
Trial series Standard CPU card T6xxx Users Manual

T6206 (RX24T (A version) 100pin)

T6207 (RX24T (B version) 100pin)

T6209 (RX63T 144pin)

T6211B (RX66T 112pin)

T6214 (RX72T 144pin)

Index

1. Introduction	5
1.1. Introduction	5
1.2. Suitable user	5
1.3. Notice	5
1.4. Warning	6
2. CPU card overview.....	9
2.1. Feature	9
2.2. Common specifications	9
3. DTL standard CPU card specifications.....	10
3.1. Inverter connector (CN-A, CN-B)	10
3.1.1. CN-A Standard connector pin assign.....	10
3.1.2. CN-A connector pin assign for each CPU card	11
3.1.3. CN-B Standard connector pin assign	13
3.1.4. CN-B connector pin assign for each CPU card	14
3.2. Connection with E1 emulator.....	15
4. T6206 RX24T (Chip version A) 100pin.....	16
4.1. T6206 overview.....	16
4.2. Connection with In Circuit Scope (ICS)	16
4.3. External connection	17
4.3.1. Inverter connector CNA	17
4.3.2. Inverter connector CNB	18
4.3.1. ABZ1 encoder connector CN1	19
4.3.2. Hall encoder connector CN2	19
4.3.3. ABZ2 encoder connector CN3	19
4.3.4. CPU pin connector CN4	19
4.3.5. E1 connector CN5.....	20
4.3.1. ICS/UART connector CN6.....	21
4.3.2. ICS/UART connector CN7.....	21
4.3.3. ICS/UART connector CN8.....	21
5. T6207 RX24T (Chip version B) 100pin.....	22
5.1. T5102 overview.....	22
5.2. Connection with In Circuit Scope.....	22
5.3. External connection	23
5.3.1. Inverter connector CNA	23
5.3.2. Inverter connector CNB	24
5.3.1. ICS/UART connector CN1.....	25
5.3.2. Hall encoder connector CN2	25
5.3.3. ICS/UART connector CN3.....	25
5.3.1. CPU pin connector CN4	26
5.3.2. E1 connector CN5.....	27
5.3.3. ABZ2 encoder connector CN6	27
5.3.4. ABZ1 encoder connector CN7	27
5.3.5. CAN connector CN8.....	28
5.3.6. ICS/UART connector CN9.....	28
5.3.7. ICS/UART connector CN10	28

6.	T6209 RX63T 144pin	29
6.1.	T6209 overview	29
6.2.	Connection with In Circuit Scope.....	29
6.3.	External connection	30
6.3.1.	Inverter connector CNA	30
6.3.2.	Inverter connector CNB	31
6.3.1.	ICS/UART connector CN1.....	32
6.3.2.	ICS/UART connector CN2.....	32
6.3.3.	ICS/UART connector CN3.....	32
6.3.4.	ICS/UART connector CN4.....	32
6.3.5.	ABZ2 encoder connector CN5.....	32
6.3.6.	CPU pin connector CN6	33
6.3.7.	E1 connector CN7.....	34
6.3.8.	ICS/UART connector CN8.....	34
6.3.9.	ICS/UART connector CN9.....	34
6.3.10.	ICS/UART connector CN10	35
6.3.11.	ICS/UART connector CN11.....	35
6.3.12.	ICS/UART connector CN12	35
6.3.13.	ICS/UART connector CN13	35
6.3.14.	ICS/UART connector CN14	35
7.	T6211B RX66T 112pin.....	36
7.1.	T6211B overview	36
7.2.	Connection with In Circuit Scope.....	36
7.3.	External connector	37
7.3.1.	Inverter connector CNA	37
7.3.2.	Inverter connector CNB	38
7.3.1.	ICS/UART connector CN2.....	39
7.3.2.	ICS/UART connector CN4.....	39
7.3.3.	ICS/UART connector CN5.....	39
7.3.4.	ICS/UART connector CN6.....	39
7.3.5.	ICS/UART connector CN7.....	39
7.3.6.	ICS/UART connector CN8.....	40
7.3.7.	ICS/UART connector CN9.....	40
7.3.8.	ICS/UART connector CN10	40
7.3.9.	ICS/UART connector CN11.....	40
7.3.10.	ICS/UART connector CN12	40
7.3.11.	ICS/UART connector CN14	41
7.3.12.	ICS/UART connector CN15	41
7.3.13.	ABZ1 encoder connector CN3.....	41
7.3.14.	HALL1 sensor input connector CN13.....	41
7.3.15.	CPU pin connector CN6	42
7.3.16.	connector CN16.....	42
8.	T6214 RX72T 144pin.....	43
8.1.	T6214 overview	43
8.2.	Connection with In Circuit Scope.....	43
8.3.	External connection	44
8.3.1.	Inverter connector CNA	44

8.3.2.	Inverter connector CNB	45
8.3.3.	ICS/UART connector CN2.....	46
8.3.4.	ICS/UART connector CN3.....	46
8.3.5.	ICS/UART connector CN5.....	46
8.3.1.	ICS/UART connector CN6.....	46
8.3.2.	ICS/UART connector CN7.....	46
8.3.3.	ICS/UART connector CN10	47
8.3.4.	ICS/UART connector CN11.....	47
8.3.5.	ICS/UART connector CN13	47
8.3.6.	ICS/UART connector CN14	47
8.3.7.	ICS/UART connector CN15	47
8.3.8.	ICS/UART connector CN16	48
8.3.9.	ICS/UART connector CN17	48
8.3.10.	ICS/UART connector CN18	48
8.3.11.	ICS/UART connector CN19	48
8.3.12.	ICS/UART connector CN20	48
8.3.13.	ABZ1 encoder connector CN12	49
8.3.14.	HALL1 sensor input connector CN1	49
8.3.15.	CPU pin connector1 CN4	49
8.3.16.	CPU pin connector1 CN9	50
8.3.17.	connector CN8.....	50
9.	Ordering information.....	51
9.1.	Part number list	51
10.	Revision	52

1. Introduction

1.1. Introduction

This users' manual is for Trial series standard CPU card.

This CPU card is for DTL Trial series inverter.

1.2. Suitable user

This CPU card is suitable for research or development stage.

1.3. Notice

1. All information included in this document is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Desk Top Laboratories Inc products listed herein, please confirm the latest product information with a Desk Top Laboratories Inc. Also, please pay regular and careful attention to additional and different information to be disclosed by Desk Top Laboratories Inc such as that disclosed through our website.

2. Desk Top Laboratories Inc does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from the use of Desk Top Laboratories Inc products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Desk Top Laboratories Inc or others.

3. You should not alter, modify, copy, or otherwise misappropriate any Desk Top Laboratories Inc product, whether in whole or in part.

4. 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 of these circuits, software, and information in the design of your equipment. Desk Top Laboratories Inc assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.

