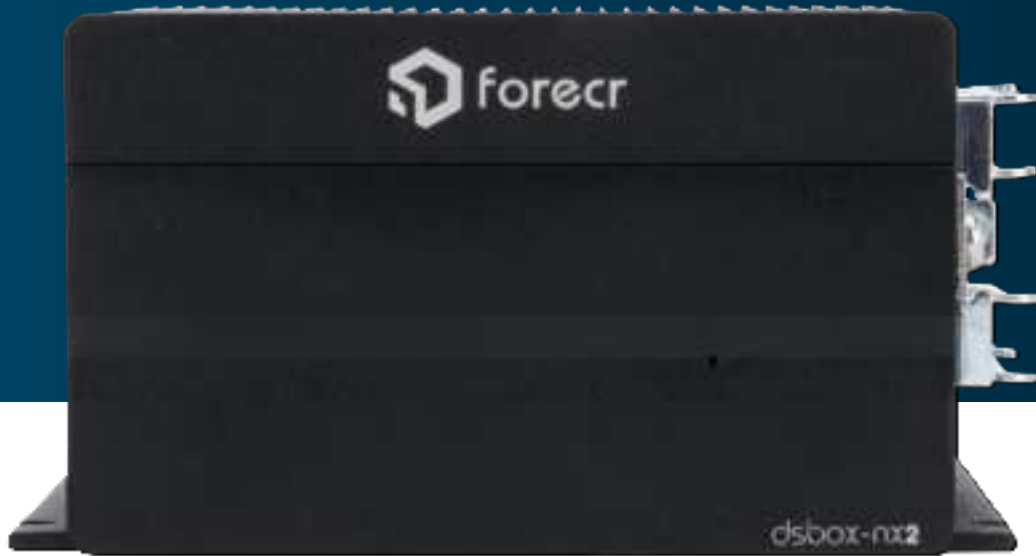




DSBOX NX2

USER MANUAL

UM-DSBXNX2-01

Revision 1.0

07/10/2024

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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-NX2. Therefore, this manual only represents the technical status of Forecr DSBOX-NX2 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-NX2, please reach out to the Forecr reseller from which you purchased the DSBOX-NX2.

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-NX2. This warranty period is valid from the original purchase date of the DSBOX-NX2. In order to maintain warranty, the DSBOX-NX2 must not be altered or modified in any way. Changes or modifications to the DSBOX-NX2, 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-NX2 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	07.10.2024	Preliminary Release

1. Introduction

DSBOX-NX2 is an industrial PC that harnesses the power of NVIDIA Jetson Xavier NX, offering a highperformance computing platform tailored for industrial use cases. Its fanless and rugged design make it an ideal choice for deployment in challenging industrial environments. The DSBOX-NX2's NVIDIA Jetson Xavier NX AI processor delivers up to 21 TOPS of AI performance, empowering it to tackle sophisticated AI applications.

Moreover, it comes with a variety of I/O ports such as Gigabit Ethernet, HDMI, USB 3.1, CAN and serial ports, enabling easy integration with other industrial devices. In addition, the DSBOX-NX2 features hardware acceleration for video encoding and decoding, support for multiple camera inputs, and compatibility with popular AI frameworks, including TensorFlow, PyTorch, and Caffe. These capabilities allow for the development of custom AI solutions for various industrial use cases, including predictive maintenance, quality control, and object recognition.

