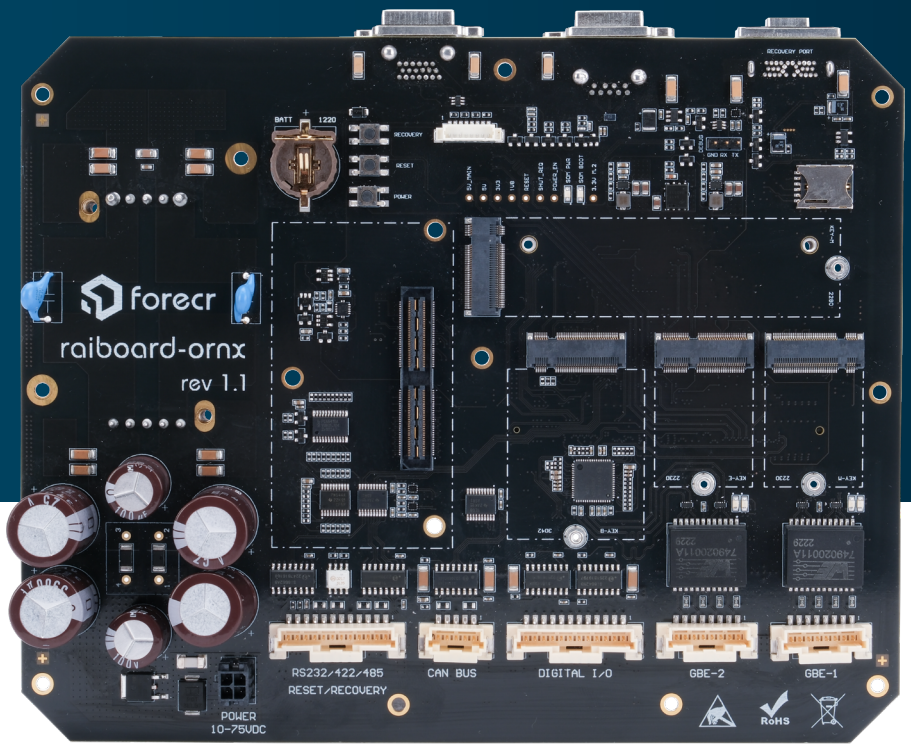

RAIBOARD-ORNX Rev 1.1

USER MANUAL

UM-RBRDORNX-01
Revision 1.1
12/06/2026

NVIDIA Elite Partner

Forecr
https://www.forecr.io
support@forecr.io

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Preface

Disclaimer

Forecr emphasizes that the information contained in this user manual is continuously updated in line with the technical modifications and enhancements made by Forecr to its carrier board. Therefore, this manual only represents the technical status of Forecr carrier board at the time of publishing.

Forecr shall not be held responsible for any damages that may occur directly or indirectly as a result of any technical or typographical errors or omissions found in this document or for any discrepancies between the product and the user's manual.

Customer Support

In case you encounter any challenges after reading the user manual and/or using the carrier board, please reach out to the Forecr reseller from which you purchased the carrier board.

See the contact information section below for more information on how to contact us directly.

Contact Information

E-mail Address	For information requests: info@forecr.io For support requests: support@forecr.io For wholesale inquiries: sales@forecr.io
Address	Forecr OÜ Akadeemia tee 21/1 (II floor), Room 219, 12618, Tallinn, Estonia
Telephone Number	Estonia +372 5332 2632
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Symbols

ElectroStatic Discharge (ESD) Sensitive Device!

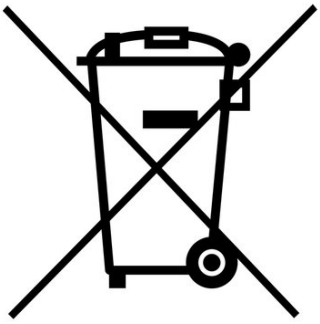
Electronic boards and their components are sensitive to static electricity. When handling any circuit board assemblies, it is recommended that ESD safety precautions be observed.

ESD safe best practices include, but are not limited to:

- Do not handle the carrier board out of its antistatic packaging while it is not used for operational purposes unless it is otherwise protected.
- Whenever possible, unpack or pack this product only at ESD safe work stations.
- Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools.
- Try to handle the board by the edges, avoiding contact with components.

HOT Surface!

Do not touch. Contact may cause burns. Allow to cool before servicing.



Waste Electrical and Electronic Equipment (WEEE)!

The carrier board should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.

Restriction of Hazardous Substances (RoHS)!

The carrier board complies with the regulations and restrictions established by the ROHS Directive and does not contain hazardous substances in concentrations that may be harmful to health or the environment.

Limited Product Warranty

Forecr provides a 1-year Warranty for the carrier board. This warranty period is valid from the original purchase date of the carrier board. In order to maintain warranty, the carrier board must not be altered or modified in any way. Changes or modifications to the board, that are not explicitly approved by Forecr and described in this user manual or received from Forecr Support as a special handling instruction, will void your warranty.
To receive warranty service, the carrier board must be delivered to Forecr within the warranty period together with the original invoice or proof of purchase.

Revision History

Revision No	Revision Date	Revision Description
rev 1.0	11.12.2024	Preliminary Release
rev 1.1	13.06.2026	The CAN bus update related to the new revision board has been added to Section 5.3.

1. Introduction

The RAIBOARD-ORNX is a cutting-edge AI computing solution designed for railway applications, powered by NVIDIA Jetson Orin NX (8GB/16GB). It delivers up to 100 TOPS of AI performance, ideal for real-time data processing and machine learning tasks.

Key features include dual Gigabit Ethernet ports, USB 3.2, and support for WiFi, Bluetooth, LTE, and 5G connectivity. Its dual M.2 SSD slots ensure high-speed, large-capacity data storage, making it suitable for applications like video analytics and monitoring. Built to withstand extreme temperatures (-25°C to 85°C), shock, and vibration, it complies with EN50155 and other railway standards. With low power consumption and robust design, the RAIBOARD-ORNX excels as a secure gateway and onboard AI engine for railway infrastructure and monitoring systems.

This platform redefines reliability, efficiency, and AI-driven innovation in railway technology.

