



MILBOX-AGX

# USER MANUAL

UM-MBXAGX-01

Revision 1.3

20/02/2025



Forecr  
<https://www.forecr.io>  
[support@forecr.io](mailto:support@forecr.io)

# Table of Contents

<b>Preface</b> .....	<b>3</b>
Disclaimer.....	3
Customer Support .....	3
Contact Information .....	3
Copyright Notice.....	3
Trademark Acknowledgment.....	3
Limited Product Warranty.....	4
Revision History .....	4
<b>1. Introduction</b> .....	<b>5</b>
<b>2. Product Specification</b> .....	<b>5</b>
2.1 Technical Specification .....	5
2.2 Block Diagram .....	6
2.3 MILBOX-AGX Visuals .....	6
<b>3. Hardware Information</b> .....	<b>7</b>
3.1 Connector Location .....	7
3.2 List of Connector .....	7
3.3 The Definition of Each Connector .....	7
3.3.1 Power Connector (X1) .....	7
3.3.2 High-Speed Connector (X2) .....	8
3.3.3 USB 3.0 Connector (X3) .....	9
3.3.4 Ethernet Connector (X4,X5,X6,X7) .....	9
3.3.5 Low-Speed Connector (X8) .....	10
<b>4. Software Information</b> .....	<b>11</b>
4.1 Installation .....	11
<b>5. Mechanical Models &amp; Drawings</b> .....	<b>11</b>
5.1 3D Model.....	11
5.2 2D Mechanical Drawing .....	11
<b>6. Power Consumption</b> .....	<b>12</b>
6.1 AGX Orin 32GB .....	12
6.2 AGX Orin 64GB .....	12
6.3 AGX Orin Industrial.....	12
<b>7. Cables</b> .....	<b>13</b>
<b>8. MTBF Prediction</b> .....	<b>14</b>
<b>9. Ordering Information</b> .....	<b>14</b>

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

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

### Contact Information

E-mail Address	For information requests: <a href="mailto:info@forecr.io">info@forecr.io</a>  For support requests: <a href="mailto:support@forecr.io">support@forecr.io</a>  For wholesale inquiries: <a href="mailto:sales@forecr.io">sales@forecr.io</a>
Address	Forecr OÜ Akadeemia tee 21/1 (II floor), Room 219, 12618, Tallinn, Estonia
Telephone Number	Estonia +372 5332 2632
Website	<a href="https://www.forecr.io">https://www.forecr.io</a>

### Copyright Notice

The information provided in this manual is subject to change without notice. Forecr shall not be held responsible for any errors contained herein or for any incidental or consequential damages that may arise from the provision, implementation, or utilization of this material. This manual is protected by copyright. All rights are reserved by Forecr. No part of this manual may be reproduced, copied, translated or transmitted in any form without the prior written consent of Forecr.

Copyright © 2023 - Forecr.io

### Trademark Acknowledgment

Forecr recognizes and acknowledges that all trademarks, registered trademarks, and/or copyrights mentioned in this user manual belong to their respective owners. All possible trademarks or copyright acknowledgments that are not listed herein do not mean a lack of acknowledgment to the rightful owners of mentioned trademarks and copyrights. Forecr acknowledge the rights of the trademark owners and respect their intellectual property.

## Limited Product Warranty

Forecr provides a 1-year Warranty for the MILBOX-AGX. This warranty period is valid from the original purchase date of the MILBOX-AGX. In order to maintain warranty, the MILBOX-AGX must not be altered or modified in any way. Changes or modifications to the MILBOX-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 MILBOX-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	07.03.2024	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.
rev 1.2	01.10.2024	Power supply range in the Section 2.1 has been changed. Voltage range has been added to the Section 3.3.1.
rev 1.3	20.02.2025	Form Factor / Dimensions in the Section 2.1 has been corrected. Section 6,7 and 8 have been edited.

## 1. Introduction

Introducing our latest military grade ruggedized computer, powered by the cutting-edge AGX Orin SoM technology. This compact and powerful device is designed to withstand the toughest environments, making it the perfect solution for military, industrial, and other demanding applications.

With 4x Gigabit Ethernet ports, USB3.2, HDMI, 2x CAN, 4x RS- 232, and 4x RS-422, this ruggedized computer offers unparalleled connectivity options. Plus, with M.2 SSD support, you'll have lightningfast storage performance, ensuring your critical data is always available when you need it.

