

# RX26T Group

## MCB-RX26T Type B User's Manual

Renesas RX Family  
RX200 Series

All information contained in these materials, including products and product specifications, represents information on the product at the time of publication and is subject to change by Renesas Electronics Corp. without notice. Please review the latest information published by Renesas Electronics Corp. through various means, including the Renesas Electronics Corp. website (<http://www.renesas.com>).

## General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

### 1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity.

Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

### 2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.

### 3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

### 4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

### 5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.

### 6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between  $V_{IL}$  (Max.) and  $V_{IH}$  (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between  $V_{IL}$  (Max.) and  $V_{IH}$  (Min.).

### 7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

### 8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

## Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
6. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.

"Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.

"High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.

Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
8. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

## Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan

[www.renesas.com](http://www.renesas.com)

## Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

## Contact information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:  
[www.renesas.com/contact/](http://www.renesas.com/contact/).

## Renesas RX Family

# MCB-RX26T Type B User's Manual

## Contents

1. Overview .....	4
1.1 Presupposition and precautions of this document .....	4
2. Product Contents .....	5
3. Product Order Information .....	5
4. Hardware Configuration and Default Setting .....	6
4.1 Hardware configuration .....	6
4.2 Block diagram .....	7
4.3 Board Layout .....	8
4.4 Standoffs and Screws .....	8
4.5 Jumper pin setting .....	9
4.6 Hardware Setup.....	10
5. CPU Board Specification .....	11
5.1 Functions .....	11
5.1.1 Power supply .....	11
5.1.2 On-board debugger .....	11
5.1.3 Inverter board connector .....	12
5.1.4 Serial communication .....	14
5.1.5 Reset circuit.....	14
5.1.6 LED.....	15
5.1.7 CAN Communication.....	15
5.1.8 SPI Communication.....	15
5.1.9 PMOD.....	16
5.2 RX26T pin function list .....	17
6. Design and Manufacture Information .....	19
7. Website and Support .....	19
Revision History .....	20

## Figure of contents

Figure 2-1 Product contents .....	5
Figure 4-1 CPU board block diagram .....	7

---

Figure 4-2 CPU Board Layout .....	8
Figure 4-3 Standoffs and Screws assembly .....	8
Figure 4-4 Default jumper pin setting .....	9
Figure 4-5 Board connection example.....	10
Figure 5-1 Board connection of CPU board, INV board and COM board .....	14

**Table of contents**

Table 4-1 CPU board specification .....	6
Table 4-2 Jumper pin setting of CPU board .....	9
Table 5-1 1st inverter board connector (CN1) pin assignment.....	12
Table 5-2 1st inverter board connector (CN2) pin assignment.....	12
Table 5-3 2nd inverter board connector (CN3) pin assignment .....	13
Table 5-4 2nd inverter board connector (CN4) pin assignment .....	13
Table 5-5 SCI connector (CN6) pin assignment.....	14
Table 5-6 LED pin assignment .....	15
Table 5-7 CAN communication pin assignment (CN5).....	15
Table 5-8 SPI communication pin assignment (CN13) .....	15
Table 5-9 PMOD Type 3A connector pin assignment (CN12) .....	16
Table 5-10 PMOD Type 6A connector pin assignment (CN10) .....	16
Table 5-11 RX26T pin function list .....	17

## 1. Overview

MCB-RX26T Type B is a CPU board for motor control evaluation. By using this product in combination with an inverter board, motor control using RX26T can be easily performed.

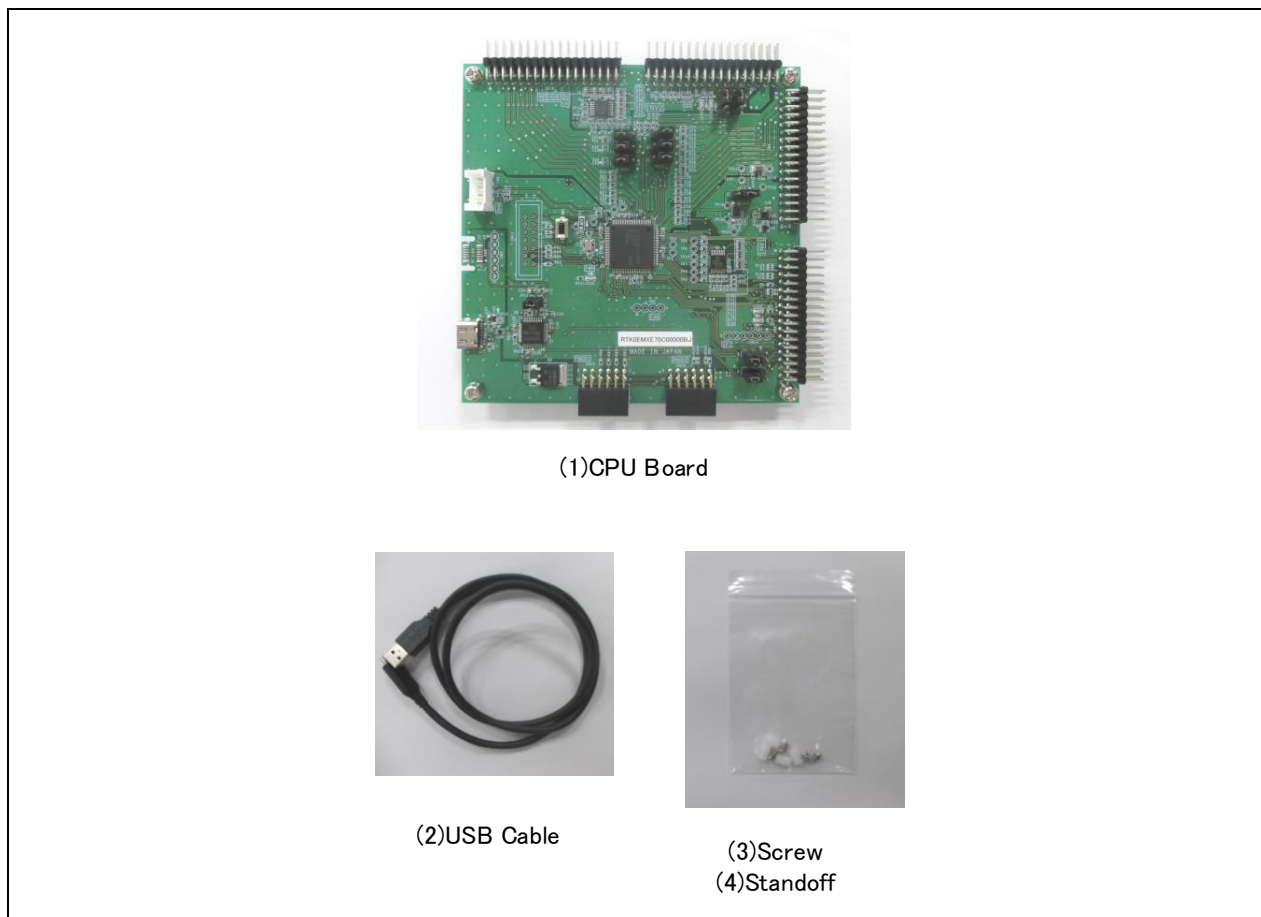
### 1.1 Presupposition and precautions of this document