5. When exporting the products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You should not use Desk Top Laboratories Inc products or the technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. Desk Top Laboratories Inc products and technology may 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.

6. Desk Top Laboratories Inc has used reasonable care in preparing the information included in this document, but Desk Top Laboratories Inc does not warrant that such information is error free. Desk Top Laboratories Inc assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.

7. Desk Top Laboratories Inc products are classified to the experimental use. Especially, you may not use any Desk Top Laboratories Inc product for any application for Transportation equipment (automobiles, trains, ships, etc.), traffic control systems; anti-disaster systems; anti-crime systems; safety equipment; and medical equipment not specifically designed for life support; Aircraft;

aerospace equipment; submersible repeaters; nuclear reactor control systems; medical equipment or systems for life support.

8. You should use the Desk Top Laboratories Inc products described in this document within the range specified by Desk Top Laboratories Inc, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Desk Top Laboratories Inc shall have no liability for malfunctions or damages arising out of the use of Desk Top Laboratories Inc products beyond such specified ranges.

9. Although Desk Top Laboratories Inc endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Desk Top Laboratories Inc products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Desk Top Laboratories Inc product, 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, please evaluate the safety of the final products or system manufactured by you.

10. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written consent of Desk Top Laboratories Inc.

1.4. Warning



Danger

- There is a risk of fire.

If you find inverter firing, Fuming, abnormal sounding, or other abnormal conditions, stop the inverter immediately. After you stop the inverter, you should disconnect all wiring connected to the inverter.



Danger

- There is a risk of electrical shock.

There is a high voltage parts inside the inverter. Do not touch directly on working or after you stopped the inverter, while there is a charge in the capacitor. If you don't keep this warning, by electric shock, there is a risk of serious injury or death.



Danger

- There is a risk of blindness.

This inverter has an enclosure. If the inverter ruptured while opening the lid of the enclosure, there is a possibility the liquid contained in the internal capacitor, such as damaged parts enters the eyes, and it would make you blindness. Please do not open the lid of the enclosure after stopped the inverter immediately, even during the operation. If you open the lid, please be sure to wear goggles for protection such as in the photo below.



Caution

- There is a risk of burns

While driving or after stopped, this inverter gets hot such as more than 100 degree. If you touch the inverter, please pay attention to the temperature.



Caution

- Please do not block the air vents of the enclosure. (only for T2000B)

In this inverter there is a vent for cooling the inside. If you block the air vent, cooling capacity is reduced. And it may cause the inverter damage or fire.



Caution

- Please drive the FAN while driving the inverter. (only for T2000B)

In this inverter there is a FAN to cooling the inverter. If you do not drive the FAN while driving the inverter, the temperature of the inverter will rise, it may cause the inverter damage or fire.



Caution

- If you want to create a software, please create the protection routine first, such as over-current protection, over-heat protection and so on.

In this inverter, there is no mechanism to protect the inverter hardware alone. Please make the protection software first, or you may break the inverter.



Caution

- Do not drive the inverter when the ambient is very high or very high humidity.

This inverter is designed for experimental use. So this inverter won't work under below conditions. Do not use under the environment that is out of the operation environment of this manual.

- Environment where there is vibration and shock.
- Environment where there is saprophagous gas, combustible gas, humidity over 90%
- Very High or very low temperature environment



Caution

- This product handling high voltage. Please use a person who is aware of the danger of high voltage.

The wiring materials are enclosed in this inverter for reference. But they do not necessarily mean that they are appropriate for your application. Please use it before check the applications.



Caution

- Rating of this product is measured under certain conditions.

Maximum power capacity would be affected by input voltage output voltage, output current, load conditions, operations conditions and ambient temperature. To prevent the inverter broken, please watch the temperature, current, voltage, and external sensors for to protect inverter.

2. CPU card overview

2.1. Feature

* This CPU card for Trial series inverter is designed for a research or development of the consumer inverter products use.

* Unused CPU pin can be used freely by the user.

2.2. Common specifications

Item	Specifications	Note
Operation temperature	0°C~35°C	
Operation humidity	Below 90% (No dew condensation)	
Size	94 x76 x20 mm	
Weight	About 45g	

3. DTL standard CPU card specifications

3.1. Inverter connector (CN-A, CN-B)

3.1.1. CN-A Standard connector pin assign

Pin	Dir	STD Pin name	
1	To INV	(/LED1)	LED1 control signal. This signal is only valid for T2001 / T2002 inverter board.
2	To INV	(/LED2)	LED1 control signal. This signal is only valid for T2001 / T2002 inverter board.
3	To INV	PFCG1	PFC gate signal. This signal is LED3 for T2001 / T2002 inverter board.
4	To INV	VRL	In rush current protection circuit control signal. Switch on by High level.
5	To CPU	/FO	Over current detection signal on Low level.
6	To INV	/INVRES	Reserved for future use (Reset inverter error)
7	To INV	WN	Three phase PWM signal
8	To INV	VN	Three phase PWM signal
9	To INV	UN	Three phase PWM signal
10	To INV	WP	Three phase PWM signal
11	To INV	VP	Three phase PWM signal
12	To INV	UP	Three phase PWM signal
13	To CPU	(/SW1)	Switch input signal. This signal is only valid for T2001 / T2002 inverter board.
14	To CPU	(/SW2)	Switch input signal. This signal is only valid for T2001 / T2002 inverter board.
15	To CPU	5V	Power supply pin
16	To CPU	5V	Power supply pin
17	To CPU	GND	Power supply pin
18	To CPU	GND	Power supply pin
19	To CPU	3.3V	Power supply pin
20	To CPU	3.3V	Power supply pin

Extended part of T6xxxseries

21	To INV	WN2	Three phase PWM signal
22	To INV	VN2	Three phase PWM signal
23	To INV	UN2	Three phase PWM signal
24	To INV	WP2	Three phase PWM signal
25	To CPU	VP2	Three phase PWM signal
26	To INV	UP2	Three phase PWM signal
27	To INV	/FO2	Over current detection signal on Low level.
28	To INV	GND	Power supply pin
29	To INV	WN3	Three phase PWM signal
30	To INV	VN3	Three phase PWM signal
31	To INV	UN3	Three phase PWM signal
32	To INV	WP3	Three phase PWM signal
33	To CPU	VP3	Three phase PWM signal
34	To CPU	UP3	Three phase PWM signal

35	To CPU	/FO3	Over current detection signal on Low level.
36	To CPU	GND	Power supply pin
37	To CPU	RSV5	Reserved for future use
38	To CPU	RSV6	Reserved for future use
39	To CPU	RSV7	Reserved for future use
40	To CPU	RSV8	Reserved for future use

