

DSBOARD-XV2 Rev 1.2

USER MANUAL

UM-DSBDXV2-01

Revision 1.0

03/10/2024



Forecr
<https://www.forecr.io>
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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 carrier board. Therefore, this manual only represents the technical status of Forecr carrier board 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 carrier board, please reach out to the Forecr reseller from which you purchased the carrier board.

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

Contact Information

E-mail Address	For information requests: info@forecr.io For support requests: support@forecr.io For wholesale inquiries: sales@forecr.io
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Symbols



ElectroStatic Discharge (ESD) Sensitive Device!

Electronic boards and their components are sensitive to static electricity. When handling any circuit board assemblies, it is recommended that ESD safety precautions be observed.

ESD safe best practices include, but are not limited to:

- Do not handle the carrier board out of its antistatic packaging while it is not used for operational purposes unless it is otherwise protected.
- Whenever possible, unpack or pack this product only at ESD safe work stations.
- Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools.
- Try to handle the board by the edges, avoiding contact with components.



HOT Surface!

Do not touch. Contact may cause burns. Allow to cool before servicing.



Waste Electrical and Electronic Equipment (WEEE)!

The carrier board should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.



Restriction of Hazardous Substances (RoHS)!

The carrier board complies with the regulations and restrictions established by the ROHS Directive and does not contain hazardous substances in concentrations that may be harmful to health or the environment.

Limited Product Warranty

Forecr provides a 1-year Warranty for the carrier board. This warranty period is valid from the original purchase date of the carrier board. In order to maintain warranty, the carrier board must not be altered or modified in any way. Changes or modifications to the board, 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 carrier board 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	03.10.2024	Preliminary Release

1. Introduction

DSBOARD-XV2 is the perfect edge computing device for industrial applications that require high processing power and reliability. Powered by the NVIDIA Jetson AGX Xavier module with a Volta GPU and an eightcore ARM64 CPU, it offers up to 32 TOPS of compute performance for deep learning and computer vision tasks. The device also boasts multiple connectivity options, including Gigabit Ethernet, Wi-Fi, Bluetooth, and USB 3.2, as well as M.2 expansion slots and a microSD card slot for storage expansion. Its wide operating temperature and input voltage range make it highly adaptable to various industrial environments, from robotics to transportation, security, and surveillance.

Compact yet rugged, the DSBOARD-XV2 is built to withstand even the toughest industrial conditions, making it an ideal choice for applications that require both high-performance computing and reliable connectivity. So whether you're working in industrial automation, healthcare, or any other industrial field, the DSBOARD-XV2 is the edge computing device you need to take your applications to the next level.

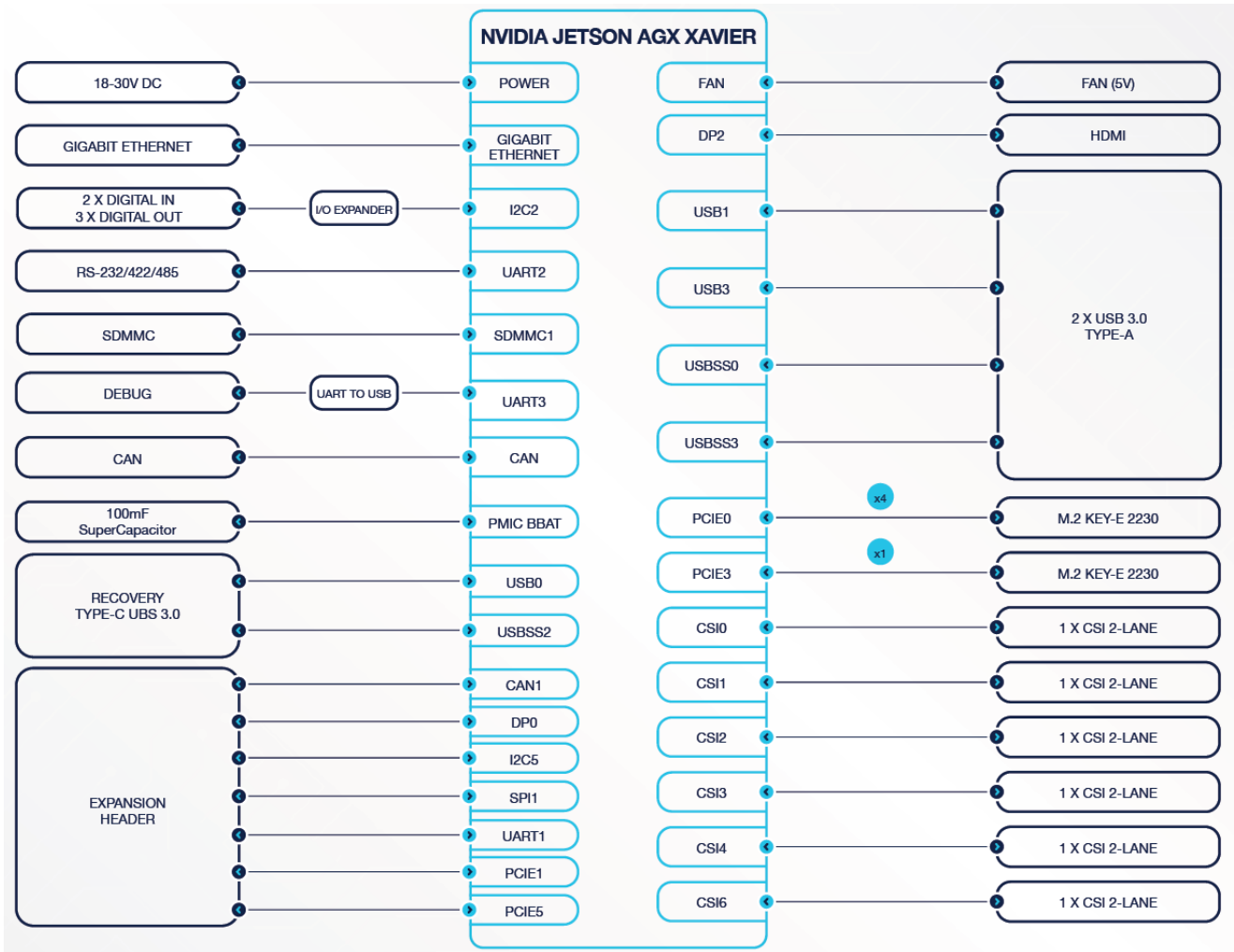
Latest revision of this user manual, datasheet, and 3D model can be downloaded from [Forecr Web Page](#).

