.5.5. LCD Connector

CN7 is a connector for LCD interfaces. Please use it according to the specification of LCD which the user adopted. The connectors currently used are 40 FLH-SM1-TB (LF), and (SN) (made from the J.S.T. Mfg Co.,Ltd) The appearance figure of the connector for LCD interfaces is shown in Fig. 2.5.5, and signal arrangement is shown in Table 2.5.5.

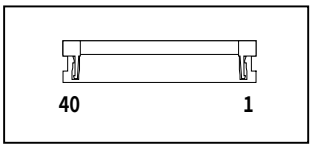


Figure 2.5.5 Connector appearance figure for LCD interfaces

Table 2.5.5 Signal arrangement of connector for LCD interfaces

Pin number	Signal name	Note
1	GND	
2	CK	Clock signal
3	GND	
4	HSYNC	Horizontal Synchronizing signal
5	GND	
6	VSYNC	Vertical Synchronizing signal
7	GND	
8	R0	Red data
9	R1	
10	R2	
11	R3	
12	R4	
13	R5	
14	GND	
15	G0	Green data
16	G1	
17	G2	
18	G3	
19	G4	
20	G5	
21	GND	
22	B0	Blue data
23	B1	
24	B2	
25	B3	
26	B4	
27	B5	
28	GND	
29	FPEN	LCD enable
30	GND	
31	GND	
32	NC	
33	NC	
34	+5.0V	
35	+5.0V	
36	+5.0V	
37	+5.0V	
38	+5.0V	
39	+5.0V	
40	+5.0V	

2.5.6. LCD Back Light Connector

CN6 is a connector for LCD inverter connection. The appearance figure of the connector for LCD inverter connection is shown in Fig. 2.5.6, and signal arrangement of the connector for LCD inverter connection is shown in Table 2.5.6.
The connector currently used is the product 53261-0571 made from Molex. Conformity housing is 51021-0500.

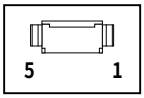


Figure 2.5.6 Connector appearance figure for LCD inverter connection

Table 2.5.6 Signal arrangement of connector for LCD inverter connection

Pin number	Signal name	Note
1	VCC	12.0V
2	GND	
3	VRMT	Inverter ON/OFF
4	VR0	Brightness adjustment Volume resistance of 50kohm
5	VR1	

2.5.7. Touch Panel Connector

CN9 is a connector for interfaces for receiving the signal from LSI for touch-panel control. Please prepare of a user about a touch-panel interface circuitry. The appearance figure of the connector for touch-panel interfaces is shown in Fig. 2.5.7, and signal arrangement is shown in Table 2.5.7.

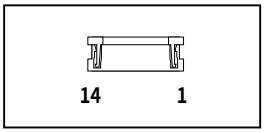


Figure 2.5.7 Connector appearance figure for Touch panel interface

Table2.5.7 Signal arrangement of the connector for Touch panel interface

Pin number	Signal name	IO	Note
1	3.3V		
2	3.3V		
3	DCLK	O	Clock output (it can change on FPGA to 60kHz - 110kHz)
4	GND		
5	CS#	O	Chip Select
6	GND		
7	DIN	O	Write Data
8	GND		
9	BUSY	I	Busy signal
10	GND		
11	DOUT	I	Read Data
12	GND		
13	IRQ#	I	Interrupt
14	GND		

2.5.8. The Connector for Main Board and Sub Board

The main board and the Sub board are connected by three connectors.

Connector A	Main Board CN13	⇔	Sub Board CN1
Connector B	Main Board CN14	⇔	Sub Board CN2
Connector C	Main Board CN15	⇔	Sub Board CN3

2.5.8.1. The Connector [A] for Main Board and Sub Board

The signal arrangement is shown in Table 2.5.8.1.