3.1.2. CN-A connector pin assign for each CPU card

Pin	T6206 RX24T 100pin	T6207 RX24TH 100pin	T62093 RX63T 144pin
1	PA2	PA2	PE1
2	PA1	PA4	PE0
3	PD7	PD7	PB3
4	PB3	PB3	PB0
5	P70	P70	PE2
6	P55	PB4	P01
7	P76	P76	P76
8	P75	P75	P75
9	P74	P74	P74
10	P73	P73	P73
11	P72	P72	P72
12	P71	P71	P71
13	P80	PE4	PD1
14	P81	PE3	PD0
15	5V	5V	5V
16	5V	5V	5V
17	GND	GND	GND
18	GND	GND	GND
19	3.3V	3.3V	3.3V
20	3.3V	3.3V	3.3V
21	P90	P90	P90
22	P91	P91	P91
23	P92	P92	P92
24	P93	P93	P93
25	P94	P94	P94
26	P95	P95	P95
27	P01	P01	PB4
28	GND	GND	GND
29	—	—	PD2
30	—	—	PD4
31	—	—	PD6
32	—	—	PD3
33	—	—	PD5

34	—	—	PD7
35	—	—	P96
36	GND	GND	GND
37	RSV	RSV	RSV
38	RSV	RSV	RSV
39	RSV	RSV	RSV
40	RSV	RSV	RSV

3.1.3. CN-B Standard connector pin assign

pin	Dir	Pin name	
1	To INV	AVCC	Power supply pin for inverter analog circuits.
2	To INV	AVCC	Power supply pin for inverter analog circuits.
3	To CPU	reserve	Reserved for future use
4	To CPU	reserve	Reserved for future use
5	To CPU	IU	U phase current signal
6	To CPU	IV	V phase current signal
7	To CPU	IW	W phase current signal
8	To CPU	VPN	DC link voltage signal
9	To CPU	(Vot)	Main circuits temperature signal
10	To CPU	VU	U phase voltage signal
11	To CPU	VV	V phase voltage signal
12	To CPU	VW	W phase voltage signal
13	To CPU	(VAC)	AC voltage signal
14	To CPU	(IPFC)	PFC current signal
15	To CPU	(VR1)	Variable resister signal. This signal is only valid for T2001 / T2002 inverter board.
16	To CPU	reserve	Reserved for future use.
17	To INV	VCCIO	Power supply pin for inverter digital circuits.
18	To INV	VCCIO	Power supply pin for inverter digital circuits.
19	To CPU	GND	GND
20	To CPU	GND	GND

Extended part of T6xxxseries

pin	Dir	Pin name	
21	To CPU	IU2	INV2 U 相電流検出信号
22	To CPU	IV2	INV2 V 相電流検出信号
23	To CPU	IW2	INV2 W 相電流検出信号
24	To CPU	VU2	INV2 U 相電圧検出信号
25	To CPU	VV2	INV2 V 相電圧検出信号
26	To CPU	VW2	INV2 W 相電圧検出信号
27	To CPU	TEMP2	INV2 主回路温度検出端子（一部のインバータに装備）
28	To CPU	GND	
29	To CPU	IU3	INV3 U 相電流検出信号
30	To CPU	IV3	INV3 V 相電流検出信号
31	To CPU	IW3	INV3 W 相電流検出信号
32	To CPU	VU3	INV3 U 相電圧検出信号
33	To CPU	VV3	INV3 V 相電圧検出信号
34	To CPU	VW3	INV3 W 相電圧検出信号
35	To CPU	TEMP3	INV3 主回路温度検出端子（一部のインバータに装備）
36	To CPU	GND	
37	To CPU	RSV	将来の予約
38	To CPU	RSV	将来の予約
39	To CPU	RSV	将来の予約

3.1.4. CN-B connector pin assign for each CPU card

pin	T6206 RX24T 100pin	T6207 RX24TH 100pin	T6209 RX63T 144pin
1	5V	5V	5V
2	5V	5V	5V
3		P60_AN200	AN10
4	P43_AN003	P64_AN204	AN11
5	AN100	P44_AN100	AN000
6	AN101	P45_AN101	AN001
7	AN102	P46_AN102	AN002
8	AN204	P52_AN208	AN004
9	AN205	P20_AN016	AN8
10	AN201	P47_AN103	AN4
11	AN202	P50_AN206	AN5
12	AN203	P51_AN207	AN6
13	AN207	P43_AN003	AN9
14	AN208	P55_AN211	AN103
15	AN209	P53_AN209	AN7
16	AN210	P54_AN210	AN3
17	5V	5V	3.3V
18	5V	5V	3.3V
19	GND	GND	GND
20	GND	GND	GND
21	AN000	P40_AN000	AN100
22	AN001	P41_AN001	AN101
23	AN002	P42_AN002	AN102
24	AN200	P61_AN201	AN12
25	AN103	P62_AN202	AN13
26	AN206	P63_AN203	AN14
27	AN016	P65_AN205	AN18
28	GND	GND	GND
29	—	—	AN0
30	—	—	AN1
31	—	—	AN2
32	—	—	AN15
33	—	—	AN16
34	—	—	AN17
35	—	—	AN19
36	GND	GND	GND
37	—	—	—
38	—	—	—
39	—	—	—
40	—	—	—

3.2. Connection with E1 emulator

When you use this CPU card with E1 emulator, please be careful.

*Caution 1: **We strongly recommend not using E1 emulator when you drive the inverter. We strongly recommend not applying main power while connecting E1 emulator.** Please use ICS when you debug the inverter software. ICS can isolate between inverter side and the PC side. So when the inverter is broken, you can avoid the electric shock and PC damage.

*Caution 2: An inverter generates very high level noise. Because of this noise, E1 emulator sometimes cannot control inverter software.

*Caution 3: This Trial series inverter does not isolate between control side and the high voltage inverter main circuits side. Do not power on for inverter main circuits when you are using E1 emulator, there is a possibility of receiving an electric shock, if you touched in this situation.

*Caution 4: If you want to power on when you are using E1 emulator,

RX series:

Please use E1 isolator <R0E000010ACB10> delivered from RENESAS ELECTRONICS. But the withstand voltage of this equipment is only 60V DC.

RL78 series:

Please use E1 isolator <A1001> delivered from Desk Top Laboratories Inc. Withstand voltage of this equipment is 1500VAC.

4. T6206 RX24T (Chip version A) 100pin

4.1. T6206 overview

T6206 and T6207 is different circuits. T6206 is almost same as the RENESAS's RX24T CPU card.

Item	Specication	Note
CPU	R5F524TAAFP	RX24T series (A version)
Clock	80MHz	
Power supply voltage	5V	
ROM size	256kB	
RAM size	16kB	
Emulator	E1 / E2 Lite	
Emulator isolator	Desk Top Laboratories A1002 RENESAS R0E000010ACB10	We strongly recommend to use emulator isolator when you use E1emulator.

4.2. Connection with In Circuit Scope (ICS)

This CPU card can connect with ICS through CN6, CN6 and CN8.

