



MILBOX-AGX

USER MANUAL

UM-MBXAGX-01

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Table of Contents

Preface	3
Disclaimer.....	3
Customer Support	3
Contact Information	3
Copyright Notice.....	3
Trademark Acknowledgment.....	3
Limited Product Warranty.....	4
Revision History	4
1. Introduction	5
2. Product Specification	5
2.1 Technical Specification	5
2.2 Block Diagram	6
2.3 MILBOX Visuals	6
3. Hardware Information	7
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 Connectors (X4,X5,X6,X7)	9
3.3.5 Low-Speed Connector (X8)	10
4. Software Information	11
4.1 Installation	11
5. 3D Model & Mechanical Information	11
5.1 3D Model.....	11
5.2 2D Mechanical Drawing	11
6. Power Consumption	12
6.1 AGX Orin 32GB.....	12
6.2 AGX Orin 64GB.....	12
6.3 AGX Orin Industrial.....	12
7. Cables	13
8. MTBF Prediction	14
9. Ordering Information	14

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.

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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	Added JetPack 6.x to Section 2.1 and Section 4.1.
rev 1.2	01.10.2024	Changed power supply range in Section 2.1; added voltage range to Section 3.3.1.
rev 1.3	20.02.2025	Corrected form factor/dimensions in Section 2.1. Edited Sections 6, 7, and 8.
rev 1.4	25.06.2026	Updated Sections 2.1, 3.3.1, 3.3.3, 3.3.4, and 7.

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.

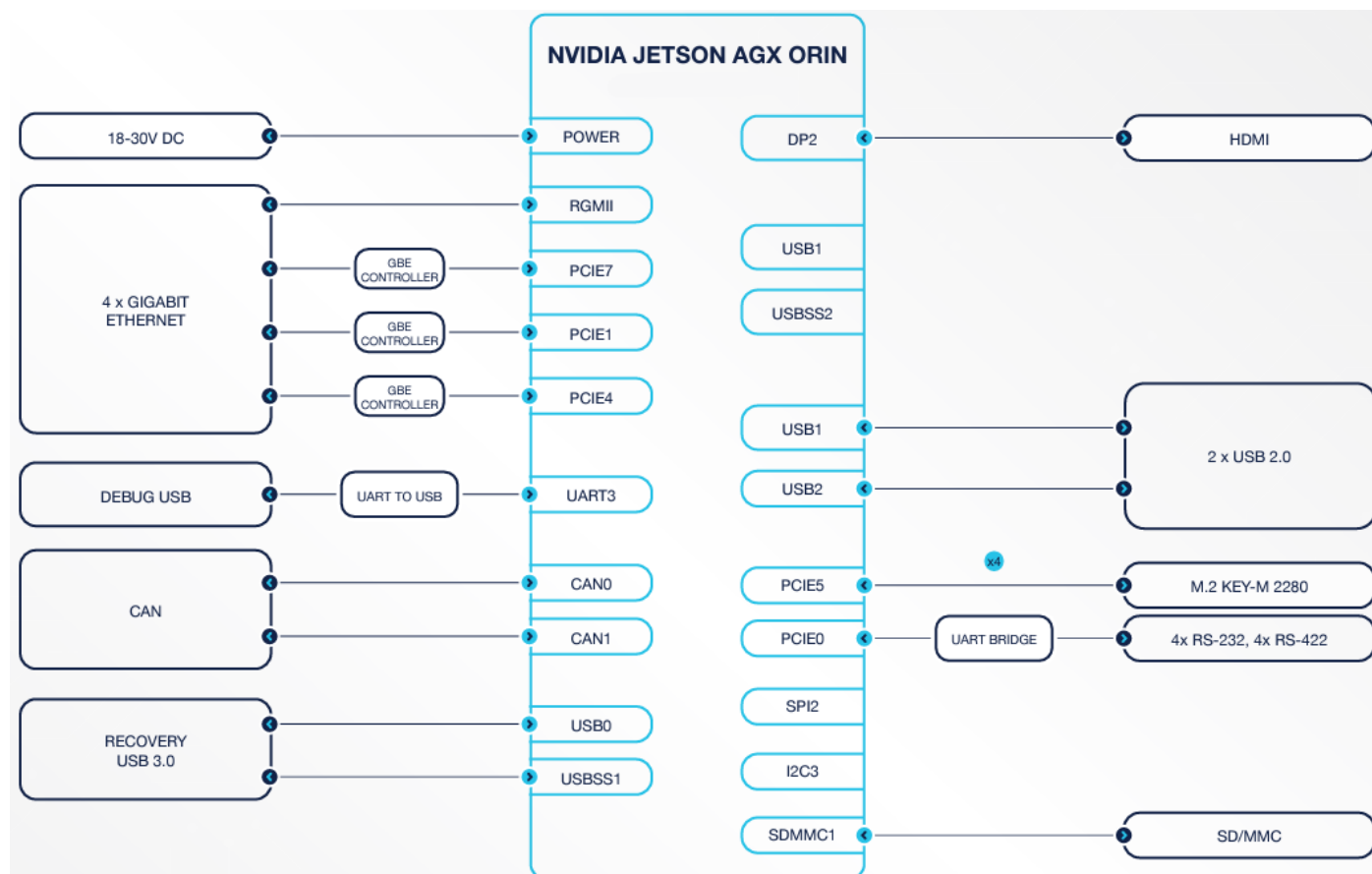
Latest revision of this user manual, datasheet, and 3D model can be downloaded from [Forecr Web Page](#).

