



DSBOX-THRMAX

USER MANUAL

UM-DSBXTHRMAX-01
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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-THRMX. Therefore, this manual only represents the technical status of Forecr DSBOX-THRMX 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-THRMX, please reach out to the Forecr reseller from which you purchased the DSBOX-THRMX.

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 DSBOX-THRMAX. This warranty period is valid from the original purchase date of the DSBOX-THRMAX. In order to maintain warranty, the DSBOX-THRMAX must not be altered or modified in any way. Changes or modifications to the DSBOX-THRMAX 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-THRMAX 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
1.0	09.06.2026	Preliminary Release
1.01	28.07.2026	Updated Sections 1 and 2.1. Modified connector names in Sections 3.1–3.3. Added new sections for Software Information and General-Purpose Input/Output (GPIO).

1. Introduction

The DSBOX-THRMAL is FORECR’s latest industrial-grade Edge AI computer, powered by the NVIDIA® Jetson AGX Thor™ platform (supporting the T4000 and T5000 modules). Engineered for next-generation robotics, vision-based systems, and autonomous platforms, this rugged, enclosed system delivers exceptional computing performance with 128GB of LPDDR5X memory and advanced connectivity, including QSFP28, dual USB-C, and high-speed PCIe Gen5 storage. With support for dual HDMI 2.1, the system manages multi-display, high-resolution video workloads efficiently.

Designed for mission-critical deployment in challenging environments, the device features an extended operating temperature range of -25°C to +55°C and is housed in a robust enclosure measuring 221 mm x 132 mm x 83 mm. Its versatile I/O interfaces, which include CAN, RS-232/422/485, digital inputs/outputs, an onboard IMU, and temperature sensors, make the platform an ideal choice for real-time, sensor-rich AI applications.

Additionally, built-in support for Wi-Fi, Bluetooth, LTE/5G, and optional 8x GMSL2 camera connectivity enables seamless integration into vision systems, drones, autonomous vehicles, and edge-based surveillance networks.

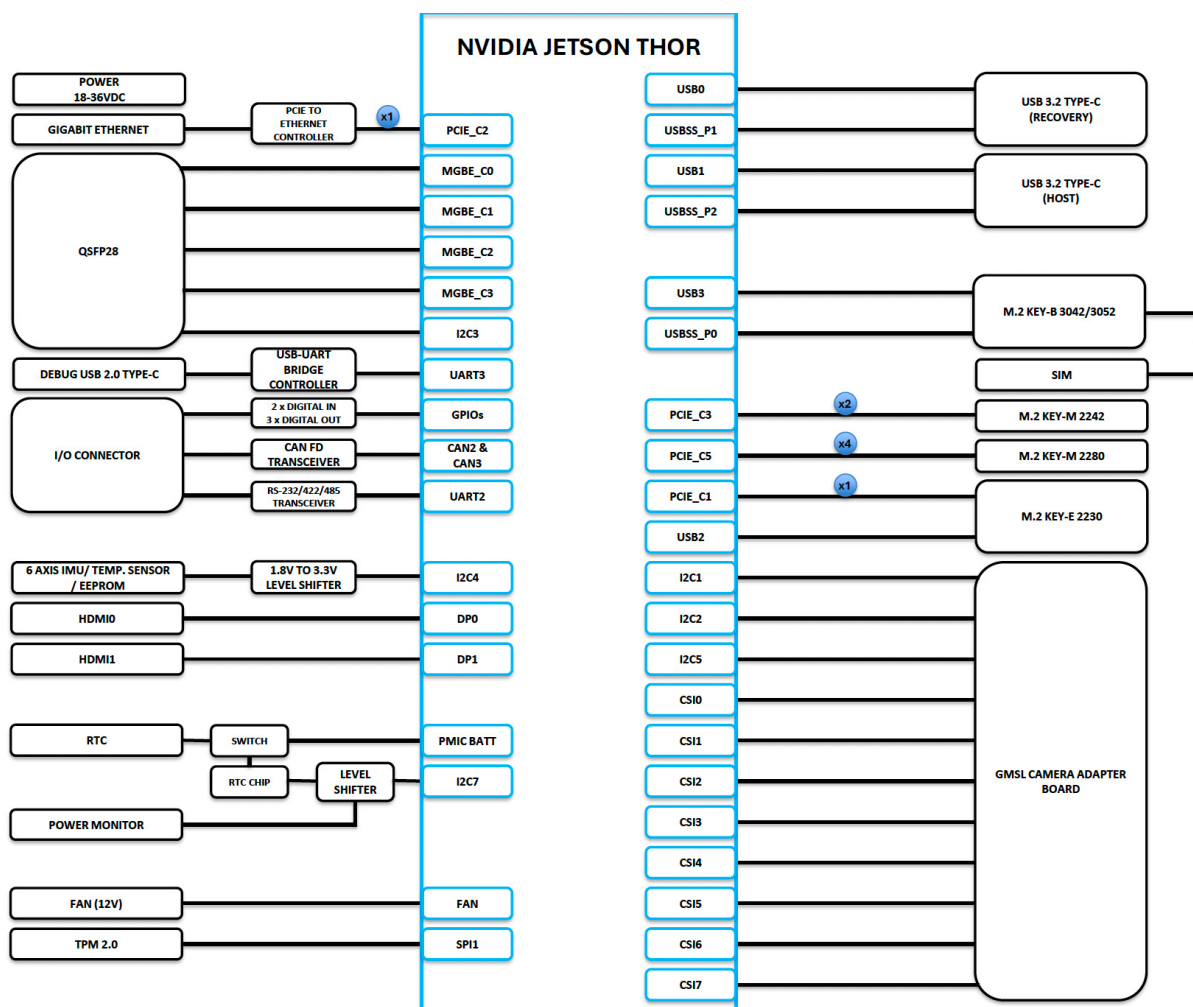
The latest revision of this user manual, datasheet, and 3D model can be downloaded from the [Forecr](#) website.

