DSBOX ORN

USER MANUAL

UM-DSBXORN-01
Revision 1.0
12/07/2025

Forecr
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NVIDIA Preferred Partner

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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-ORN. Therefore, this manual only represents the technical status of Forecr DSBOX-ORN 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-ORN, please reach out to the Forecr reseller from which you purchased the DSBOX-ORN.

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!

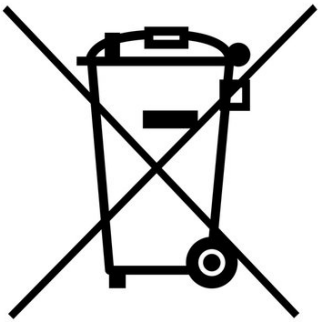
Electronic boards and their components are sensitive to static electricity. When handling any circuit board assemblies, it is recommended that ESD safety precautions be observed.

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 DSBOX-ORN. This warranty period is valid from the original purchase date of the DSBOX-ORN. In order to maintain warranty, the DSBOX-ORN must not be altered or modified in any way. Changes or modifications to the DSBOX-ORN, 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-ORN 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	12.07.2025	Preliminary Release

1. Introduction

DSBOX-ORN is a high-performance industrial fanless PC that delivers exceptional computing power for demanding industrial applications. Built with the latest NVIDIA Jetson Orin Nano System on Module (SOM), it offers advanced AI and machine learning capabilities with with up to 67 TOPS of computing performance.

With a range of connectivity options and advanced thermal management, the DSBOX-ORN is designed to operate reliably in a range of harsh industrial environments. Its rugged and durable construction ensures long-lasting performance, while its compact design allows for easy integration into existing industrial systems.

Whether you need a powerful computing solution for advanced robotics, automation, or other industrial applications, the DSBOX-ORN is the ideal choice. Upgrade your industrial computing power with the DSBOX-ORN today.

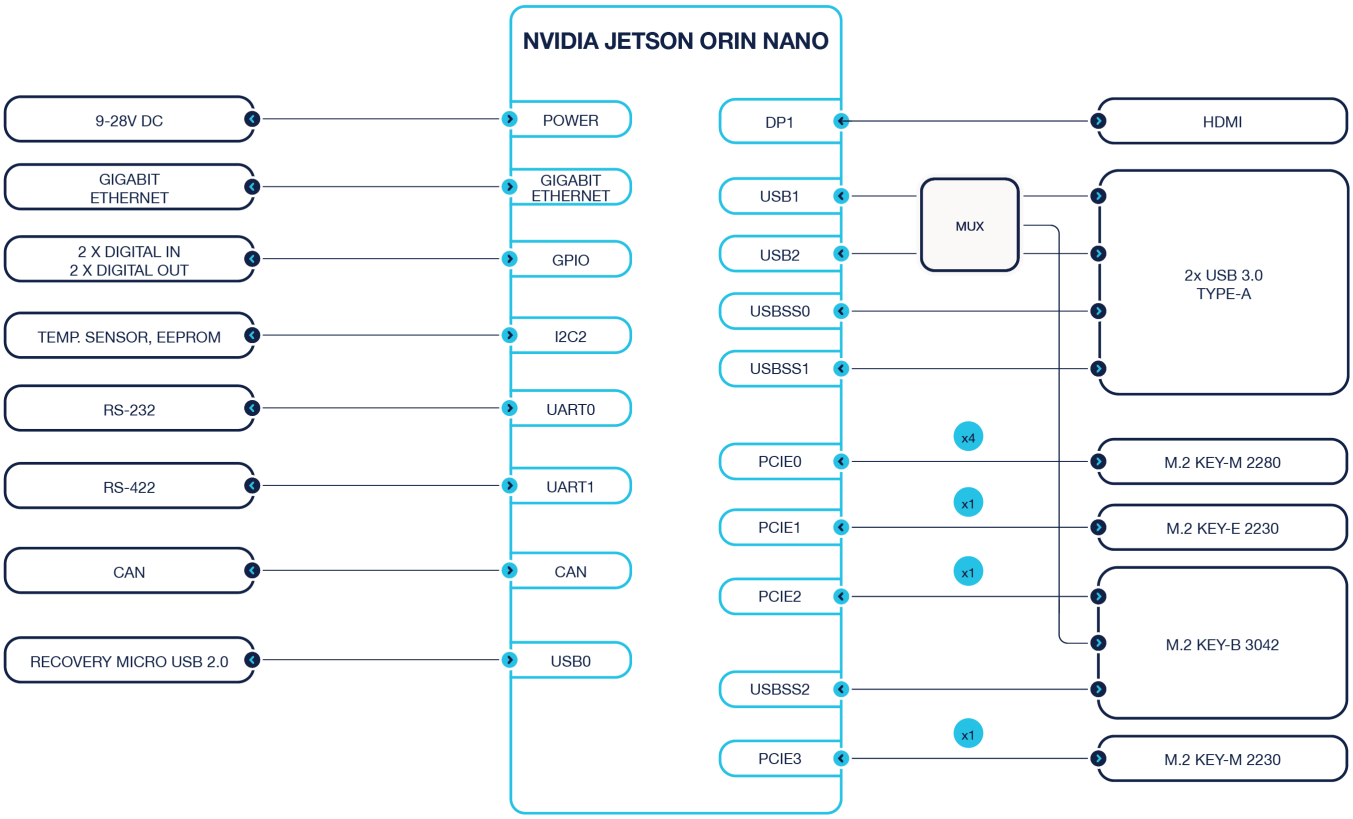
Latest revision of this user manual, datasheet, and 3D model can be downloaded from Forecr Web Page.