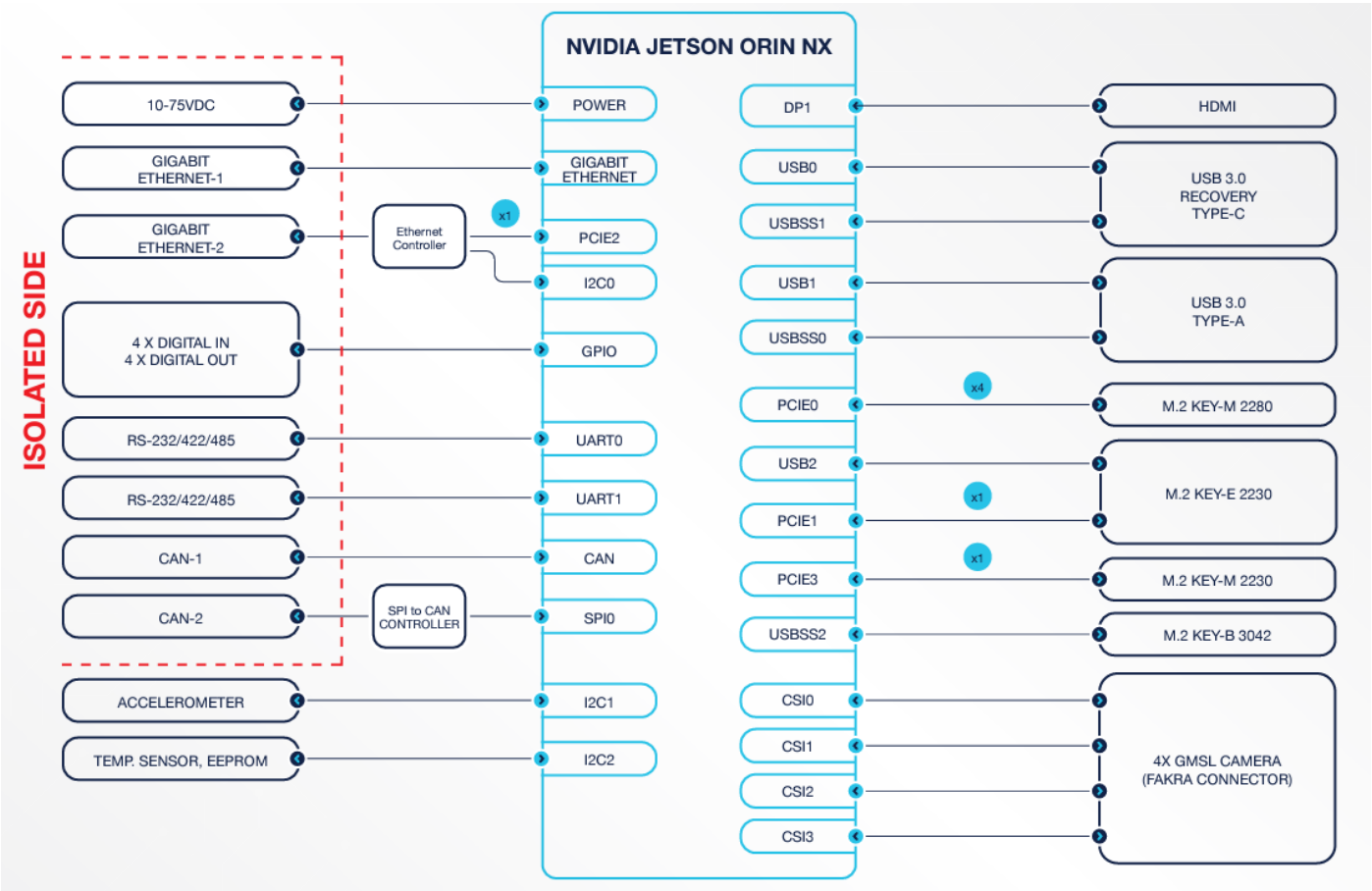
Latest revision of this user manual, datasheet, and 3D model can be downloaded from Forecr Web Page.

2. Product Specification

2.1 Technical Specification

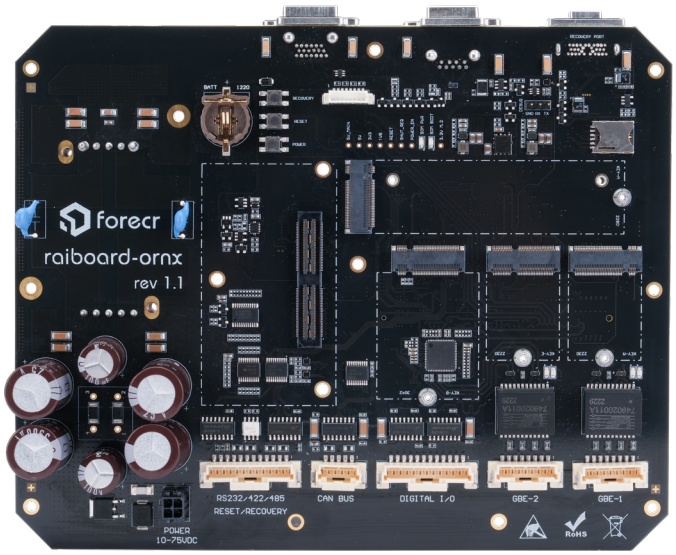
Supported Modules	NVIDIA Jetson Orin Nano 4GB / 8GB NVIDIA Jetson Orin NX 8GB / 16GB
Memory	4 GB 64-bit LPDDR5 / 8 GB 128 bit LPDDR5 8 GB 256-bit LPDDR5 / 16 GB 128 bit LPDDR5
Graphics Interfaces	1x HDMI 2.0(max resolution 3840x2160)
Interfaces	2x Gigabit Ethernet 1x USB 3.1 Type-A 1x USB 3.1 Type-C 2x CAN Bus (Isolated) 2x RS232/RS422/RS485 (Isolated) 4x Digital In (Isolated) 4x Digital Out (Isolated)
Wireless Communication	WiFi/Bluetooth/LTE Connectivity by extension sockets
Power Supply	10-75VDC
Extension Sockets	1x M.2 Key-E, 1x M.2 Key-B, 1x SIM
Mass Storage	2x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	275 mm x 200 mm x 75 mm 2750gr
Operating Systems	Ubuntu Linux 20.04 Ubuntu Linux 22.04
Standards (with Raibox chassis)	EN50155, EN45545-2 HL3, EN61373, EN60068, IP67
JetPack Support	JetPack 5.x JetPack 6.x