2. Product Specification

2.1 Technical Specification

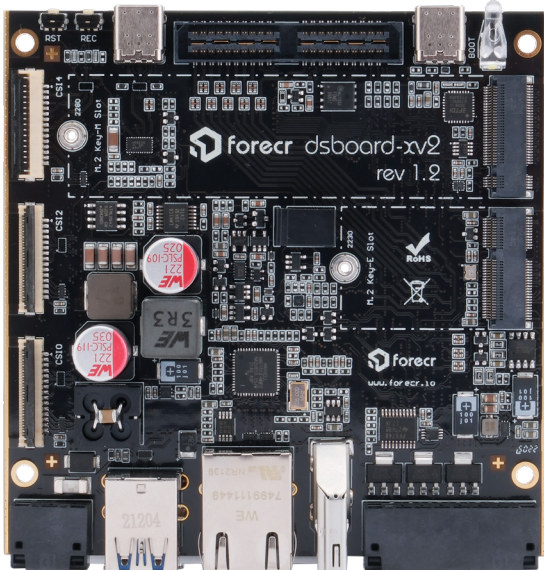
Supported Modules	NVIDIA Jetson AGX Xavier 32GB NVIDIA Jetson AGX Xavier 64GB NVIDIA Jetson AGX Xavier Industrial 32GB
Memory	32 / 64 GB 256-bit LPDDR4x
Graphics Interfaces	1x HDMI 2.0 (max resolution 3840x2160)
Interfaces	1x Gigabit Ethernet 2x USB 3.1 Type-A 1x CAN Bus 1x RS232/422/485 (software configurable) 2x Type-C (Debug/Recovery) 2x Digital Input 3x Digital Output 6x CSI 2-LANE
Wireless Communication	WiFi/Bluetooth Connectivity by extension sockets
Power Supply	18-30 VDC
Extension Sockets	1x M.2 Key-E, 1x MicroSD, 1x 5V Fan 1x PCIE(x8), 1x PCIE(x1), 1x CAN 1x UART, 1x SPI, 1x I2C, 1x DP
Mass Storage	32 / 64 GB eMMC 5.1 Flash 1x M.2 Key-M SSD Slot
Ambient Conditions	-25°C ... +85°C
Form Factor / Dimensions	100 mm x 100 mm, 103gr
Operating Systems	Ubuntu Linux 18.04 / 20.04
JetPack Support	JetPack 4.x JetPack 5.x