2. Product Specification

2.1 Technical Specification

Supported Modules	NVIDIA Jetson T5000 NVIDIA Jetson T4000
Memory	128 GB 256-bit LPDDR5X 64 GB 256-bit LPDDR5X
Graphics Interfaces	2x HDMI 2.1
Interfaces	1x Gigabit Ethernet (RJ45) 1x USB3.2 Type-C 1x USB3.2 Type-C (Recovery Port) 1x Debug USB-C 1x QSFP28 (4x 25GbE) 1x RS-232/422/485 2x CAN Bus (CAN FD supported) 2x Digital Input (11-60V compatible) 3x Digital Output (11-60V compatible) EEPROM, IMU, Temperature Sensor RTC (10+ years lifetime)
Wireless Communication	WiFi/Bluetooth/LTE/5G Connectivity (optional)
Security	ST33TPHF2XSPI TPM2.0 chipset
Power Supply	18-36V DC
Camera Connections	8x GMSL2 (optional)
Mass Storage	1x M.2 Key-M 2280 (PCIe Gen5 x4) 1x M.2 Key-M 2242 (PCIe Gen5 x2)
Ambient Conditions	-25°C ... +55°C
Form Factor / Dimensions (WxLxH)	221 mm x 132 mm x 83 mm
Operating Systems	Ubuntu Linux 24.04
JetPack Support	JetPack 7.x

