

DSBOARD ORNX-LAN Rev 1.21

USER MANUAL

UM-DSBDORNXLAN-01

Revision 1.3

14/10/2024



Forecr
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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

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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	29.04.2024	Preliminary Release
rev 1.1	17.07.2024	JetPack 6.x has been added to the 2.1 Technical Specification Section and the 4.1 Installation Section.
rev 1.2	06.09.2024	Key-M and Key-E connector pinouts have been added to section 3.3.3 and 3.3.4.
rev 1.21	01.10.2024	Ordering information has been edited in Section 9.
rev 1.3	14.10.2024	The revision of the DSBOARD-ORNX-LAN has been changed. Section 3.3.6 - Serial Communication Connector has been edited. Section 3.3.15 - LED Indicators have been added. Section 5.2.3 - Serial Communication Interface has been corrected. Section 9 - Accessories have been added.

1. Introduction

DSBOARD-ORNX-LAN is an industrial carrier board designed for harsh environments and applications that demand high processing power and reliability. It is based on the NVIDIA Orin NX system-on-module (SOM), which features multiple NVIDIA Ampere GPU cores and Arm64 CPU cores. The compact design of the carrier board makes it a versatile and flexible solution for a wide range of industrial applications such as autonomous systems, robotics, and intelligent video analytics.

DSBOARD-ORNX-LAN comes with various connectivity options, including dual Gigabit Ethernet, USB 3.1, HDMI, and CAN, enabling seamless integration with a wide range of devices and systems. The dual Gigabit Ethernet support allows for increased data transfer speeds and redundancy in network connections. The NVIDIA Orin NX SOM provides the processing power and capabilities needed to support intensive data processing and analysis.

In addition to its compact size, DSBOARD-ORNX-LAN also features multiple expansion slots for adding peripherals and customizing the system to meet specific requirements. Its wide operating temperature range ensures reliable operation in challenging environments.

Overall, DSBOARD-ORNX-LAN is an effective solution for industrial applications that demand high processing power and a reliable platform. Its advanced features, including dual Gigabit Ethernet support, and compact design make it an ideal choice for applications where space is limited, and flexibility is key.

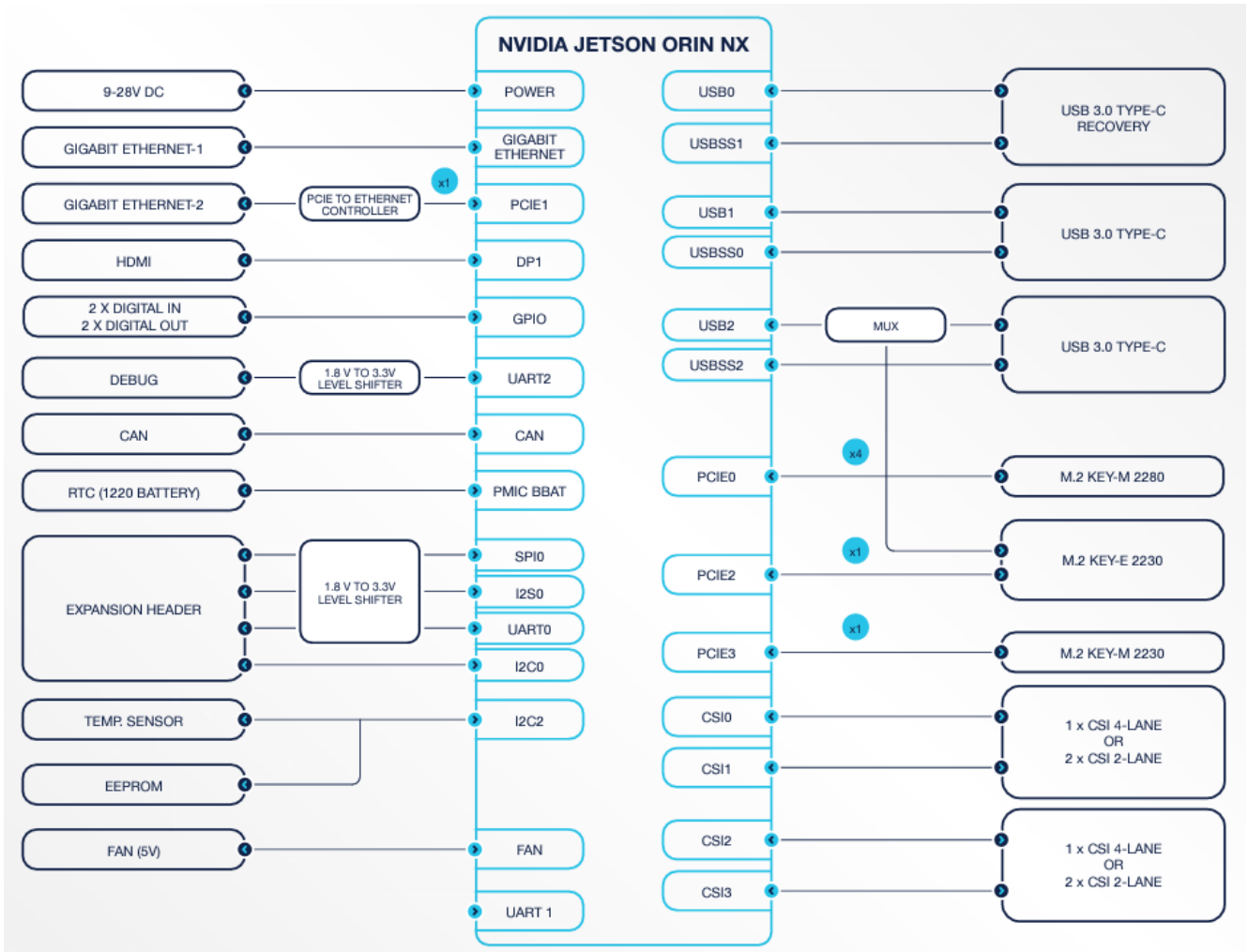
Latest revision of this user manual, datasheet, and 3D model can be downloaded from [Forecr Web Page](#).