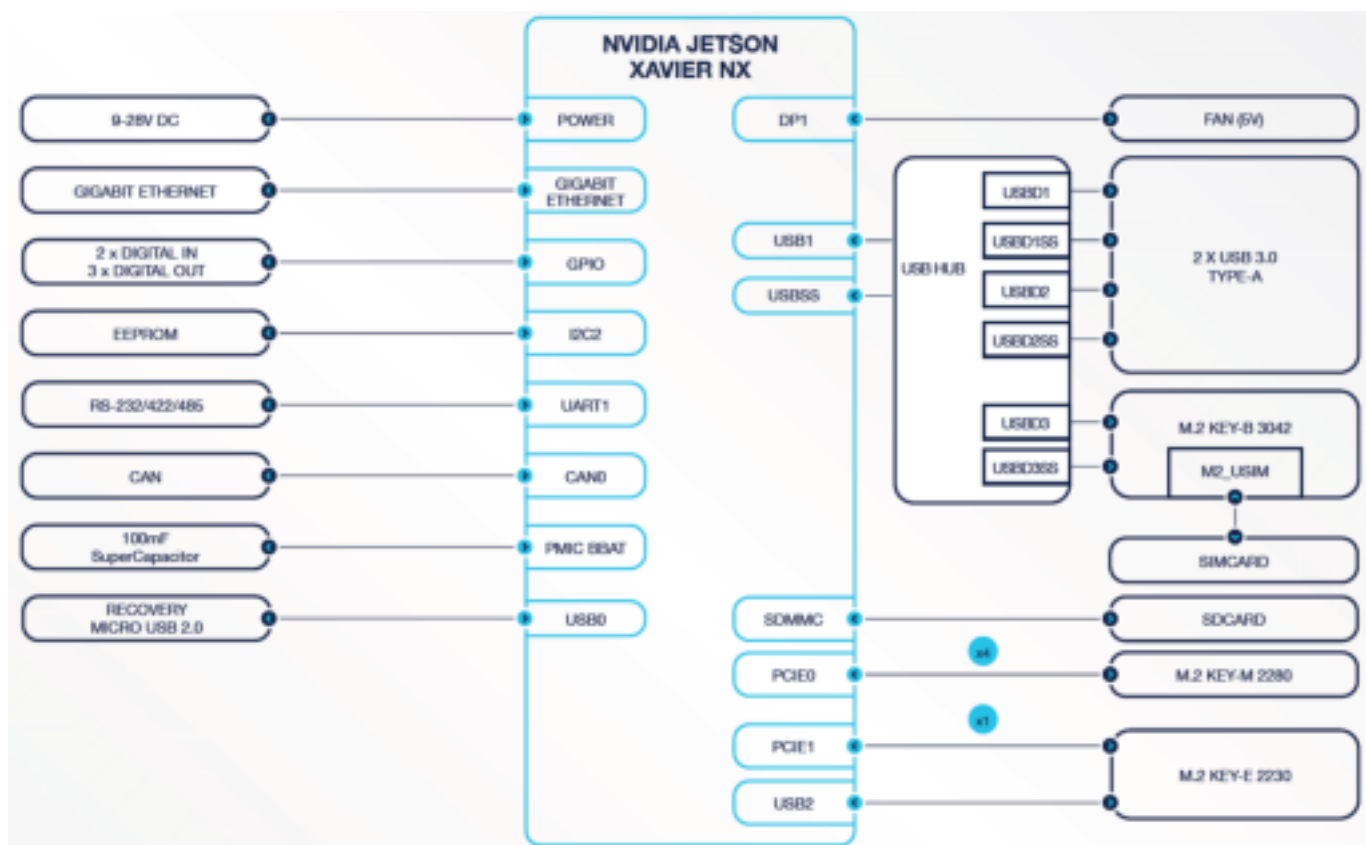
Latest revision of this user manual, datasheet, and 3D model can be downloaded from [Forecr Web Page](#).

2. Product Specification

2.1 Technical Specification

Supported Modules	NVIDIA Jetson Xavier NX 8GB / 16GB
Memory	8 GB 128-bit LPDDR4x / 16 GB 128-bit LPDDR4x
Graphics Interfaces	1x HDMI 2.0(max resolution 3840x2160)
Interfaces	1x Gigabit Ethernet 2x USB 3.1 Type-A 1x CAN Bus (Only in Xavier NX and TX2NX SoM) 1x RS232/422/485 (software configurable) 1x microUSB 2.0 (Recovery) 2x Digital Input 3x Digital Output
Wireless Communication	WiFi/Bluetooth/LTE/5G Connectivity by extension sockets
Power Supply	9-28 VDC
Extension Sockets	1x M.2 Key-E, 1x M.2 Key-B, 1x MicroSD, 1x SIM
Mass Storage	16 GB eMMC 5.1 Flash 1x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	110 mm x 130 mm x 60 mm, 760gr
Operating Systems	Ubuntu Linux 18.04 Ubuntu Linux 20.04
JetPack Support	JetPack 4.x JetPack 5.x