Our ruggedized computer is built to last, with a ruggedized chassis that can withstand extreme temperatures, shocks, and vibrations. You can rely on this device to operate reliably in the most challenging environments. Whether you're in the military, working in industrial settings, or need a reliable computing solution for outdoor applications, our ruggedized computer is the ideal choice. With its powerful performance, rugged design, and extensive connectivity options, this device is sure to exceed your expectations.

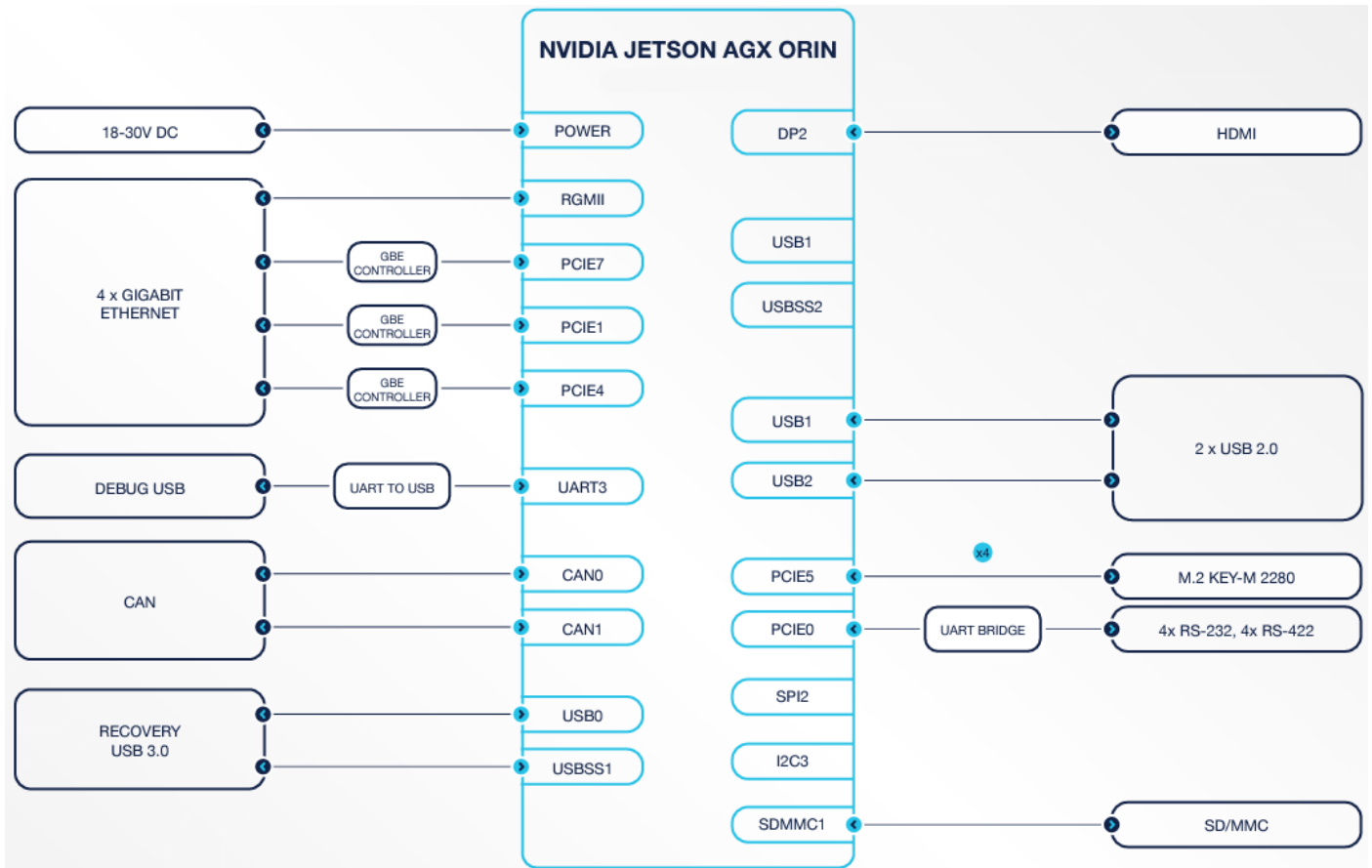
Latest revision of this user manual, datasheet, and 3D model can be downloaded from [Forecr Web Page](#).