2. Product Specification

2.1 Technical Specification

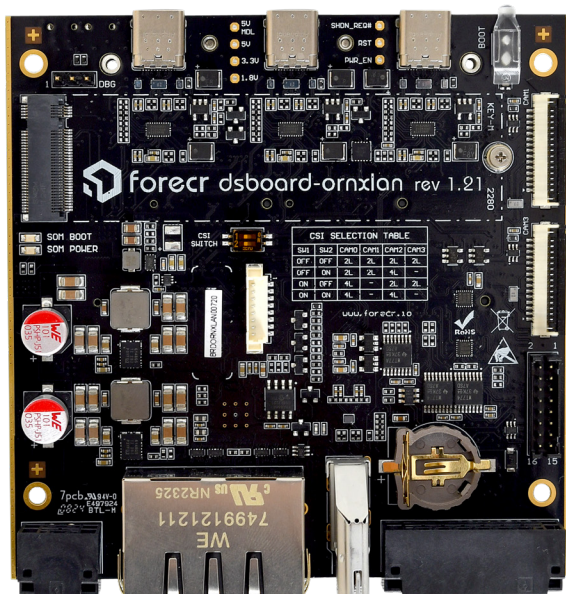
Supported Modules	NVIDIA Jetson Orin Nano 4GB / 8GB NVIDIA Jetson Orin NX 8GB / 16GB
Memory	4 GB 64-bit LPDDR5 / 8 GB 128 bit LPDDR5 8 GB 256-bit LPDDR5 / 16 GB 128 bit LPDDR5
Graphics Interfaces	1x HDMI 2.0 (max resolution 3840x2160)
Interfaces	2x Gigabit Ethernet 3x USB 3.1 Type-C 1x CAN Bus 1x RS232/422/485 2x Digital Input 2x Digital Output 2x CSI 4-LANE or 4x CSI 2-LANE
Wireless Communication	WiFi/Bluetooth Connectivity by extension sockets
Power Supply	9-28 VDC
Extension Sockets	1x M.2 Key-E, 1x 5V Fan 1x SPI, 1x I2S, 1x I2C, 1x UART
Mass Storage	2x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	100 mm x 100 mm, 88gr
Operating Systems	Ubuntu Linux 20.04 Ubuntu Linux 22.04
JetPack Support	JetPack 5.x JetPack 6.x