2.2 Block Diagram



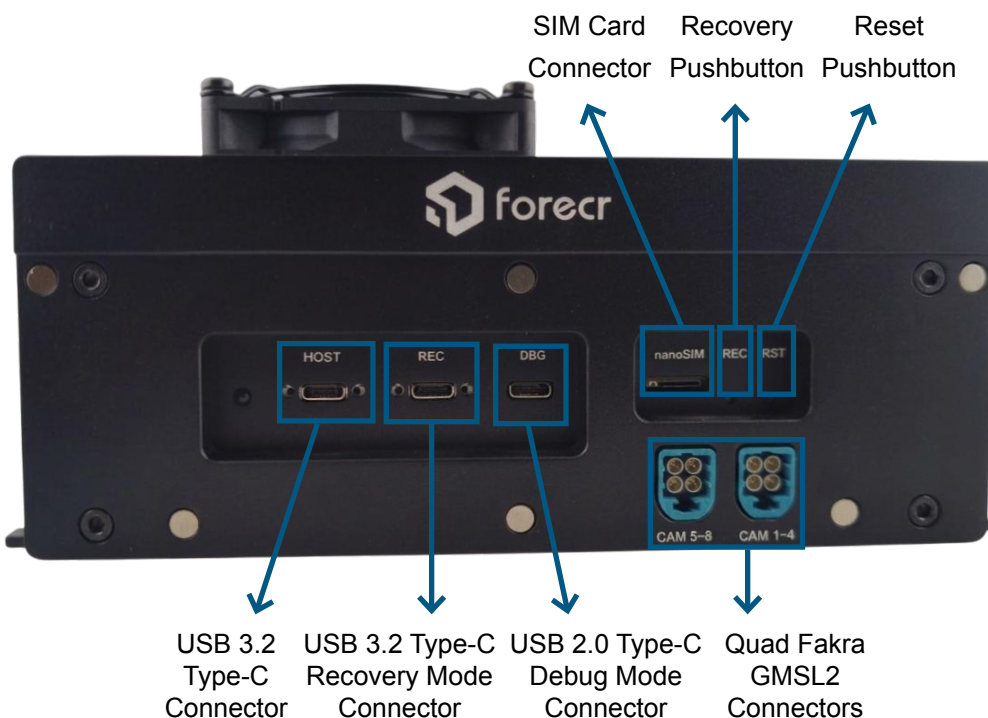
2.3 DSBOX Visuals



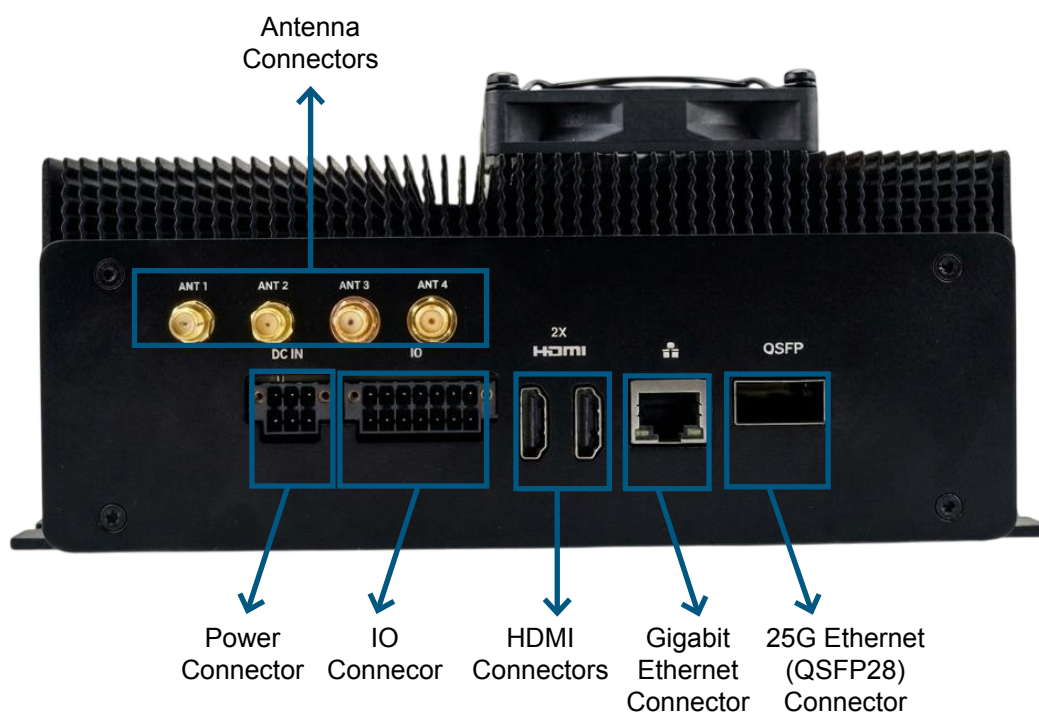
3. Hardware Information

3.1 Connector Location

3.1.1 Front Side



3.1.2 Rear Side

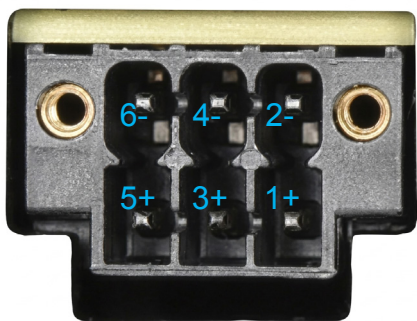


3.2 List of Connectors and Buttons

Connectors
DSBOX-THRMAX Power Connector
DSBOX-THRMAX I/O Connector
DSBOX-THRMAX HDMI Connectors
DSBOX-THRMAX 25G Ethernet (QSFP28) Connector
DSBOX-THRMAX Gigabit Ethernet Connector
DSBOX-THRMAX USB 3.2 Type-C Recovery Mode Connector
DSBOX-THRMAX USB 2.0 Type-C Debug Mode Connector
DSBOX-THRMAX USB 3.2 Type C Connector
DSBOX-THRMAX SIM Card Connector
DSBOX-THRMAX Quad Fakra GMSL2 Connectors
DSBOX-THRMAX Antenna Connectors
Buttons
DSBOX-THRMAX Recovery Pushbutton
DSBOX-THRMAX Reset Pushbutton

3.3 Definition of Each Connector

3.3.1 Power Connector

	Function		Description	
	Connector Type		1787027	
	Mating Connector		1790302	
	Minimum Input Voltage		+18V	
	Maximum Input Voltage		+36V	
	Pinout		Pin	Description
			1	Positive
			2	Negative
			3	Positive
			4	Negative
			5	Positive
			6	Negative

3.3.2 I/O Connector

	Function		Description	
	Connector Type		1787069	
	Mating connector		1790344	
	Pinout		14 Pin Connector	
			Pin	Description
			1	RS422 B
			2	RS422 Y
			3	RS232 RX / RS422 A
			4	RS232 TX / RS422 Z
			5	CAN2_H
			6	CAN3_H
			7	CAN2_L
			8	CAN3_L
			9	DIGITAL_OUT2
			10	DGND
			11	DIGITAL_OUT1
			12	DIGITAL_IN1