1. Experience of using tools: This document assumes that the user has used terminal emulation program of Integrated Development Environment (IDE) such as e2 studio before.
2. Knowledge about the development subject: This document assumes that the user has a basic knowledge to modify the sample project regarding MCU and embedded system.
3. Before using this product, wear an antistatic wrist strap. If you touch this product with static charge on your body, a device failure may occur, or operation may become unstable
4. All screen shots provided in this document is for reference. Actual screen displays may differ depending on the software and development tool version which you use.

## 2. Product Contents

This kit consists of the following parts.

1. CPU Board (RTK0EMXE70C01000BJ) x1
2. USB Cable x1
3. Screw x4
4. Standoff x4



**Figure 2-1 Product contents**

## 3. Product Order Information


Product number to order MCB-RX26T Type B : RTK0EMXE70C01000BJ

## 4. Hardware Configuration and Default Setting

### 4.1 Hardware configuration

The specifications of the CPU board are shown below.

Table 4-1 CPU board specification

item	Specification	
Product name	CPU Board	
Board part No.	RTK0EMXE70C01000BJ	
Compatible inverter board	RTK0EM0000B12020BJ	
External view	 <p>Note: The actual product may differ from this photo.</p>	
Mounted MCU	Product group	RX26T group
	Product No.	R5F526TFDDFP
	CPU maximum operating frequency	120MHz
	Bit count	32 bit
	Package / Pin count	LFQFP / 100 pin
	ROM	512KB
MCU input clock	10MHz (Generate with external crystal oscillator)	
Power supply	DC 5V,3.3V (selectable with jumper switch) Select one way automatically from the below <ul style="list-style-type: none"> <li>• Power is supplied from compatible inverter board</li> <li>• Power is supplied from USB connector</li> </ul>	
Debugger	E2OB (Onboard debugger circuit)	
Connector	<ul style="list-style-type: none"> <li>• Inverter board connector</li> <li>• USB connector for E2 OB</li> <li>• SCI connector for Renesas Motor Workbench communication</li> <li>• Through hole for CAN communication</li> <li>• Through hole for SPI communication</li> <li>• PMOD connectors</li> </ul>	
Switch	MCU reset switch	
LED	User-controllable LED x4, Power LED x1	
Board size	109 mm (W) x 109 mm (L)	
Operating temperature	Room temperature	
Operating humidity	No condensation allowed	
EMC Directive	EN61326-1:2021 EMI : Class A EMS : Basic Electromagnetic environment	