2.2 Block Diagram



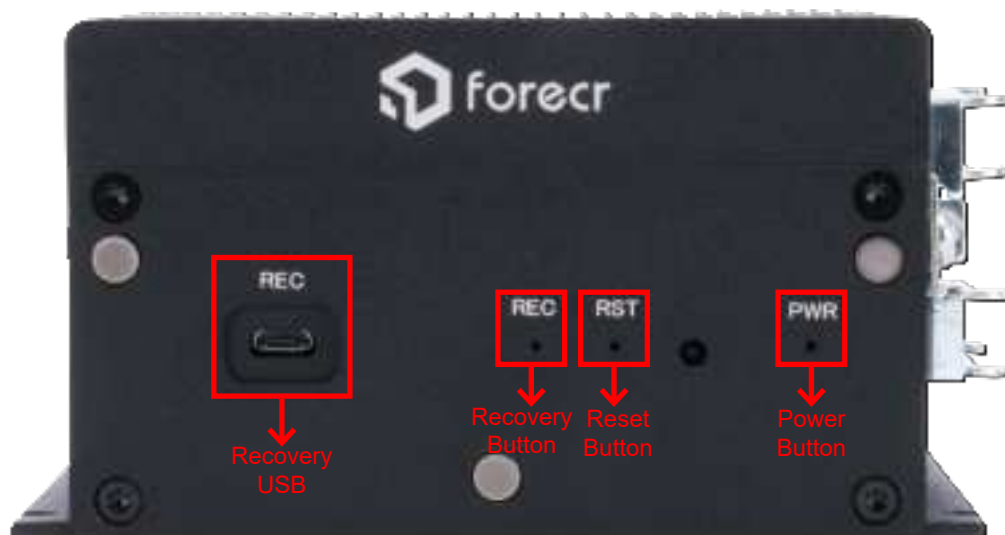
2.3 DSBOX-NX2 Visuals



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-NX2 I/O Connector
DSBOX-NX2 HDMI Conector
DSBOARD-NX2 Gigabit Ethernet Connector
DSBOARD-NX2 USB 3.1 Type-A Connector
DSBOARD-NX2 Power Connector
DSBOARD-NX2 Recovery USB
DSBOARD-NX2 Recovery USB
DSBOARD-NX2 Reset Button
DSBOARD-NX2 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	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	DIGITAL_OUT2	Output
		10	ISOLATED GROUND	Power
		11	DIGITAL_OUT1 <i>Note:</i> Up to 24V, low-side switch mechanism	Output
		12	DIGITAL_IN1 <i>Note:</i> High at 11-24V	Input
		13	DIGITAL_OUT0 <i>Note:</i> Up to 24V, low-side switch mechanism	Output
		14	DIGITAL_IN0 <i>Note:</i> High at 11-24V	Input

3.3.2 HDMI Connector

	<table><tr><th data-bbox="537 284 1329 300">Description</th></tr><tr><td data-bbox="537 300 1329 468"> The NVIDIA® Jetson Orin NX module will output video via the vertical HDMI connector that is HDMI 2.0 capable. </td></tr></table>	Description	The NVIDIA® Jetson Orin NX module will output video via the vertical HDMI connector that is HDMI 2.0 capable.
Description			
The NVIDIA® Jetson Orin NX module will output video via the vertical HDMI connector that is HDMI 2.0 capable.			

3.3.3 Gigabit Ethernet Connector

	<table><tr><th>Description</th></tr><tr><td>It is a RJ-45 ethernet connector for network communication.</td></tr></table>	Description	It is a RJ-45 ethernet connector for network communication.
Description			
It is a RJ-45 ethernet connector for network communication.			