## 2. Product Specification

### 2.1 Technical Specification

<b>Supported Modules</b>	NVIDIA Jetson AGX Orin 32GB NVIDIA Jetson AGX Orin 64GB NVIDIA Jetson AGX Orin Industrial
<b>Memory</b>	32 GB 256-bit LPDDR5x 64 GB 256-bit LPDDR5x
<b>Graphics Interfaces</b>	1x HDMI
<b>Interfaces</b>	4x Gigabit Ethernet 1x USB 3.1 2x USB 2.0 1x USB 2.0 (Serial Console) 2x CAN Bus 4x RS232 4x RS422
<b>Wireless Communication</b>	None
<b>Power Supply</b>	12-36 VDC (28 VDC Nominal)
<b>Extension Sockets</b>	None
<b>Mass Storage</b>	64 GB eMMC 5.1 Flash 1x M.2 Key-M SSD Slot SD Card
<b>Ambient Conditions</b>	-25°C ... +85°C (-40°C for Industrial Module)
<b>Form Factor / Dimensions</b>	30cm x 24cm x 10cm, 5292gr
<b>Operating Systems</b>	Ubuntu Linux 20.04
<b>Standards</b>	Designed to meet MIL-STD-1275/704, MIL-STD-810, MIL-STD-461, IP67
<b>JetPack Support</b>	JetPack 5.x JetPack 6.x

## 2.2 Block Diagram



## 2.3 MILBOX-AGX Visuals



### 3. Hardware Information

#### 3.1 Connector Location




#### 3.2 List of Connector

Connectors
MILBOX-AGX Power Connector
MILBOX-AGX HIGH-SPEED Connector
MILBOX-AGX USB 3.0 Connector
MILBOX-AGX Ethernet Connectors
MILBOX-AGX LOW-SPEED Connector

#### 3.3 The Definition of Each Connector

##### 3.3.1 Power Connector (X1)

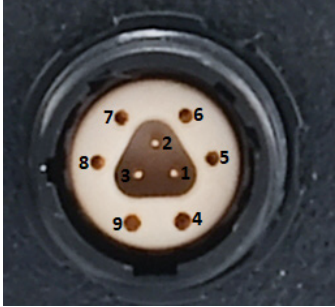
	Function		Description	
	Mating Connector		D38999/26WC4SN	
	Voltage Range		12-36 VDC (28 VDC Nominal)	
	X1-Pinout		Pin	Description
			A	VIN
			B	VIN
C			GND	
		D	GND	

## 3.3.2 High-Speed Connector (X2)



	Function	Description			
		Mating Connector	UP01L18 M042C BK1 Z1ZB		
	X2-Pinout	Pin	Description	Pin	Description
		1*	TMDS DATA 1+	22	GND (NO WIRE)
		2*	TMDS DATA 1-	23	GND (NO WIRE)
		3	TMDS DATA 1 SHIELD	24	GND (NO WIRE)
		4*	TMDS CLOCK+	25	GND (NO WIRE)
		5*	TMDS CLOCK-	26	GROUND
		6*	TMDS DATA 0+	27	RECOVERY
		7*	TMDS DATA 0-	28	RESET
		8	TMDS DATA 0 SHIELD	29	USB0 GROUND
		9	TMDS CLOCK SHIELD	30	USB0 +5V POWER
		10*	TMDS DATA 2+	31	ID
		11*	TMDS DATA 2-	32	USB2 +5V POWER
		12	HDMI +5V POWER	33	USB2 GROUND
		13	HDMI GROUND	34*	USB0 D+
		14	HOT PLUG DETECT	35*	USB0 D-
		15	DDC CLOCK	36	USB1 GROUND
		16	DDC DATA	37	USB1 +5V POWER
		17	CEC	38*	USB2 D-
		18	TMDS DATA 2 SHIELD	39*	USB2 D+
		19	GND (NO WIRE)	40	GND (NO WIRE)
		20	GND (NO WIRE)	41*	USB1 D+
21	GND (NO WIRE)	42*	USB1 D-		
<b>Note:</b> Pins with * mark in Pin section are differential signals.					




### 3.3.3 USB 3.0 Connector (X3)

	Function		Description	
	Mating Connector		MP11ZS08 2007 BK1 Z1AS	
	X3-Pinout		Pin	Description
			1*	USB 2.0 D-
			2	SS drain
			3*	USB 2.0 D+
			4	Vbus 5V
			5*	SS TX+
			6*	SS TX-
			7*	SS RX+
8*			SS RX-	
9	Vbus GND			
<b>Note:</b> Pins with * mark in Pin section are differential signals.				