Connector	SCI number	TX pin	RX pin	Settings	Note
CN6	SCI6	PB2	PB1	None	
CN7	SCI5	PB5	PB6	None	
CN8	SCI1	PD3	PD5	None	This port cannot use when you use E1 emulator.

Note: Please refer below ICS support pages about latest ICS document and libraries.

<http://desktoplab.co.jp>

4.3. External connection

4.3.1. Inverter connector CNA

Pin number	Pin name	function
1	PA2/LED1	
2	PA1/LED2	
3	PD7/PFC_G1	PFC gate signal
4	PB3 (VRL)	Rush current protection circuits control.
5	P70 / /FO1	Inverter fault input
6	P55 /INV_RESET	Inerter error reset
7	P76 / WN1	3 phase gate signal WN
8	P75 /VN1	3 phase gate signal VN
9	P74 / UN1	3 phase gate signal UN
10	P73 / WP1	3 phase gate signal WP
11	P72 / VP1	3 phase gate signal VP
12	P71 / UP1	3 phase gate signal UP
13	P80 / SW1	
14	P81 / SW2	
15	+5V in	
16	+5V in	
17	GND	
18	GND	
19	+3.3V in	
20	+3.3V in	
21	P90 / WN2	
22	P91 / VN2	
23	P92 / UN2	
24	P93 / WP2	
25	P94 / VP2	
26	P95 / UP2	
27	P01 / /FO0	
28	GND	
29	—	
30	—	
31	—	
32	—	
33	—	
34	—	
35	—	
36	GND	
37	—	
38	—	
39	—	
40	—	

4.3.2. Inverter connector CNB

Pin number	Pin name	function
1	+AVcc out	Analog power supply from CPU board (+5V)
2	+AVcc out	Analog power supply from CPU board (+5V)
3	Reserved	
4	Reserved	AN003
5	Iu1	AN100
6	Iv1	AN101
7	Iw1	AN102
8	Vpn	AN204
9	TEMP1(Vot)	AN205
10	UV1	AN201
11	VV1	AN202
12	VW1	AN203
13	VAC	AN207
14	Ipf	AN208
15	VR1	AN209
16	RSVIN1	AN210
17	+Vio out	Digital power supply from CPU board (+5V)
18	+Vio out	Digital power supply from CPU board (+5V)
19	GND	
20	GND	
21	Iu2	AN000
22	Iv2	AN001
23	Iw2	AN002
24	Vu2	AN200
25	Vv2	AN103
26	Vw2	AN206
27	TEMP2	AN016
28	GND	
29	—	
30	—	
31	—	
32	—	
33	—	
34	—	
35	—	
36	GND	
37	—	
38	—	
39	—	
40	—	

4.3.1. ABZ1 encoder connector CN1

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	A	A P33
4	B	B P32
5	Z	Z PA5

4.3.2. Hall encoder connector CN2

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	HU	P10 IRQ0/HU1
4	HV	P11 IRQ1/HV1
5	HW	P96 IRQ4/HW1

4.3.3. ABZ2 encoder connector CN3

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	A	A PE4
4	B	B PE3
5	Z	Z PA3

4.3.4. CPU pin connector CN4

Pin number	Pin name	function
1	+AVcc	
2	+AVcc	
3	GND	
4	GND	
5	P82	
6	P21	
7	P22	
8	P23	
9	P24	
10	P30	
11	P31	
12		
13		

14		
15	PE5	
16	P02	
17	P00	
18	PE1	
19	PE0	
20	PD6	
21	PD4	
22	PD2	
23	PD1	
24	PD0	
25	PB7	
26	PB4	
27	PB0	
28	PA4	
29	PA0	
30		
31	UVCC	
32	UVCC	
33	GND	
34	GND	

4.3.5. E1 connector CN5

Pin number	Pin name	function
1	--	
2	GND	
3	--	
4	--	
5	TXD1	
6	--	
7	FINED	
8	VCC	
9	--	
10	--	
11	RXD1	
12	GND	
13	/RESET	
14	GND	

4.3.1. ICS/UART connector CN6

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6 out	TXD6(PB2)
3	RXD6 in	RXD6(PB1)
4	GND	GND

4.3.2. ICS/UART connector CN7

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5 out	TXD5 (PB6)
3	RXD5 in	RXD5 (PB5)
4	GND	GND

4.3.3. ICS/UART connector CN8

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD1	TXD1(PD3)
3	RXD1	RXD1(PD5)
4	GND	GND

5. T6207 RX24T (Chip version B) 100pin

5.1. T5102 overview

T6206 and T6207 is different circuits. T6207 is different circuits..

Item	Specifications	Note
CPU	R5F524TEADFP	RX24T series (B version)
Clock	80MHz	
Power supply voltage	5V	
ROM size	512kB	
RAM size	32kB	
Emulator	E1 / E2 Lite	
Emulator isolator	Desk Top Laboratories A1002 RENESAS R0E000010ACB10	We strongly recommend to use emulator isolator when you use E1emulator.

5.2. Connection with In Circuit Scope

This CPU card can connect with ICS through CN1, CN3, CN9 and CN10. And some SCI ports are assigned to two or more pins.

Connector	SCI number	TX pin	RX pin	Settings	Note
CN1	SCI6	P81	P80	None	
CN3	SCI1	PD3	PD5	None	This port cannot use when you use E1 emulator.
CN9	SCI6	PB2	PB1	None	
CN10	SCI5	PB5	PB6	None	

Note: Please refer below ICS support pages about latest ICS document and libraries.

<http://desktoplab.co.jp>

5.3. External connection

5.3.1. Inverter connector CNA

Pin number	Pin name	function
1	PA2/LED1	
2	PA4/LED2	
3	PD7/PFC_G1	Gate signal output for software PFC
4	PB3 (VRL)	Rush current protection pin
5	P70 / /FO1	Inverter fault input
6	PB4 /INV_RESET	Inerter error reset
7	P76 / WN1	3 phase gate signal WN
8	P75 /VN1	3 phase gate signal VN
9	P74 / UN1	3 phase gate signal UN
10	P73 / WP1	3 phase gate signal WP
11	P72 / VP1	3 phase gate signal VP
12	P71 / UP1	3 phase gate signal UP
13	PE4 / SW1	
14	PE3 / SW2	
15	+5V in	
16	+5V in	
17	GND	
18	GND	
19	+3.3V in	
20	+3.3V in	
21	P90 / WN2	
22	P91 / VN2	
23	P92 / UN2	
24	P93 / WP2	
25	P94 / VP2	
26	P95 / UP2	
27	P01 / /FO0	
28	GND	
29	—	
30	—	
31	—	
32	—	
33	—	
34	—	
35	—	
36	GND	
37	—	
38	—	
39	—	
40	—	