2.2 Block Diagram

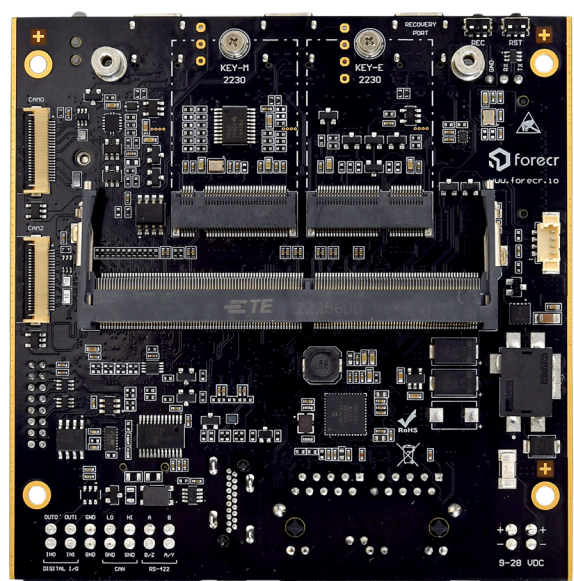


2.3 Board Visuals

Top Side



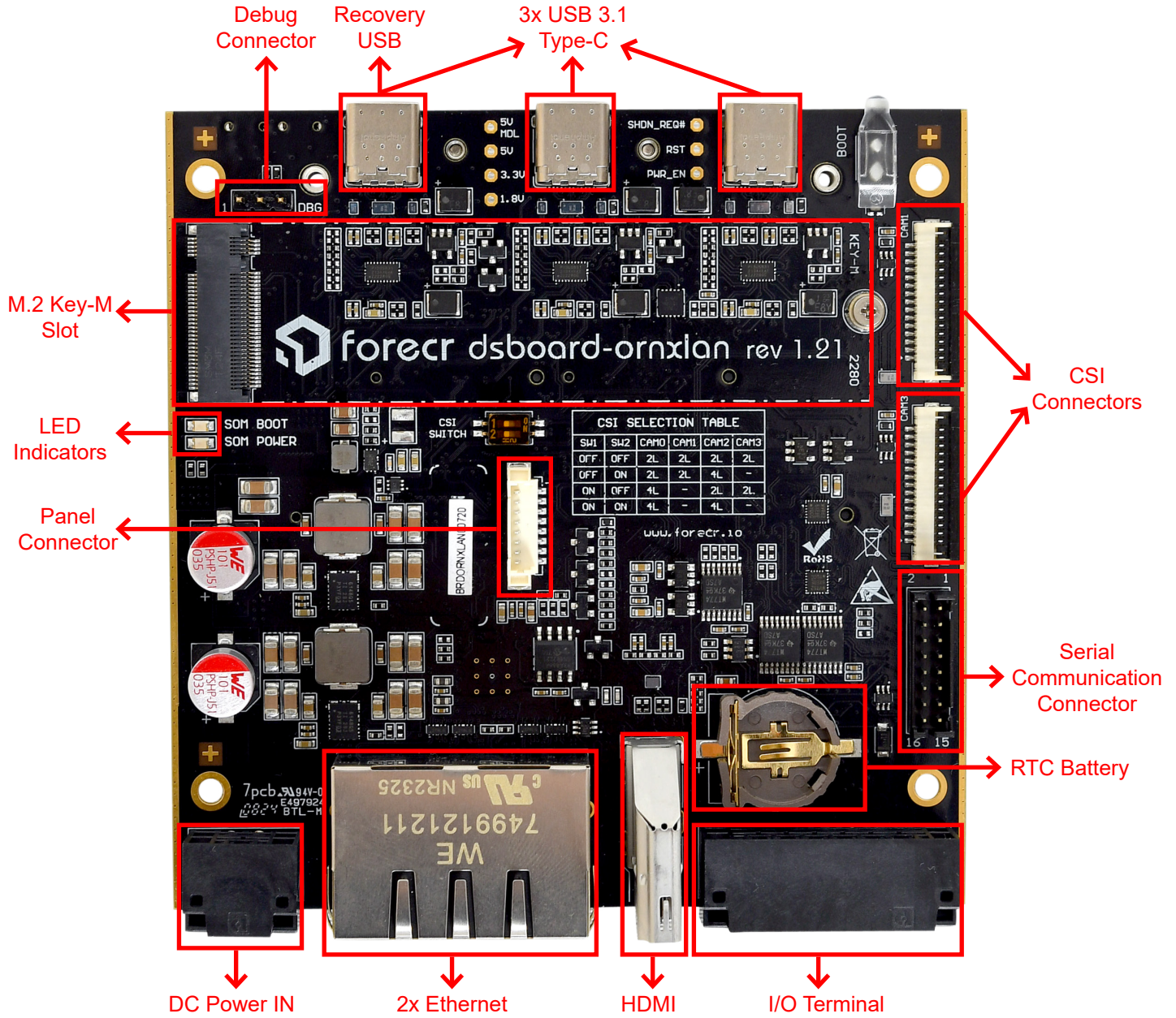
Bottom Side



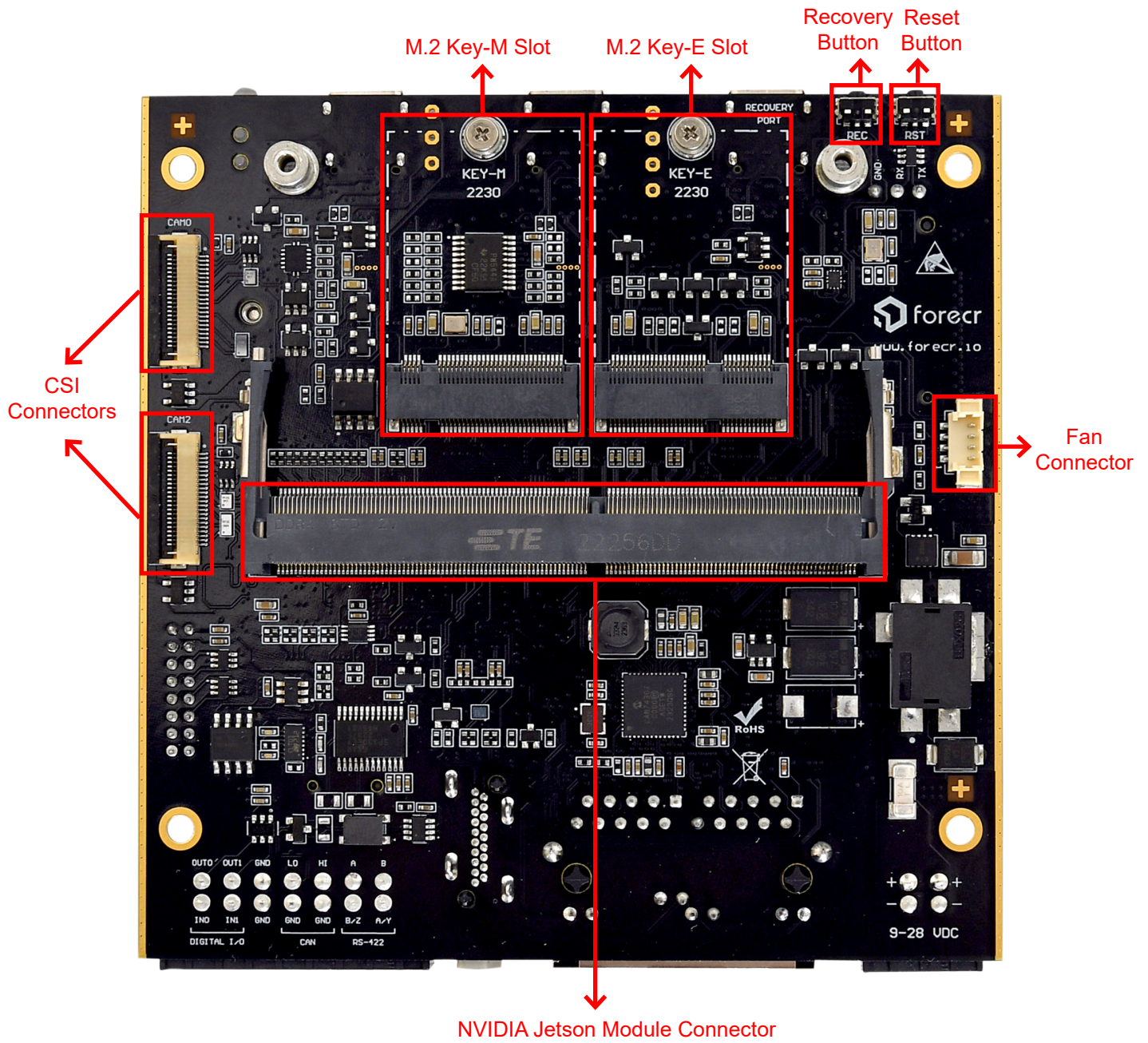
3. Hardware Information

3.1 Connector and Button Location

3.1.1 Top Side



3.1.2 Bottom Side

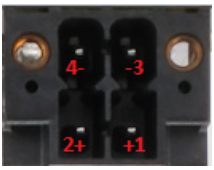


3.2 List of Connectors and Buttons


Connectors
DSBOARD-ORNX-LAN Power Connector
DSBOARD-ORNX-LAN I/O Terminal Connector
DSBOARD-ORNX-LAN M.2 Key-M Connectors
DSBOARD-ORNX-LAN M.2 Key-E Connector
DSBOARD-ORNX-LAN CSI Connectors
DSBOARD-ORNX-LAN Serial Communication Connector
DSBOARD-ORNX-LAN Panel Connector
DSBOARD-ORNX-LAN RTC Battery Connector
DSBOARD-ORNX-LAN HDMI Connector
DSBOARD-ORNX-LAN USB 3.1 Type-C Connectors
DSBOARD-ORNX-LAN 10/100/1000 Ethernet Connector
DSBOARD-ORNX-LAN Fan Connector
DSBOARD-ORNX-LAN Recovery Mode USB Type-C Connector
DSBOARD-ORNX-LAN Debug Mode Header Connector
DSBOARD-ORNX-LAN LED Indicators
Buttons
DSBOARD-ORNX-LAN Recovery Pushbutton
DSBOARD-ORNX-LAN Reset Pushbutton

3.3 The Definition of Each Connector

3.3.1 Power Connector

	Function		Description	
	Mating Connector		1708595	
	Minimum Input Voltage		+9V	
	Maximum Input Voltage		+28V	
	Pinout		Pin	Description
		1	Positive	
		2	Positive	
		3	Negative	
		4	Negative	

3.3.2 I/O Terminal Connector

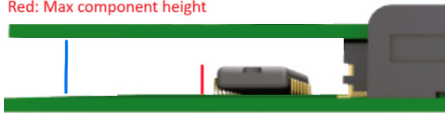
	Function		Description		
	Mating connector		1790344 (DFMC 1,5/ 7-STF-3,5) from Phoenix Contact.		
	Pinout		Pin	Description	I/O Type
			1	RS422 B	I/O
			2	RS422 Y / RS485 A	I/O
			3	RS232 RX / RS422 A	I/O
			4	RS232 TX / RS422 Z / RS485 B	I/O
			5	CAN_H	I/O
			6	GROUND	Power
			7	CAN_L	I/O
			8	GROUND	Power
			9	GROUND	Power
			10	GROUND	Power
			11	DIGITAL_OUT1 <i>Note:</i> Up to 24V, low-side switch	Output
			12	DIGITAL_IN1	Input
		13	DIGITAL_OUT0 <i>Note:</i> Up to 24V, low-side switch	Output	
		14	DIGITAL_IN0	Input	

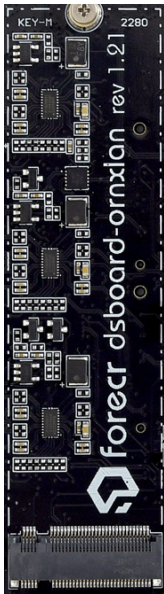
3.3.3 M.2 Key-M Connectors

M.2 Key M-2230		Description					
Pinout	Pin	Description	Pin	Description	Pin	Description	
	1	DGND	24	NC	47	PCIE3.TX0_N	
	2	VDD_3V3	25	NC	48	NC	
	3	DGND	26	NC	49	PCIE3.TX0_P	
	4	VDD_3V3	27	DGND	50	PCIE3.RST_N	
	5	NC	28	NC	51	DGND	
	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	DGND	32	NC	55	PCIE3.CLK_P	
	10	NC	33	DGND	56	NC	
	11	NC	34	NC	57	DGND	
	12	VDD_3V3	35	NC	58	NC	
	13	NC	36	NC	67	NC	
	14	VDD_3V3	37	NC	68	32KHZ_CLK	
	15	DGND	38	NC	69	NC	
	16	VDD_3V3	39	DGND	70	VDD_3V3	
	17	NC	40	NC	71	DGND	
	18	VDD_3V3	41	PCIE3.RX0_N	72	VDD_3V3	
	19	NC	42	NC	73	DGND	
	20	NC	43	PCIE3.RX0_P	74	VDD_3V3	
	21	DGND	44	NC	75	DGND	
	22	NC	45	DGND	MNT1	DGND	
	23	NC	46	NC	MNT2	DGND	