Table2.5.8.1 Signal arrangement of connector [A] for Main to Sub board connection

Pin number	Signal name	Function	Pin number	Signal name	Function
1	GND	Ground	31	GND	Ground
2	R.S.V21	Reserved 21	32	R.S.V20	Reserved 20
3	R.S.V19	Reserved 19	33	R.S.V18	Reserved 18
4	R.S.V17	Reserved 17	34	R.S.V16	Reserved 16
5	R.S.V15	Reserved 15	35	R.S.V14	Reserved 14
6	R.S.V13	Reserved 13	36	R.S.V12	Reserved 12
7	R.S.V11	Reserved 11	37	POWER_OFF#	Power OFF Control
8	GND	Ground	38	GND	Ground
9	GND	Ground	39	GND	Ground
10	GND	Ground	40	GND	Ground
11	+5.0V	Power Supply	41	+５V	Power Supply
12	+5.0V	Power Supply	42	+５V	Power Supply
13	+5.0V	Power Supply	43	+５V	Power Supply
14	GND	Ground	44	GND	Ground
15	GND	Ground	45	GND	Ground
16	GND	Ground	46	GND	Ground
17	EXT_GPIO7	FPGA GPIO Port 7	47	EXT_GPIO6	FPGA GPIO Port 6
18	EXT_GPIO5	FPGA GPIO Port 5	48	EXT_GPIO4	FPGA GPIO Port 4
19	EXT_GPIO3	FPGA GPIO Port 3	49	EXT_GPIO2	FPGA GPIO Port 2
20	EXT_GPIO1	FPGA GPIO Port 1	50	EXT_GPIO0	FPGA GPIO Port 0
21	GND	Ground	51	GND	Ground
22	GND	Ground	52	GND	Ground
23	+5.0V	Power Supply	53	+5.0V	Power Supply
24	+5.0V	Power Supply	54	+5.0V	Power Supply
25	+5.0V	Power Supply	55	+5.0V	Power Supply
26	GND	Ground	56	GND	Ground
27	+12V	Power Supply	57	+12V	Power Supply
28	+12V	Power Supply	58	+12V	Power Supply
29	GND	Ground	59	GND	Ground
30	GND	Ground	60	GND	Ground

2.5.8.2. The Connector [B] for Main Board and Sub Board

The signal arrangement is shown in Table 2.5.8.2.

Table2.5.8.2 Signal arrangement of connector [B] for Main to Sub board connection

Pin number	Signal name	Function	Pin number	Signal name	Function
1	GND	Ground	31	GND	Ground
2	RESET_LED	Reset LED Control	32	DASP_LED	CF access LED control
3	LCD_VDD_EN	LCD Power Enable	33	LCD_LIGHT_EN	LCD back light Enable
4	GND	Ground	34	GND	Ground
5	D_B5	LCD data bus Blue 5	35	D_B4	LCD data bus Blue 4
6	D_B3	LCD data bus Blue 3	36	D_B2	LCD data bus Blue 2
7	D_B1	LCD data bus Blue 1	37	D_B0	LCD data bus Blue 0
8	GND	Ground	38	D_G5	LCD data bus Green 5
9	D_G4	LCD data bus Green 4	39	D_G3	LCD data bus Green 3
10	D_G2	LCD data bus Green 2	40	D_G1	LCD data bus Green 1
11	D_G0	LCD data bus Green 0	41	GND	Ground
12	D_R5	LCD data bus Red 5	42	D_R4	LCD data bus Red 4
13	D_R3	LCD data bus Red 3	43	D_R2	LCD data bus Red 2
14	D_R1	LCD data bus Red 1	44	D_R0	LCD data bus Red 0
15	GND	Ground	45	GND	Ground
16	D_DOTCLK	LCD Dot Clock	46	D_DISP	Digital DISP
17	D_HSYNC	Digital HSYNC	47	D_VSYNC	Digital VSYNC
18	GND	Ground	48	GND	Ground
19	+3.3V	Power Supply	49	+3.3V	Power Supply
20	+3.3V	Power Supply	50	+3.3V	Power Supply
21	+3.3V	Power Supply	51	+3.3V	Power Supply
22	+3.3V	Power Supply	52	+3.3V	Power Supply
23	GND	Ground	53	GND	Ground
24	GND	Ground	54	A_VSYNC	Analog VSYNC
25	D_CLAMP	Digital CLAMP	55	A_HSYNC	Analog HSYNC
26	AN_GND	Analog Ground	56	D_CDE	Digital color detection
27	A_R	Analog RED	57	AN_GND	Analog Ground
28	A_B	Analog BLUE	58	A_G	Analog GREEN
29	AN_GND	Analog Ground	59	AN_GND	Analog Ground
30	A+3.3V	Analog 3.3V	60	A+3.3V	Analog 3.3V

2.5.8.3. The Connector [C] for Main Board and Sub Board

The signal arrangement is shown in Table 2.5.8.3.