2. Product Specification

2.1 Technical Specification

Supported Modules	NVIDIA Jetson Orin Nano 4GB / 8GB
Memory	4 GB 64-bit LPDDR5 / 8 GB 128 bit LPDDR5
Graphics Interfaces	1x HDMI 2.0(max resolution 3840x2160)
Interfaces	1x Gigabit Ethernet 2x USB 3.1 Type-A 1x CAN Bus 1x RS232 & 1x RS422 1x microUSB 2.0 (Recovery) 2x Digital Input, 2x Digital Output
Wireless Communication	WIFI/LTE/5G/Bluetooth Connectivity by extension sockets
Power Supply	9-28 VDC
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	110 mm x 130 mm x 67 mm 760gr
Operating Systems	Ubuntu Linux 20.04 / 22.04
JetPack Support	JetPack 5.x / 6.x

2.2 Block Diagram

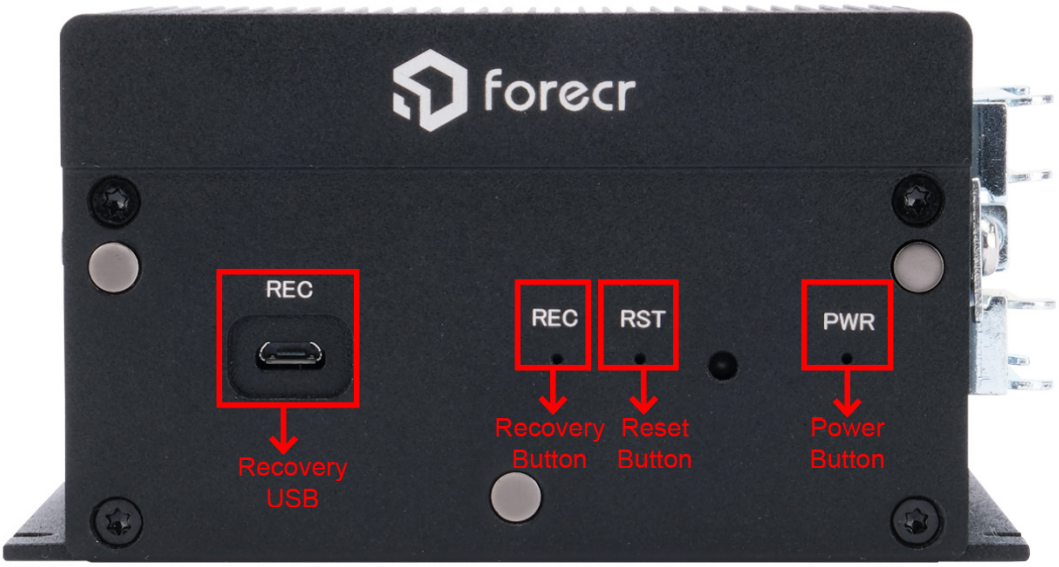


2.3 DSBOX-ORN Visuals

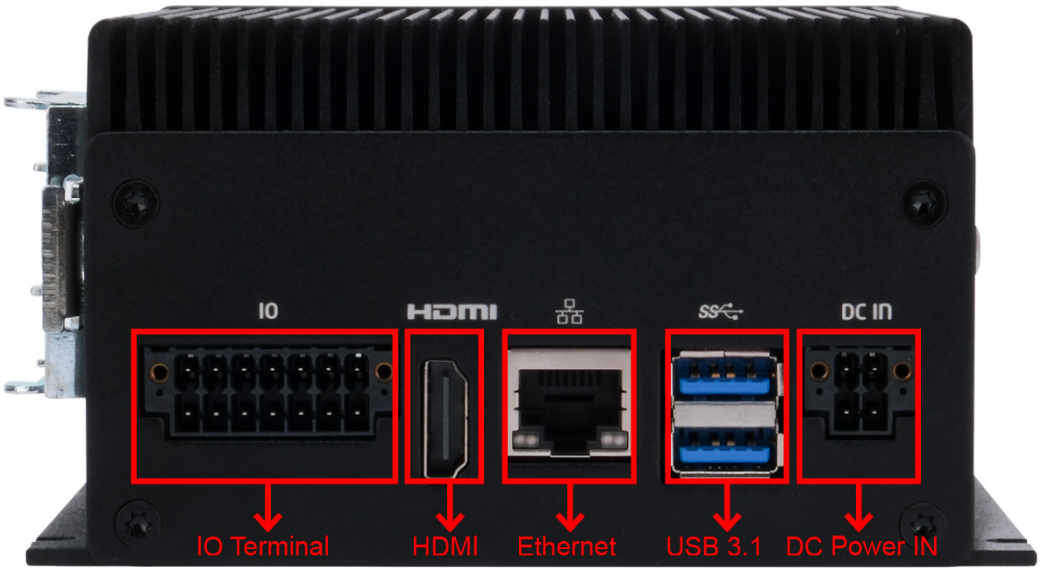
3. Hardware Information

3.1 Connector Location

3.1.1 Front Connectors Layout



3.1.2 Rear Connectors Layout

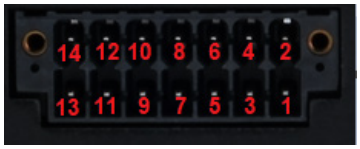


3.2 List of Connectors and Buttons

Connectors
DSBOX-ORN I/O Terminal Connector
DSBOX-ORN HDMI Conector
DSBOX-ORN Gigabit Ethernet Connector
DSBOX-ORN USB 3.1 Type-A Connector
DSBOX-ORN Power Connector
DSBOX-ORN Recovery mode USB 3.1 Type C Connector
DSBOX-ORN Recovery Button
DSBOX-ORN Reset Button