4.2 Block diagram

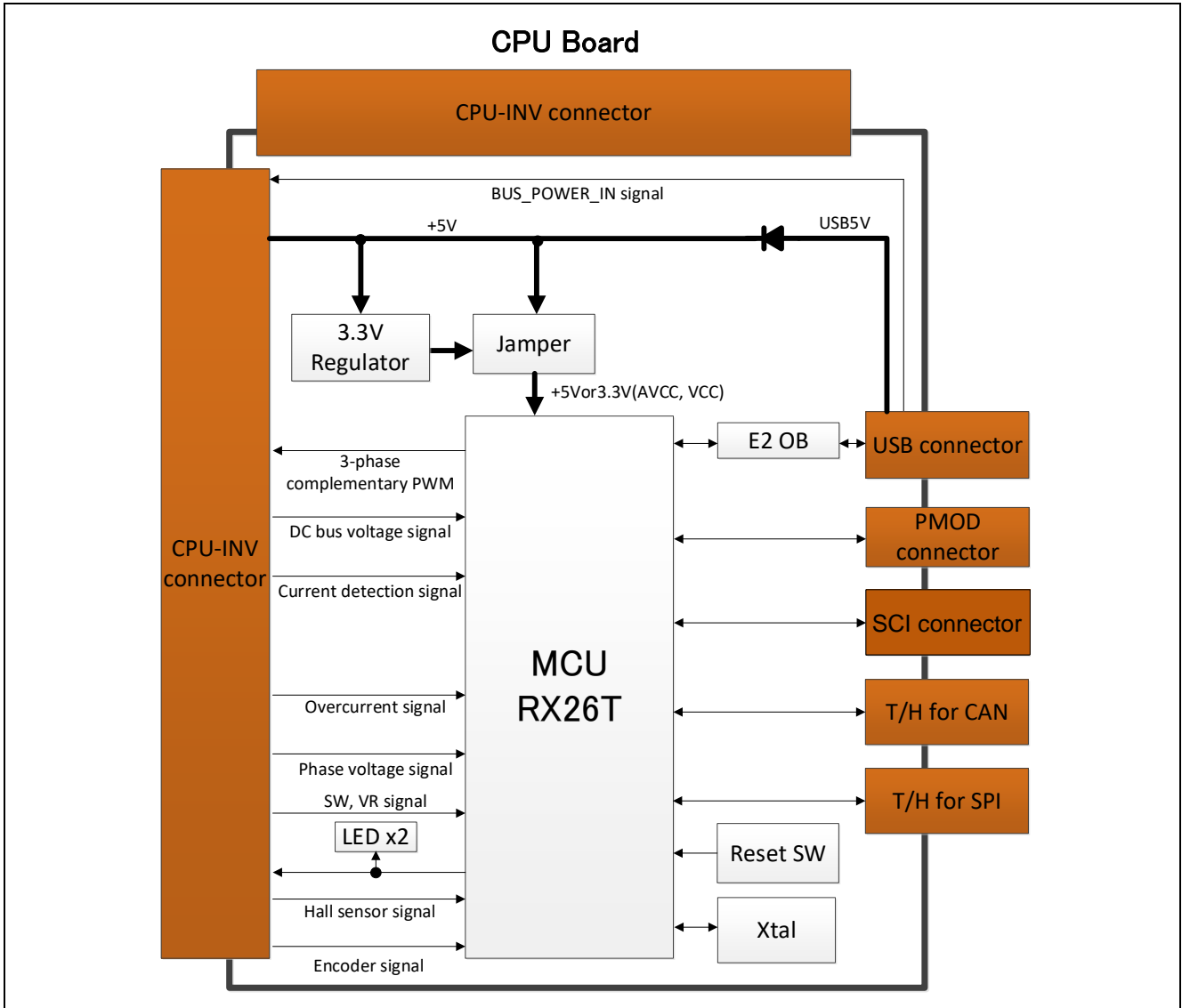


Figure 4-1 CPU board block diagram

### 4.3 Board Layout

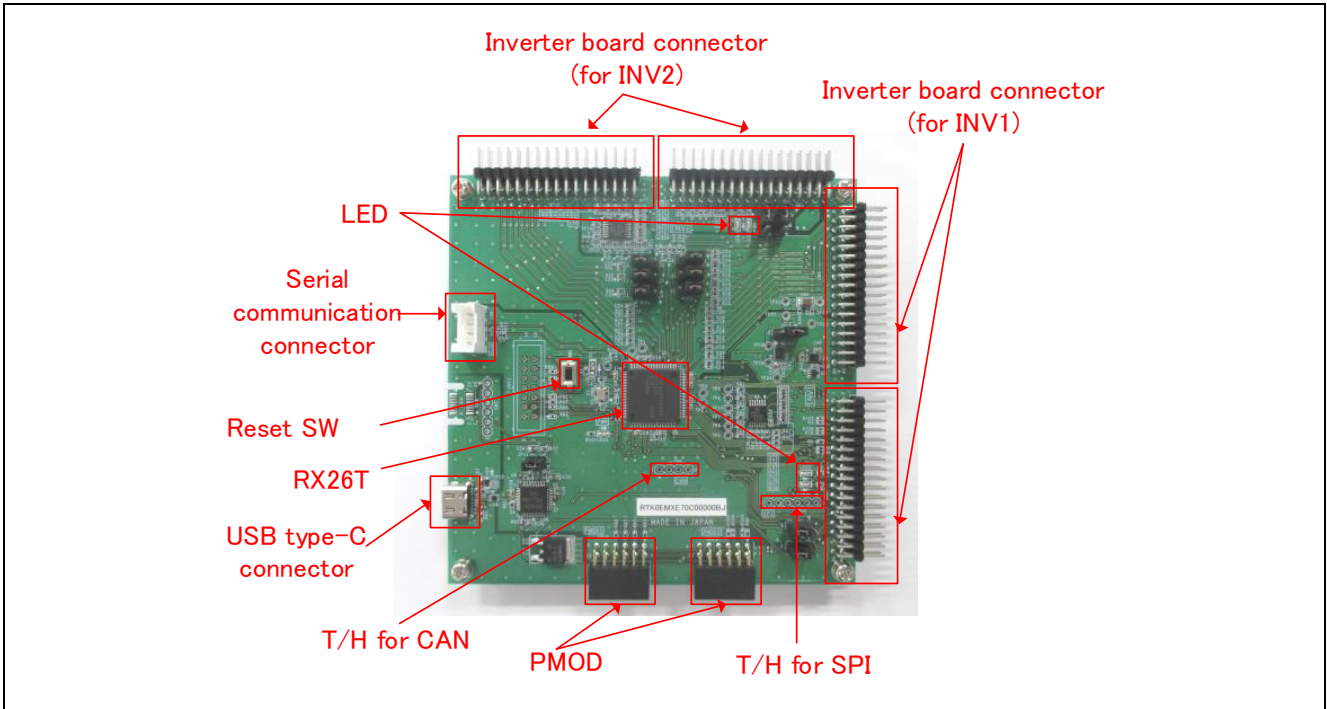


Figure 4-2 CPU Board Layout

### 4.4 Standoffs and Screws

Before using this product, assemble the included standoffs and screws as shown below.

