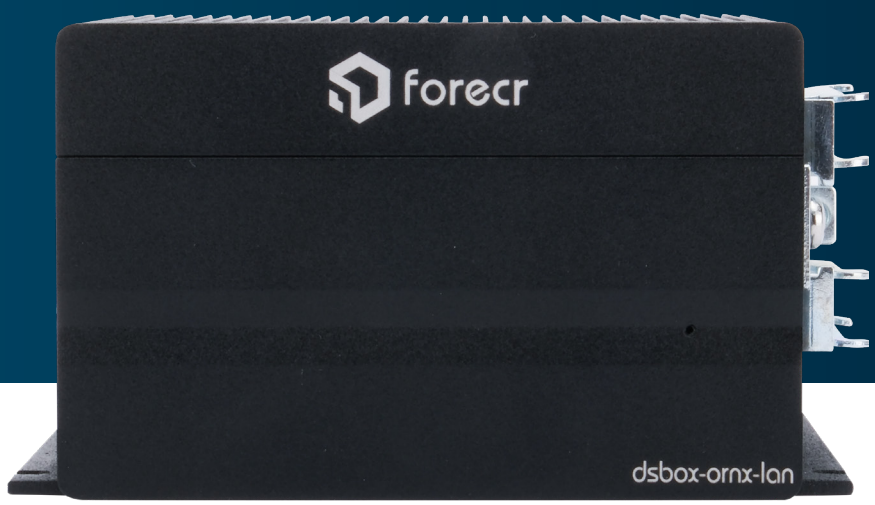

DSBOX ORNX-LAN

USER MANUAL

UM-DSBXORNX-LAN-01
Revision 1.11
01/10/2024

Forecr
https://www.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 DSBOX-ORNXLAN. Therefore, this manual only represents the technical status of Forecr DSBOX-ORNXLAN 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 DSBOX-ORNXLAN, please reach out to the Forecr reseller from which you purchased the DSBOX-ORNXLAN.

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

Contact Information

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Limited Product Warranty

Forecr provides a 1-year Warranty for the DSBOX-ORNXLAN. This warranty period is valid from the original purchase date of the DSBOX-ORNXLAN. In order to maintain warranty, the DSBOX-ORNXLAN must not be altered or modified in any way. Changes or modifications to the DSBOX-ORNXLAN, 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 DSBOX-ORNXLAN 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	18.03.2024	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.

1. Introduction

DSBOX-ORNX-LAN is a powerful and reliable industrial computing device with dual LAN connectivity, suitable for industrial applications that require high processing power and ruggedness, such as autonomous driving, robotics, and intelligent video analytics. It is based on the NVIDIA DRIVE AGX Orin system-on-a-chip, featuring multiple NVIDIA Ampere GPU cores and Arm64 CPU cores, providing the processing power required for complex industrial applications such as autonomous driving, robotics, and intelligent video analytics.

DSBOX-ORNX-LAN has a rugged and compact design optimized for industrial environments. It is built with an aluminum chassis that provides excellent heat dissipation and protection against dust, shock, and vibration. The device features a wide operating temperature range and a wide input voltage range to ensure reliable operation in harsh industrial environments.