5.3.2. Inverter connector CNB

Pin number	Pin name	function
1	+AVcc out	Analog power supply from CPU board (+5V)
2	+AVcc out	Analog power supply from CPU board (+5V)
3	Reserved	AN200
4	Reserved	AN204
5	Iu1	AN100
6	Iv1	AN101
7	Iw1	AN102
8	Vpn	AN208
9	TEMP1(Vot)	AN016
10	UV1	AN103
11	VV1	AN206
12	VW1	AN207
13	VAC	AN003
14	Ipf	AN211
15	VR1	AN209
16	RSVIN1	AN210
17	+Vio out	Digital power supply from CPU board (+5V)
18	+Vio out	Digital power supply from CPU board (+5V)
19	GND	
20	GND	
21	Iu2	AN000
22	Iv2	AN001
23	Iw2	AN002
24	Vu2	AN201
25	Vv2	AN202
26	Vw2	AN203
27	TEMP2	AN205
28	GND	
29	—	
30	—	
31	—	
32	—	
33	—	
34	—	
35	—	
36	GND	
37	—	
38	—	
39	—	
40	—	

5.3.1. ICS/UART connector CN1

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6 out	TXD6(P81)
3	RXD6 in	RXD6(P80)
4	GND	GND

5.3.2. Hall encoder connector CN2

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	HU	P10 IRQ0/HU1
4	HV	P11 IRQ1/HV1
5	HW	P96 IRQ4/HW1

5.3.3. ICS/UART connector CN3

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD1	TXD1(PD3)
3	RXD1	RXD1(PD5)
4	GND	GND

5.3.1. CPU pin connector CN4

Pin number	Pin name	function
1	+AVcc	
2	+AVcc	
3	GND	
4	GND	
5	P21	
6	P22	
7	P23	
8	P24	
9	P82	
10	PE5	
11	P02	
12	P00	
13	P01	
14	PE1	
15	PE0	
16	PD6	
17	PD4	
18	PD2	
19	PD1	
20	PD0	
21	PB7	
22	PB0	
23	UVCC	
24	UVCC	
25	GND	
26	GND	

5.3.2. E1 connector CN5

このコネクタは、ルネサスエレクトロニクス製の E1 エミュレータ用のコネクタです。標準のケーブルで E1 エミュレータと接続してください。

Pin number	Pin name	function
1	--	
2	GND	
3	--	
4	--	
5	TXD1	
6	--	
7	FINED	
8	VCC	
9	--	
10	--	
11	RXD1	
12	GND	
13	/RESET	
14	GND	

5.3.3. ABZ2 encoder connector CN6

Pin number	Pin name	function
1	+5V	+5V power supply from CPU board
2	GND	GND
3	A	A P31
4	B	B P30
5	Z	Z PA3

5.3.4. ABZ1 encoder connector CN7

Pin number	Pin name	function
1	+5V	+5V power supply from CPU board
2	GND	GND
3	A	A P33
4	B	B P32
5	Z	Z PA5

5.3.5. CAN connector CN8

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	CANRX	CRXD PA1
3	CANTX	CTXD PA0
4	GND	GND

5.3.6. ICS/UART connector CN9

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6 out	TXD6(PB2)
3	RXD6 in	RXD6(PB1)
4	GND	GND

5.3.7. ICS/UART connector CN10

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5 out	TXD5 (PB6)
3	RXD5 in	RXD5 (PB5)
4	GND	GND

6. T6209 RX63T 144pin

6.1. T6209 overview

Item	Specifications	Note
CPU	R5F563TEBDFB	RX63T series
Clock	100MHz	
Power supply voltage	3.3V	
ROM size	512kB	
RAM size	48kB	
Emulator	E1	
Emulator isolator	Desk Top Laboratories A1002 RENESAS R0E000010ACB10	We strongly recommend to use emulator isolator when you use E1emulator.

6.2. Connection with In Circuit Scope

This CPU card can connect with ICS through CN1, CN2, CN3, CN4, CN8, CN9, CN10, CN11, CN12, CN13 and CN14.

Connector	SCI number	TX pin	RX pin	Settings	Note
CN1	SCI3	P35	P34	None	
CN2	SCI0	P23	P22	None	
CN3	SCI12	P81	P80	None	
CN4	SCI2	P02	P03	None	
CN8	SCI2	PA1	PA2	None	
CN9	SCI12	PB5	PB6	None	
CN10	SCI0	PA4	PA5	None	
CN11	SCI0	PB2	PB1	None	
CN12	SCI2	PG0	PG1	None	
CN13	SCI3	PG3	PG4	None	
CN14	SCI1	PF3	PF2	None	

Note: Please refer below ICS support pages about latest ICS document and libraries.

<http://desktoplab.co.jp>

6.3. External connection

6.3.1. Inverter connector CNA

Pin number	Pin name	function
1	PE1/LED1	
2	PE0/LED2	
3	PB3/PFC_G1	Gate signal output for software PFC
4	PB0 (VRL)	Rush current protection pin
5	PE2 / /FO1	Inverter fault input
6	P01 /INV_RESET	Inerter error reset
7	P76 / WN1	3 phase gate signal WN
8	P75 /VN1	3 phase gate signal VN
9	P74 / UN1	3 phase gate signal UN
10	P73 / WP1	3 phase gate signal WP
11	P72 / VP1	3 phase gate signal VP
12	P71 / UP1	3 phase gate signal UP
13	PD1 / SW1	
14	PD0 / SW2	
15	+5V in	
16	+5V in	
17	GND	
18	GND	
19	+3.3V in	
20	+3.3V in	
21	P90 / WN2	
22	P91 / VN2	
23	P92 / UN2	
24	P93 / WP2	
25	P94 / VP2	
26	P95 / UP2	
27	PB4 / /FO0	
28	GND	
29	PD2	
30	PD4	
31	PD6	
32	PD3	
33	PD5	
34	PD7	
35	P96	
36	GND	
37	—	
38	—	
39	—	
40	—	

6.3.2. Inverter connector CNB

Pin number	Pin name	function
1	+AVcc out	Analog power supply from CPU board (+5V)
2	+AVcc out	Analog power supply from CPU board (+5V)
3	Reserved	AN10
4	Reserved	AN11
5	Iu1	AN000
6	Iv1	AN001
7	Iw1	AN002
8	Vpn	AN003
9	TEMP1(Vot)	AN8
10	UV1	AN4
11	VV1	AN5
12	VW1	AN6
13	VAC	AN9
14	Ipf	AN103
15	VR1	AN7
16	RSVIN1	AN3
17	+Vio out	Digital power supply from CPU board (+3.3V)
18	+Vio out	Digital power supply from CPU board (+3.3V)
19	GND	
20	GND	
21	Iu2	AN100
22	Iv2	AN101
23	Iw2	AN102
24	Vu2	AN12
25	Vv2	AN13
26	Vw2	AN14
27	TEMP2	AN18
28	GND	
29	Iu3	AN0
30	Iv3	AN1
31	Iw3	AN2
32	Vu3	AN15
33	Vv3	AN16
34	Vw3	AN17
35	TEMP3	AN19
36	GND	
37	—	
38	—	
39	—	
40	—	