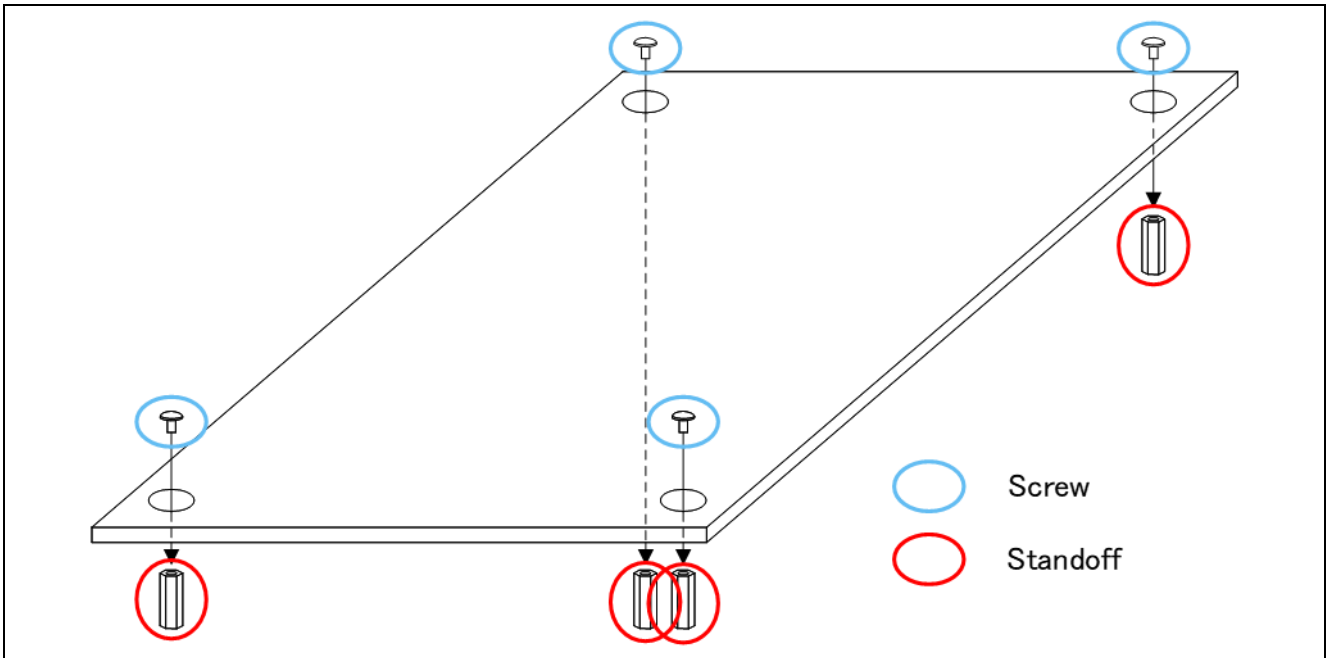


Figure 4-3 Standoffs and Screws assembly

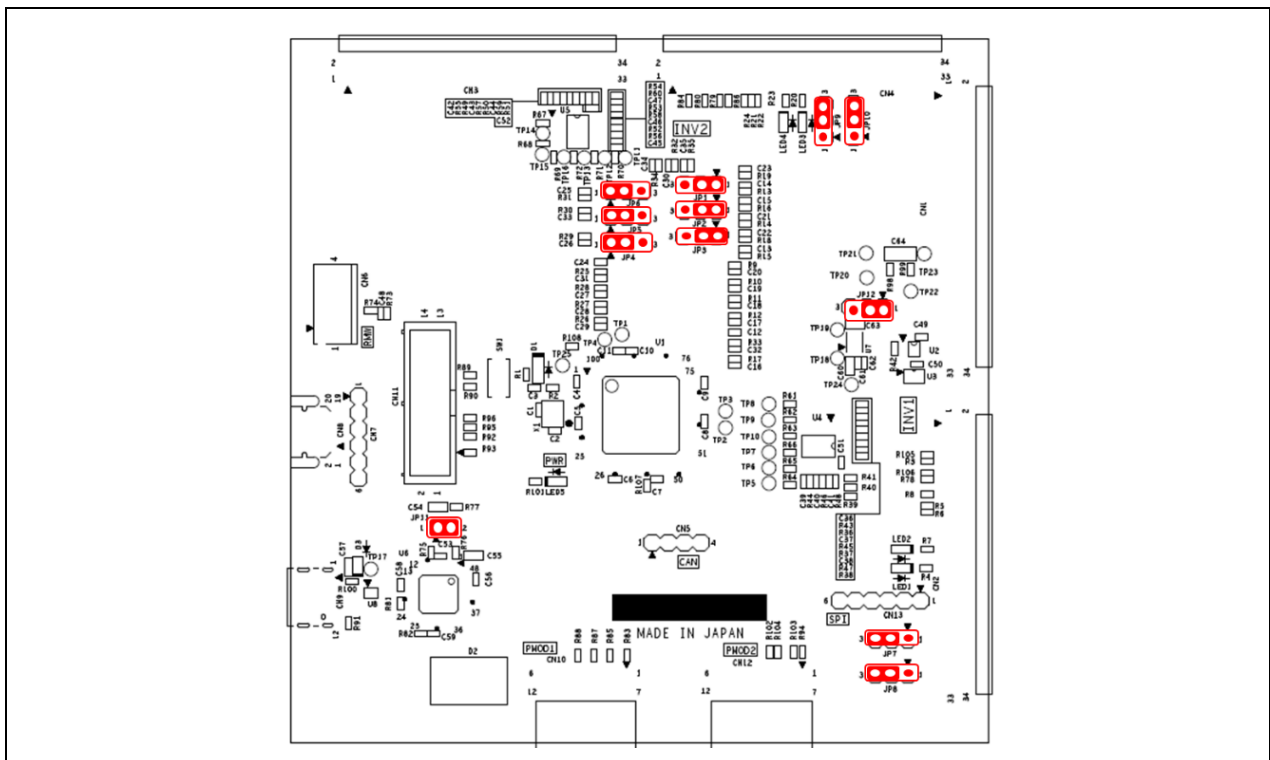
### 4.5 Jumper pin setting

Default settings and functions of the jumper pins (JP1~JP12) are as follows.