			13	DIGITAL_OUT0
			14	DIGITAL_IN0

3.3.3 HDMI Connectors

	The NVIDIA® Jetson Thor modules output video via the DSBOX-THRMAX's vertical HDMI 2.0 connector.
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3.3.4 25G Ethernet (QSFP28) Connector



The DSBOX-THRMAX implements a high-speed Ethernet connection in QSFP28 form factor that supports up to 100G (4x25G).

3.3.5 Gigabit Ethernet Connector



The DSBOX-THRMAX integrates a RJ-45 Ethernet connector for network communication that supports 10/100/1000 Mbps operation.

3.3.6 USB 3.2 Type-C Recovery Mode Connector



The DSBOX-THRMAX features a USB 3.2 Type-C recovery mode connector to allow installing or upgrading the operating system. This port can be used in host mode when recovery functionality is not needed.

3.3.7 USB 2.0 Type-C Debug Mode Connector



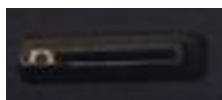
The DSBOX-THRMAX includes a USB 2.0 Type-C debug mode connector to access the module by using serial connection.

3.3.8 USB 3.2 Type C Connector



The DSBOX-THRMAX incorporates USB 3.2 Type-C connector.

3.3.9 SIM Card Connector



The DSBOX-THRMAX implements a nano SIM card connector.

3.3.10 Quad Fakra GMSL2 Connectors (Optional)



The DSBOX-THRMAX implements optional 2 Quad Fakra GMSL2 camera connectors.

3.3.11 Antenna Connectors (Optional)



The DSBOX-THRMAX includes optional SMA/RP-SMA type antenna connectors to use with WiFi, LTE, 5G, Bluetooth addons.