Board to board spacing=1.45 mm
 Max component height=1.2 mm

Blue: Board-to-Board spacing
 Red: Max component height

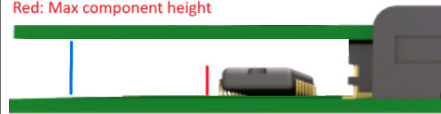


M.2 Key M-2280

Description

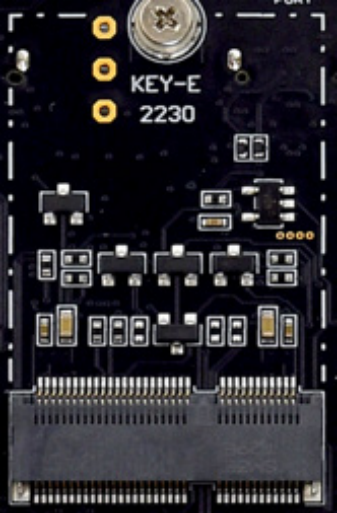

Pinout	Pin	Description	Pin	Description	Pin	Description
	1	DGND	24	NC	47	PCIE0.TX0_N
	2	VDD_3V3	25	PCIE0.TX2_P	48	NC
	3	DGND	26	NC	49	PCIE0.TX0_P
	4	VDD_3V3	27	DGND	50	PCIE0.RST_N
	5	PCIE0.RX3_N	28	NC	51	DGND
	6	NC	29	PCIE0.RX-1_N	52	PCIE0.CLKREQ_N
	7	PCIE0.RX3_P	30	NC	53	PCIE0.CLK_N
	8	NC	31	PCIE0.RX1_P	54	PCIE.WAKE_N
	9	DGND	32	NC	55	PCIE0.CLK_P
	10	NC	33	DGND	56	NC
	11	PCIE0.TX3_N	34	NC	57	DGND
	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	32KHZ_CLK
	15	DGND	38	NC	69	NC
	16	VDD_3V3	39	DGND	70	VDD_3V3
	17	PCIE0.RX2_N	40	NC	71	DGND
	18	VDD_3V3	41	PCIE0.RX-0_N	72	VDD_3V3
	19	PCIE0.RX2_P	42	NC	73	DGND
	20	NC	43	PCIE0.RX0_P	74	VDD_3V3
	21	DGND	44	NC	75	DGND
	22	NC	45	DGND	MNT1	DGND
	23	PCIE0.TX2_N	46	NC	MNT2	DGND

Board to board spacing=2.45 mm
Max component height=1.45 mm

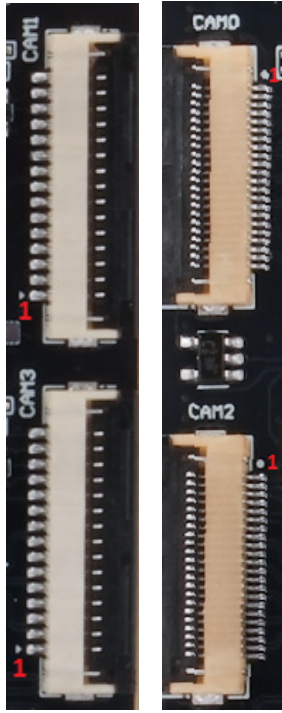
Blue: Board-to-Board spacing
Red: Max component height



3.3.4 M.2 Key-E Connector

		Description				
		Pinout	Pin	Description	Pin	Description
	1	DGND	44	NC		
	2	VDD_3V3	45	DGND		
	3	USB2_KEYE.AP2_P	46	NC		
	4	VDD_3V3	47	PCIE2.CLK_P		
	5	USB2_KEYE.AP2_N	48	NC		
	6	NC	49	PCIE2.CLK_N		
	7	DGND	50	M2E_SUSCLK_32KHZ		
	8	NC	51	DGND		
	9	MC	52	PCIE2.RST_N		
	10	NC	53	PCIE2.CLKREQ_N		
	11	NC	54	M2E_WDISABLE2_N		
	12	NC	55	PCIE.WAKE_N		
	13	NC	56	M2E_WDISABLE1_N		
	14	NC	57	DGND		
	15	NC	58	NC		
	16	NC	59	NC		
	17	NC	60	NC		
	18	DGND	61	NC		
	19	NC	62	NC		
	20	NC	63	DGND		
	21	NC	64	NC		
	22	NC	65	NC		
	23	NC	66	NC		
	32	NC	67	NC		
	33	DGND	68	NC		
	34	NC	69	DGND		
	35	PCIE2.TX0_P	70	NC		
	36	NC	71	NC		
	37	PCIE2.TX0_N	72	VDD_3V3		
	38	NC	73	NC		
	39	DGND	74	VDD_3V3		
	40	NC	75	DGND		
	41	PCIE2.RX0_P	MNT1	DGND		
	42	NC	MNT2	DGND		
	43	PCIE2.RX0_N				
	Board to board spacing=1.45 mm Max component height=1.1 mm Blue: Board-to-Board spacing Red: Max component height 					

3.3.5 CSI Connectors

	Function	Description							
	Pin/Pitch/ Bottom contact	CAM0, CAM2= 22-pin, 0.5mm pitch, bottom contact CAM1, CAM3= 15-pin, 1mm pitch, bottom contact							
	Pinout	CAM0		CAM1		CAM2		CAM3	
		Pin	Description	Pin	Description	Pin	Description	Pin	Description
	1	+3.3V	1	GND	1	+3.3V	1	GND	
	2	SDA	2	DATA0_N	2	SDA	2	DATA0_N	
	3	SCL	3	DATA0_P	3	SCL	3	DATA0_P	
	4	GND	4	GND	4	GND	4	GND	
	5	MCLK	5	DATA1_N	5	MCLK	5	DATA1_N	
	6	PWDN	6	DATA1_P	6	PWDN	6	DATA1_P	
	7	GND	7	GND	7	GND	7	GND	
	8	DATA3_P	8	CLK_N	8	DATA3_P	8	CLK_N	
	9	DATA3_N	9	CLK_P	9	DATA3_N	9	CLK_P	
	10	GND	10	GND	10	GND	10	GND	
	11	DATA2_P	11	PWDN	11	DATA2_P	11	PWDN	
	12	DATA2_N	12	CLK	12	DATA2_N	12	CLK	
	13	GND	13	SCL	13	GND	13	SCL	
	14	CLK_P	14	SDA	14	CLK_P	14	SDA	
	15	CLK_N	15	+3.3V	15	CLK_N	15	+3.3V	
	16	GND			16	GND			
	17	DATA1_P			17	DATA1_P			
	18	DATA1_N			18	DATA1_N			
	19	GND			19	GND			
	20	DATA0_P			20	DATA0_P			
	21	DATA0_N			21	DATA0_N			
	22	GND			22	GND			


