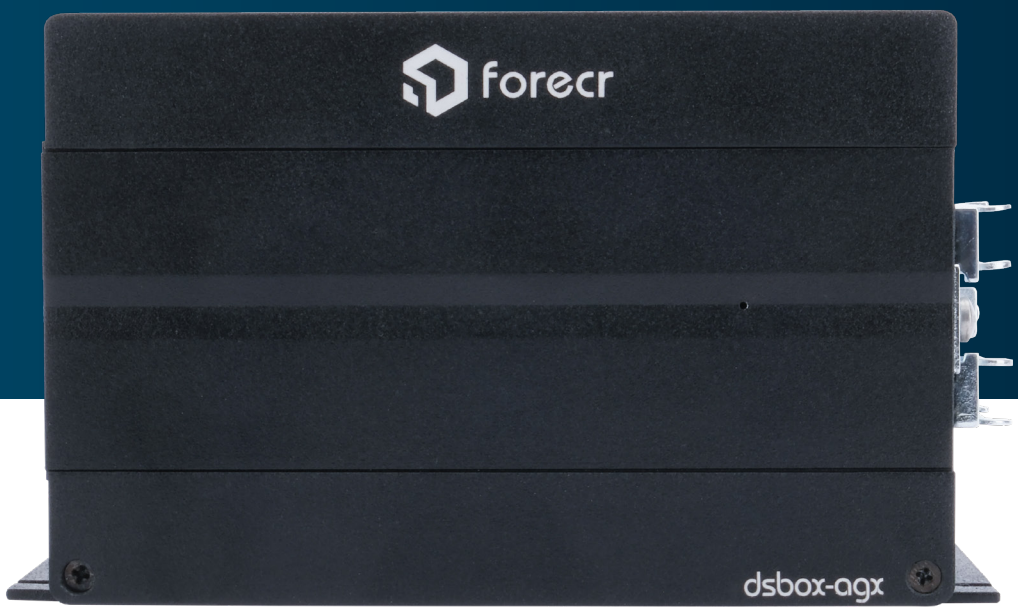

DSBOX AGX

USER MANUAL

UM-DSBXAGX-01
Revision 1.0
07/10/2024

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

NVIDIA Preferred Partner

Table of Contents

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

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

Contact Information

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Telephone Number	Estonia +372 5332 2632
Website	https://www.forecr.io

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Limited Product Warranty

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

Introducing the DSBOX-AGX, an industrial fanless box PC that combines the power of the AGX Orin SoM with a range of essential features for any industrial application. With Gigabit Ethernet, USB 3.2, HDMI, CAN, Serial Ports and Digital I/Os, this compact and robust PC offers unparalleled connectivity and functionality for a variety of industrial uses.

Featuring a rugged design and fanless construction, the DSBOX-AGX is built to withstand harsh environments and demanding workloads. With its powerful NVIDIA AGX Orin SoM, it delivers exceptional 275 TOPS performance and reliability, making it ideal for edge computing, AI inference, and other advanced applications.

Its compact size and versatile connectivity options make it easy to integrate into existing systems, while its powerful performance and reliable operation ensure that you get the results you need. With its rugged design, advanced performance, and versatile connectivity options, it is the ideal solution for any industrial application.