3.4 Definition of Each Button

3.4.1 Recovery Pushbutton



The DSBOX-THRMAX features a recovery pushbutton. The recovery pushbutton should be pressed with the reset pushbutton at the same time. After releasing the reset pushbutton, the recovery pushbutton should be held down for a minimum of 250 ms.

3.4.2 Reset Pushbutton



The DSBOX-THRMAX includes a reset button. It is recommended to use needle-like material.

4. Software Information

4.1 Installation

The JetPack-7.x installation guide can be found [here](#).

5. Connectivity

5.1 General Purpose Input/Output (GPIO)

MODULE PIN NUMBER	I/O NAME	MODULE PIN NAME	TYPE	DESCRIPTION
C4	CAM0_PWDN	GPIO47	OUTPUT	Camera 0 power down (3.3V Level)
F10	CAM1_PWDN	GPIO15	OUTPUT	Camera 1 power down (3.3V Level)
L5	CAM0_RST	UART4_TX	OUTPUT	Camera 0 reset.
F9	CAM1_RST	GPIO16	OUTPUT	Camera 1 reset.
J54	CAM0_MCLK	MCLK02	OUTPUT	Camera 0 reference clock (1.8V Level)
H53	CAM1_MCLK	MCLK03	OUTPUT	Camera 1 reference clock (1.8V Level)
H55	CAM2_MCLK	MCLK04	OUTPUT	Camera 2 reference clock (1.8V Level)
E61	CAM_INT1	SPI2_CLK	INPUT	Camera 1 interrupt.
F60	CAM_INT3	SPI2_MOSI	INPUT	Camera 3 interrupt.
G7	I2C_GP3_PEX_EN_N	GPIO13	OUTPUT	Enable signal for QSFP+ connector I2C voltage level translator.
A7	PWRMON_ALERT_N	GPIO29	INPUT	Hardware alert signal from the INA228 power monitor.
C18	DP1.HPD	HPD1	INPUT	Display Port 1: Hot Plug Detect
G4	TPM_SPI_PIRQ_N	I2S2_CLK/BOOT_CHAIN_1	INPUT	TPM chip interrupt signal.
F5	TPM_SPI_RST_N	I2S2_DOUT	OUTPUT	TPM chip reset signal.
F6	TPM_GPIO_LP	I2S2_DIN	OUTPUT	TPM chip low power/standby mode signal.
E4	TPM_GPIO_PP	I2S2_FS	OUTPUT	TPM chip physical presence signal.
G58	IMU_INT0	UART2_RTS	INPUT	IMU sensor interrupt signal.
E56	IMU_INT1	SPI2_CS1_N	INPUT	IMU sensor interrupt signal.
L49	GPIO179_5V0_HDMI_EN	I2S7_LRCK	OUTPUT	HDMI2 enable signal.
L50	"GPIO35_5V0_HDMI_EN"	I2S7_SCLK	OUTPUT	HDMI1 enable signal.
B54	M2B_W_DISABLE1#	GPIO45	OUTPUT	LTE/5G module airplane mode control. Drive low to enable airplane mode. Drive high for normal operation.
A54	M2B_W_DISABLE2#	GPIO46	OUTPUT	GNSS disable control. Drive low to disable GNSS. Drive high for normal operation.
J55	M2B_RESET	I2C9_DAT	OUTPUT	LTE/5G module reset control input. Drive low to trigger reset. Drive high for normal operation.
B59	M2B_FULLCARD_PWROFF#	GPIO04	OUTPUT	LTE/5G module power on/off control. Drive low to power off the module. Drive high for normal operation.
A59	M2B_PWR_ON#	GPIO05	OUTPUT	LTE/5G module 3.8V power supply LDO enable control. Drive high to disable LDO. Drive low for normal operation.
C60	M2E_WDISABLE1_N	I2S3_FS	OUTPUT	WiFi/BT module full powerdown control for the WiFi/BT radio. Drive low to disable WiFi/BT. Drive high for normal operation