2.2 Block Diagram

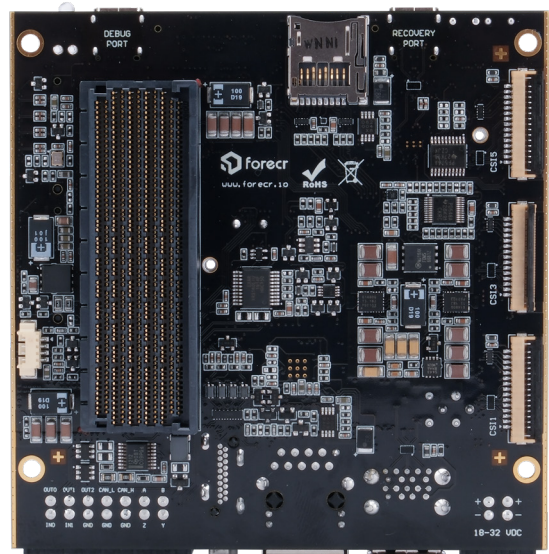


2.3 Board Visuals

Top Side



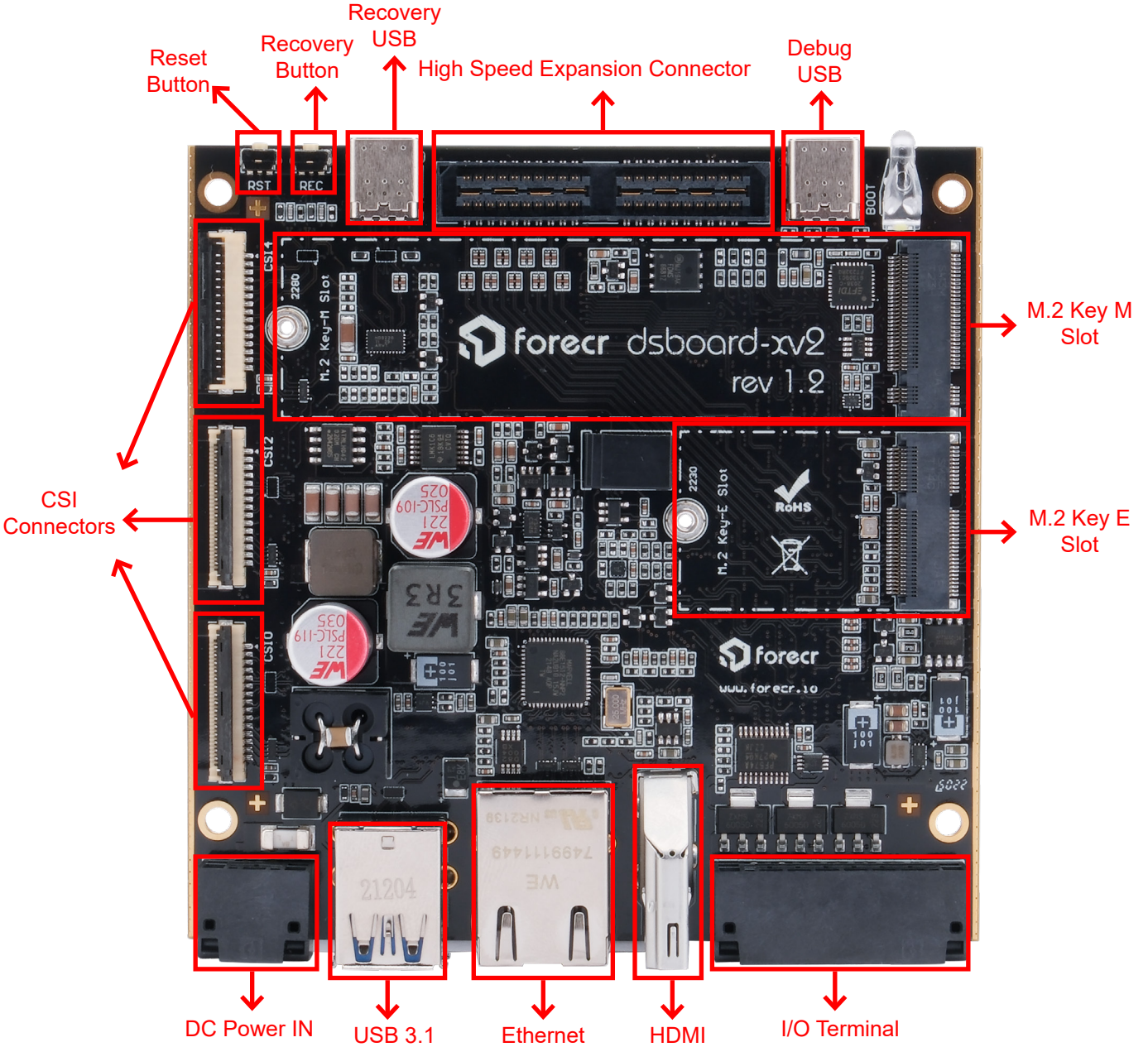
Bottom Side



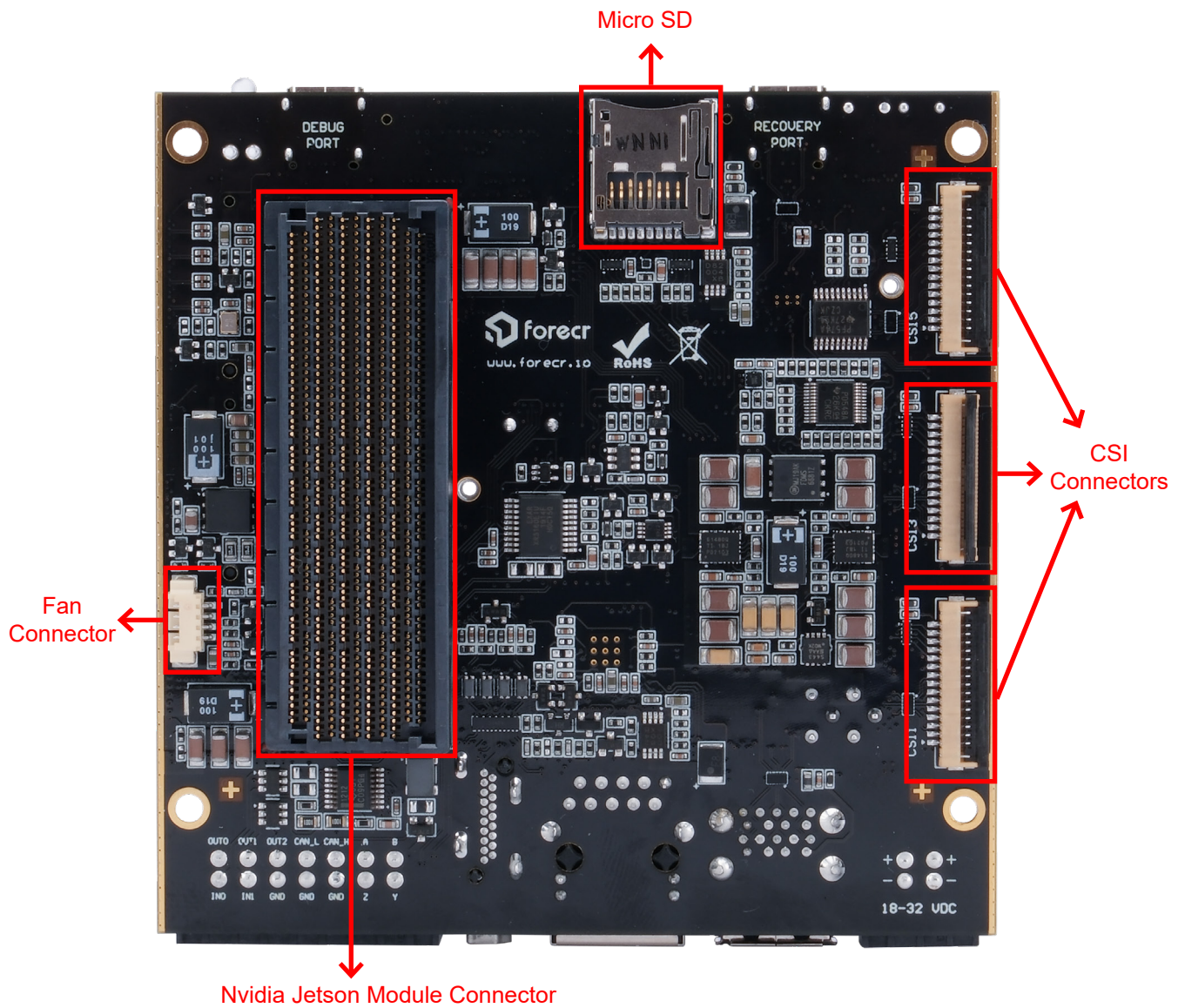
3. Hardware Information

3.1 Connector and Button Location

3.1.1 Top Side



3.1.2 Bottom Side

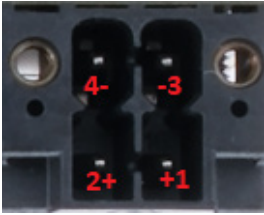


3.2 List of Connectors and Buttons


Connectors
DSBOARD-XV2 Power Connector
DSBOARD-XV2 SD Card Connector
DSBOARD-XV2 M.2 Key-M Connector
DSBOARD-XV2 M.2 Key-E Connector
DSBOARD-XV2 MIPI CSI Connector (Raspberry Pi Camera Compatible)
DSBOARD-XV2 I/O Terminal Connector
DSBOARD-XV2 Fan Connector
DSBOARD-XV2 High Speed Expansion Connector
DSBOARD-XV2 HDMI Connector
DSBOARD-XV2 USB 3.1 Type-A Connector
DSBOARD-XV2 10/100/1000 Ethernet Connector
DSBOARD-XV2 Recovery Mode Type-C USB Connector
DSBOARD-XV2 Debug Mode Type-C USB Connector
Buttons
DSBOARD- XV2 Recovery Pushbutton
DSBOARD- XV2 Reset Pushbutton