2. Product Specification

2.1 Technical Specification

Supported Modules	NVIDIA Jetson AGX Orin 32GB NVIDIA Jetson AGX Orin 64GB NVIDIA Jetson AGX Orin Industrial
Memory	32 GB 256-bit LPDDR5x 64 GB 256-bit LPDDR5x
Graphics Interfaces	1x HDMI
Interfaces	4x Gigabit Ethernet 1x USB 3.1 2x USB 2.0 1x USB 2.0 (Serial Console) 2x CAN Bus 4x RS232 4x RS422
Wireless Communication	None
Power Supply	12-36 VDC (28 VDC Nominal)
Extension Sockets	None
Mass Storage	64 GB eMMC 5.1 Flash 1x M.2 Key-M SSD Slot SD Card
Ambient Conditions	-40C ... +70C (-25C for non-Industrial SoMs)
Form Factor / Dimensions (WxLxH)	300mm x 225mm x 100mm, 5292gr
Operating Systems	Ubuntu Linux 20.04 / 22.04 / 24.04
Standards	MIL-STD-1275/704, MIL-STD-810, MIL-STD-461, IP67
JetPack Support	JetPack 5.x / 6.x / 7.2+

2.2 Block Diagram

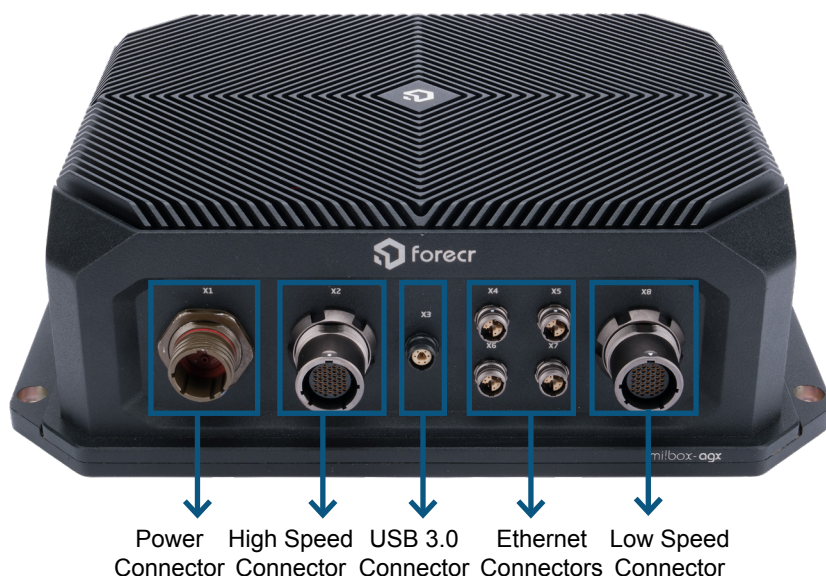


2.3 MILBOX Visuals



3. Hardware Information

3.1 Connector Location



3.2 List of Connector

Connectors
MILBOX-AGX Power Connector (X1)
MILBOX-AGX High Speed Connector (X2)
MILBOX-AGX USB 3.0 Connector (X3)
MILBOX-AGX Ethernet Connectors (X4, X5, X6, X7)
MILBOX-AGX Low Speed Connector (X8)

3.3 The Definition of Each Connector

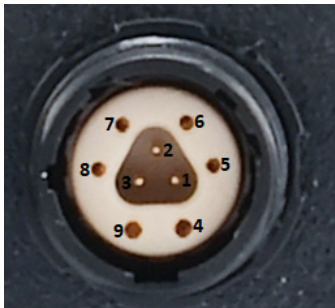
3.3.1 Power Connector (X1)

	Function	Description	
	Mating Connector	D38999/26FC4SN	
	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-
		Note: Pins with * mark in Pin section are differential signals.			