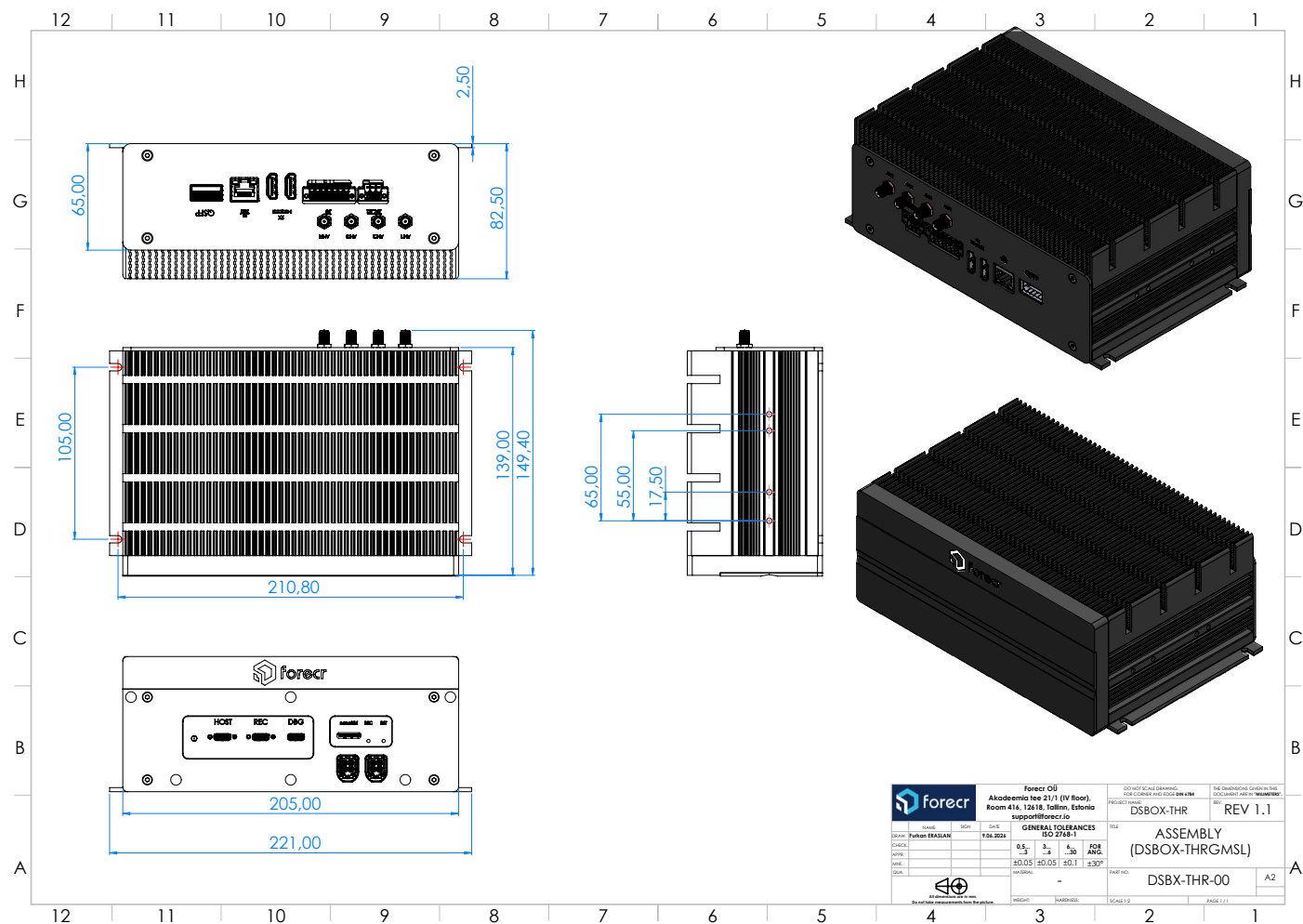
C59	M2E_WDISABLE2_N	I2S3_SCLK	OUTPUT	Reset for Bluetooth. Active low by default.
B58	M2E_BT_WAKE_N	GPIO21	INPUT	Wake up signal for Bluetooth radio.
B55	PWRLED_R	GPIO30/IST_DONE_N	OUTPUT	Drive high to turn on the Red LED.
C54	PWRLED_G	GPIO33/XFI1_MDIO	OUTPUT	Drive high to turn on the Green LED.
H60	PWRLED_B	GPIO31_IST_REQ_N	OUTPUT	Drive high to turn on the Blue LED.
F54	GPIO22_USB_VBUS_EN0	GPIO22	OUTPUT	Connect to enable and overcurrent pins of load switch.
G55	GPIO23_USB_VBUS_EN0	GPIO23	OUTPUT	Connect to enable and overcurrent pins of load switch.
B56	SERIAL.485/2\3\2\	SPI1_CS1_N	OUTPUT	Serial communication control for SP330EEY-L transceiver. Drive low to enable RS-232. Drive high to enable RS-485.
A47	SERIAL.HALF/FULL	I2C10_CLK	OUTPUT	Half duplex or full duplex control for RS-485 communication protocol. Drive low for full duplex communication. Drive high for half duplex communication.
D54	SERIAL.DE	GPIO03/XFI2_MDC	OUTPUT	Driver control for RS485 communication. Drive high for enable receiver.
J51	SERIAL_RE	GPIO24/XFI2_MDIO	OUTPUT	Receiver control for RS485 communication. Drive low for enable receiver.
K58	GPIO08_DATA_IN0	GPIO8	OUTPUT	Control signal for DIGITAL_IN1 in I/O
H57	GPIO09_DATA_IN1	GPIO9	OUTPUT	Control signal for DIGITAL_IN1 in I/O Connector.
A62	CAM_FRSYNC1	GPIO17	OUTPUT	Camera frame synchronization signal for multi-camera timing alignment.
K56	GPIO19_DATA_OUT0	GPIO19/XFI_MDC	OUTPUT	Control signal for GPIO19_DATA_OUT0 in I/O CONNECTOR.
K49	GPIO25_DATA_OUT1	GPIO25/XFI0_MDIO	OUTPUT	Control signal for GPIO25_DATA_OUT1 I/O CONNECTOR.
H51	GPIO26_DATA_OUT2	GPIO26/XFI0_MDC	OUTPUT	Control signal for GPIO26_DATA_OUT2 in I/O CONNECTOR.
H52	PWM_ GPIO27	GPIO27	OUTPUT	Control signal for PWM_ GPIO36 in I/O CONNECTOR.
F56	PWM_ GPIO36	GPIO36	OUTPUT	Control signal for PWM_ GPIO36 in I/O CONNECTOR.
H17	"SOC_QSFP_PRSENT_N"	GPIO62	INPUT	QSFP present signal.
G18	SOC_QSFP_LP_N	GPIO57	OUTPUT	QSFP low power signal.
J53	SOC_QSFP_INT	I2C0_DAT	INPUT	QSFP interrupt signal.
J52	SOC_QSFP_RESET	I2C0_CLK	OUTPUT	QSFP reset signal.