2.2 Block Diagram

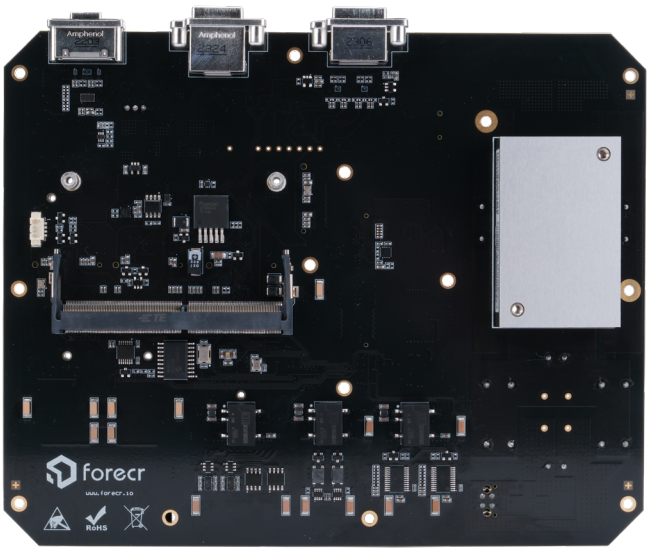


2.3 Raiboard Visuals

Top Side



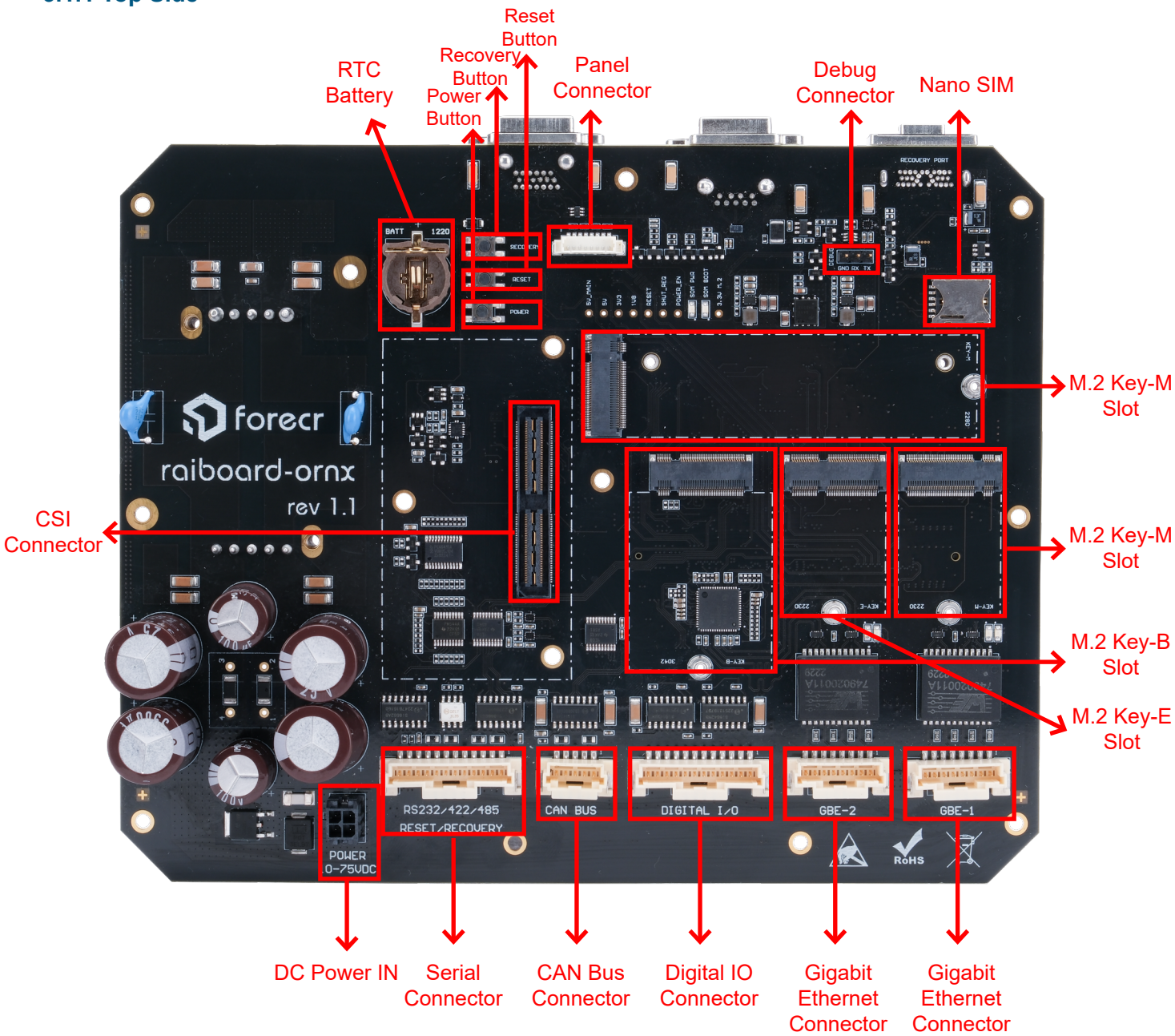
Bottom Side



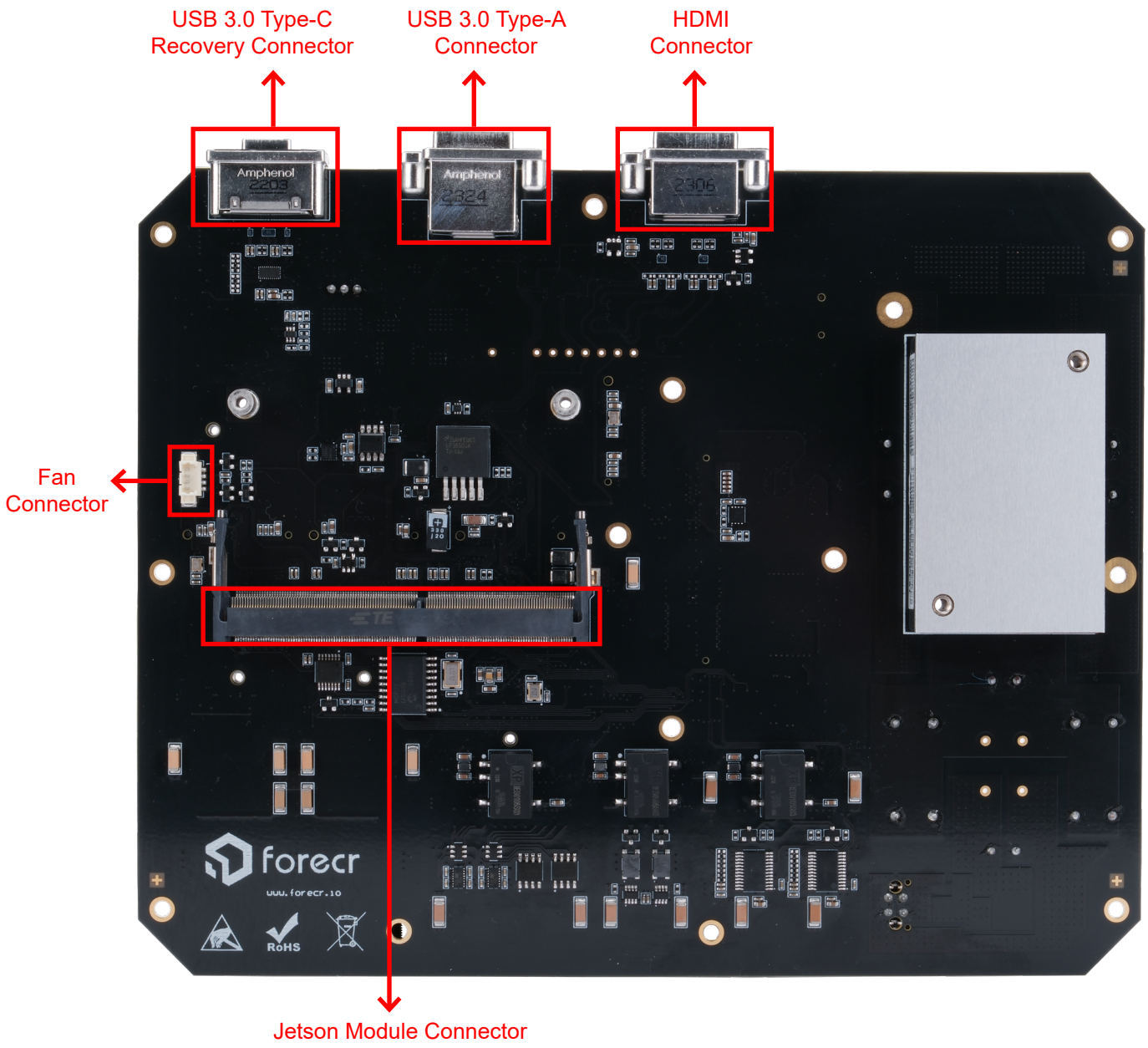
3. Hardware Information

3.1 Connector and Button Location

3.1.1 Top Side



3.1.2 Bottom Side

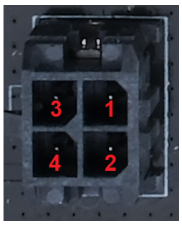


3.2 List of Connectors and Buttons

Connectors
RAIBOARD-ORNX Power Connector
RAIBOARD-ORNX Fan Connector
RAIBOARD-ORNX M.2 Key-M Connector
RAIBOARD-ORNX M.2 Key-B Connector
RAIBOARD-ORNX M.2 Key-E Connector
RAIBOARD-ORNX CSI Connector
RAIBOARD-ORNX Debug Connector
RAIBOARD-ORNX Panel Connector
RAIBOARD-ORNX Serial Connector
RAIBOARD-ORNX CAN Bus Connector
RAIBOARD-ORNX Digital IO Connector
RAIBOARD-ORNX Gigabit Ethernet Connector
RAIBOARD-ORNX Nano SIM
RAIBOARD-ORNX RTC Battery
RAIBOARD-ORNX USB 3.0 Type-C Recovery Connector
RAIBOARD-ORNX USB 3.0 Type-A Connector
RAIBOARD-ORNX HDMI Connector
Buttons
RAIBOARD-ORNX Power Button
RAIBOARD-ORNX Recovery Button
RAIBOARD-ORNX Reset Button

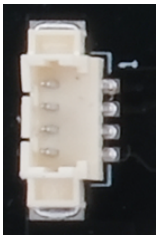
3.3 The Definition of Each Connector

3.3.1 Power Connector



Function	Description	
Connector Type	0430450424	
Mating Connector	0430250408	
Minimum Input Voltage	10V	
Maximum Input Voltage	75V	
Pinout	**Pin**	**Description**
	1	VIN-
	2	VIN-
	3	VIN+
	4	VIN+