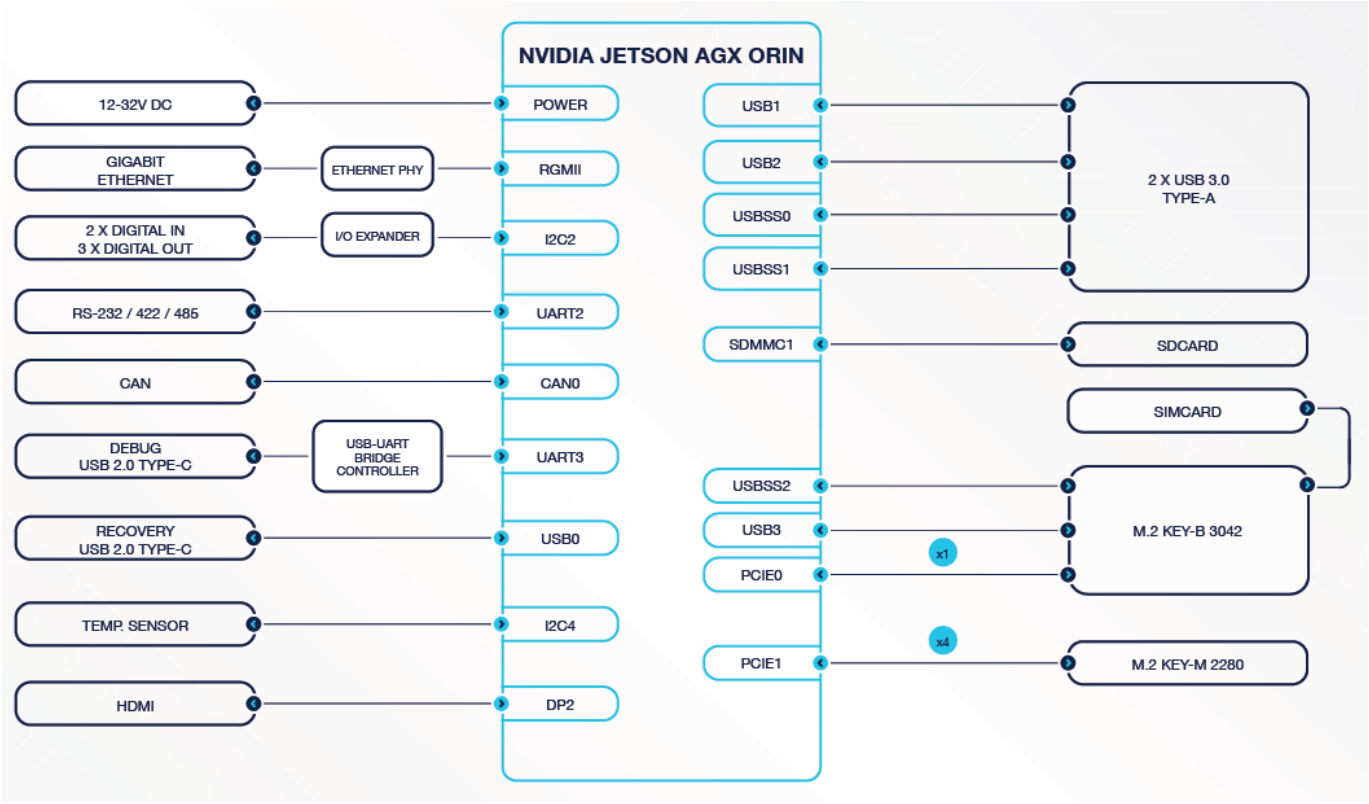
Latest revision of this user manual, datasheet, and 3D model can be downloaded from Forecr Web Page.