6. 3D Model & Mechanical Information

6.1 3D Model

The full 3D models of DSBOX-THRMAX can be found [here](#).

6.2 2D Mechanical Drawing



7. Power Consumption

7.1 AGX THOR T4000

Input Voltage: 24V

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	70W (12 core)	MAXN (12 core)
Current (A)	1.3	0.96	0.13	3.17	3.37
Power (W)	31.2	23.04	3.12	76.08	80.88

7.2 AGX THOR T5000

Input Voltage: 24V

All CPU and GPU cores are %100 loaded.

	Power Up Sequence	Idle	Standby (Suspend mode)	70W (12 core)	90W (12core)	120W (14 core)	MAXN (14 core)
Current (A)	2.34	1.1	0.12	5.16	5.72	6.72	6.84
Power (W)	56.16	26.4	2.88	123.84	137.28	161.28	164.16

8. MTBF Prediction

Methodology	Telcordia SR-332 (Parts Count)
Operating Environment	Ground Fixed (GF), Uncontrolled
Ambient Temperature	40 °C
System Failure Rate	7.594 failures / 10 ⁶ hours
MTBF	131690 hours, 15.03 years

9. Accessories

	Part Number	Description	Quantity
	1790344	IO Connector	1

	Part Number	Description	Quantity
	1790302	Power Connector	1

10. Ordering Information