6.3.1. ICS/UART connector CN1

Pin number	Pin name	function
1	Vio out	+3,3V power supply fromCPU board
2	TXD3 out	TXD3(P35)
3	RXD3 in	RXD3(P34)
4	GND	GND

6.3.2. ICS/UART connector CN2

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD0 out	TXD0(P23)
3	RXD0 in	RXD0(P22)
4	GND	GND

6.3.3. ICS/UART connector CN3

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD12 out	TXD12(P81)
3	RXD12 in	RXD12(P80)
4	GND	GND

6.3.4. ICS/UART connector CN4

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD2 out	TXD2(P02)
3	RXD2 in	RXD2(P03)
4	GND	GND

6.3.5. ABZ2 encoder connector CN5

Pin number	Pin name	function
1	+5V	+3,3V power supply fromCPU board
2	GND	GND
3	A	A P11
4	B	B P10
5	Z	Z PA3

6.3.6. CPU pin connector CN6

Pin number	Pin name	function
1	UVCC	
2	UVCC	
3	GND	
4	GND	
5	PF4	
6	PB7	
7	PA6	
8	PA0	
9	PG6	
10	PG5	
11	PG2	
12	P70	
13	P33	
14	P32	
15	P31	
16	P30	
17	P26	
18	P25	
19	P24	
20	P21	
21	P20	
22	P82	
23	P12	
24	P05	
25	P04	
26	USB0_DPUE	
27	USB0_DM	
28	USB0_DP	
29	PE5	
30	P00	
31	PE4	
32	PE3	
33	P14	
34	P13	

6.3.7. E1 connector CN7

このコネクタは、ルネサスエレクトロニクス製の E1 エミュレータ用のコネクタです。標準のケーブルで E1 エミュレータと接続してください。

Pin number	Pin name	function
1	TCK/FINEC	
2	GND	
3	/TRST	
4	EMLE	
5	TDO	
6	--	
7	MD/FINED	
8	VCC	
9	TMS	
10	--	
11	TDI	
12	GND	
13	/RESET	
14	GND	

6.3.8. ICS/UART connector CN8

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD2	TXD1(PA1)
3	RXD2	RXD1(PA2)
4	GND	GND

6.3.9. ICS/UART connector CN9

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD12 out	TXD12(PB5)
3	RXD12 in	RXD12(PB6)
4	GND	GND

6.3.10. ICS/UART connector CN10

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD0 out	TXD0 (PA4)
3	RXD0 in	RXD0 (PA5)
4	GND	GND

6.3.11. ICS/UART connector CN11

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD0 out	TXD0 (PB2)
3	RXD0 in	RXD0 (PB1)
4	GND	GND

6.3.12. ICS/UART connector CN12

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD2 out	TXD2 (PG0)
3	RXD2 in	RXD2 (PG1)
4	GND	GND

6.3.13. ICS/UART connector CN13

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD3 out	TXD3 (PG3)
3	RXD3 in	RXD3 (PG4)
4	GND	GND

6.3.14. ICS/UART connector CN14

Pin number	Pin name	function
1	Vio out	+3.3V power supply fromCPU board
2	TXD1 out	TXD1 (PF3)
3	RXD1 in	RXD1 (PF2)
4	GND	GND

7. T6211B RX66T 112pin

7.1. T6211B overview

Item	Specifications	Note
CPU	R5F566TEADFH	RX66T series
Clock	160MHz	
Power supply voltage	5V	
ROM size	512kB	
RAM size	64kB	
Emulator	E1 / E2 Lite	
Emulator isolator	Desk Top Laboratories A1002 RENESAS R0E000010ACB10	We strongly recommend to use emulator isolator when you use E1emulator.

7.2. Connection with In Circuit Scope

This CPU card can connect with ICS through CN1, CN2, CN3, CN4, CN8, CN9, CN10, CN11, CN12, CN13 and CN14.

Connector	SCI number	TX pin	RX pin	Settings	Note
CN2	SCI9	PA0	PA1	None	
CN4	SCI9	PA3	PA2	None	
CN5	SCI6	PB0	PB1	None	
CN6	SCI8	PA4	PA5	None	Also connected ABZ-Z1
CN7	SCI8	PC1	PC0	None	
CN8	SCI5/11/12	PB5	PB6	None	
CN9	SCI9	PG0	PG1	None	
CN10	SCI11	PD3	PD5	None	Also connected E1, INV3-WP3, VP3
CN11	SCI8	PD0	PD1	None	
CN12	SCI8/12	P23	P22	None	
CN14	SCI5	PD7	PE0	None	Also connected INV3-UP3, UVW-U1
CN15	SCI9/12	P01	P00	None	Also connected E1

Note: Please refer below ICS support pages about latest ICS document and libraries.

<http://desktoplab.co.jp>

7.3. External connector

7.3.1. Inverter connector CNA

Pin number	Pin name	function
1	PE3 / LED1	
2	PB7 / LED2	
3	PB3 / PFC_G1	Software PFC gate output
4	P24 (VRL)	In rush current control terminal
5	P70 / FO1#	Inverter fault input
6	P27 /INV_RESET#	Inverter error reset
7	P76 / WN1	3 phase gate signal WN
8	P75 /VN1	3 phase gate signal VN
9	P74 / UN1	3 phase gate signal UN
10	P73 / WP1	3 phase gate signal WP
11	P72 / VP1	3 phase gate signal VP
12	P71 / UP1	3 phase gate signal UP
13	P80 / SW1	
14	P81 / SW2	
15	+5V in	
16	+5V in	
17	GND	
18	GND	
19	+3.3V in	
20	+3.3V in	
21	P90 / WN2	
22	P91 / VN2	
23	P92 / UN2	
24	P93 / WP2	
25	P94 / VP2	
26	P95 / UP2	
27	P96 / FO2#	
28	GND	
29	PD2 / WN3	
30	PD4 / VN3 / FINEC	
31	PD6 / VN3 / TMS	
32	PD3 / WP3 / TDO	
33	PD5 / VP3 / TDI	
34	PD7 / UP3 /TRST#	
35	PB4 / FO3#	
36	GND	
37	—	
38	—	
39	—	
40	—	

7.3.2. Inverter connector CNB

Pin number	Pin name	function
1	+AVcc out	Analog power supply from CPU board (+5V)
2	+AVcc out	Analog power supply from CPU board (+5V)
3	Reserved	NC
4	Reserved	AN007
5	Iu1	AN000
6	Iv1	AN001
7	Iw1	AN002
8	Vpn	AN206
9	TEMP1(Vot)	AN209
10	UV1	AN200
11	VV1	AN201
12	VW1	AN202
13	VAC	AN216
14	Ipf	AN210
15	VR1	AN217
16	RSVIN1	NC
17	+Vio out	Digital power supply from CPU board (+3.3V)
18	+Vio out	Digital power supply from CPU board (+3.3V)
19	GND	
20	GND	
21	Iu2	AN100
22	Iv2	AN101
23	Iw2	AN102
24	Vu2	AN203
25	Vv2	AN206
26	Vw2	AN207
27	TEMP2	NC
28	GND	
29	Iu3	AN003
30	Iv3	AN103
31	Iw3	AN211
32	Vu3	NC
33	Vv3	NC
34	Vw3	NC
35	TEMP3	NC
36	GND	
37	—	
38	—	
39	—	
40	—	