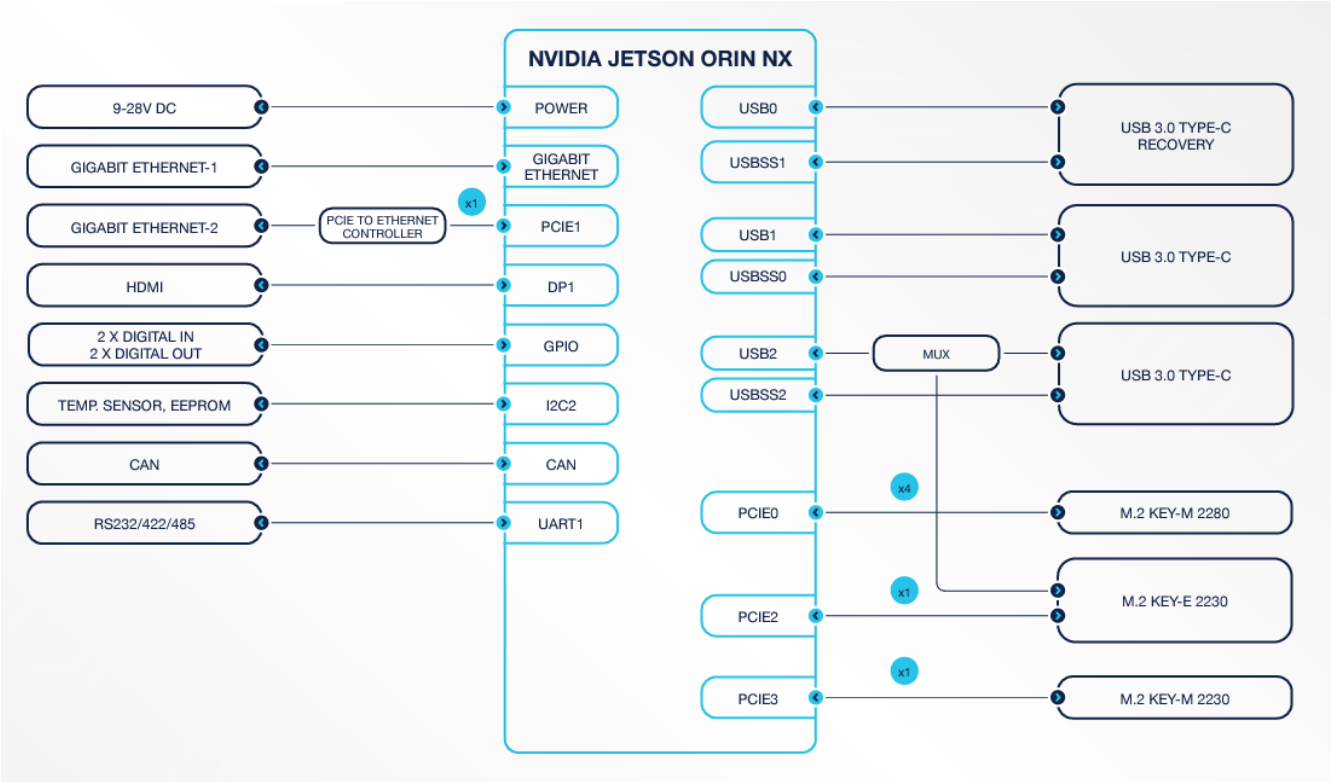
Latest revision of this user manual, datasheet, and 3D model can be downloaded from Forecr Web Page.

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 & 1x RS422 2x Digital Input, 2x Digital Output
Wireless Communication	WiFi/Bluetooth Connectivity by extension sockets
Power Supply	9-28 VDC
Extension Sockets	1x M.2 Key-E
Mass Storage	2x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	110 mm x 130 mm x 60 mm 765gr
Operating Systems	Ubuntu Linux 20.04
JetPack Support	JetPack 5.x JetPack 6.x