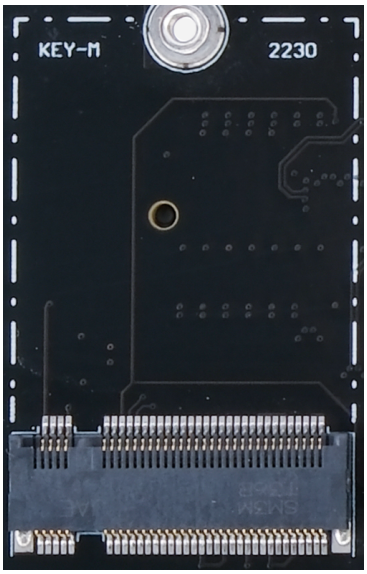
3.3.2 Fan Connector



Function	Description	
Connector Type	53398-0471	
Mating Connector	0510210400	
Pinout	**Pin**	**Description**
	1	DGND
	2	VDD_5V
	3	TACH
	4	PWM

3.3.3 M.2 Key-M Connectors

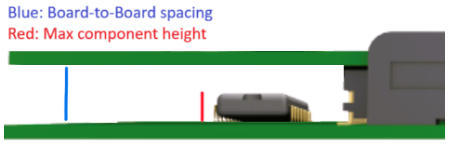
Key-M 2230



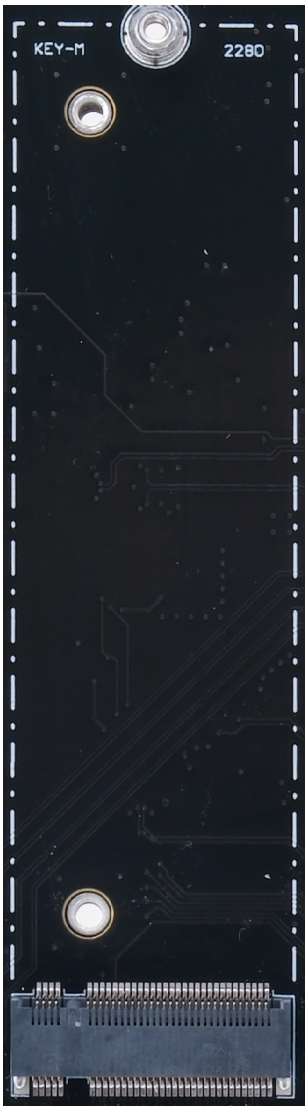
Description

Pinout	Pin	Description	Pin	Description	Pin	Description
	1	GND	24	NC	47	PCIE3.TX0_N
	2	VDD_3V3	25	NC	48	NC
	3	GND	26	NC	49	PCIE3.TX0_P
	4	VDD_3V3	27	GND	50	PCIE3.RST_N
	5	NC	28	NC	51	GND
	6	NC	29	NC	52	PCIE3.CLKREQ_N
	7	NC	30	NC	53	PCIE3.CLK_N
	8	NC	31	NC	54	PCIE.WAKE_N
	9	GND	32	NC	55	PCIE3.CLK_P
	10	NC	33	GND	56	NC
	11	NC	34	NC	57	GND
	12	VDD_3V3	35	NC	58	NC
	13	NC	36	NC	67	NC
	14	VDD_3V3	37	NC	68	SUSCLK_32KHZ
	15	GND	38	NC	69	NC
	16	VDD_3V3	39	GND	70	VDD_3V3
	17	NC	40	NC	71	GND
	18	VDD_3V3	41	PCIE3.RX0_N	72	VDD_3V3
	19	NC	42	NC	73	GND
	20	NC	43	PCIE3.RX0_P	74	VDD_3V3
	21	GND	44	NC	75	GND
	22	NC	45	GND		
	23	NC	46	NC		

Board to board spacing= 1.45mm
Max component height= 0mm



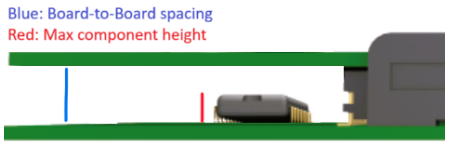
Key-M 2280



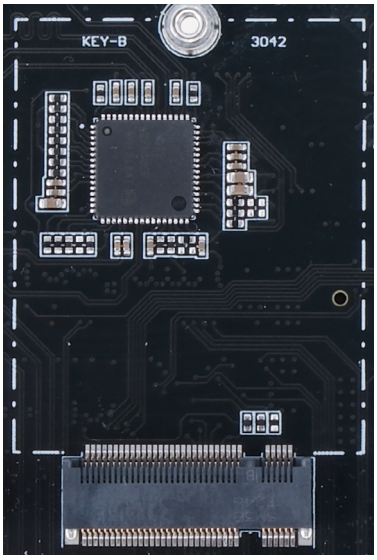
Description

Pinout	Pin	Description	Pin	Description	Pin	Description
	1	GND	24	NC	47	PCIE0.TX0_N
	2	VDD_3V3	25	PCIE0.TX2_P	48	NC
	3	GND	26	NC	49	PCIE0.TX0_P
	4	VDD_3V3	27	GND	50	PCIE0.RST_N
	5	PCIE0.RX3_N	28	NC	51	GND
	6	NC	29	PCIE0.RX1_N	52	PCIE0.CLKREQ_N
	7	PCIE0.RX3_P	30	NC	53	PCIE0.CLK_N
	8	NC	31	PCIE0.RX1_P	54	PCIE.WAKE_N
	9	GND	32	NC	55	PCIE0.CLK_P
	10	NC	33	GND	56	NC
	11	PCIE0.TX3_N	34	NC	57	GND
	12	VDD_3V3	35	PCIE0.TX1_N	58	NC
	13	PCIE0.TX3_P	36	NC	67	NC
	14	VDD_3V3	37	PCIE0.TX1_P	68	SUSCLK_32KHZ
	15	GND	38	NC	69	NC
	16	VDD_3V3	39	GND	70	VDD_3V3
	17	PCIE0.RX2_N	40	NC	71	GND
	18	VDD_3V3	41	PCIE0.RX0_N	72	VDD_3V3
	19	PCIE0.RX2_P	42	NC	73	GND
	20	NC	43	PCIE0.RX0_P	74	VDD_3V3
	21	GND	44	NC	75	GND
	22	NC	45	GND		
	23	PCIE0.TX2_N	46	NC		