3.3.4 USB 3.1 Type-A Connector

	<table><tr><th data-bbox="537 875 1329 909">Description</th></tr><tr><td data-bbox="537 909 1329 1064">There are 2 USB 3.1 Type-A connectors with a 1.5A current limit per connector.</td></tr></table>	Description	There are 2 USB 3.1 Type-A connectors with a 1.5A current limit per connector.
Description			
There are 2 USB 3.1 Type-A connectors with a 1.5A current limit per connector.			

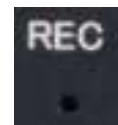
3.3.5 Power Connector

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

3.3.6 Recovery USB

	<table><tr><th>Description</th></tr><tr><td>It is used to allow to install or upgrade the operating system.</td></tr></table>	Description	It is used to allow to install or upgrade the operating system.
Description			
It is used to allow to install or upgrade the operating system.			

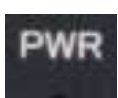
3.3.7 Recovery Button

	<table><tr><th data-bbox="536 253 1326 465">Description</th></tr><tr><td data-bbox="536 253 1326 465">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).</td></tr></table>	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).
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

	<table><tr><th>Description</th></tr><tr><td>Reset button is used to reset the Jetson SoM.</td></tr></table>	Description	Reset button is used to reset the Jetson SoM.
Description			
Reset button is used to reset the Jetson SoM.			

3.3.9 Power Button

	<table><tr><th>Description</th></tr><tr><td>Power button is used to energize the platform.</td></tr></table>	Description	Power button is used to energize the platform.
Description			
Power button is used to energize the platform.			

4. Software Information

4.1 Installation

JetPack-4.x Installation can be found here: <https://www.forecr.io/blogs/installation/jetpack-4-x-installation-for-dsbox-nx2>

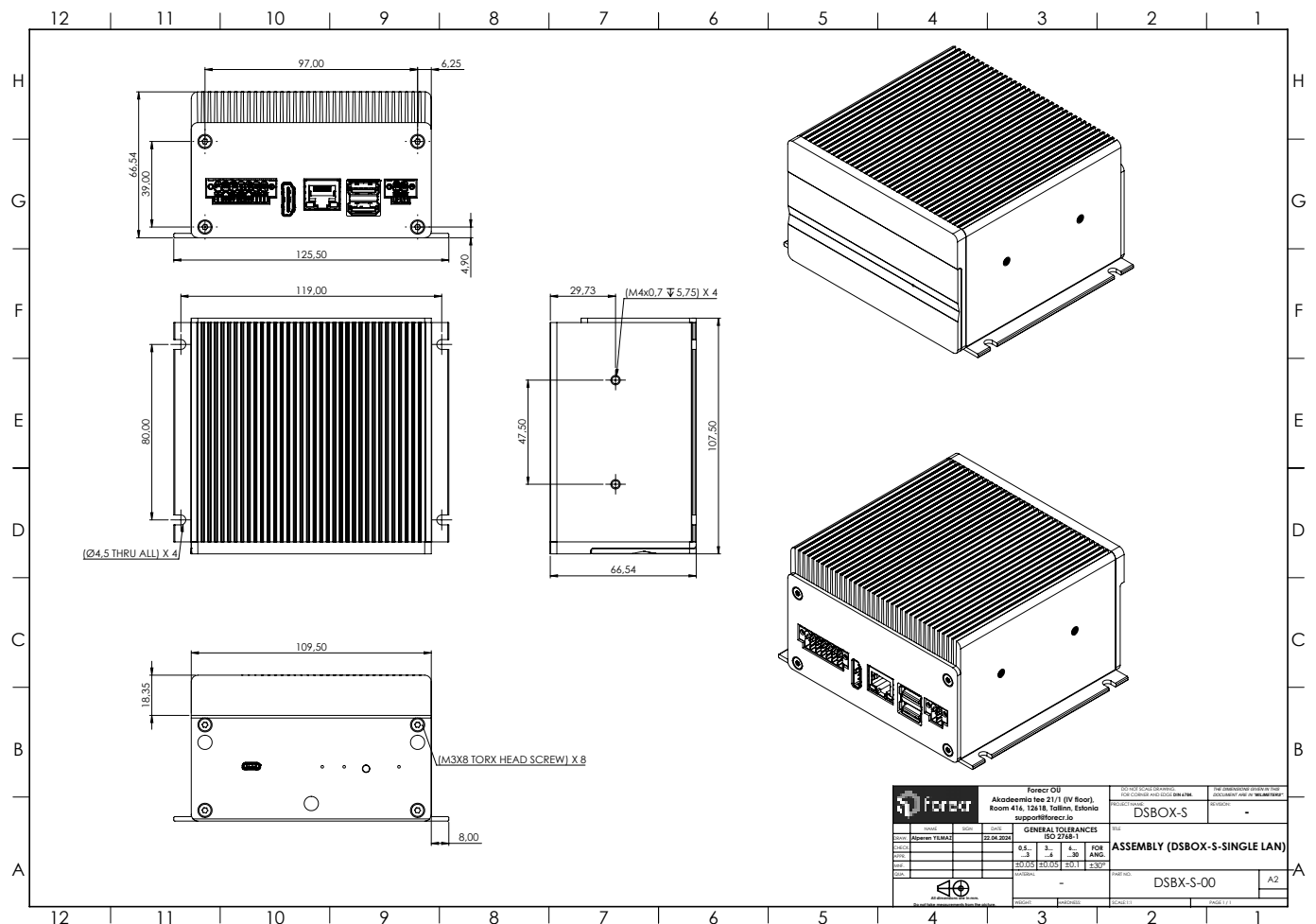
JetPack-5.x Installation can be found here: <https://www.forecr.io/blogs/installation/jetpack-5-x-installation-for-dsbox-nx2>