Table2.5.8.3 Signal arrangement of connector [C] for Main to Sub board connection

Pin number	Signal name	Function	Pin number	Signal name	Function
1	PAN_GND	Ground	31	PAN_GND	Ground
2	PAOUT0	Data out 0 for Amperometries	32	PAOUT1	Data out 1 for Amperometries
3	PAN_GND	Ground	33	PAN_GND	Ground
4	GND	Ground	34	GND	Ground
5	GPS_IN	GPS data	35	GPS_CLK	GPS Clock
6	CAN_TX	CAN Bus Transmit data	36	GND	Ground
7	CAN_ERR#	CAN Bus error	37	CAN_RX	CAN Bus Receive data
8	GND	Ground	38	GND	Ground
9	TP_BUSY	Touchpanel busy	39	TP_IRQ#	Touch panel interrupt
10	TP_DOUT	Touch panel data output	40	TP_DIN	Touch panel data input
11	TP_CS#	Touch panel select	41	TP_CLK	Touch panel clock
12	GND	Ground	42	GND	Ground
13	SCI1_SCK	SCIF1 Clock	43	SCI1_RXD	SCIF1 Receive data
14	SCI1_TXD	SCIF1 Transmit data	44	GND	Ground
15	GND	Ground	45	GND	Ground
16	GND	Ground	46	GND	Ground
17	GND	Ground	47	GND	Ground
18	+3.3V	Power Supply	48	+3.3V	Power Supply
19	+3.3V	Power Supply	49	+3.3V	Power Supply
20	+3.3V	Power Supply	50	+3.3V	Power Supply
21	+3.3V	Power Supply	51	+3.3V	Power Supply
22	+3.3V	Power Supply	52	+3.3V	Power Supply
23	GND	Ground	53	GND	Ground
24	GND	Ground	54	GND	Ground
25	GND	Ground	55	GND	Ground
26	+3.3V	Power Supply	56	+3.3V	Power Supply
27	+3.3V	Power Supply	57	+3.3V	Power Supply
28	+3.3V	Power Supply	58	+3.3V	Power Supply
29	+3.3V	Power Supply	59	+3.3V	Power Supply
30	+3.3V	Power Supply	60	+3.3V	Power Supply

2.5.9. Extension Power Connector 1

CN16 is a connector for power supply extension. It is used in order to supply a power supply to R0P0400LE0011RL. Hirose Electric DF1E-4P-2.5DS is used. The general-view figure of extension power connector 1 is shown in Fig. 2.5.9, and signal arrangement is shown in Table 2.5.9.

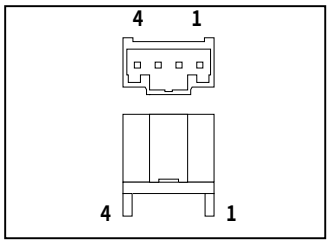


Figure 2.5.9 Extension power connector 1

Table2.5.9 Signal arrangement of extension power connector 1

Pin number	Signal name	Note
1	+5.0V	Power Supply
2	GND	Ground
3	+3.3V	Power Supply
4	GND	Ground

CAUTION

The rated current value of connector contact is a maximum of 3A. Please do not use it more than 3A.

2.5.10. Extension Power Connector 2

CN11 is a connector for power supply extension. It is used when supplying a power supply to external HDD etc.
Hirose Electric DF1E-6P-2.5DS is used. The general-view figure of extension power connector 2 is shown in Fig. 2.5.10, and signal arrangement is shown in Table 2.5.10.

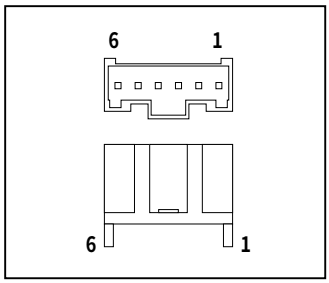


図2.5.10 Extension power connector 2

Table2.5.10 Signal arrangement of extension power connector 2

Pin number	Signal name	Note
1	+12V	Power Supply
2	GND	Ground
3	GND	Ground
4	+5.0V	Power Supply
5	NC	Not use
6	NC	Not use

CAUTION

The rated current value of connector contact is a maximum of 3A. Please do not use it more than 3A.

3. Extension Board Specification

3.1. About Add-in Board Size

Please observe the following matters, in case the add-in board for these products is created of a user.

An add-in board size figure is shown in Fig. 3.1.1, and a terminal accommodation figure is shown in Fig. 3.1.2.

■Board size is 117.85mm x 133mm fixation. Moreover, the board both ends each 10mm x 133mm is pattern prohibition and the ban on part mounting.