Board to board spacing= 2.45mm
Max component height= 0mm



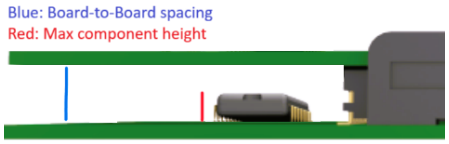
3.3.4 M.2 Key-B Connector



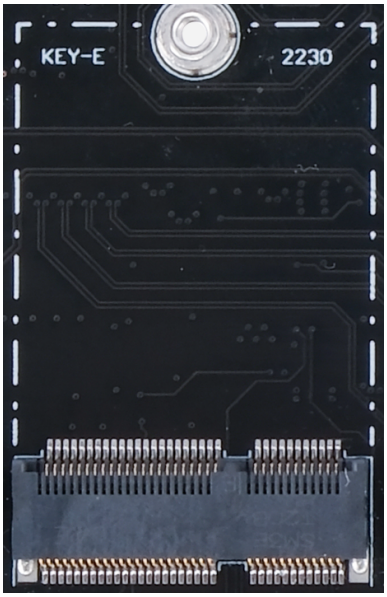
Description

Pinout	Pin	Description	Pin	Description	Pin	Description
	1	NC	32	USIM_CLK	55	NC
	2	VDD_3V8	33	GND	56	NC
	3	GND	34	USIM_DAT	57	GND
	4	VDD_3V8	35	USBSS2.TX_N	58	NC
	5	GND	36	USIM_VDD	59	NC
	6	M2B_FULLCARD_PWROFF_N	37	USBSS2.TX_P	60	NC
	7	USB2_DP	38	NC	61	NC
	8	M2B_WDIS-ABLE1_N	39	GND	62	NC
	9	USB2_DM	40	NC	63	NC
	10	NC	41	NC	64	NC
	11	GND	42	NC	65	NC
	20	NC	43	NC	66	NC
	21	NC	44	NC	67	M2B_RESET_N
	22	NC	45	GND	68	NC
	23	NC	46	NC	69	NC
	24	NC	47	NC	70	VDD_3V8
	25	NC	48	NC	71	GND
	26	M2B_WDIS-ABLE2_N	49	NC	72	VDD_3V8
	27	GND	50	NC	73	GND
	28	NC	51	GND	74	VDD_3V8
	29	USBSS2.RX_N	52	NC	75	NC
	30	USIM_RST	53	NC		
	31	USBSS2.RX_P	54	NC		

Board to board spacing= 2.45mm
Max component height= 1mm



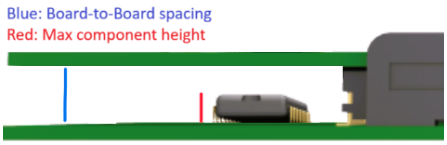
3.3.5 M.2 Key-E Connector



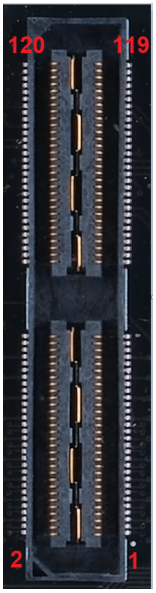
Description

Pinout	Pin	Description	Pin	Description	Pin	Description
	1	GND	32	NC	55	PCIE.WAKE_N
	2	VDD_3V3	33	GND	56	M2E_WDIS-ABLE1_N
	3	USB2_DP	34	NC	57	GND
	4	VDD_3V3	35	PCIE1.TX0_P	58	NC
	5	USB2_DM	36	NC	59	NC
	6	NC	37	PCIE1.TX0_N	60	NC
	7	GND	38	NC	61	NC
	8	NC	39	GND	62	NC
	9	NC	40	NC	63	GND
	10	NC	41	PCIE1.RX0_P	64	NC
	11	NC	42	NC	65	NC
	12	NC	43	PCIE1.RX0_N	66	NC
	13	NC	44	NC	67	NC
	14	NC	45	GND	68	NC
	15	NC	46	NC	69	GND
	16	NC	47	PCIE1.CLK_P	70	NC
	17	NC	48	NC	71	NC
	18	GND	49	PCIE1.CLK_N	72	VDD_3V3
	19	NC	50	SUSCLK_32KHZ	73	NC
	20	NC	51	GND	74	VDD_3V3
	21	NC	52	PCIE1.RST_N	75	GND
	22	NC	53	PCIE1. CLKREQ_N		
	23	NC	54	M2E_WDIS-ABLE2_N		

Board to board spacing= 1.45mm
Max component height= 0mm



3.3.6 CSI Connector



Function	Description							
Connector Type	QSH-060-01-L-D-A-K-TR							
Mating Connector	QTH-060-0X-L-D-A-K-TR							
Pinout	**Pin**	**Description**	**Pin**	**Description**	**Pin**	**Description**	**Pin**	**Description**
	1	CSI0.D0_P	37	NC	73	NC	109	CAM_BACK-LIGHT_PWM
	2	CSI1.D0_P	38	NC	74	NC	110	VDD_3V3
	3	CSI0.D0_N	39	NC	75	CAM1_I2C.SCL	111	NC
	4	CSI1.D0_N	40	NC	76	CAM_ERROR1	112	NC
	5	GND	41	GND	77	CAM1_I2C.SDA	113	NC
	6	GND	42	GND	78	CAM_ERROR2	114	NC
	7	CSI0.CLK_P	43	NC	79	GND	115	GND
	8	CSI1.CLK_P	44	NC	80	GND	116	GND
	9	CSI0.CLK_N	45	NC	81	AVDD_CAM_2V8	117	CAM_INT1
	10	CSI1.CLK_N	46	NC	82	AVDD_CAM_2V8	118	VDD_3V3
	11	GND	47	GND	83	AVDD_CAM_2V8	119	CAM_VDD_SYS_EN
	12	GND	48	GND	84	CAM_ERROR3	120	VDD_3V3
	13	CSI0.D1_P	49	NC	85	CAM_FRSYNC1		
	14	CSI1.D1_P	50	NC	86	CAM_ERROR4		
	15	CSI0.D1_N	51	NC	87	CAM2_I2C.SCL		
	16	CSI1.D1_N	52	NC	88	CAM1_MCLK		
	17	GND	53	GND	89	CAM2_I2C.SDA		
	18	GND	54	GND	90	CAM1_PWDN		
	19	CSI2.D0_P	55	NC	91	CAM0_MCLK		
	20	CSI3.D0_P	56	NC	92	CAM1_RST		
	21	CSI2.D0_N	57	NC	93	CAM0_PWDN		
	22	CSI3.D0_N	58	NC	94	CAM2_MCLK		
	23	GND	59	NC	95	CAM0_RST		
	24	GND	60	NC	96	CAM_FRSYNC4		
	25	CSI2.CLK_P	61	NC	97	CAM_FRSYNC3		
	26	CSI3.CLK_P	62	NC	98	CAM_FRSYNC2		
	27	CSI2.CLK_N	63	GND	99	GND		
	28	CSI3.CLK_N	64	GND	100	GND		
	29	GND	65	NC	101	CAM_TE_RSV		
	30	GND	66	NC	102	VDD_1V8		
	31	CSI2.D1_P	67	NC	103	CAM_INT3		
	32	CSI3.D1_P	68	NC	104	CAM_INT4		
	33	CSI2.D1_N	69	GND	105	CAM3_I2C.SCL		
	34	CSI3.D1_N	70	GND	106	CAM_INT2		
	35	GND	71	NC	107	CAM3_I2C.SDA		
	36	GND	72	NC	108	VDD_3V3		

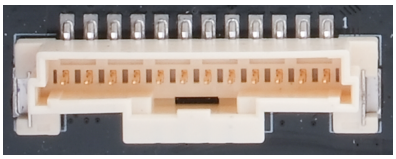
3.3.7 Debug Connector

Function	Description	
Connector Type	68001-203HLF	
Pinout	**Pin**	**Description**
	1	UART2_3V3.TX
	2	UART2_3V3.RX
	3	GND

3.3.8 Panel Connector

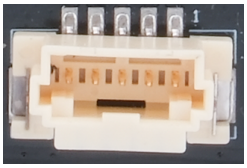
Function	Description	
Connector Type	53398-0871	
Mating Connector	0510210800	
Pinout	**Pin**	**Description**
	1	PWR_BTN_N
	2	GND
	3	RESET_N
	4	GND
	5	RECOVERY_N
	6	GND
	7	LED_BOOT_A
	8	LED_BOOT_C

3.3.9 Serial Connector



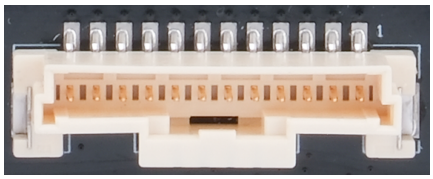
Function	Description	
Connector Type	5600201230	
Mating Connector	5023511200	
Pinout	**Pin**	**Description**
	1	SERIAL_CH0.TX_N
	2	SERIAL_CH0.TX_P
	3	SERIAL_CH0.RX_N
	4	SERIAL_CH0.RX_P
	5	GND_ISO_SERIAL
	6	SERIAL_CH1.TX_N
	7	SERIAL_CH1.TX_P
	8	SERIAL_CH1.RX_N
	9	SERIAL_CH1.RX_P
	10	GND_ISO_SERIAL
	11	RESET_ISO_N
	12	RECOVERY_ISO_N