3.3.5.1 CSI Switch and Selection Table



SW1	SW2	CAM0	CAM1	CAM2	CAM3
OFF	OFF	2L	2L	2L	2L
OFF	ON	2L	2L	4L	-
ON	OFF	4L	-	2L	2L
ON	ON	4L	-	4L	-


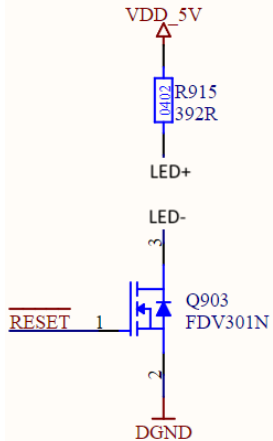
3.3.6 Serial Communication Connector

All signals on this connector are at 3.3V level.


	Function		Description
	Connector Type		DF11-16DP-2DSA(24)
	Mating connector		DF11-16DS-2C
	Pinout	Pin	Description
		1	+5V
		2	+3.3V
		3	GND
		4	GND
		5	SPI0_CS0
		6	SPI0_SCK
		7	SPI0_MISO
		8	SPI0_MOSI
		9	UART0_RX
		10	UART0_TX
		11	UART0_CTS
		12	UART0_RTS
		13	I2C0_SCL
14		AUD_MCLK	
15		I2C0_SDA	
16	SPI0_CS1		
<p>Note: UART0 signals can be replaced with I2S0 signals if they are preferred for audio applications. This modification requires four resistor changes.</p>			

3.3.7 Panel Connector


The power, recovery & reset button's signals located at the panel connector. Pin 1,3 and 5 signals are at 1.8V level.

	Function		Description	Led Schematic
	Connector type		53398-0871	
	Mating connector		51021-0800 from Molex	
	Pinout	Pin	Description	
		1	PWR_BTN	
		2	GND	
		3	RST	
		4	GND	
		5	RECOVERY	
		6	GND	
7		LED +		
8	LED -			


3.3.8 RTC Battery Connector

	Description	
	<p>The DSBOARD-ORNX implements a RTC battery holder. The connector is suitable for CR1220 batteries.</p>	


3.3.9 HDMI Connector

	Description	
	<p>The NVIDIA® Jetson Orin modules will output video via the DSBOARD-ORNX-LAN vertical HDMI connector that is HDMI 2.0 capable.</p>	


3.3.10 USB 3.1 Type-C Connectors

	Description	
	<p>The DSBOARD-ORNX-LAN incorporates 3 USB 3.1 Type-C connectors with a 1.5A current limit per connector.</p>	


3.3.11 10/100/1000 Ethernet Connector

	Description	
	<p>The DSBOARD-ORNX-LAN implements 2 port RJ-45 ethernet connector for internet communication.</p>	


3.3.12 Fan Connector

	Function		Description	
	Connector Type		3398-0471 from Molex	
	Mating Connector		0510210400	
	Pinout		Pin	Description
			1	GND
			2	+5V
		3	FAN_TACH	
		4	FAN_PWM	


3.3.13 Recovery Mode USB Type-C Connector

	Description	
	<p>The DSBOARD-ORNX-LAN implements a USB Type-C connector to allow to install or upgrade the operating system.</p>	

3.3.14 Debug Mode Header Connector

	Function	Description	
	Pinout	Pin	Description
		1	TX
		2	RX
3	GND		

3.3.15 LED Indicators


	Description
	The DSBOARD-ORNX-LAN implements LED indicators. LED indicators show that Jetson power supply is at correct level and Jetson is not at reset state.

3.4 The Definition of Buttons

3.4.1 Recovery Pushbutton

	Description
	The DSBOARD-ORNX-LAN 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).

3.4.2 Reset Pushbutton

	Description
	The DSBOARD-ORNX-LAN 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-dsboard-ornx-lan>

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

5. Connectivity

5.1 General Purpose Input/Output (GPIO)

MODULE PIN NUMBER	I/O NAME	MODULE PIN NAME	TYPE	DESCRIPTION
220	PWRLED_R	I2S1_DOUT	OUTPUT	Drive high to turn on the Red LED.
222	PWRLED_G	I2S1_DIN	OUTPUT	Drive high to turn on the Green LED.
224	PWRLED_B	I2S1_FS	OUTPUT	Drive high to turn on the Blue LED.

128	HALF/FULL	GPIO05	OUTPUT	Half duplex or full duplex control for RS-485 communication protocol. Drive low for full duplex communication. Drive high for half duplex communication.
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.
206	RS485/RS232	GPIO07(PWM)	OUTPUT	Serial communication control for SP330EEY-L transceiver. Drive low to enable RS-232. Drive high to enable RS-485.
126	RS485_CTRL	GPIO03	OUTPUT	Receiver or driver control for RS-485. Drive low to enable receiver. Drive high to enable driver.
110	DIGITAL_OUT1	SPI1_CS0	OUTPUT	Control signal for DIGITAL_OUT1 in I/O Connector. See Section 5.2.2 for more details.
104	DIGITAL_OUT0	SPI1_MOSI	OUTPUT	Control signal for DIGITAL_OUT0 in I/O Connector. See Section 5.2.2 for more details.
108	DIGITAL_IN1	SPI1_MISO	INPUT	Control signal for DIGITAL_IN1 in I/O Connector. See Section 5.2.2 for more details.
106	DIGITAL_IN0	SPI1_SCK	INPUT	Control signal for DIGITAL_IN0 in I/O Connector. See Section 5.2.2 for more details.

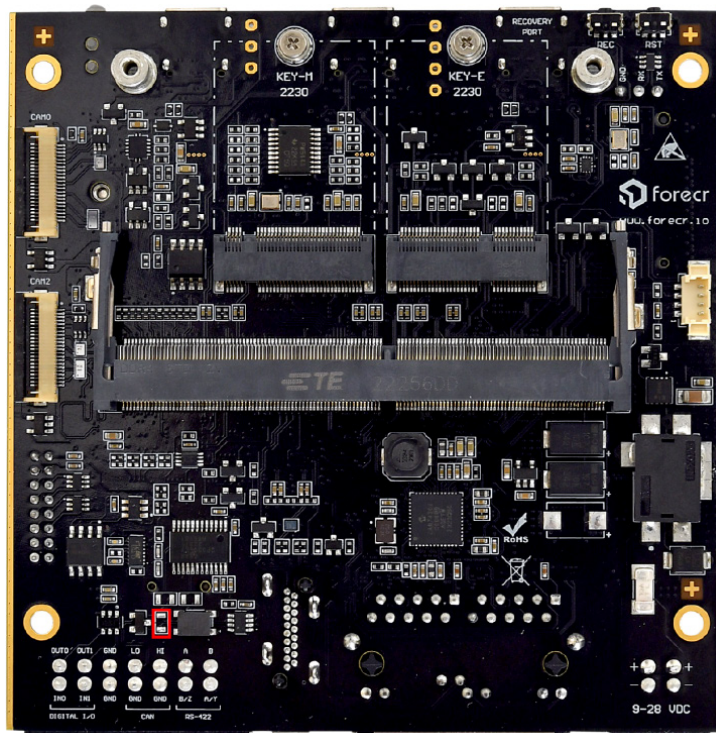
5.2 I/O Connector

On the connector, there are 4 serial communication, 4 ground, 2 CANBus, 2 digital input and 2 digital output pins.