### 3.3.4 Ethernet Connector (X4,X5,X6,X7)

<p style="text-align: center;">X4 and X5</p>  <p style="text-align: center;">X6 and X7</p> 	Function		Description	
	Mating Connector		MP11ZS08 0008 BK1 Z1AS	
	X4,X5,X6,X7-Pinout		Pin	Description
			1*	DATA A+
			2*	DATA A-
			3*	DATA B+
			4*	DATA B-
			5*	DATA C+
			6*	DATA C-
			7*	DATA D+
8*	DATA D-			
<b>Note:</b> Pins with * mark in Pin section are differential signals.				

## 3.3.5 Low-Speed Connector (X8)

	Function		Description	
		Mating Connector		UP01L18 M042C BK2 Z1ZB
	X8-Pinout			
	Pin	Description	Pin	Description
	1*	RS422 CH1 A	22	RS232 CH4 GROUND
	2*	RS422 CH1 B	23	RS232 CH4 RX
	3	RS422 CH1 GROUND	24	RS232 CH4 TX
	4*	RS422 CH1 Z	25	RS232 CH3 GROUND
	5*	RS422 CH1 Y	26	RS232 CH3 TX
	6	RS422 CH2 GROUND	27	RS232 CH3 RX
	7*	RS422 CH2 A	28	GND (NO WIRE)
	8*	RS422 CH2 B	29	CAN CH1 GROUND
	9*	RS422 CH2 Z	30*	CAN CH1 LO
	10*	RS422 CH2 Y	31*	CAN CH1 HI
	11	GND (NO WIRE)	32	RS422 CH3 GROUND
	12	RS232 CH2 GROUND	33*	RS422 CH3 Y
	13	RS232 CH2 RX	34*	RS422 CH3 Z
	14	RS232 CH2 TX	35*	RS422 CH3 B
	15	GND (NO WIRE)	36*	RS422 CH3 A
	16	CAN CH2 GROUND	37	GND (NO WIRE)
	17*	CAN CH2 HI	38*	RS422 CH4 Y
	18*	CAN CH2 LO	39*	RS422 CH4 Z
	19	RS232 CH1 GROUND	40	RS422 CH4 GROUND
20	RS232 CH1 RX	41*	RS422 CH4 B	
21	RS232 CH1 TX	42*	RS422 CH4 A	
<b>Note:</b> Pins with * mark in Pin section are differential signals.				

## 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-milboard-agx>

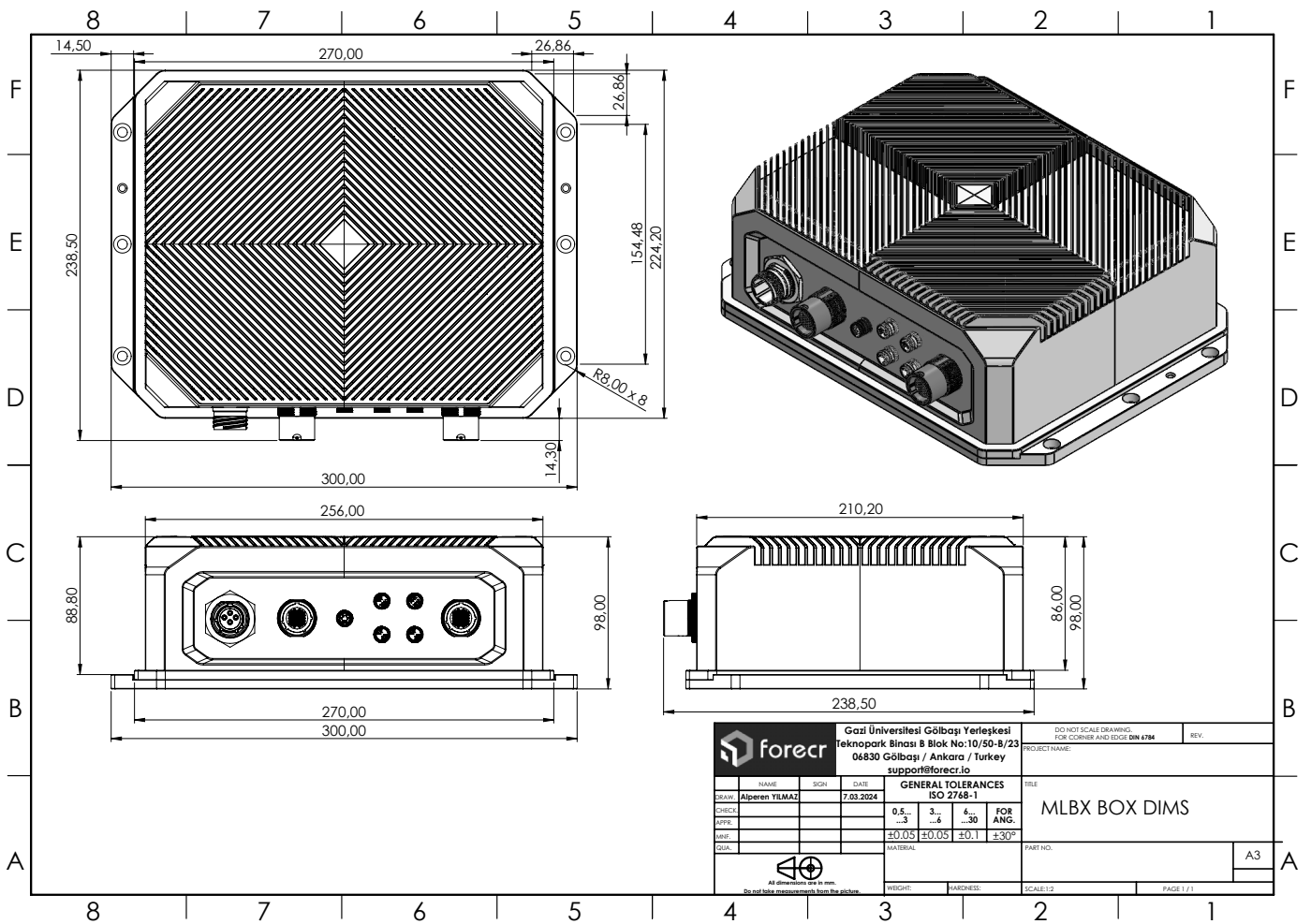
JetPack-6.x Installation can be found here: <https://www.forecr.io/blogs/installation/jetpack-6-x-installation-for-milboard-agx>