7.3.1. ICS/UART connector CN2

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD11 out	TXD11(PA0)
3	RXD11 in	RXD11(PA1)
4	GND	GND

7.3.2. ICS/UART connector CN4

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9 out	TXD9 (PA3)
3	RXD9 in	RXD9 (PA2)
4	GND	GND

7.3.3. ICS/UART connector CN5

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6 out	TXD6 (PB0)
3	RXD6 in	RXD6 (PB1)
4	GND	GND

7.3.4. ICS/UART connector CN6

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	TXD8 (PA4)
3	RXD8 in	RXD8 (PA5)
4	GND	GND

7.3.5. ICS/UART connector CN7

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	TXD8 (PC1)
3	RXD8 in	RXD8 (PC0)
4	GND	GND

7.3.6. ICS/UART connector CN8

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5/11/12 out	TXD5/11/12 (PB5)
3	RXD5/11/12 in	RXD5/11/12 (PB6)
4	GND	GND

7.3.7. ICS/UART connector CN9

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9 out	TXD9 (PG1)
3	RXD9 in	RXD9 (PG0)
4	GND	GND

7.3.8. ICS/UART connector CN10

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD11 out	TXD11 (PD3)
3	RXD11 in	RXD11 (PD5)
4	GND	GND

7.3.9. ICS/UART connector CN11

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	TXD8 (PD0)
3	RXD8 in	RXD8 (PD1)
4	GND	GND

7.3.10. ICS/UART connector CN12

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8/12 out	TXD8/12 (P23)
3	RXD8/12 in	RXD8/12 (P22)
4	GND	GND

7.3.11. ICS/UART connector CN14

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5 out	TXD5 (PD7)
3	RXD5 in	RXD5 (PE0)
4	GND	GND

7.3.12. ICS/UART connector CN15

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9/12 out	TXD9/12 (P01)
3	RXD9/12 in	RXD9/12 (P00)
4	GND	GND

7.3.13. ABZ1 encoder connector CN3

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	A1	A P33
4	B1	B P32
5	Z1	Z PA5

7.3.14. HALL1 sensor input connector CN13

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	HU1	HU PE0
4	HV1	HV PE1
5	HW1	HW PE5

7.3.15. CPU pin connector CN6

Pin number	Pin name	function
1	UVCC	
2	UVCC	
3	GND	
4	GND	
5	PG2	
6	P31	
7	P30	
8	PC2	
9	PB2	
10	PH4/AN107	
11	P82	
12	P11	
13	P10	
14	P17	
15	P16	
16	P15	
17	PE4	
18	P14	
19	P13	
20	P12	

7.3.16. connector CN16

このコネクタは、ルネサスエレクトロニクス製の E1 エミュレータ用のコネクタです。標準のケーブルで E1 エミュレータと接続してください。

Pin number	Pin name	function
1	TCK/FINEC	
2	GND	
3	/TRST	
4	EMLE	
5	TDO	
6	--	
7	MD/FINED	
8	VCC	
9	TMS	
10	UB	
11	TDI	
12	GND	
13	/RESET	
14	GND	

8. T6214 RX72T 144pin

8.1. T6214 overview

Item	Specifications	Note
CPU	R5F572TKCDFB	RX72T series
Clock	200MHz	
Power supply voltage	5V	
ROM size	1MB	
RAM size	128kB	
Emulator	E1 / E2 Lite	
Emulator isolator	Desk Top Laboratories A1002 RENESAS R0E000010ACB10	We strongly recommend to use emulator isolator when you use E1emulator.

8.2. Connection with In Circuit Scope

This CPU card can connect with ICS through CN2, CN3, CN5, CN6, CN7, CN10, CN11, CN13, CN14, CN15, CN16, CN17, CN18, CN19 and CN20.

Connector	SCI number	TX pin	RX pin	Settings	Note
CN2	SCI1/12	PC4	PC3	None	
CN3	SCI6/12	PB1	PB0	None	
CN5	SCI8/12	P23	P22	Need install R29	Also connected HU1
CN6	SCI5	PK1	PK0	Need install R31, R35	Also connected INV3
CN7	SCI9	PG1	PG0	Need install R38, R40	Also connected INV3
CN10	SCI9	PA3	PA2	None	
CN11	SCI8	PA4	PA5	Need install R48	Also connected ABZ
CN13	SCI6	PB0	PB1	None	
CN14	SCI9/12	P01	P00	Need install R33	Also connected /FO2
CN15	SCI1/11	PD3	PD5	None	Also connected E1
CN16	SCI8	PD0	PD1	None	
CN17	SCI8	PC1	PC0	None	
CN18	SCI5/11/12	PB5	PB6	None	
CN19	SCI11	PF0	PF1	None	
CN20	SCI9/12	PD7	PE0	None	

Note: Please refer below ICS support pages about latest ICS document and libraries.

<http://desktoplab.co.jp>

8.3. External connection

8.3.1. Inverter connector CNA

Pin number	Pin name	function
1	PC5 / LED1	
2	PC6 / LED2	
3	P34 / PFC_G1	Software PFC gate output
4	PA1 (VRL)	In rush current control terminal
5	P70 / FO1#	Inverter fault input
6	/INV_RESET#	Inerter error reset (No connection)
7	P76 / WN1	3 phase gate signal WN1
8	P75 / VN1	3 phase gate signal VN1
9	P74 / UN1	3 phase gate signal UN1
10	P73 / WP1	3 phase gate signal WP1
11	P72 / VP1	3 phase gate signal VP1
12	P71 / UP1	3 phase gate signal UP1
13	P35 / SW1	
14	PA0 / SW2	
15	+5V in	
16	+5V in	
17	GND	
18	GND	
19	+3.3V in	
20	+3.3V in	
21	P90 / WN2	3 phase gate signal WN2
22	P91 / VN2	3 phase gate signal VN2
23	P92 / UN2	3 phase gate signal UN2
24	P93 / WP2	3 phase gate signal WP2
25	P94 / VP2	3 phase gate signal VP2
26	P95 / UP2	3 phase gate signal UP2
27	P01 / FO2#	
28	GND	
29	PK1 / WN3	3 phase gate signal WN3
30	PG0 / VN3	3 phase gate signal VN3
31	PG2 / VN3	3 phase gate signal UN3
32	PK0 / WP3	3 phase gate signal WP3
33	PK2 / VP3	3 phase gate signal VP3
34	PG1 / UP3	3 phase gate signal UP3
35	PE4 / FO3#	
36	GND	
37	—	
38	—	
39	—	
40	—	