3.3 The Definition of Each Connector

3.3.1 Power Connector

	Function		Description	
	Mating Connector		1708595	
	Minimum Input Voltage		+18V	
	Maximum Input Voltage		+30V	
	Pinout		Pin	Description
1			Positive	
2			Positive	
3			Negative	
		4	Negative	

3.3.2 SD Card Connector

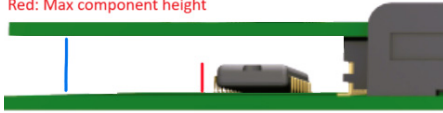
	Description	
	The DSBOARD-XV2 implements a micro SD Card connector.	

3.3.3 M.2 Key-M Connector

		Description					
Pinout	Pin	Description	Pin	Description	Pin	Description	
	1	DGND	24	NC	47	PCIE.TX0_N	
	2	VDD_3V3	25	PCIE.TX2_P	48	NC	
	3	DGND	26	NC	49	PCIE.TX0_P	
	4	VDD_3V3	27	DGND	50	PCIE.RST_N	
	5	PCIE.RX3_N	28	NC	51	DGND	
	6	NC	29	PCIE.RX1_N	52	PCIE.CLKREQ_N	
	7	PCIE.RX3_P	30	NC	53	PCIE.REFCLK_N	
	8	NC	31	PCIE.RX1_P	54	GPIO29_M2_KEYM_PEWAKE*	
	9	DGND	32	NC	55	PCIE.REFCLK_P	
	10	NC	33	DGND	56	NC	
	11	PCIE.TX3_N	34	NC	57	DGND	
	12	VDD_3V3	35	PCIE.TX1_N	58	NC	
	13	PCIE.TX3_P	36	NC	67	NC	
	14	VDD_3V3	37	PCIE.TX1_P	68	32KHZ_CLK	
	15	DGND	38	NC	69	NC	
	16	VDD_3V3	39	DGND	70	VDD_3V3	
	17	PCIE.RX2_N	40	I2C4.SCL	71	DGND	
	18	VDD_3V3	41	PCIE.RX0_N	72	VDD_3V3	
	19	PCIE.RX2_P	42	I2C4.SDA	73	DGND	
	20	NC	43	PCIE.RX0_P	74	VDD_3V3	
	21	DGND	44	GPIO34_M2_KEYM_ALERT*	75	DGND	
	22	NC	45	DGND	MNT1	DGND	
	23	PCIE.TX2_N	46	NC	MNT2	DGND	

Board to board spacing=2.45 mm
 Max component height=1.6 mm

Blue: Board-to-Board spacing
 Red: Max component height




3.3.4 M.2 Key-E Connector

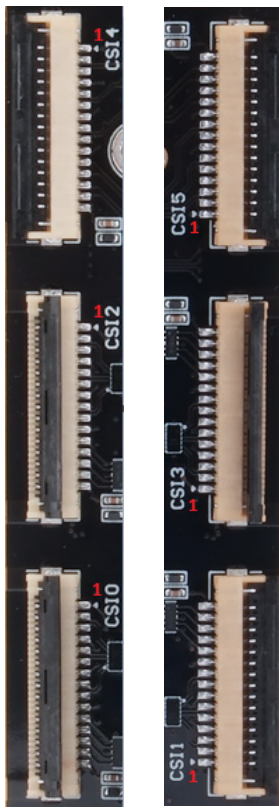
Description						
Pinout	Pin	Description	Pin	Description	Pin	Description
	1	DGND	32	UART5.TX	55	PCIE.WAKE_N
	2	VDD_3V3	33	DGND	56	GPIO1_WIFI_DISABLE_BUFF*
	3	USB2.D_P	34	UART5.CTS	57	DGND
	4	VDD_3V3	35	PCIE.TX0_P	58	M2E_I2C2.SDA
	5	USB2.D_N	36	UART5.RTS	59	GPIO24_SAR_TOUT
	6	NC	37	PCIE.TX0_N	60	M2E_I2C2.SCL
	7	DGND	38	GPIO3_AP_WAKE_BT_M2	61	GPIO3_AP_WAKE_BT_M2
	8	NC	39	DGND	62	M2E_ALERT_N
	9	NC	40	NC	63	DGND
	10	NC	41	PCIE.RX0_P	64	NC
	11	NC	42	NC	65	NC
	12	NC	43	PCIE.RX0_N	66	NC
	13	NC	44	NC	67	NC
	14	NC	45	DGND	68	NC
	15	NC	46	NC	69	DGND
	16	NC	47	PCIE.REF-CLK_P	70	NC
	17	NC	48	NC	71	NC
	18	DGND	49	PCIE.REF-CLK_N	72	VDD_3V3
	19	NC	50	M2E_SUS-CLK_32KHZ	73	NC
	20	GPIO13_BT_WAKE_AP_3V3	51	DGND	74	VDD_3V3
	21	GPIO12_M2_WAKE_AP	52	PCIE.RST_N	75	DGND
	22	UART5.RX	53	PCIE.CLKREQ_N	MNT1	DGND
	23	GPIO14_M2_EN	54	BT_RST_D_M2*	MNT2	DGND