2. Product Specification

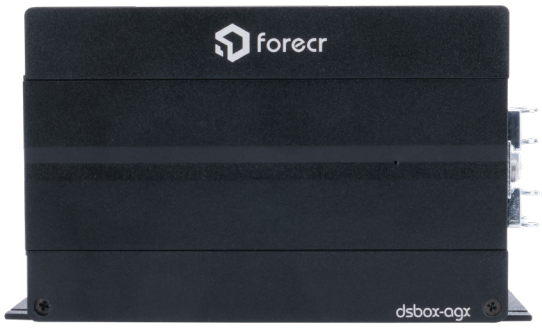
2.1 Technical Specification

Supported Modules	NVIDIA Jetson AGX Orin 32GB NVIDIA Jetson AGX Orin 64GB
Memory	32 GB 256-bit LPDDR5x 64 GB 256-bit LPDDR5x
Graphics Interfaces	1x HDMI 2.0(max resolution 3840x2160)
Interfaces	1x Gigabit Ethernet 2x USB 3.1 Type-A 1x CAN Bus 1x RS232/422/485 (software configurable) 2x USB-C (Debug/Recovery) 2x Digital Input 3x Digital Output
Wireless Communication	WiFi/LTE/5G Connectivity by extension sockets
Power Supply	12-30 VDC
Extension Sockets	1x M.2 Key-B, 1x SIM, 1x MicroSD
Mass Storage	64 GB eMMC 5.1 Flash 1x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	160 mm x 110 mm x 65 mm 1340gr
Operating Systems	Ubuntu Linux 20.04 Ubuntu Linux 22.04
JetPack Support	JetPack 5.x JetPack 6.x