2.2 Block Diagram

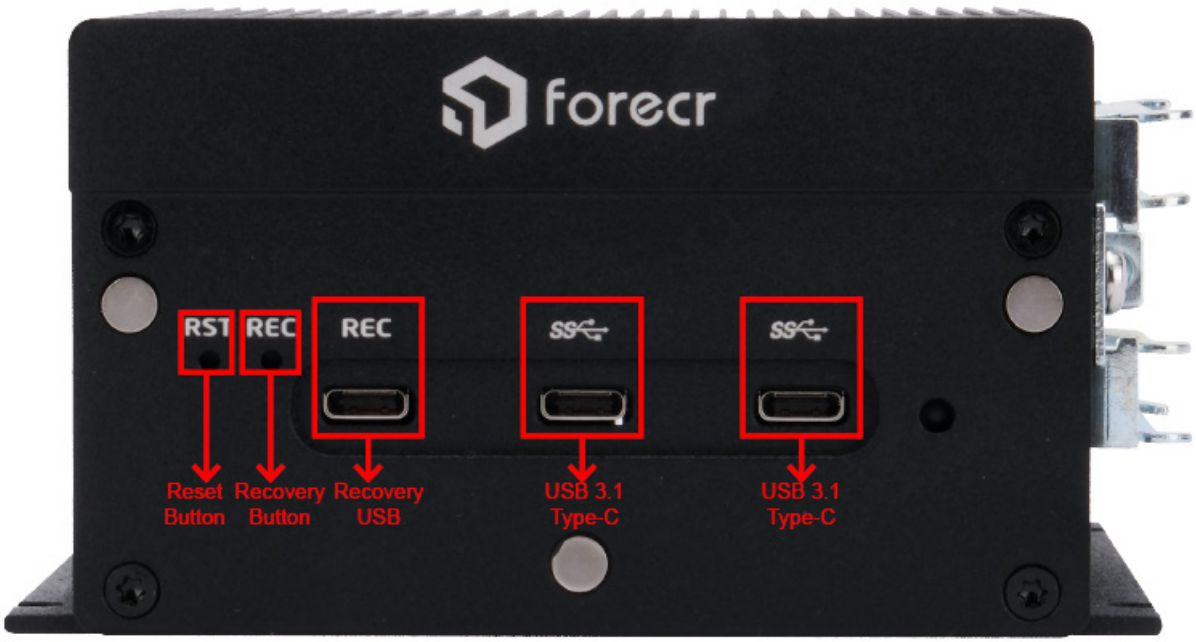


2.3 DSBOX ORNX-LAN Visuals

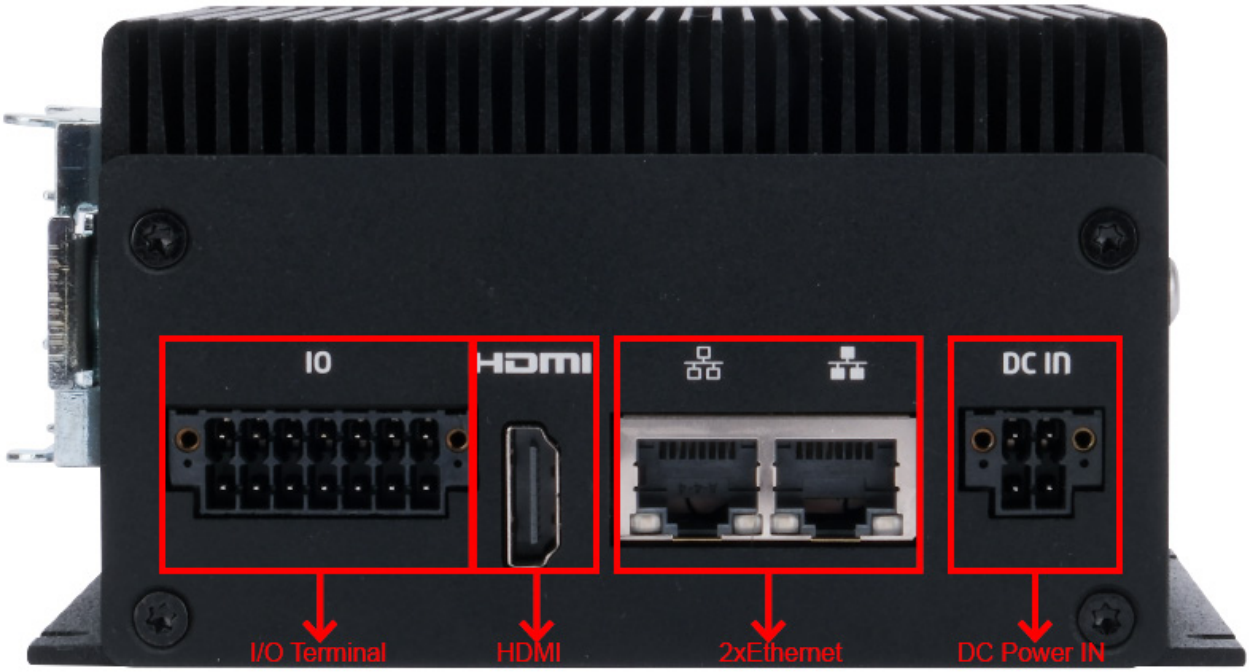
3. Hardware Information

3.1 Connector Location

3.1.1 Front Connectors Layout



3.1.2 Rear Connectors Layout

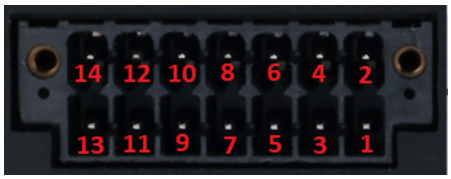


3.2 List of Connectors and Buttons

Connectors
DSBOX-ORNX-LAN I/O Terminal Connector
DSBOX-ORNX-LAN HDMI Conector
DSBOX-ORNX-LAN Gigabit Ethernet Connector
DSBOX-ORNX-LAN Power Connector
DSBOX-ORNX-LAN USB 3.1 Type-C Connectors
DSBOX-ORNX-LAN Recovery Mode USB 3.1 Type-C Connector
DSBOX-ORNX-LAN Reset Pushbutton
DSBOX-ORNX-LAN Recovery Pushbutton

3.3 The Definition of Each Connector

3.3.1 I/O Terminal Connector

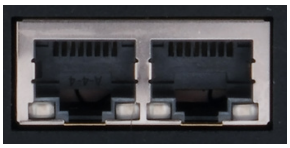


Function	Description		
Mating connector	1790344 (DFMC 1,5/ 7-STF-3,5) from Phoenix Contact.		
Pinout	**Pin**	**Description**	**I/O Type**
	1	RS422 B	I/O
	2	RS422 Y / RS485 A	I/O
	3	RS232 RX / RS422 A	I/O
	4	RS232 TX / RS422 Z / RS485 B	I/O
	5	CAN_H	I/O
	6	GROUND	Power
	7	CAN_L	I/O
	8	GROUND	Power
	9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

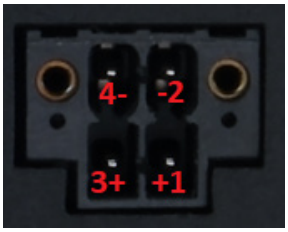
3.3.2 HDMI Connector

	Description
	The NVIDIA® Jetson Orin modules will output video via vertical HDMI connector that is HDMI 2.0 capable.

3.3.3 Gigabit Ethernet Connector

	Description
	There are 2 port RJ-45 ethernet connector for internet communication.

3.3.4 Power Connector



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

3.3.5 USB 3.1 Type-C Connectors

	Description
	There are 3 USB 3.1 Type-C connectors with a 1.5A current limit per connector.

3.3.6 Recovery Mode USB 3.1 Type-C Connector

	Description
	It is used to allow to install or upgrade the operating system.

3.3.7 Reset Pushbutton

	Description
	Reset button is used to reset the Jetson SoM.

3.3.8 Recovery Pushbutton

	Description
	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).