**Table 4-2 Jumper pin setting of CPU board**

JP No.	Function	Setting (function in use)			Default setting
		open	1-2 short	2-3 short	
1	IPS/VU select (INV1)	N/A	VU	IPS	1-2 short
2	IPS/VV select (INV1)	N/A	VV	IPS	1-2 short
3	IPS/VW select (INV1)	N/A	VW	IPS	1-2 short
4	IPS/VU select (INV2)	N/A	VU	IPS	1-2 short
5	IPS/VV select (INV2)	N/A	VV	IPS	1-2 short
6	IPS/VW select (INV2)	N/A	VW	IPS	1-2 short
7	IPS/ENC select (INV1)	N/A	IPS	ENC	2-3 short
8	IPS/ENC select (INV1)	N/A	IPS	ENC	2-3 short
9	IPS/ENC select (INV2)	N/A	IPS	ENC	2-3 short
10	IPS/ENC select (INV2)	N/A	IPS	ENC	2-3 short
11	Debugger connection	Enabled	Disabled	N/A	1-2 short
12	MCU operation voltage	N/A	5V	3.3V	1-2 short

IPS : Inductive Position Sensor  
 ENC : Encoder



**Figure 4-4 Default jumper pin setting**

### 4.6 Hardware Setup

Figure 4-5 show a connection example when using this product with the inverter board kit (product name: MCI-LV-1, model name: RTK0EM0000S04020BJ) and the communication board (product name: MC-COM, model name: RTK0EMXC90S00000BJ).

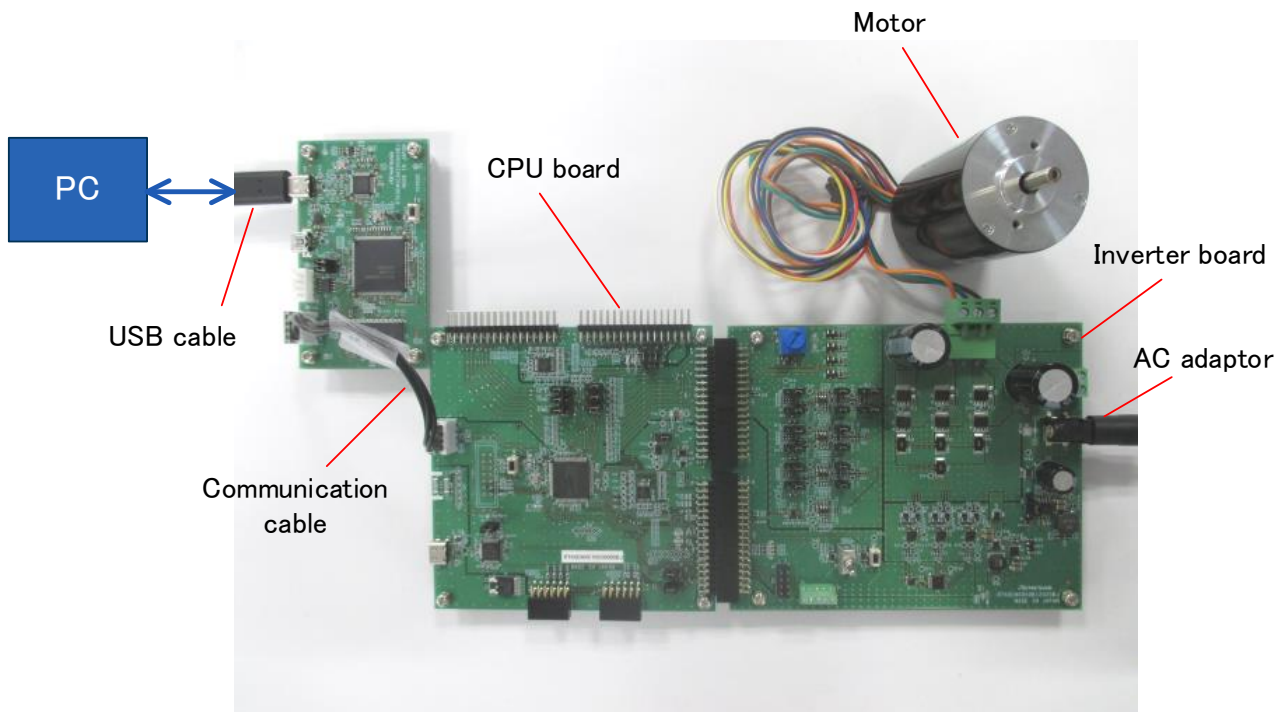


Figure 4-5 Board connection example

## 5. CPU Board Specification

This section describes the specification of the CPU Board.

### 5.1 Functions

#### 5.1.1 Power supply

When not connected to the inverter board, power should be supplied from the USB connector. When connecting to the inverter board, power supply from the USB connector or from the inverter board will be automatically selected. USB power supply has priority. The MCU operation voltage can be selected at either 5 V or 3.3 V for this product. The operation voltage is switched with JP12 as shown in Table 4-2.

#### 5.1.2 On-board debugger

This product has the on-board debugger circuit, E2 On-Board (hereinafter called “E2OB”). You can write a program (firmware) of RX26T with it. When you write a program, open (remove) JP11 and connect the CPU board to PC with USB cable. E2OB operates as debugger equivalent to E2 emulator Lite. If connecting from Integrated Development Environment or flash programming tool (e.g. Renesas Flash Programmer), set the type of debugger (tool) to “E2 emulator Lite”.