Board to board spacing=2.45 mm
Max component height=1 mm


Blue: Board-to-Board spacing
Red: Max component height




3.3.5 MIPI CSI Connector (Raspberry Pi Camera Compatible)

	Function		Description		
	Mating connector		686715100001 (Flat Flex Ribbon Cable)		
	Connector type		FPC Vertical Connector		
	Pin/Pitch		15-pin, 1mm pitch		
	Pinout	Pin	Description	I/O Type	
		1	GROUND	Power	
		2	CSI_D0_N	Data	
		3	CSI_D0_P	Data	
		4	GROUND	Power	
		5	CSI_D1_N	Data	
		6	CSI_D1_P	Data	
		7	GROUND	Power	
		8	CSI_CLK_N	Clock	
		9	CSI_CLK_P	Clock	
		10	GROUND	Power	
11		CAM_PWDN_CONN	Data		
12		CAM_MCLK_CONN	Data		
13		CAM_I2C.SCL	Clock		
14	CAM_I2C.SDA	Data			
15	VDD_3V3	Power			

3.3.6 Fan Connector

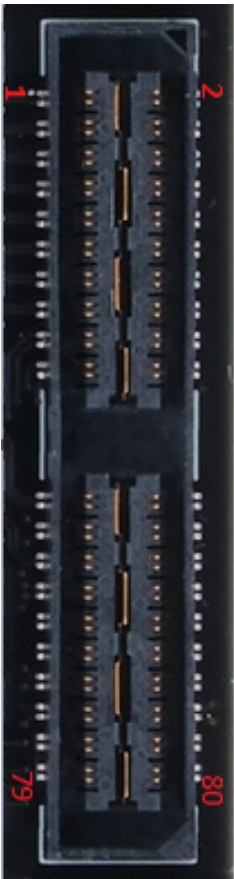
	Function		Description	
	Connector Type		53261-0471 from Molex	
	Mating Connector		0510210400	
	Pinout	Pin	Description	
		1	FAN_PWM	
		2	FAN_TACH	
	3	5V		
	4	GND		

3.3.7 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 / RS 422 Z / RS485 B	I/O
		5	CAN_H	I/O
		6	GROUND	Power
		7	CAN_L	I/O
		8	GROUND	Power
		9	DIGITAL_OUT2 <i>Note:</i> Up to 24V,1A max, low-side switch	Output
		10	GROUND	Power
		11	DIGITAL_OUT1 <i>Note:</i> Up to 24V,1A max, low-side switch	Output
		12	DIGITAL_IN1	Input
		13	DIGITAL_OUT0 <i>Note:</i> Up to 24V,1A max, low-side switch	Output
14	DIGITAL_IN0	Input		

3.3.8 High Speed Expansion Connector


Function	Description			
Connector Type	QSH-040-01-L-D-DP-A from Samtec (It is ideal for high-speed differential signals and supports up to 25 Gbps data transmission)			
Mating connector	DF11-16DS-2C			
Pinout	Pin	Description	Pin	Description
	1	PCIE0.TX0_N	41	PCIE1.TX0_N
	2	PCIE0.RX0_N	42	PCIE1.RX0_N
	3	PCIE0.TX0_P	43	PCIE1.TX0_P
	4	PCIE0.RX0_P	44	PCIE1.RX0_P
	5	PCIE0.TX1_N	45	PCIE1.RST_N
	6	PCIE0.RX1_N	46	PCIE1.CLK_N
	7	PCIE0.TX1_P	47	PCIE1.CLKREQ_N
	8	PCIE0.RX1_P	48	PCIE1.CLK_P
	9	PCIE0.TX2_N	49	DP.AUX_N
	10	PCIE0.RX2_N	50	DP.TXD0_N
	11	PCIE0.TX2_P	51	DP.AUX_P
	12	PCIE0.RX2_P	52	DP.TXD0_P
	13	PCIE0.TX3_N	53	DP.TXD1_N
	14	PCIE0.RX3_N	54	DP.TXD2_N
	15	PCIE0.TX3_P	55	DP.TXD1_P
	16	PCIE0.RX3_P	56	DP.TXD2_P
	17	PCIE0.TX4_N	57	DP.TXD3_N
	18	PCIE0.RX4_N	58	DP.HPD
	19	PCIE0.TX4_P	59	DP.TXD3_P
	20	PCIE0.RX4_P	60	SPI.MISO
	21	PCIE0.TX5_N	61	PCIE.WAKE_N
	22	PCIE0.RX5_N	62	SPI.CS1
	23	PCIE0.TX5_P	63	NC
	24	PCIE0.RX5_P	64	SPI.MOSI
	25	PCIE0.TX6_N	65	UART1.CTS
	26	PCIE0.RX6_N	66	SPI.CS0
	27	PCIE0.TX6_P	67	UART1.RTS
	28	PCIE0.RX6_P	68	SPI.CLK
	29	PCIE0.TX7_N	69	UART1.TX
	30	PCIE0.RX7_N	70	1.8V
	31	PCIE0.TX7_P	71	UART1.RX
	32	PCIE0.RX7_P	72	3.3V
	33	PCIE0.RST_N	73	5V
	34	PCIE0.CLK_N	74	5V
	35	PCIE0.CLKREQ_N	75	5V
	36	PCIE0.CLK_P	76	5V
	37	CAN.DOUT	77	5V
	38	I2C.SCL	78	5V
	39	CAN_DIN	79	5V
	40	I2C.SDA	80	5V