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

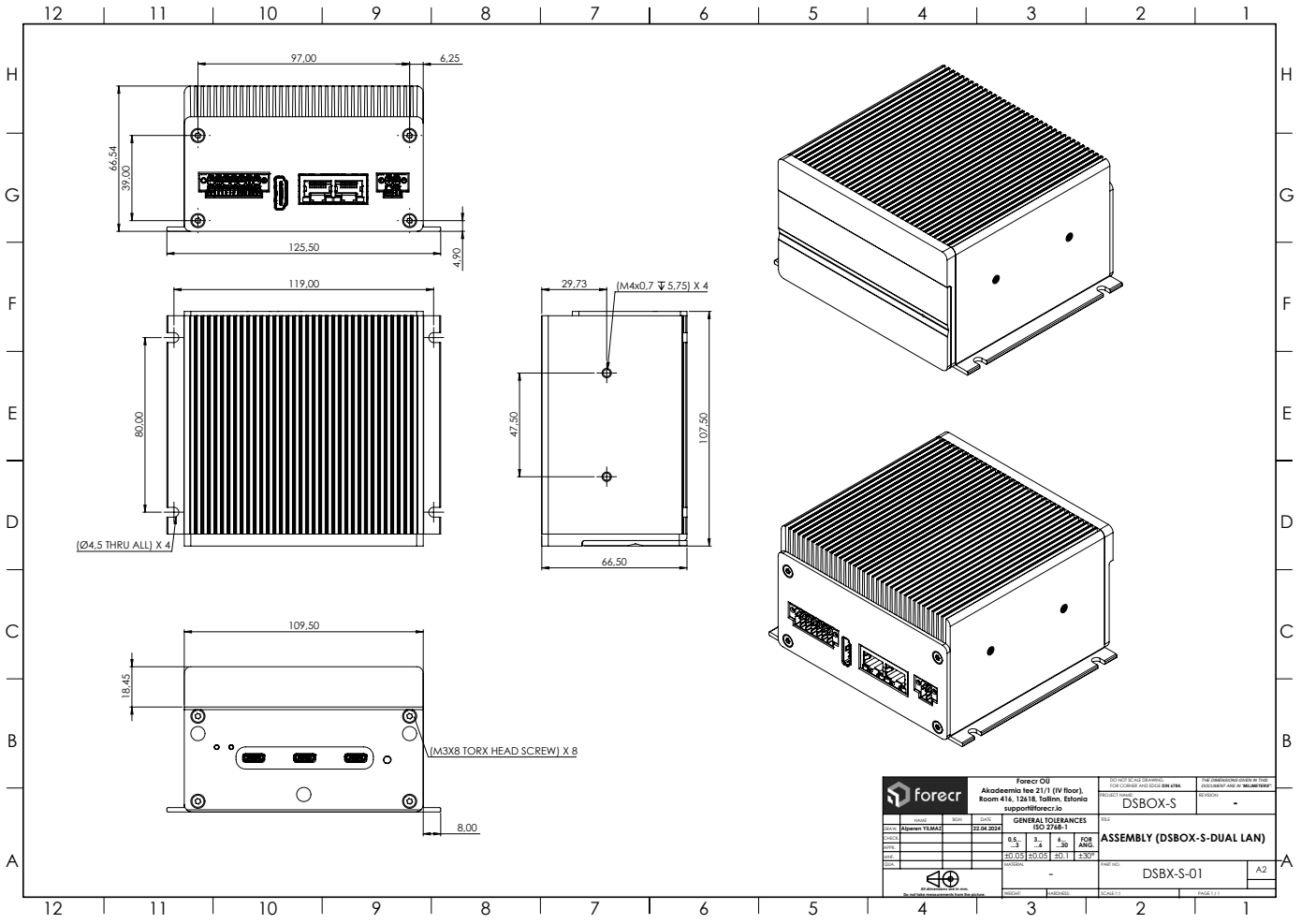
JetPack-6.x Installation can be found here: https://www.forecr.io/blogs/installation/jetpack-6-x-installation-for-dsboard-ornx-lan

5. Mechanical Models & Drawings

5.1 3D Model

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

5.2 2D Mechanical Drawing



6. Power Consumption

This section will be completed soon. It will be published on our website once completed. Please check our Forecr Web Page regularly.

7. Cables

This section will be completed soon. It will be published on our website once completed. Please check our Forecr Web Page regularly.

8. MTBF Prediction

This section will be completed soon. It will be published on our website once completed. Please check our Forecr Web Page regularly.

9. Ordering Information