After writing a program, short JP11 for CPU board operation.

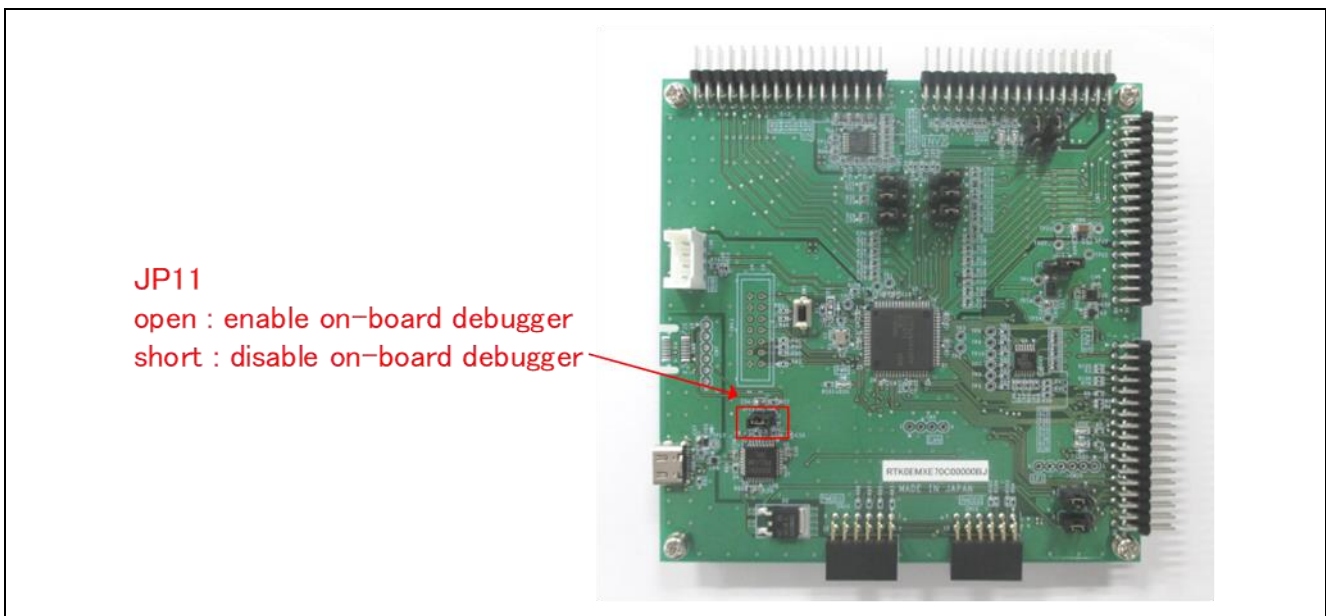


Figure 5-1 JP11 setting

### 5.1.3 Inverter board connector

Max 2 inverter boards can be connected to this product. 1st inverter board is connected with CN1 and CN2, and 2nd inverter board is connected with CN3 and CN4. The pin assignments of the connectors are shown in Table 5-1, Table 5-2, Table 5-3, Table 5-4.

**Table 5-1 1st inverter board connector (CN1) pin assignment**

Pin No.	Pin Function	RX26T Pin	Pin No.	Pin Function	RX26T Pin
1	NC	-	2	AGND	- (AVSS)
3	VPN	P43/AN003	4	AGND	- (AVSS)
5	IU	P40/AN000	6	NC	-
7	IV	P41/AN001	8	NC	-
9	IW	P42/AN002	10	NC	-
11	VU	P51/AN205	12	VV	P52/AN200
13	VW	P53/AN201	14	AGND	- (AVSS)
15	NC	-	16	NC	-
17	VR	P50/AN204	18	AGND	- (AVSS)
19	AVCC	- (AVCC)	20	AVCC	- (AVCC)
21	AGND	- (AVSS)	22	AGND	- (AVSS)
23	VCC	- (VCC)	24	VCC	- (VCC)
25	GND	- (VSS)	26	GND	- (VSS)
27	UN	P76/GTIOC2B	28	GND	- (VSS)
29	UP	P73/GTIOC2A	30	GND	- (VSS)
31	VN	P75/GTIOC1B	32	GND	- (VSS)
33	VP	P72/GTIOC1A	34	GND	- (VSS)

**Table 5-2 1st inverter board connector (CN2) pin assignment**

Pin No.	Pin Function	RX26T Pin	Pin No.	Pin Function	RX26T Pin
1	WN	P74/GTIOC0B	2	GND	- (VSS)
3	WP	P71/GTIOC0A	4	GND	- (VSS)
5	DRV_SCK	P91/RSPCK1	6	DRV_RXD	P93/MOSI1
7	DRV_TXD	P92/MISO1	8	DRV_CS	PA2/SSLA1
9	BUS_POWER_IN	-	10	INV_CONNECTED	-
11	SAFE_LOCK	-	12	OC#	P70/GTETRGB
13	DRV_nFault	PA5	14	DRV_EN	PB14/GTIOC1A
15	CON_MOT_SEL	PA3	16	SW1	P23
17	SW2	P22	18	LED1	P21
19	LED2	P20	20	NC	-
21	HALL_U	P30/IRQ7	22	HALL_V	P27/IRQ15
23	HALL_W	P24/IRQ4	24	SIO_SDA	PB2/SDA
25	SCK_SCL	PB1/SCL	26	CSN_IRQN/ENC_Z	P31/MTIOC0A
27	IPS_A ENC_A	P53/AN201 P33/MTCLKA	28	IPS_A#/ENC_A#	P52/AN200
29	IPS_B ENC_B	P51/AN205 P32/MTCLKB	30	IPS_B#/ENC_B#	P54/AN202
31	GND	- (VSS)	32	GND	- (VSS)
33	+5V	-	34	+5V	-