3.3.10 CAN Bus Connector



Function	Description	
Connector Type	5600200530	
Mating Connector	5023510500	
Pinout	**Pin**	**Description**
	1	CAN0_HI
	2	CAN0_LO
	3	GND_ISO_CAN
	4	CAN1_HI
	5	CAN1_LO

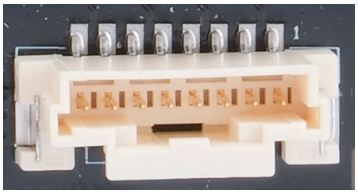
3.3.11 Digital IO Connector



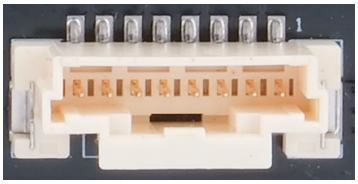
Function	Description	
Connector Type	5600201230	
Mating Connector	5023511200	
Pinout	**Pin**	**Description**
	1	DIGITAL_IN0
	2	DIGITAL_IN1
	3	DIGITAL_IN2
	4	DIGITAL_IN3
	5	GND_ISO
	6	GND_ISO
	7	GND_ISO
	8	GND_ISO
	9	DIGITAL_OUT0
	10	DIGITAL_OUT1
	11	DIGITAL_OUT2
	12	DIGITAL_OUT3

3.3.12 Gigabit Ethernet Connectors

GBE-1

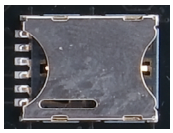


GBE-2



Function	Description	
Connector Type	5600200830	
Mating Connector	5023510800	
Pinout	**Pin**	**Description**
	1	D0_P
	2	D0_N
	3	D1_P
	4	D1_N
	5	D2_P
	6	D2_N
	7	D3_P
	8	D3_N

3.3.13 Nano SIM

	Description
	RAIBOARD-ORNX implements a nano SIM card connector.

3.3.14 RTC Battery Connector

	Description
	RAIBOARD-ORNX implements a RTC battery holder. The connector is suitable for CR1220 batteries.

3.3.15 USB Type-C Recovery Connector

	Description
	RAIBOARD-ORNX incorporates a USB 3.0 Type-C connector for software installation in recovery mode and device usage in regular use case.

3.3.16 USB Type-A Connector

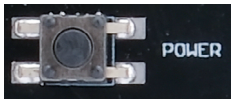
	Description
	RAIBOARD-ORNX incorporates a USB 3.0 Type-A connector with a 1.5A current limit.

3.3.17 HDMI Connector

	Description
	The NVIDIA® Jetson Orin NX module will output video via the RAIBOARD-ORNX HDMI connector that is HDMI 2.0 capable.

3.4 The Definition of Buttons

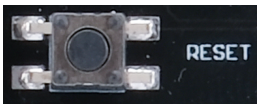
3.4.1 Power Button

	Description
	RAIBOARD-ORNX implements a power button for energize the platform when in button powered mode.

3.4.2 Recovery Button

	Description
	RAIBOARD-ORNX implements a recovery pushbutton. Recovery button should be pressed with reset button at the same time. After released reset button, recovery button should be pressed a little bit more (min. 250 ms).

3.4.3 Reset Button

	Description
	RAIBOARD-ORNX implements a reset button to reset the Jetson SoM.

4. Software Information

4.1 Installation

JetPack-5.x Installation can be found here: https://www.forecr.io/blogs/installation/jetpack-5-x-installation-for-raibox-ornx

JetPack-6.x Installation can be found here: https://www.forecr.io/blogs/installation/jetpack-6-x-installation-for-raibox-ornx

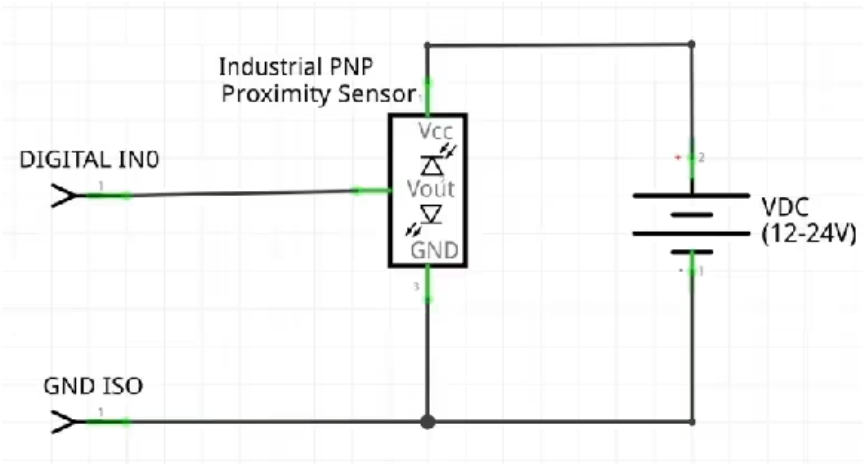
5. Connectivity

5.1 Industrial Input Output Interface

On the industrial input output connector, there are 4 ground, 4 digital input and 4 digital output pins. The pinout detail of the connector is given in section 3.3.11.

5.1.1 Setting and Reading Input Pin

Digital input side accepts signals between 12-24V (rated for 2.25mA). In our application, we used Heschen M12 Inductive Proximity Sensor (PNP & Normally Open(NO)) with 24V voltage source.



Find sysfs equivalent of the connected output pin from the table below. For this setup, it is DIGITAL_IN0. After proper hardware connection with industrial LED, we can continue with the software side.

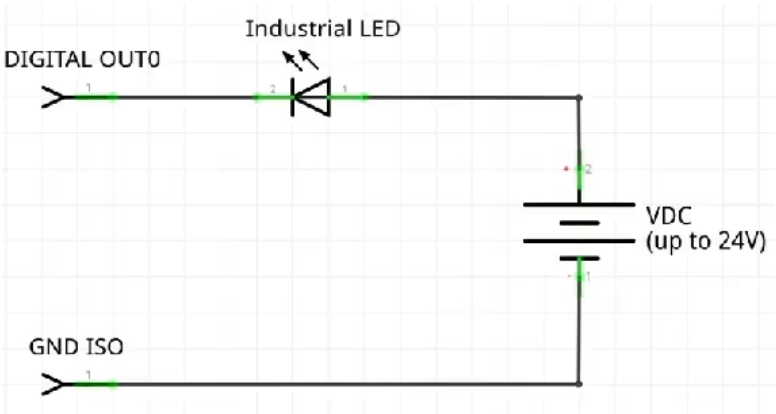
Pin Name	Sysfs Name
DIGITAL_IN0	gpio-399 (PI.00)
DIGITAL_IN1	gpio-400 (PI.01)
DIGITAL_IN2	gpio-401 (PI.02)
DIGITAL_IN3	gpio-398 (PH.07)
GROUND	GND

Set DIGITAL_IN0 as input and read sensor value. To do this, you should use the commands below.

```
sudo sh -c “echo 399 > /sys/class/gpio/export”
sudo sh -c “echo in > /sys/class/gpio/PI.00/direction”
sudo sh -c “cat /sys/class/gpio/PI.00/value”
```

5.1.2 Setting Digital Output as High and Low

Digital output side can drive loads up to 24V and has a current limit of 1A. They work as low side switches, open-close between them and GND. So, you should have a circuitry as in the schematic below. In our application, we used GASHER 24V Indicator Light with 24V voltage source.