■A part side and a solder side set height restrictions of mounting parts to a maximum of 15mm.

Connector A, B: PCN21A-125SB-2PF-G (HIROSE)

Connector C: PCN21A-95SB-2PF-G(HIROSE)

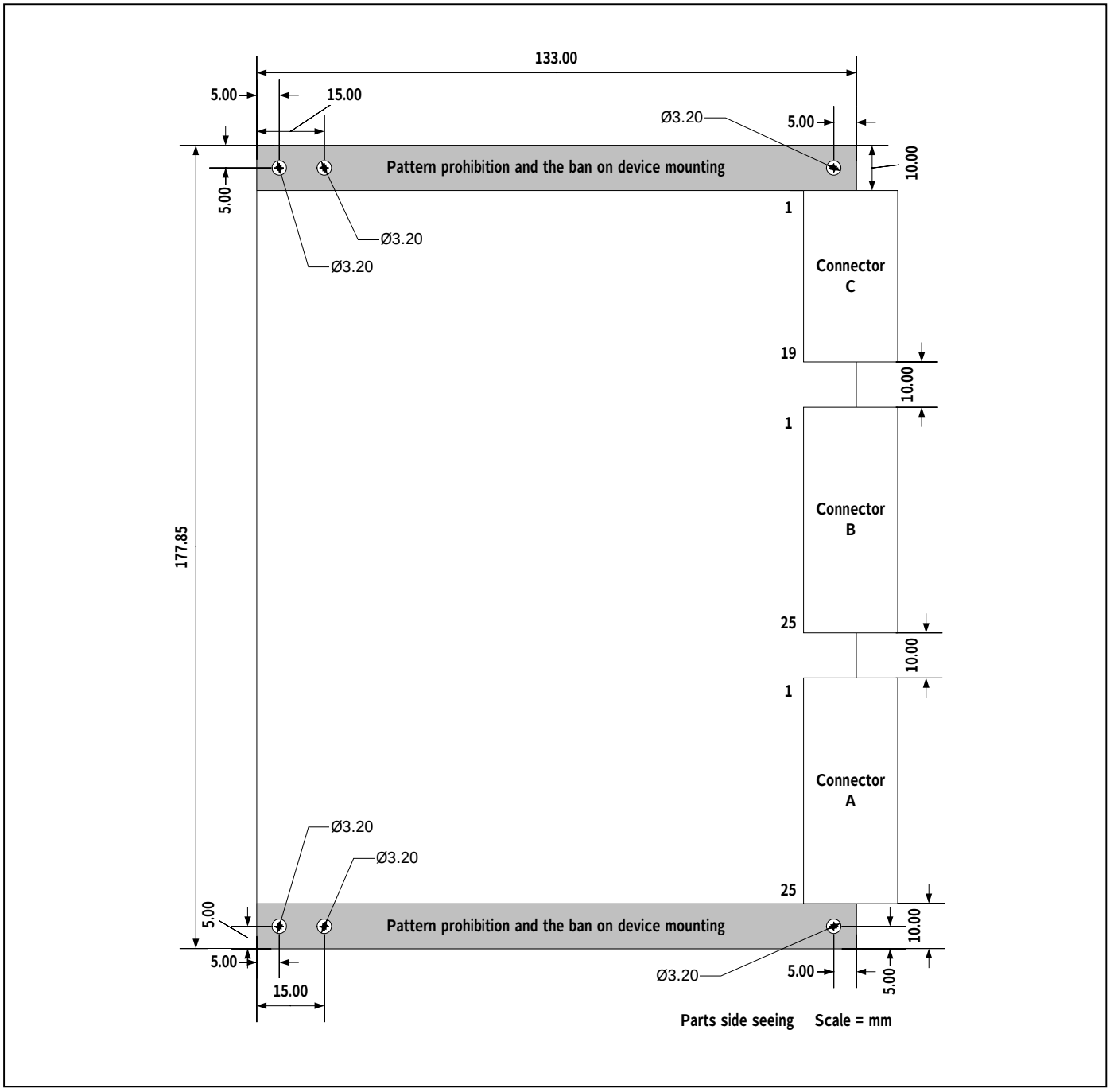


Figure 3.1.1 Add-in board size

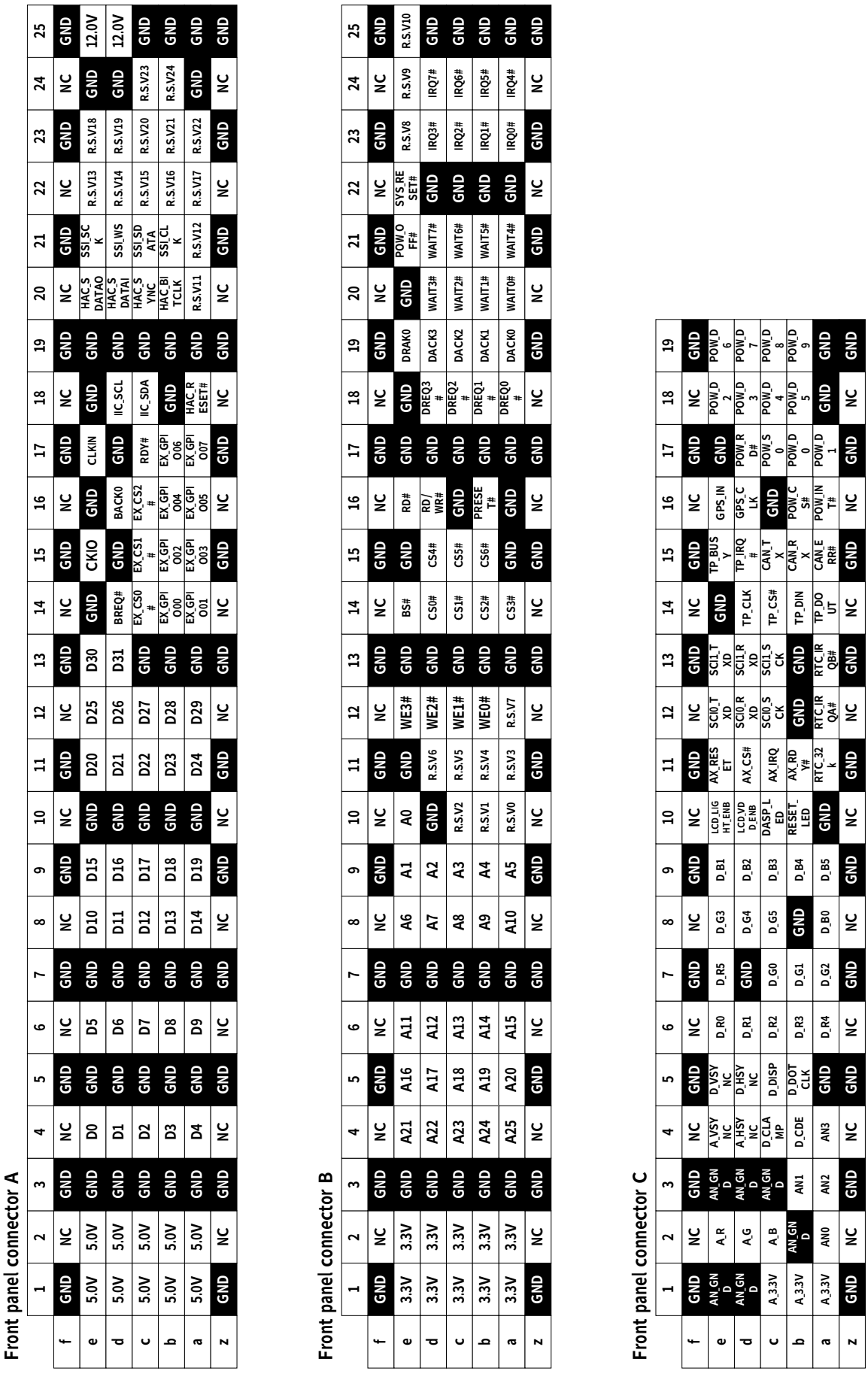


Figure 3.1.2 Signal arrangement of Add-in board connector

3.2. About permission electric energy

The maximum consumed electric power which can respond with this product is about 90W. Be careful for the combination of a board not to exceed 90W.

4. Appendix

4.1. R0P0400LP0011RL Main Board Circuit

4.2. R0P0400LP0011RL Sub Board Circuit

The power supply board for the RENESAS microcomputer evaluation KIT
User's Manual
R0P0400LP0011RL

Publication Date: July. 2006 Rev.1.00

Published by: Renesas Solutions Corp.
System Buisiness Division

Edited by: Renesas Solutions Corp.
System Buisiness Division

R0P0400LP0011RL
User’s Manual