5.2.1 CANBus Interface

There is a single CAN Bus interface on the DSBOARD-ORNX-LAN. MAX3051 transceiver is used between native CAN pins of the Jetson and connector. There is a 0805 size 120R termination resistor between CAN_H and CAN_L pins on the board, which is not populated by default. A standard resistor with above specs can be fitted if termination resistor is needed on the DSBOARD-ORNX-LAN side.

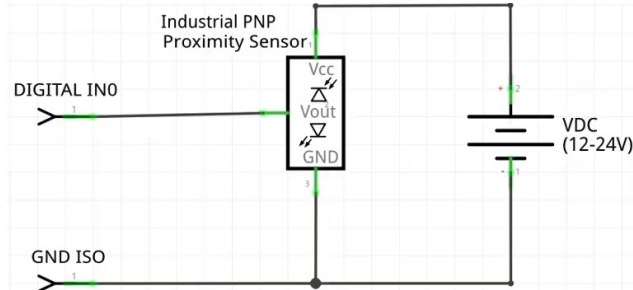
CANBus Termination Resistor



5.2.2 Industrial Input Output Interface

5.2.2.1 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.

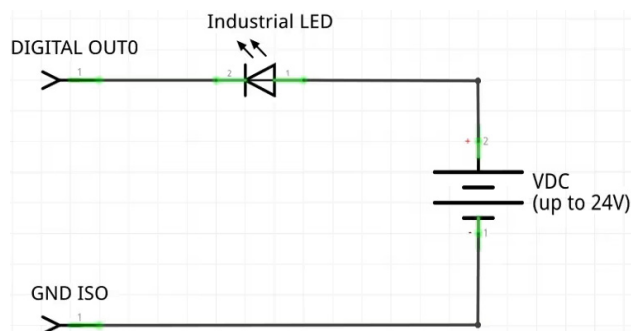
Pin Name	Sysfs Name
DIGITAL_IN0	gpio-470 (PY.00)
DIGITAL_IN1	gpio-471 (PY.01)
GROUND	GND

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

```
sudo sh -c "echo 470 > /sys/class/gpio/export"
sudo sh -c "echo in > /sys/class/gpio/PY.00/direction"
sudo sh -c "cat /sys/class/gpio/PY.00/value"
```

5.2.2.2 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 [GASH-ER 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-472 (PY.02)
DIGITAL_OUT1	gpio-473 (PY.03)
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 472 > /sys/class/gpio/export"
sudo sh -c "echo out > /sys/class/gpio/PY.02/direction"
```

To short output:

```
sudo sh -c "echo 1 > /sys/class/gpio/PY.02/value"
```

To open output:

```
sudo sh -c "echo 0 > /sys/class/gpio/PY.02/value"
```

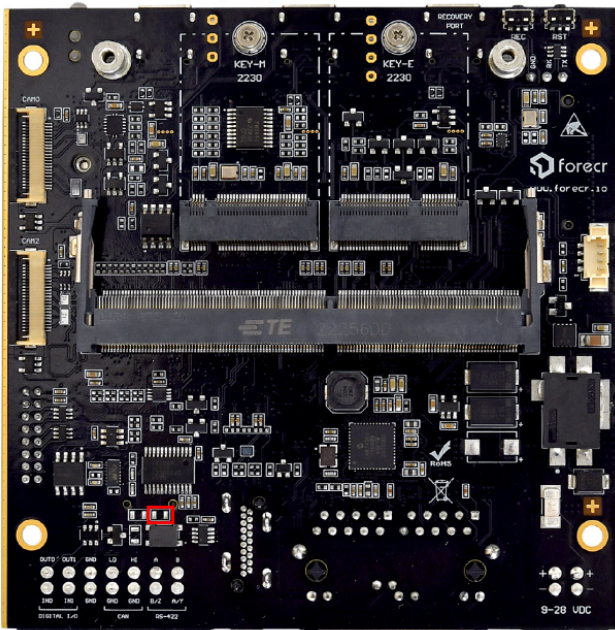
5.2.3 Serial Communication Interface

5.2.3.1 RS232/RS422/RS485

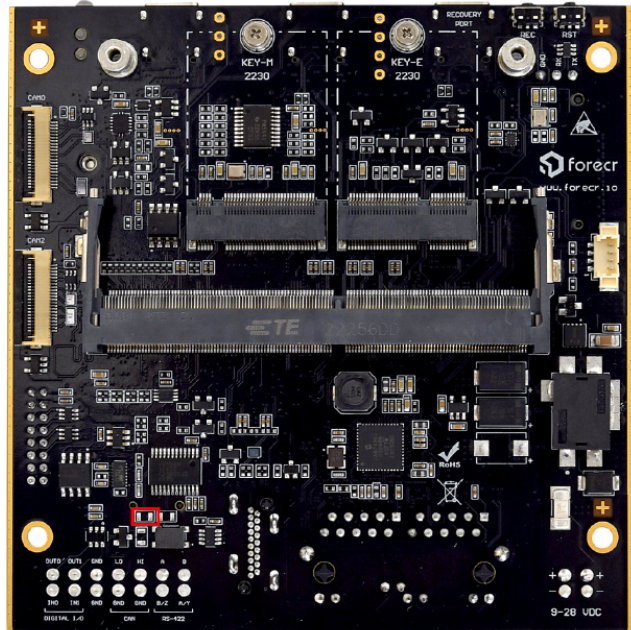
SP330EEY-L from MaxLinear is used to UART1 to RS422/RS232 from Jetson.

There are two 0805 size 120R termination resistors, one between transmit lanes and one between receive lanes. These are not populated by default. In case termination resistors are needed on the DSBOARD-ORNX-LAN side, standard resistors with above specs can be fitted.

RS422 RX (A/B) Termination Resistor



RS422 TX (Z/Y) Termination Resistor



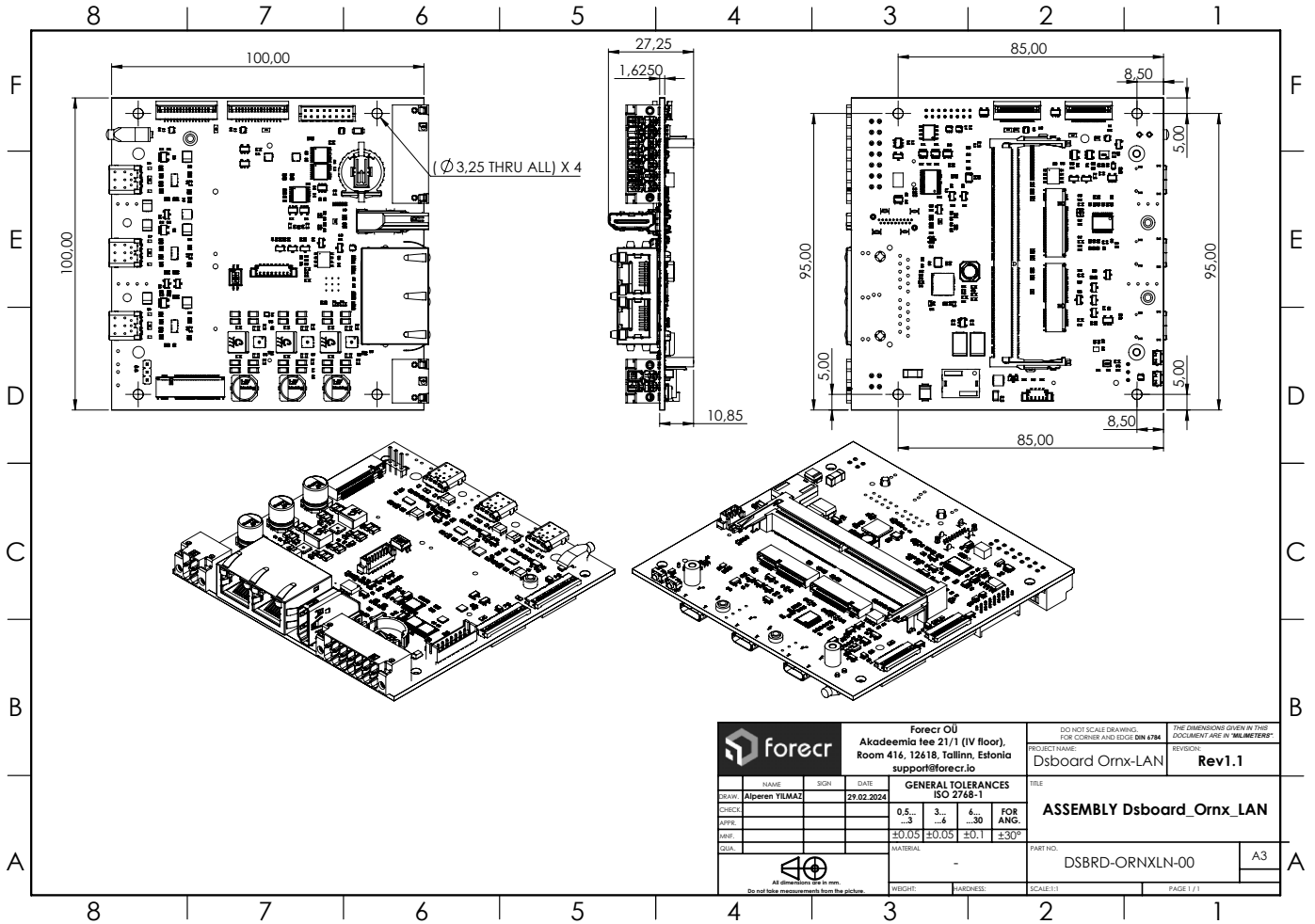
For RS422 communication protocol, RS485/RS232 GPIO from Jetson should be driven high. To use half-duplex mode, HALF/FULL GPIO should be driven high. To use full-duplex mode, HALF/FULL GPIO should be driven low. In half-duplex mode, RS485_CTRL GPIO must be used to switch between driver or receiver mode. To enable receiver mode, RS485_CTRL GPIO should be driven low. To enable driver mode, RS485_CTRL GPIO should be driven high.

For RS232 communication protocol RS485/RS232 GPIO should be driven low. HALF/FULL and RS485_CTRL GPIOs are not used in this mode.

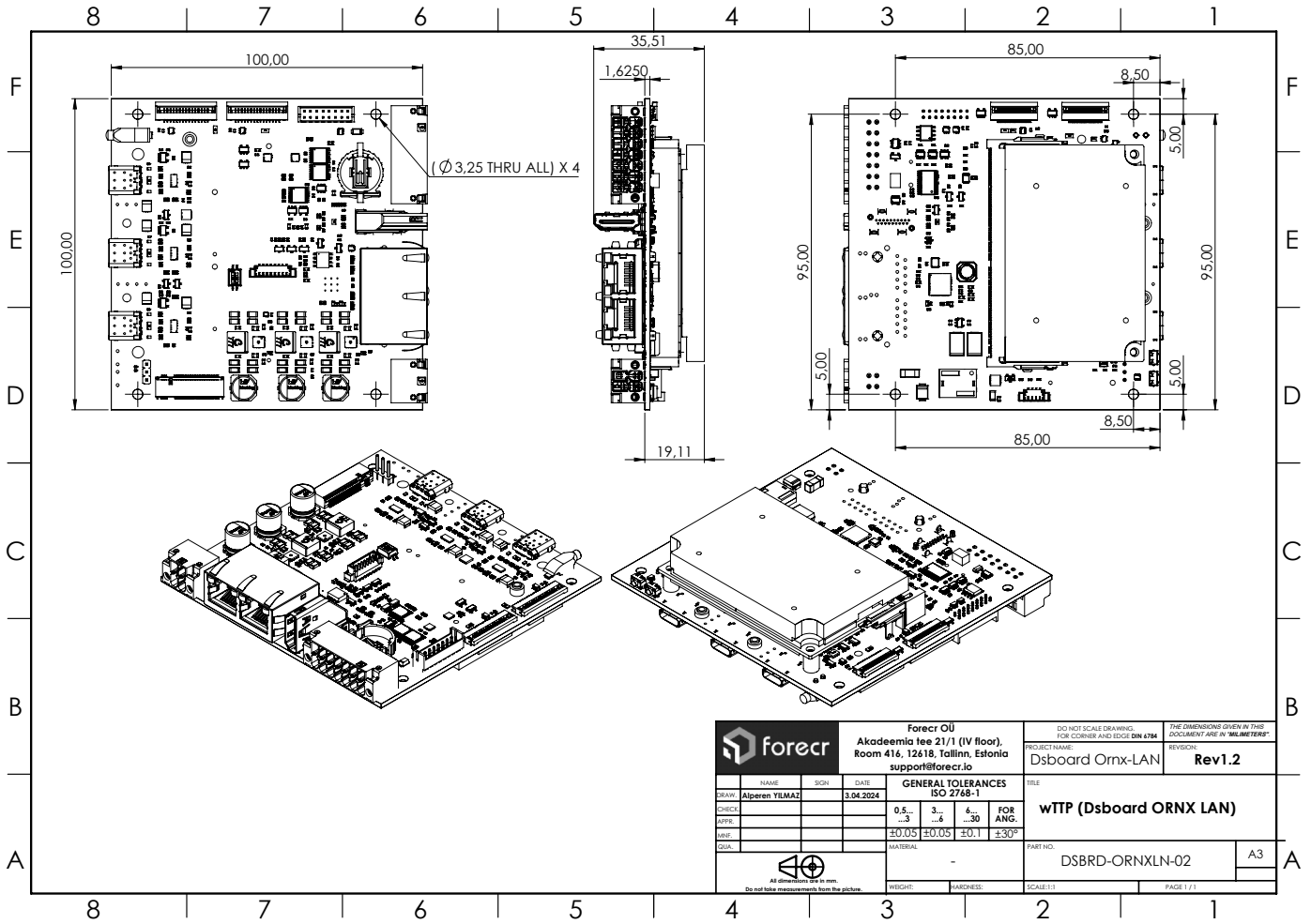
6. 3D Model & Mechanical Information

Full 3D models of all DSBOARD ORNX-LAN Carrier Board can be found here: https://github.com/forecr/forecr_3d_models/tree/master/DSBOARD-ORNXLAN