DSBOX-ORN Power Button

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	RS232 TX	I/O
	2	RS232 RX	I/O
	3	RS422 A	I/O
	4	RS422 Z	I/O
	5	RS422 B	I/O
	6	RS422 Y	I/O
	7	CAN_H	I/O
	8	CAN_L	I/O
	9	GROUND	Power
	10	GROUND	Power
	11	DIGITAL_OUT1 Note: Up to 24V, low-side switch	Output
	12	DIGITAL_IN1	Input
	13	DIGITAL_OUT0 Note: Up to 24V, low-side switch	Output
	14	DIGITAL_IN0	Input

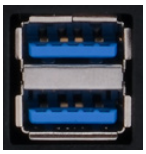
3.3.2 HDMI Connector

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

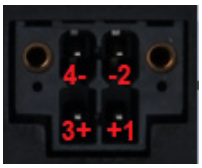
3.3.3 Gigabit Ethernet Connector

	Description
	It is a RJ-45 ethernet connector for internet communication.

3.3.4 USB 3.1 Type-A Connector

	Description
	There are 2 USB 3.1 Type-A connectors with a 1.5A current limit per connector.

3.3.5 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

3.3.6 Recovery Mode USB 3.1 Type-C Connector

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

3.3.7 Recovery Button

	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).

3.3.8 Reset Button

	Description
	Reset button is used to reset the Jetson SoM.

3.3.9 Power Button

	Description
	Power button is used to energize the platform.