Table 5-3 2nd inverter board connector (CN3) pin assignment

Pin No.	Pin Function	RX26T Pin	Pin No.	Pin Function	RX26T Pin
1	NC	-	2	AGND	- (AVSS)
3	VPN	P47/AN103	4	AGND	- (AVSS)
5	IU	P44/AN100	6	NC	-
7	IV	P45/AN101	8	NC	-
9	IW	P46/AN102	10	NC	-
11	VU	P60/AN206	12	VV	P61/AN207
13	VW	P62/AN208	14	AGND	- (AVSS)
15	NC	-	16	NC	-
17	VR	P55/AN203	18	AGND	- (AVSS)
19	AVCC	- (AVCC)	20	AVCC	- (AVCC)
21	AGND	- (AVSS)	22	AGND	- (AVSS)
23	VCC	- (VCC)	24	VCC	- (VCC)
25	GND	- (VSS)	26	GND	- (VSS)
27	UN	P92/GTIOC4B	28	GND	- (VSS)
29	UP	P95/GTIOC4A	30	GND	- (VSS)
31	VN	P91/GTIOC5B	32	GND	- (VSS)
33	VP	P94/GTIOC5A	34	GND	- (VSS)

Table 5-4 2nd inverter board connector (CN4) pin assignment

Pin No.	Pin Function	RX26T Pin	Pin No.	Pin Function	RX26T Pin
1	WN	P90/GTIOC6B	2	GND	- (VSS)
3	WP	P93/GTIOC6A	4	GND	- (VSS)
5	DRV_SCK	P91/RSPCK1	6	DRV_RXD	P93/MOSI1
7	DRV_TXD	P92/MISO1	8	DRV_CS	P94/SSLA0
9	BUS_POWER_IN	-	10	INV_CONNECTED	-
11	SAFE_LOCK	-	12	OC#	P01/GTETRGA
13	DRV_nFault	P96	14	DRV_EN	P95/GTIOC4A
15	CON_MOT_SEL	P90	16	SW1	PE1
17	SW2	P82	18	LED1	P65
19	LED2	P64	20	NC	-
21	HALL_U	PE4/IRQ1	22	HALL_V	PE3/IRQ2
23	HALL_W	PE2/IRQ0	24	SIO_SDA	PB2/SDA
25	SCK_SCL	PB1/SCL	26	CSN_IRQN/ENC_Z	PE5/MTIOC9D
27	IPS_A ENC_A	P62/AN208 P11/MTCLKC	28	IPS_A#/ENC_A#	P61/AN207
29	IPS_B ENC_B	P60/AN206 P10/MTCLKD	30	IPS_B#/ENC_B#	P63/AN209
31	GND	- (VSS)	32	GND	- (VSS)
33	+5V	-	34	+5V	-

Figure 5-1 show a connection example when using this product with the inverter board and the communication board.



(1)CPU board + INV board  
(connected with CN1,CN2)

(2)CPU board + INV board  
(connected with CN3,CN4)

(3)CPU board + INV board × 2

**Figure 5-1 Board connection of CPU board, INV board and COM board**

**5.1.4 Serial communication**

For serial communication using Renesas Motor Workbench, the CPU board has SCI connector. Pin assignment for SCI connector is listed in Table 5-5.

**Table 5-5 SCI connector (CN6) pin assignment**

Pin No.	Pin Function	RX26T Connection Pin
1	GND	-
2	MCU RXD	P80/RXD6
3	MCU TXD	P81/TXD6
4	VCC	-

**5.1.5 Reset circuit**

This product has a reset circuit to enable power-on reset or external reset on MCU. Push the tact switch (SW1) to externally reset MCU.

### 5.1.6 LED

This product has 4 controllable LEDs, so that they can be used for program debug and the system. LED switches on when output from the corresponding port is “LOW” and switches off when output is “HIGH”. Pin assignment for corresponding LEDs is listed in Table 5-6.

**Table 5-6 LED pin assignment**

RX26T pin output		LED1	LED2	LED3	LED4
P21	HIGH	OFF	-	-	-
	LOW	ON	-	-	-
P20	HIGH	-	OFF	-	-
	LOW	-	ON	-	-
P65	HIGH	-	-	OFF	-
	LOW	-	-	ON	-
P64	HIGH	-	-	-	OFF
	LOW	-	-	-	ON

### 5.1.7 CAN Communication

This product has through holes for CAN communication. Note that CAN driver is not equipped. Pin assignment for CAN communication connector is listed in Table 5-7.

**Table 5-7 CAN communication pin assignment (CN5)**

Pin No.	RX26T pin
1	VCC
2	PA0/CTX0_B
3	PA1/CRX0_B
4	VSS

### 5.1.8 SPI Communication

This product has through holes for SPI communication. Pin assignment for SPI communication connector is listed in Table 5-8.

**Table 5-8 SPI communication pin assignment (CN13)**

Pin No.	RX26T pin
1	PA2/SSLA1
2	P93/MOSI1
3	P92/MISO1
4	P91/RSPCK1
5	VSS
6	VCC

## 5.1.9 PMOD

This product has two connectors for PMOD module connection. Pin assignments are shown in Table 5-9 and Table 5-10.