3.3.9 HDMI Connector

	<table border="1"> <thead> <tr> <th data-bbox="536 250 1327 300">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 300 1327 456"> The NVIDIA® Jetson AGX Xavier™ or Jetson AGX Xavier™ Industrial module will output video via the DSBOARD-XV2 vertical HDMI connector that is HDMI 2.0 capable. </td> </tr> </tbody> </table>	Description	The NVIDIA® Jetson AGX Xavier™ or Jetson AGX Xavier™ Industrial module will output video via the DSBOARD-XV2 vertical HDMI connector that is HDMI 2.0 capable.
Description			
The NVIDIA® Jetson AGX Xavier™ or Jetson AGX Xavier™ Industrial module will output video via the DSBOARD-XV2 vertical HDMI connector that is HDMI 2.0 capable.			


3.3.10 USB 3.1 Type-A Connector

	<table border="1"> <thead> <tr> <th data-bbox="536 557 1327 607">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 607 1327 703"> The DSBOARD-XV2 incorporates 2 USB 3.1 Type-A connectors with a 2A current limit per connector. </td> </tr> </tbody> </table>	Description	The DSBOARD-XV2 incorporates 2 USB 3.1 Type-A connectors with a 2A current limit per connector.
Description			
The DSBOARD-XV2 incorporates 2 USB 3.1 Type-A connectors with a 2A current limit per connector.			


3.3.11 10/100/1000 Ethernet Connector

	<table border="1"> <thead> <tr> <th data-bbox="536 808 1327 857">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 857 1327 978"> The DSBOARD-XV2 implements RJ-45 ethernet connector for internet communication. RJ-45 connector is connected directly to the NVIDIA Jetson module. </td> </tr> </tbody> </table>	Description	The DSBOARD-XV2 implements RJ-45 ethernet connector for internet communication. RJ-45 connector is connected directly to the NVIDIA Jetson module.
Description			
The DSBOARD-XV2 implements RJ-45 ethernet connector for internet communication. RJ-45 connector is connected directly to the NVIDIA Jetson module.			

3.3.12 Recovery Mode Type-C USB Connector


	<table border="1"> <thead> <tr> <th data-bbox="536 1086 1327 1135">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 1135 1327 1225"> The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection. </td> </tr> </tbody> </table>	Description	The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection.
Description			
The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection.			

3.3.13 Debug Mode Type-C USB Connector

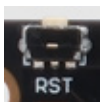
	<table border="1"> <thead> <tr> <th data-bbox="536 1326 1327 1375">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 1375 1327 1478"> The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection. It is located on the bottom side of the board. </td> </tr> </tbody> </table>	Description	The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection. It is located on the bottom side of the board.
Description			
The DSBOARD-XV2 implements a Type-C USB connector to access the module by using serial connection. It is located on the bottom side of the board.			

3.4 The Definition of Buttons

3.4.1 Recovery Pushbutton

	<table border="1"> <thead> <tr> <th data-bbox="536 1657 1327 1706">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 1706 1327 1845"> The DSBOARD-XV2 implements a recovery pushbutton. 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> </tbody> </table>	Description	The DSBOARD-XV2 implements a recovery pushbutton. 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			
The DSBOARD-XV2 implements a recovery pushbutton. 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).			

3.4.2 Reset Pushbutton

	<table border="1"> <thead> <tr> <th data-bbox="536 1948 1327 1998">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="536 1998 1327 2087"> The DSBOARD-XV2 implements a reset button to reset the Jetson SoM. </td> </tr> </tbody> </table>	Description	The DSBOARD-XV2 implements a reset button to reset the Jetson SoM.
Description			
The DSBOARD-XV2 implements a reset button to reset the Jetson SoM.			