2.2 Block Diagram



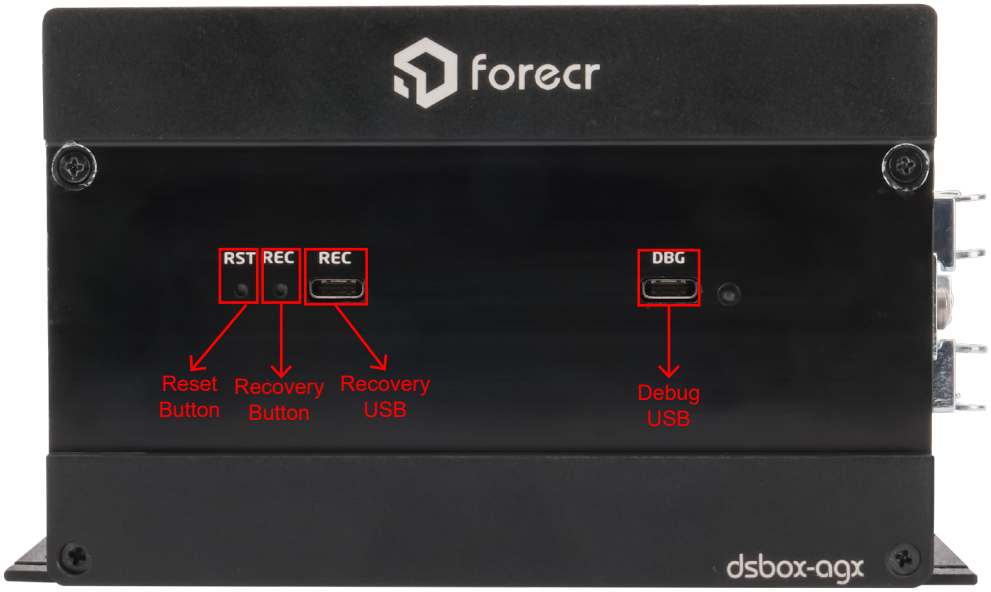
2.3 Box Visuals



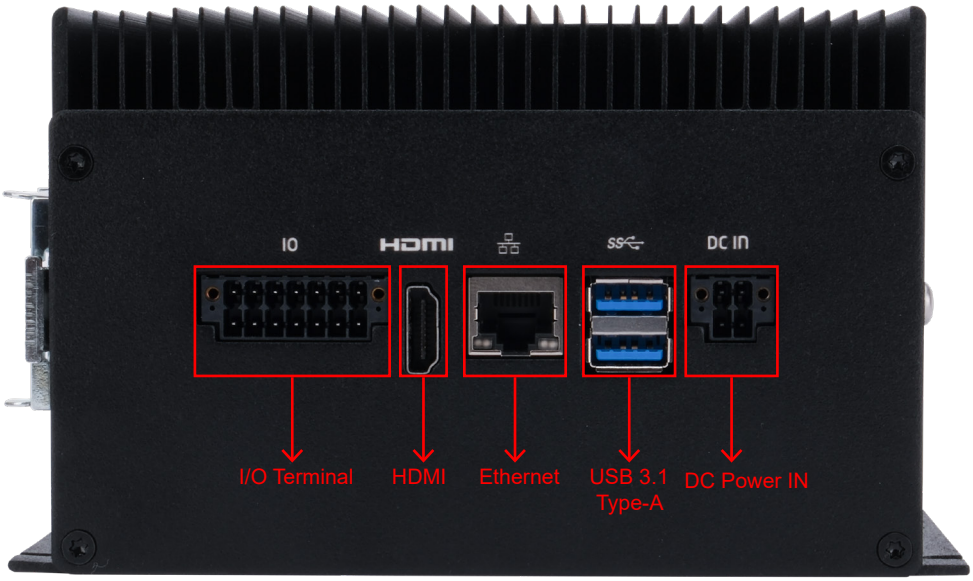
3. Hardware Information

3.1 Connector Location

3.1.1 Front Connectors Layout



3.1.2 Rear Connectors Layout

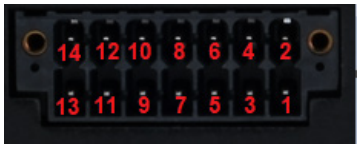


3.2 List of Connectors and Buttons

Connectors
DSBOX-AGX I/O Terminal Connector
DSBOX-AGX HDMI Conector
DSBOX-AGX 10/100/1000 Ethernet Connector
DSBOX-AGX USB 3.1 Type-A Connector
DSBOX-AGX Power Connector
DSBOX-AGX Recovery Mode USB 3.1 Type-C Connector
DSBOX-AGX Debug Mode USB 3.1 Type-C Connector
DSBOX-AGX Reset Pushbutton
DSBOX-AGX 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	DIGITAL_OUT2 Note: Up to 24V,1A max, low-side switch	Output
	10	ISOLATED GROUND	Power
	11	DIGITAL_OUT1 Note: Up to 24V,1A max, low-side switch	Output
	12	DIGITAL_IN1	Input
	13	DIGITAL_OUT0 Note: Up to 24V,1A max, low-side switch	Output
	14	DIGITAL_IN0	Input

3.3.2 HDMI Connector

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

3.3.3 10/100/1000 Ethernet Connector

	Description
	The DSBOX-AGX implements RJ-45 ethernet connector for internet communication. RJ-45 connector is connected directly to the NVIDIA Jetson module.

3.3.4 USB 3.1 Type-A Connector

	Description
	The DSBOX-AGX incorporates 2 USB 3.1 Type-A connectors with a 2A current limit per connector.

3.3.5 Power Connector

Function	Description	
Mating Connector	1708595	
Minimum Input Voltage	+12V	
Maximum Input Voltage	+30V	
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.

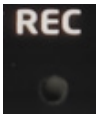
3.3.7 Debug Mode USB 3.1 Type-C Connector

	Description
	It is used to access the module by using serial connection.

3.3.8 Reset Pushbutton

	Description
	Reset button is used to reset the Jetson SoM.