Find sysfs equivalent of the connected output pin from the table below. For this setup, it is DIGITAL_OUT0. After proper hardware connection with industrial LED, we can continue with the software side.

Pin Name	Sysfs Name
DIGITAL_OUT0	gpio-352 (PA.04)
DIGITAL_OUT1	gpio-353 (PA.05)
DIGITAL_OUT2	gpio-354 (PA.06)
DIGITAL_OUT3	gpio-355 (PA.07)
GROUND	GND

Then, set DIGITAL_OUT0 as output and control light state. To do this, you should use the commands below.

```
sudo sh -c “echo 352 > /sys/class/gpio/export”
sudo sh -c “echo out > /sys/class/gpio/PA.04/direction”
```

To short output:

```
sudo sh -c “echo 1 > /sys/class/gpio/PA.04/value”
```

To open output:

```
sudo sh -c “echo 0 > /sys/class/gpio/PA.04/value”
```

5.2 Serial Communication Interface

On the serial communication connector, there are 8 serial communication, 2 ground pins. The pinout detail of the connector is given in section 3.3.2.

5.2.1 Installing GTKTerm

To test all serial communication interfaces, open a new terminal and install the GtkTerm program for ease of use (make sure Ethernet cable is connected). You can install GtkTerm with this terminal command:

```
sudo apt install gtkterm
```

5.2.2 Testing Serial Communication Interfaces

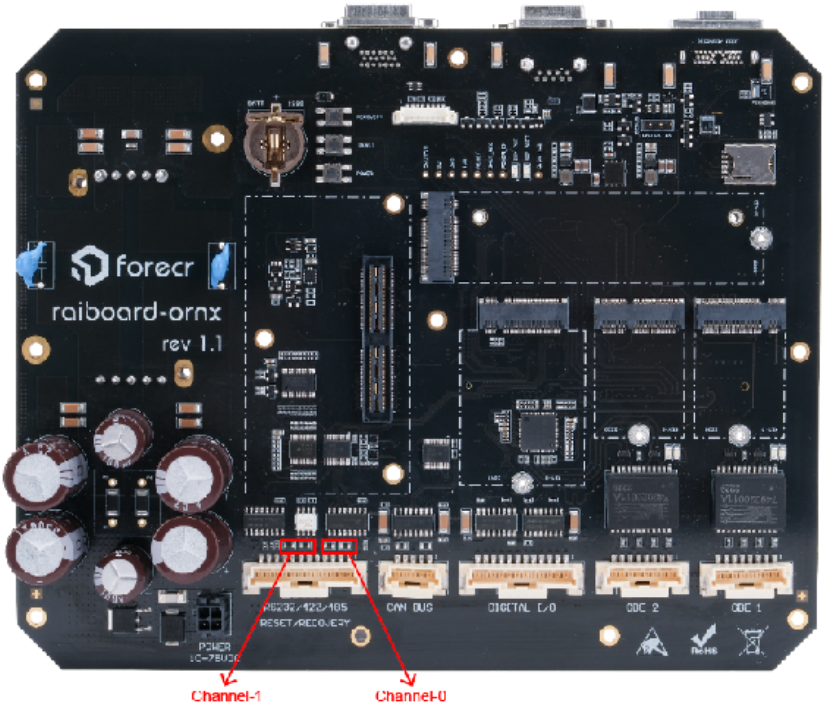
Run the GtkTerm program with arguments. On the host side, you can use TeraTerm or Putty for Windows; GtkTerm for Ubuntu OS.

Job (1/0)	Sysfs Name	
	Channel-0	Channel-1
Half/Full#	gpio-470 (PY.00)	gpio-473 (PY.03)
RS485/RS232#	gpio-471 (PY.01)	gpio-474 (PY.04)
Driver Enable	gpio-485 (PZ.07)	gpio-472 (PY.02)
Receievr Enable#	gpio-468 (PX.06)	gpio-469 (PX.07)

5.2.3 Serial Communication Termination Resistors

There are serial communication termination resistors on the RAIBOARD-ORNX. There are 0805 size 120R termination resistors between RS422 TX+/TX- and RX+/RX- pairs on the board, which are not populated by default. Standard resistors with above specs can be fitted if termination resistors are needed on the RAIBOARD-ORNX side.

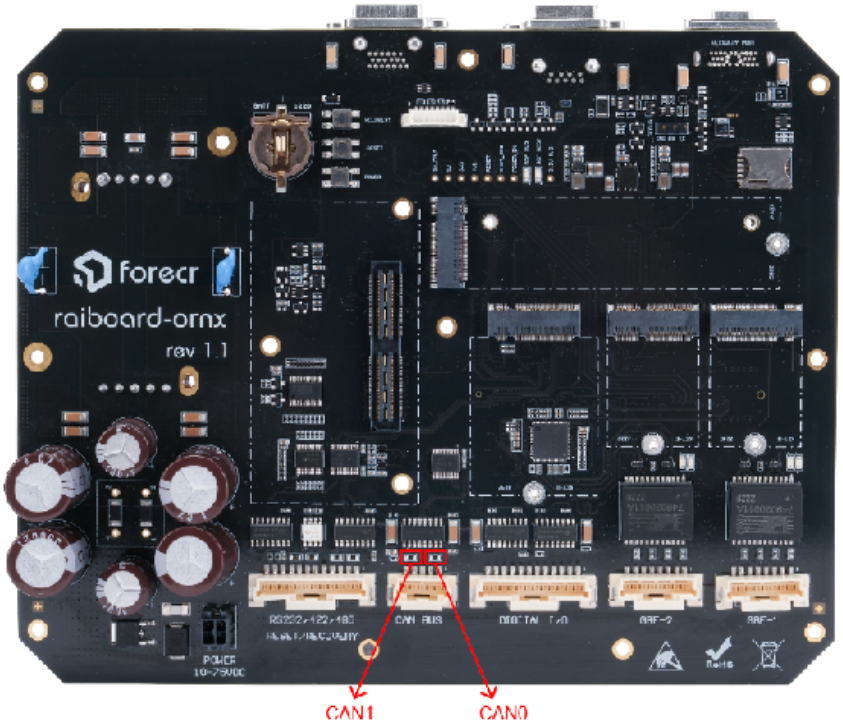
Serial Communication Termination Resistors



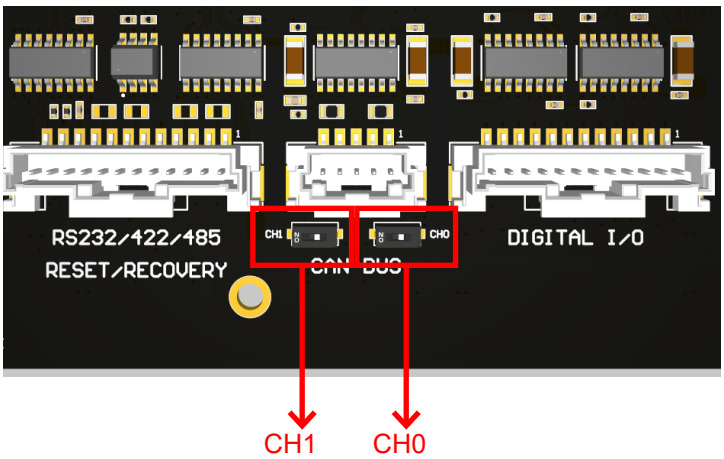
5.3 CANBus Interface

There are two CANBus interfaces on the RAIBOARD-ORNX. There are 0805 size 120R termination resistors between CAN_H and CAN_L pins on the board, which are not populated by default. Standard resistors with above specs can be fitted if termination resistors are needed on the RAIBOARD-ORNX side.