5. 3D Model & Mechanical Information

5.1 3D Model

Full 3D models of all DSBOX-NX2 can be found here: https://github.com/forecr/forecr_3d_models/tree/master/DS-BOX-NX2

5.2 2D Mechanical Drawing



6. Power Consumption

6.1 Jetson Xavier NX 8GB

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W 2 core	10W 4 core	10W Desktop	15W 2 core	15W 4 core	15W 6 core	20W 2 core	20W 4 core	20W 6 core
Current (A)	0,92	0,38	0,051	1,45	1,5	1,38	1,72	2	2,1	2,07	2,24	2,38
Power (W)	11,04	4,56	0,612	17,4	18	16,56	20,64	24	25,2	24,84	26,88	28,56

6.2 Jetson Xavier NX 8GB (with NVME SSD)

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W 2 core	10W 4 core	10W Desktop	15W 2 core	15W 4 core	15W 6 core	20W 2 core	20W 4 core	20W 6 core
Current (A)	1,27	0,65	0,058	1,58	1,63	1,55	1,84	2,08	2,24	2,14	2,23	2,51
Power (W)	15,24	7,8	0,696	18,96	19,56	18,6	22,08	24,96	26,88	25,68	26,76	30,12

6.3 Jetson Xavier NX 16GB

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W 2 core	10W 4 core	10W Desktop	15W 2 core	15W 4 core	15W 6 core	20W 2 core	20W 4 core	20W 6 core
Current (A)	0,86	0,34	0,05	1,53	1,56	1,52	1,55	2,02	2,1	2,07	2,12	2,3
Power (W)	10,32	4,08	0,6	18,36	18,72	18,24	18,6	24,24	25,2	24,84	25,44	27,6

6.4 Jetson Xavier NX 16GB (with NVME SSD)

Power Supply: 12V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	10W 2 core	10W 4 core	10W Desktop	15W 2 core	15W 4 core	15W 6 core	20W 2 core	20W 4 core	20W 6 core
Current (A)	1,17	0,6	0,06	1,7	1,9	1,6	1,88	2,08	2,4	2,11	2,2	2,5
Power (W)	14,04	7,2	0,72	20,4	22,8	19,2	22,56	24,96	28,8	25,32	26,4	30

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