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-ds-board-ornx

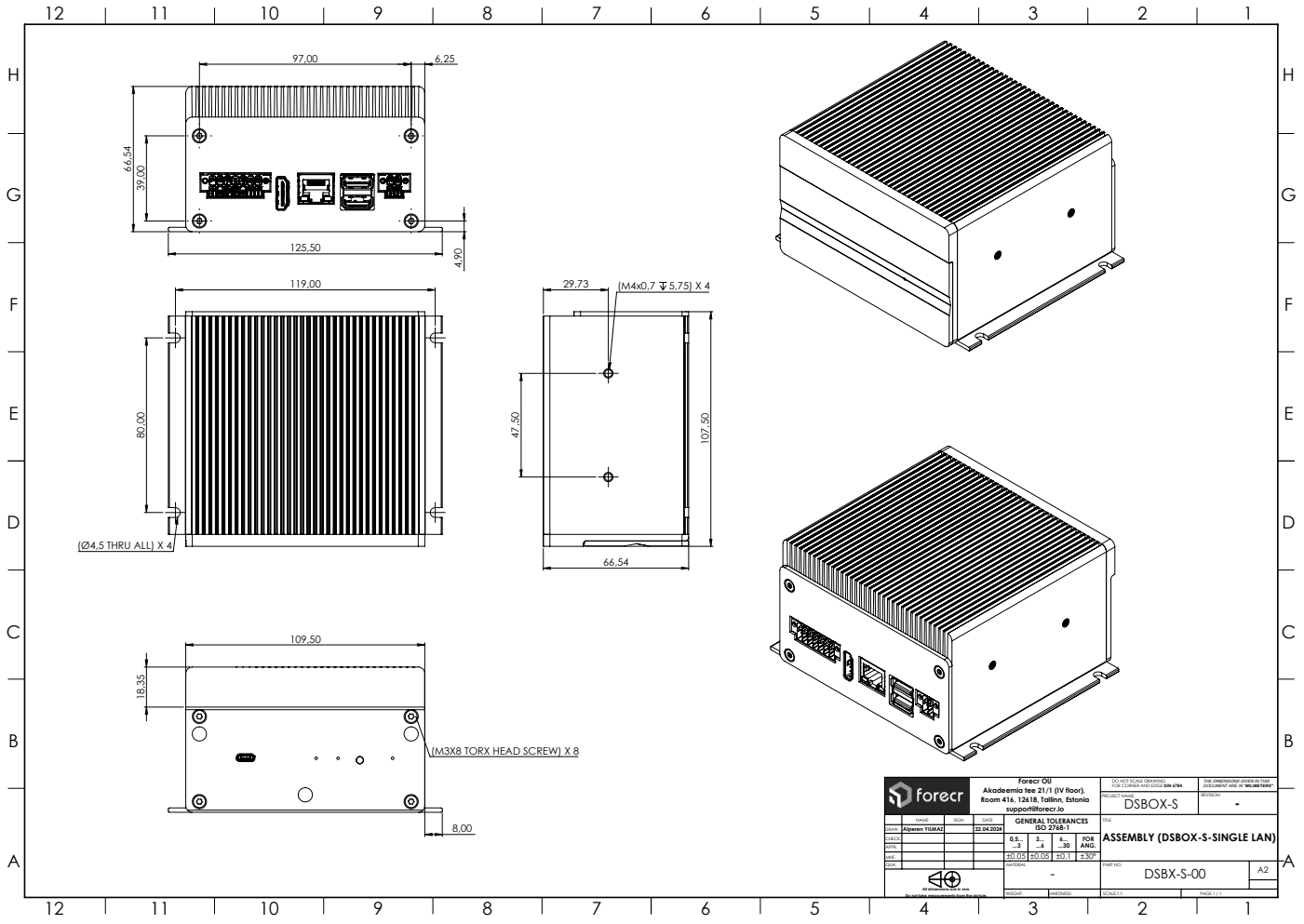
JetPack-6.x Installation can be found here: https://www.forecr.io/blogs/installation/jetpack-6-x-installation-for-ds-board-ornx

5. 3D Model & Mechanical Information

5.1 3D Model

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

5.2 2D Mechanical Drawing



6. Power Consumption

6.1 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)	1,1	0,6	0,09	1,08	1,6
Power (W)	13,2	7,2	1,08	12,96	19,2

6.2 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)	1,05	0,5	0,06	0,92	0,96	1,04
Power (W)	12,6	6	0,72	11,04	11,52	12,48

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