CANBus Termination Resistors



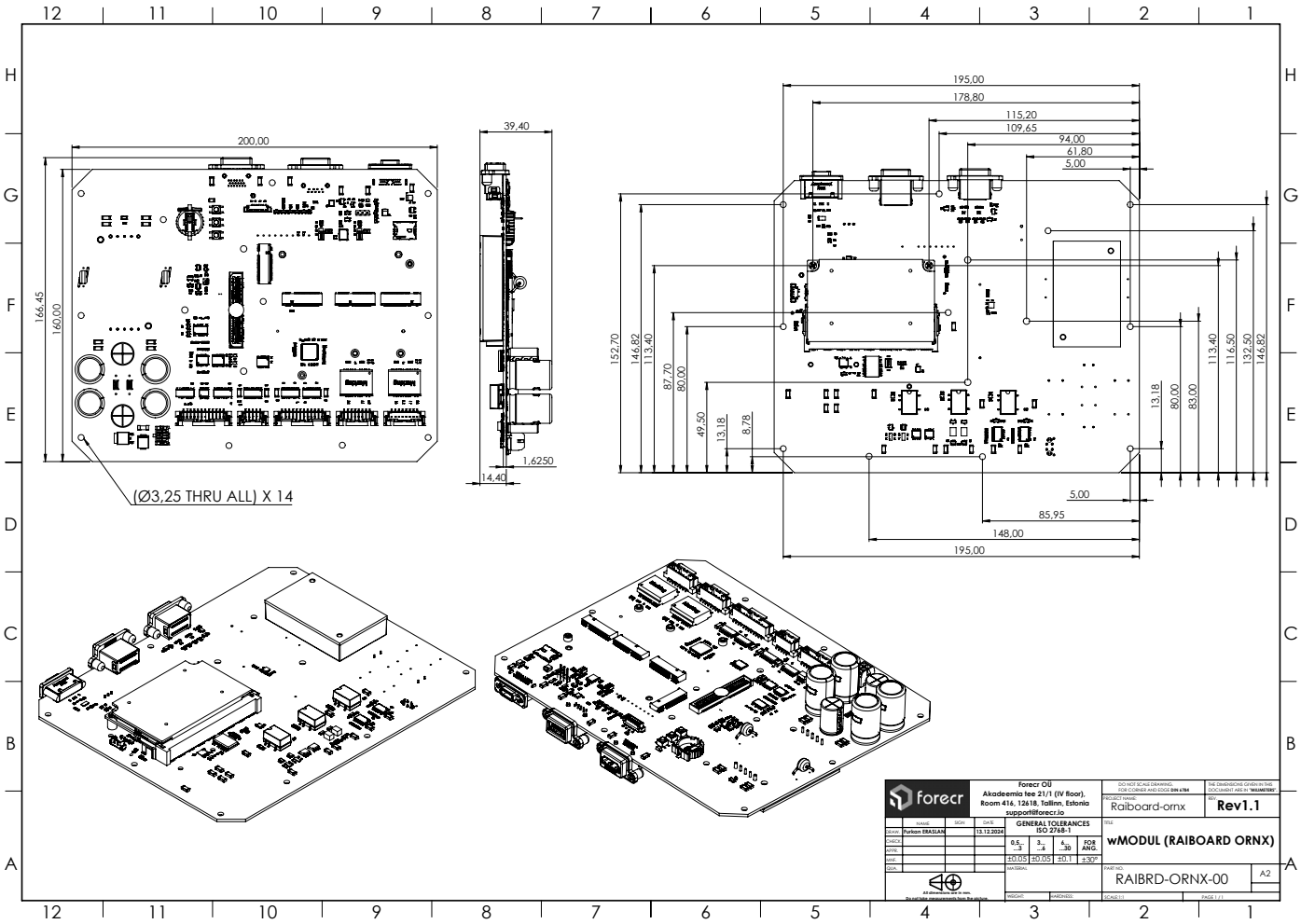
NOTE:



In the newer board revision 1.1b, CAN Bus termination resistors can be configured via DIP switches. It is no longer needed to solder or desolder 120R termination resistors manually. Termination resistors can be activated by setting the respective DIP switch to ON position.

5.4 General Purpose Input/Output (GPIO)

MODULE PIN NUMBER	I/O NAME	MODULE PIN NAME	TYPE	DESCRIPTION
193	GPIO3_PI.00	I2S0_DOUT	INPUT	DIGITAL I/O
195	GPIO3_PI.01	I2S0_DIN	INPUT	DIGITAL I/O
197	GPIO3_PI.02	I2S0_FS	INPUT	DIGITAL I/O
199	GPIO3_PH.07	I2S0_SCLK	INPUT	DIGITAL I/O
220	GPIO3_PA.05	I2S1_DOUT	OUTPUT	DIGITAL I/O
222	GPIO3_PA.06	I2S1_DIN	OUTPUT	DIGITAL I/O
224	GPIO3_PA.07	I2S1_FS	OUTPUT	DIGITAL I/O
226	GPIO3_PA.04	I2S1_SCLK	OUTPUT	DIGITAL I/O
126	M2B_W_DISABLE1#	GPIO03	OUTPUT	LTE/5G module airplane mode control. Drive low to enable airplane mode. Drive high for normal operation.
124	M2B_W_DISABLE2#	GPIO02	OUTPUT	LTE/5G module GNSS enablement control. Drive low to disable GNSS. Drive high for normal operation.
130	M2B_PWR_ON#	GPIO06	OUTPUT	LTE/5G module 3.8V power supply LDO enable control. Drive high to disable LDO. Drive low for normal operation.
216	M2B_RESET	GPIO11	OUTPUT	LTE/5G module reset control input. Drive low to trigger reset. Drive high for normal operation.
218	M2B_FULLCARD_ PWROFF#	GPIO12	OUTPUT	LTE/5G module power on/off control. Drive low to power off the module. Drive high for normal operation.
228	M2E_WDISABLE1	GPIO13	OUTPUT	WiFi/BT module full powerdown control for the WiFi/BT radio. Drive low to disable WiFi/ BT. Drive high for normal operation.
207	M2E_WDISABLE2	UART1_RTS	OUTPUT	WiFi/BT module full power down control for the WiFi/BT radio. Drive low to disable WiFi/ BT. Drive high for normal operation. Interrupt output pin for CAN controller.
212	CAN_INT_N	GPIO10	INPUT	Interrupt output pin for CAN controller
211	USB_MUX	GPIO09	OUTPUT	USB2.0 mux control pin. Drive low to rout USB2.0 connection to Key-B connector. Drive high to rout USB2.0 connection to Key-E connector.
97	SERIAL_CH0.DE	SPI0_CS1	OUTPUT	Driver enable for serial communication control.
103	SERIAL_CH0.RE#	UART0_RTS	OUTPUT	Receiver enable for serial communication control.
108	SERIAL_CH0.MODE	SPI1_MISO	OUTPUT	RS-485/RS-232 mode select pin. Drive high for RS-485 communication. Drive low for RS-232 communication.
106	SERIAL_CH0.HALF/ FULL#	SPI1_SCK	OUTPUT	Half duplex or full duplex control for RS-485 communication protocol. Drive low for full duplex communication. Drive high for half duplex communication.
104	SERIAL_CH1.DE	SPI1_MOSI	OUTPUT	Driver enable for serial communication control.

105	SERIAL_CH1.RE#	UART0_CTS	OUTPUT	Receiver enable for serial communication control.
112	SERIAL_CH1.MODE	SPI1_CS1	OUTPUT	RS-485/RS-232 mode select pin. Drive high for RS-485 communication. Drive low for RS-232 communication.
110	SERIAL_CH1.HALF/ FULL#	SPI1_CS0	OUTPUT	Half duplex or full duplex control for RS-485 communication protocol. Drive low for full duplex communication. Drive high for half duplex communication.

6. Mechanical Information