## 5. Mechanical Models & Drawings

### 5.1 3D Model

Full 3D models of all MILBOX-AGX can be found here: [https://github.com/forecr/forecr\\_3d\\_models/tree/master/MIL-BOX-AGX](https://github.com/forecr/forecr_3d_models/tree/master/MIL-BOX-AGX)

### 5.2 2D Mechanical Drawing



## 6. Power Consumption

### 6.1 AGX Orin 32GB

Power Supply: 28V-4A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	15W (4 core)	30W (8 core)	40W (8 core)	MAXN (8 core)
Current (A)	1,11	0,5	0,22	0,83	1,08	1,72	2,17
Power (W)	31,08	14	6,16	23,24	30,24	48,16	60,76

### 6.2 AGX Orin 64GB

Power Supply: 28V-4A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	15W (4 core)	30W (8 core)	50W (12 core)	MAXN (12 core)
Current (A)	1,59	0,54	0,24	0,81	1,07	1,75	3,26
Power (W)	44,52	15,12	6,72	22,68	29,96	49	91,28

### 6.3 AGX Orin Industrial

Power Supply: 28V-4A

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	15W (4 core)	35W (8 core)	60W (12 core)	MAXN (12 core)
Current (A)	1,53	0,6	0,24	0,87	1,15	1,94	3,24
Power (W)	42,84	16,8	6,72	24,36	32,2	54,32	90,72

## 7. Cables

Power Cable (for X1)	
End 1	D38999/26WC4SN
End 2	4x Open Wire (2 for positive, 2 for negative)
Cable Length	100cm

High-Speed Cable (for X2)	
End 1	UP01L18 M042C BK1 Z1ZB
End 2	1x HDMI Female, 3x USB-2.0 Type-A Female (1 for Debug, 2 for USB host), 4x Open Wire (GND (pin-26), Recovery (pin-27), Reset (pin-28), ID (pin-31, unused))
Cable Length	50cm

USB Cable (for X3)	
End 1	MP11ZS08 2007 AN1 Z1AS
End 2	USB-3.0 Type-A Female
Cable Length	50cm

Ethernet Cable (for X4, X5, X6, X7)	
End 1	MP11ZS08 0008 AN1 Z1AS
End 2	RJ-45 Ethernet Male
Cable Length	150cm

Low-Speed Cable (for X8)	
End 1	UP01L18 M042C BK2 Z1ZB
End 2	10x DB9 Female (4 for RS-232, 4 for RS-422, 2 for CAN Bus)
Cable Length	50cm

## 8. MTBF Prediction

Prediction method	Mil Hdbk 217F2, parts count
Environment	GF - Ground Fixed, $T_A=40^{\circ}\text{C}$ , $T_J=60^{\circ}\text{C}$
Date	19-Feb-2024
Total Failure Rate	9.862036(FPMH)
MTBF	101399 (Hours) 11.58 (Years)

## 9. Ordering Information