3.3.9 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-agx

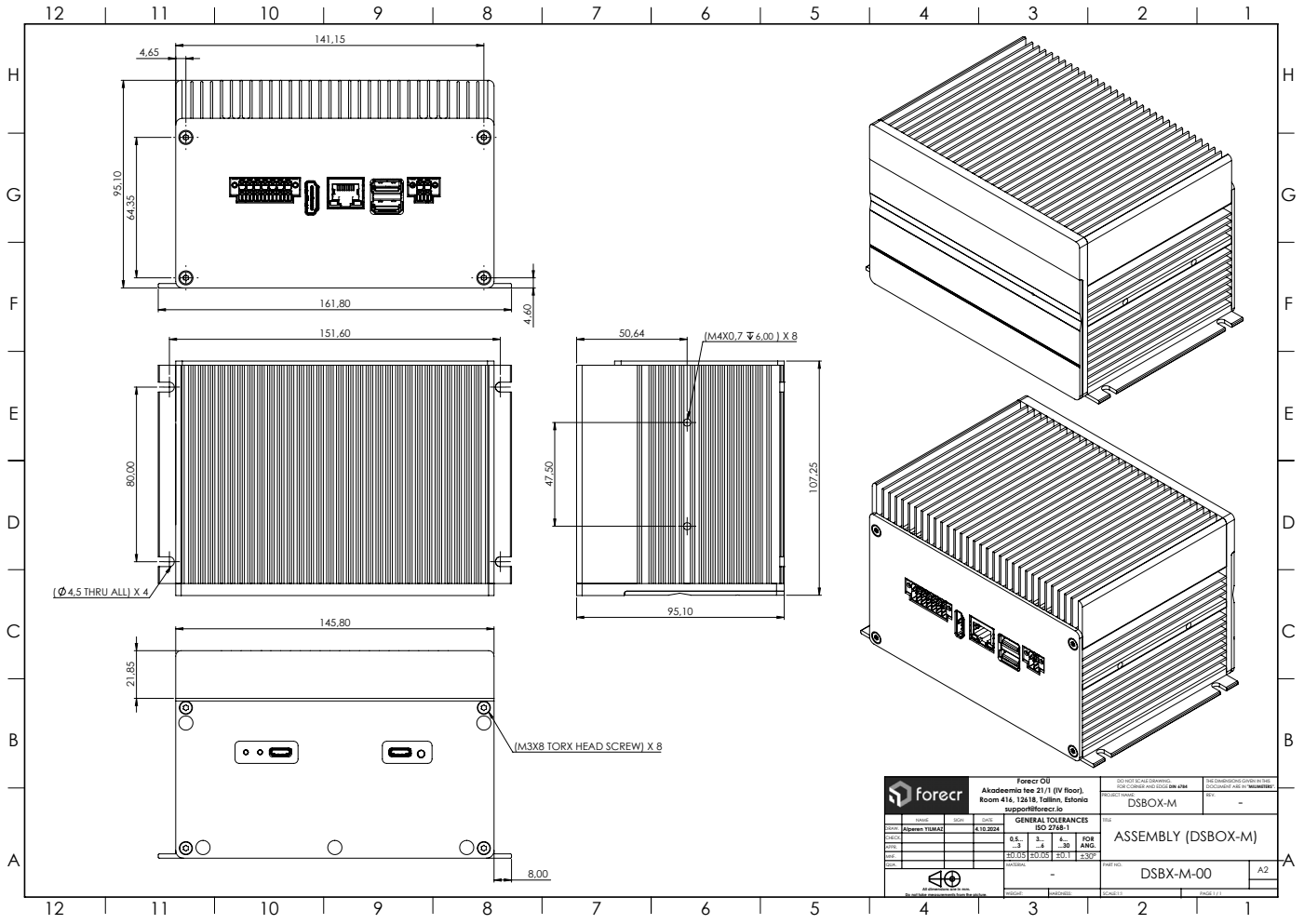
JetPack-6.x Installation can be found here: https://www.forecr.io/blogs/installation/jetpack-6-x-installation-for-dsboard-agx

5. 3D Model & Mechanical Information

5.1 3D Model

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

5.2 2D Mechanical Drawing



6. Power Consumption

6.1 AGX Orin 32GB

Power Supply: 24V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	15W (4 core)		30W (8 core)		40W (8 core)		MAXN (8 core)	
		Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak
Current (A)	~1	0,92	0,98	1,4	1,45	1,75	1,89	2,2	2,36
Power (W)	24	22,08	23,52	33,6	34,8	42	45,36	52,8	56,64

6.2 AGX Orin 64GB

Power Supply: 24V-5A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	15W (4 core)		30W (8 core)		50W (12 core)		MAXN (12 core)	
		Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak
Current (A)	~1,5	0,89	0,92	1,2	1,38	1,7	1,98	3,45	3,6
Power (W)	36	21,36	22,08	28,8	33,12	40,8	47,52	82,8	86,4

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