3.3.3 USB 3.0 Connector (X3)

	Function	Description	
	Mating Connector	MP11ZS08 2007 AN1 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
Note: Pins with * mark in Pin section are differential signals.			

3.3.4 Ethernet Connectors (X4,X5,X6,X7)

X4 and X5  X6 and X7 	Function	Description	
	Mating Connector	MP11ZS08 0008 AN1 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-
Note: 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
Note: Pins with * mark in Pin section are differential signals.				

4. Software Information

4.1 Installation

JetPack-5.x Installation can be found [here](#).

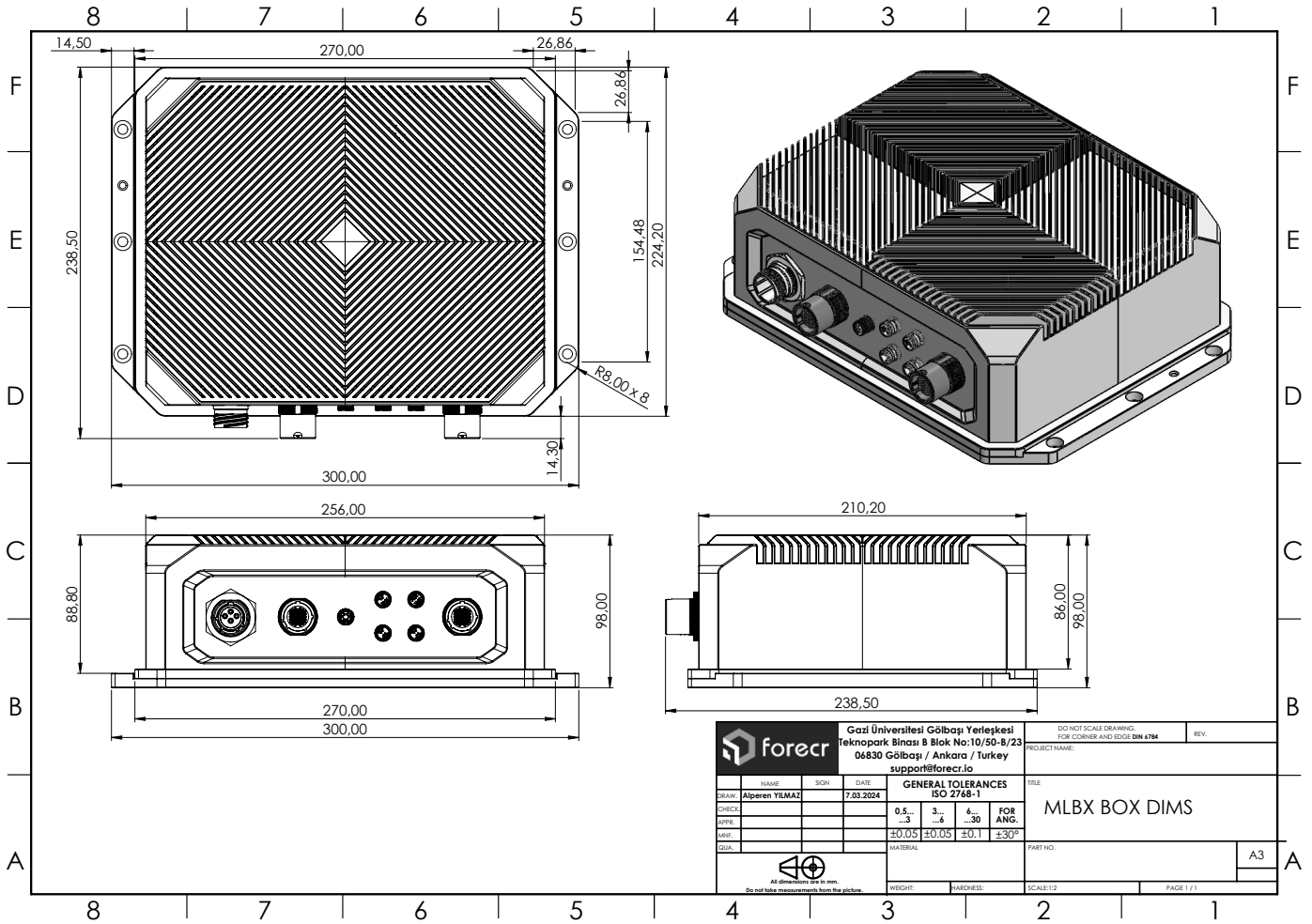
JetPack-6.x Installation can be found [here](#).

5. 3D Model & Mechanical Information

5.1 3D Model

Full 3D models of all MILBOX-AGX can be found [here](#).

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	D38999/26FC4SN
End 2	4x Open Wire (2 for positive, 2 for negative)
Cable Length	2m

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	2.2m

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

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