**Table 5-9 PMOD Type 3A connector pin assignment (CN12)**

No.	RX26T port	No.	RX26T port
1	PB4_CTS11#	7	PD2
2	PB5_TXD11	8	PD1
3	PB6_RXD11	9	PD0
4	PB0_RTS11#	10	PE0
5	VSS	11	VSS
6	VCC	12	VCC

**Table 5-10 PMOD Type 6A connector pin assignment (CN10)**

No.	RX26T port	No.	RX26T port
1	PB3_IRQ9	7	PD2
2	PB7	8	PD1
3	PB1_SCL	9	PD0
4	PB2_SDA	10	PE0
5	VSS	11	VSS
6	VCC	12	VCC

## 5.2 RX26T pin function list

Table 5-11 RX26T pin function list

Pin number	RX26T pin function	Signal function
1	MTIOC9D / IRQ0	ENC_Z (INV2) / IPS_IRQN
2	EMLE	Emulator
3	VSS	
4	-	-
5	VCL	
6	MD/FINED	E2_on board/Emulator
7	GTETRGA	Overcurrent (INV2)
8	IRQ1	HALL_U (INV2)
9	IRQ2	HALL_V (INV2)
10	RES#	E2_on board/Emulator
11	XTAL	Crystal
12	VSS	
13	EXTAL	Crystal
14	VCC	
15	IRQ0	HALL_W (INV2)
16	PE1	SW1 (INV2)
17	PE0	PMOD(GPIO)
18	TRST#	Emulator
19	TMS	Emulator
20	TDI	Emulator
21	TCK	Emulator
22	TDO	Emulator
23	PD2	PMOD(GPIO)
24	PD1	PMOD(GPIO)
25	PD0	PMOD(GPIO)
26	PB7	PMOD Type6A(I2C)
27	RXD11	PMOD Type3A(UART)
28	TXD11	PMOD Type3A(UART)
29	VCC	
30	CTS11#	PMOD Type3A(UART)
31	VSS	
32	IRQ9	PMOD Type6A(I2C)
33	SDA	PMOD Type6A(I2C) / IPS_SDA
34	SCL	PMOD Type6A(I2C) / IPS_SCL
35	RTS11#	PMOD Type3A(UART)
36	PA5	Smart Driver(nFault) (INV1)
37	PA4	Smart Driver(EN) (INV1)
38	PA3	Smart Driver(SEL) (INV1)
39	SSLA1	Smart Driver (INV1)
40	CRX0	CAN
41	CTX0	CAN
42	VCC	
43	P96	Smart Driver(nFault) (INV2)
44	VSS	
45	GTIOC4A / P95	U-upper (INV2) / Smart Driver(EN) (INV2)
46	GTIOC5A / SSLA0	V-upper (INV2) / Smart Driver (INV2)
47	GTIOC6A / MOSI1(C)	W-upper (INV2) / Smart Driver (INV1,INV2)
48	GTIOC4B / MISO1(C)	U-lower (INV2) / Smart Driver (INV1,INV2)
49	GTIOC5B / RSPCK1	V-lower (INV2) / Smart Driver (INV1,INV2)
50	GTIOC6B / P90	W-lower (INV2) / Smart Driver(SEL) (INV2)
51	GTIOC2B	U-upper (INV1)
52	GTIOC1B	V-upper (INV1)
53	GTIOC0B	W-upper (INV1)
54	GTIOC2A	U-lower (INV1)
55	GTIOC1A	V-lower (INV1)
56	GTIOC0A	W-lower (INV1)

Pin number	RX26T pin function	Signal function
57	GTETRGB	Overcurrent (INV1)
58	MTCLKA	ENC_A (INV1)
59	MTCLKB	ENC_B (INV1)
60	VCC	
61	MTIOC0A / IRQ6	ENC_Z (INV1) / IPS_IRQN
62	VSS	
63	IRQ7	HALL_U (INV1)
64	IRQ15	HALL_V (INV1)
65	IRQ4	HALL_W (INV1)
66	P23	SW1 (INV1)
67	P22	SW2 (INV1)
68	P21	LED1 (INV1)
69	P20	LED2 (INV1)
70	P65	LED1 (INV2)
71	P64	LED2 (INV2)
72	VREFH2	
73	VREFL2	
74	AN209	IPS_B# (INV2)
75	AN208	VW / IPS_B (INV2)
76	AN207	VV / IPS_A# (INV2)
77	AN206	VU / IPS_A (INV2)
78	AN203	VR (INV2)
79	AN202	IPS_B# (INV1)
80	AN201	VW / IPS_B (INV1)
81	AN200	VV / IPS_A# (INV1)
82	AN205	VU / IPS_A (INV1)
83	AN204	VR (INV1)
84	AN103	VBUS (INV2)
85	AN102	IW (INV2)
86	AN101	IV (INV2)
87	AN100	IU (INV2)
88	AN003	VBUS (INV1)
89	AN002	IW (INV1)
90	AN001	IV (INV1)
91	AN000	IU (INV1)
92	AVCC	
93	VREFH01	
94	VREFL01	
95	AVSS	
96	P82	SW2 (INV2)
97	TXD6	RMW
98	RXD6	RMW
99	MTCLKC	ENC_A (INV2)
100	MTCLKD	ENC_B (INV2)

## 6. Design and Manufacture Information

You can obtain information on the design and manufacture of this product from [renesas.com](https://www.renesas.com).

## 7. Website and Support

In order to learn, download tools and documents, apply technical support for RX family MCU and its kit, visit the below Web site.

- RX Product Information [renesas.com/rx](https://www.renesas.com/rx)
- Renesas Support [renesas.com/support](https://www.renesas.com/support)

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	May 23, 2022	-	First edition

---

MCB-RX26T Type B User's Manual

Publication Date: Rev 1.00 May 23, 2023

Published by: Renesas Electronics Corporation

---

# MCB-RX26T Type B User's Manual



Renesas Electronics Corporation

R12UZ0113EJ0100