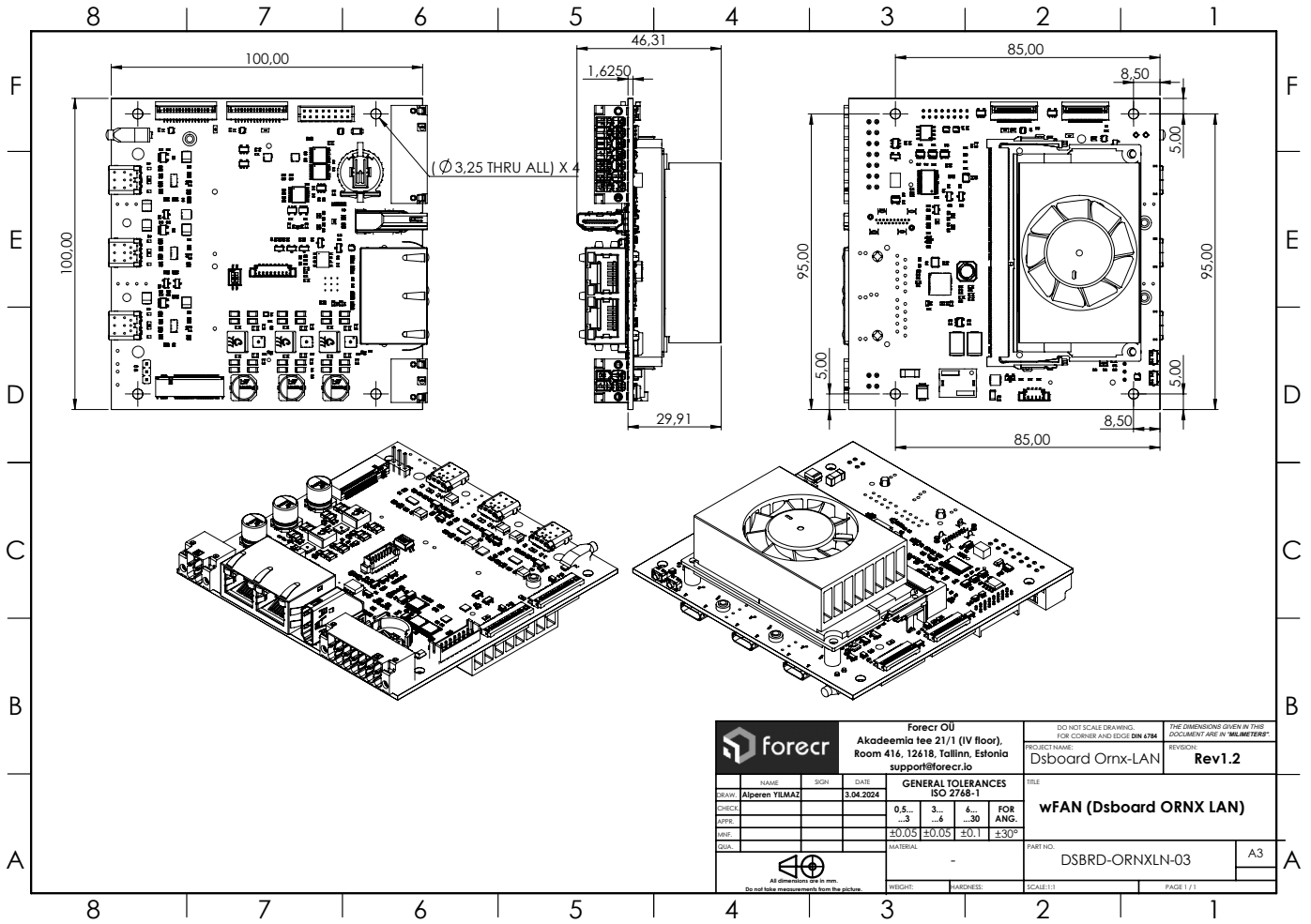
DSBOARD-ORNXLAN Stand Alone



DSBOARD-ORNXLAN with Jetson Orin Nano/NX Module and TTP Integration Details



DSBOARD-ORNX-LAN with Jetson Orin Nano/NX Module and Thermal Integration Details



7. Power Consumption

7.1 Orin NX 16GB

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W (4 core)	15W (4 core)	25W (8 core)	MAXN (8 core)
Current (A)	1,5	0,62	0,07	1,35	1,61	1,86	2,54
Power (W)	18	7,44	0,84	16,2	19,32	22,32	30,48

7.2 Orin NX 8GB

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W (4 core)	15W (4 core)	20W (6 core)	MAXN (6 core)
Current (A)	1,3	0,6	0,07	1,34	1,54	1,66	2,1
Power (W)	15,6	7,2	0,84	16,08	18,48	19,92	25,2

7.3 Orin Nano 8GB

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	7W (4 core)	15W (6 core)
Current (A)	1,2	0,7	0,09	1,21	1,7
Power (W)	14,4	8,4	1,08	14,52	20,4

7.4 Orin Nano 4GB

Power Supply: 12V-5A


All CPU and GPU cores are %100 loaded.


	Power Up Sequence	Idle	Standby (Suspend mode)	7W_CPU (4 core)	7W_AI (4 core)	10W (6 core)
Current (A)	1,1	0,58	0,11	1,03	1,1	1,19
Power (W)	13,2	6,96	1,32	12,36	13,2	14,28

8. MTBF Prediction

Prediction method	Mil Hdbk 217F2, parts count
Environment	GF - Ground Fixed, TA=40oC, TJ=60oC
Date	5-Feb-2024
Total Failure Rate	5.744836 (FPMH)
MTBF	174069 (Hours), 19.87 (Years)

9. Accessories

	Part Number	Description	Quantity
	1790344	IO Connector	1

	Part Number	Description	Quantity
	1708595	Power Connector	1

10. Ordering Information