8.3.2. Inverter connector CNB

Pin number	Pin name	function
1	+AVcc out	Analog power supply from CPU board (+5V)
2	+AVcc out	Analog power supply from CPU board (+5V)
3	Reserved	NC
4	Reserved	NC
5	Iu1	AN000
6	Iv1	AN001
7	Iw1	AN002
8	Vpn	AN209
9	TEMP1(Vot)	AN006
10	UV1	AN206
11	VV1	AN207
12	VW1	AN208
13	VAC	AN216
14	Ipfc	AN210
15	VR1	AN003
16	RSVIN1	AN203
17	+Vio out	Digital power supply from CPU board (+3.3V)
18	+Vio out	Digital power supply from CPU board (+3.3V)
19	GND	
20	GND	
21	Iu2	AN100
22	Iv2	AN101
23	Iw2	AN102
24	Vu2	AN200
25	Vv2	AN201
26	Vw2	AN202
27	TEMP2	NC
28	GND	
29	Iu3	AN004
30	Iv3	AN103
31	Iw3	AN204
32	Vu3	AN104
33	Vv3	AN105
34	Vw3	AN106
35	TEMP3	AN211
36	GND	
37	—	
38	—	
39	—	
40	—	

8.3.3. ICS/UART connector CN2

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD1/12 out	PC4
3	RXD1/12 in	PC3
4	GND	GND

8.3.4. ICS/UART connector CN3

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6/12 out	P81
3	RXD6/12 in	P80
4	GND	GND

8.3.5. ICS/UART connector CN5

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8/12 out	P23
3	RXD8/12 in	P22
4	GND	GND

8.3.1. ICS/UART connector CN6

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5 out	PK1
3	RXD5 in	PK0
4	GND	GND

8.3.2. ICS/UART connector CN7

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9 out	PG1
3	RXD9 in	PG0
4	GND	GND

8.3.3. ICS/UART connector CN10

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9 out	PA3
3	RXD9 in	PA2
4	GND	GND

8.3.4. ICS/UART connector CN11

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	PA4
3	RXD8 in	PA5
4	GND	GND

8.3.5. ICS/UART connector CN13

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD6 out	PB0
3	RXD6 in	PB1
4	GND	GND

8.3.6. ICS/UART connector CN14

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD9/12 out	P01
3	RXD9/12 in	P00
4	GND	GND

8.3.7. ICS/UART connector CN15

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD1/11 out	PD3
3	RXD1/11 in	PD5
4	GND	GND

8.3.8. ICS/UART connector CN16

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	PD0
3	RXD8 in	PD1
4	GND	GND

8.3.9. ICS/UART connector CN17

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD8 out	PC1
3	RXD8 in	PC0
4	GND	GND

8.3.10. ICS/UART connector CN18

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5/11/12 out	PB5
3	RXD5/11/12 in	PB6
4	GND	GND

8.3.11. ICS/UART connector CN19

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD11 out	PF0
3	RXD11 in	PF1
4	GND	GND

8.3.12. ICS/UART connector CN20

Pin number	Pin name	function
1	Vio out	+5V power supply fromCPU board
2	TXD5 out	PD7
3	RXD5 in	PE0
4	GND	GND

8.3.13. ABZ1 encoder connector CN12

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	A1	A PA7
4	B1	B PA6
5	Z1	Z PA5

8.3.14. HALL1 sensor input connector CN1

Pin number	Pin name	function
1	+5V	+5V power supply fromCPU board
2	GND	GND
3	HU1	HU P23/IRQ11
4	HV1	HV P24/IRQ4
5	HW1	HW P25/IRQ10

8.3.15. CPU pin connector1 CN4

Pin number	Pin name	function
1	P51 / AN205	
2	PH4 / AN107	
3	PH2 / AN005	
4	PH0 / AN007	
5	P82	
6	P11	
7	P10	
8	P17	
9	P16	
10	P15	
11	P14	
12	P13	
13	P12	
14	PE6	
15	PE5	
16	PE3	
17	PE1	
18	PD2	
19	PF3	
20	PF2	
21	USB0_DM	
22	USB0_DP	

8.3.16. CPU pin connector1 CN9

Pin number	Pin name	function
1	UVCC	
2	UVCC	
3	GND	
4	GND	
5	PB7	
6	PB4	
7	PC2	
8	PB3	
9	PB2	
10	P96	
11	P33	
12	P32	
13	P31	
14	P30	
15	P27	
16	P26	
17	P21	
18	PE2	

8.3.17. connector CN8

Pin number	Pin name	function
1	TCK/FINEC	
2	GND	
3	/TRST	
4	EMLE	
5	TDO	
6	--	
7	MD/FINED	
8	VCC	
9	TMS	
10	UB	
11	TDI	
12	GND	
13	/RESET	
14	GND	

9. Ordering information

9.1. Part number list

Part number	
Single 3phase PWM port series (STANDARD type) 20pin x 2 type	
T5101A	RL78/G14 64pin R5F104LEAFP
T5102	RL78/F14 80pin R5F10PMFKFB
T5103	RL78/G1F 64pin R5F11BLEAFB
T5104	RL78/G1G 32pin
T5105	RL78/G14 32pin
T5106	RL78/G1F 32pin
T5107	Reserved
T5201A	RX62T 100pin R5F562TAADFP
T5202	RX62T 64pin
T5203	Reserved
T5204	RX64M 144pin
T5205	RX23T 64pin
T5206	RX24T 100pin Trial series CPU card
T5210	RX71M 144pin
T5211	RX66T 100pin
T5301A	RX111 64pin R5F51115ADFM Trial series CPU card
T5302	(V850E2M/FJ4)
T5401	
Multi 3phase PWM port series 40pin x 2 type	
T6206	RX24T 100pin standard (pin assign compatible to T5206)
T6207	(RX24T) 100pin extended
T6209	RX63T 144pin
T6211B	RX66T 112pin
T6214	RX72T 144pin
T6215	RZ/T1 対応変換ボード
Pin 変換ボード	
T6X5X	Conversion board to use T6xxx series CPU cards on DTL standard inverters.

Gray part CPU cards are not sold now.

Green part CPU cards are now planning to sell.

10. Revision

Version	Date	
0.52EN	2014-12-03	・ Add RL78/G1F
0.54EN	2015-08-08	・ Add caution while connecting E1 emulator.
1.02EN	2016-07-21	・ Add RX24T, RX23T
1.03EN	2017-03-31	・ Fix spell miss ・ Change ordering information

T6xxx Trial series Standard CPU card Users Manual

Issue date: July-14-2019 Ver.1.03 EN

Issue: Desk Top Laboratories Inc.
101, 35-7, GATSUGI, HACHIOUJI-SHI, TOKYO, Japan,192-0362