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-dsboard-xv2>

JetPack-5.x Installation can be found here: <https://www.forecr.io/blogs/installation/jetpack-5-x-installation-for-dsboard-xv2>

5. Connectivity

5.1 General Purpose Input/Output (GPIO)

MODULE PIN NUMBER	I/O NAME	MODULE PIN NAME	TYPE	DESCRIPTION
G7	RS485_CTRL	GPIO13	OUTPUT	Receiver or driver control for RS-485. Drive low to enable receiver. Drive high to enable driver.
F10	RS485/RS232	GPIO15	OUTPUT	Serial communication mode control. Drive low to enable RS-232. Drive high to enable RS-485.
F9	HALF/FULL	GPIO16	OUTPUT	Half duplex or full duplex control for RS-485 communication protocol. Drive low for full duplex communication. Drive high for half duplex communication.
A7	GPIO29_M2_KEYM_PEWAKE*	GPIO19	INPUT	M.2 Key-M PCIe wake signal.
J4	GPIO1_WIFI_DISABLE*	GPIO01	OUTPUT	WiFi/BT module full powerdown control for the WiFi/BT radio. Drive low to disable WiFi/BT. Drive high for normal operation
L6	GPIO2_SD_DET	GPIO02	INPUT	SD Card Detect
A55	GPIO34_M2_KEYM_ALERT*	GPIO34	OUTPUT	Alert signal from KEY-M.
B55	GPIO30_M2_E_ALERT_R*	GPIO30	INPUT	Alert signal from KEY-E.
E54	FAN_TACH	FAN_TACH	INPUT	Fan Tachometer signal
K62	FAN_PWM	FAN_PWM	OUTPUT	Fan Pulse Width Modulation signal.
F55	BT_WAKE_AP	SPI3_CLK	INPUT	Wake up signal for Bluetooth radio.
F54	GPIO22_USB_VBUS_EN0	GPIO22	OUTPUT	Bus voltage enable for USB Load switches.
H51	GPIO26_BT_RST_M2*	GPIO26	OUTPUT	BT radio disable signal. Drive low to disable BT.
A8	PEX_WAKE_N	PEX_WAKE_N	INPUT	Wake signal shared by all PCIe interfaces.

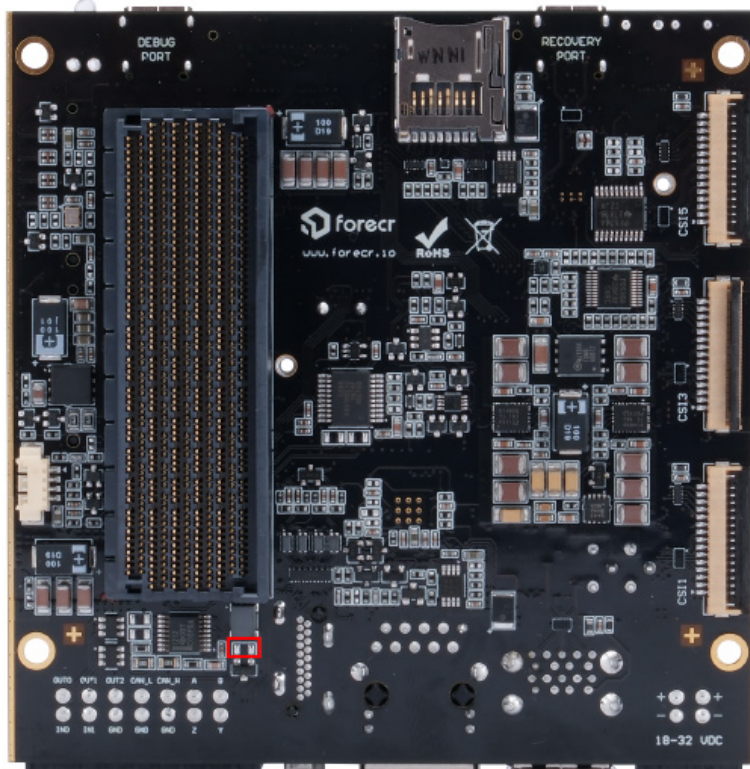
5.2 I/O Connector

On the connector, there are 3 digital output, 2 digital input, 4 serial communication, 3 ground and 2 CANBus pins.

5.2.1 CANBus Interface

There is a single CAN Bus interface on the DSBOARD-XV2. MAX3051 transceiver is used between native CAN pins of the Jetson and connector. There is a 0805 size 120R termination resistor between CAN_H and CAN_L pins on the board, which is not populated by default. A standard resistor with above specs can be fitted if termination resistor is needed on the DSBOARD-XV2 side.

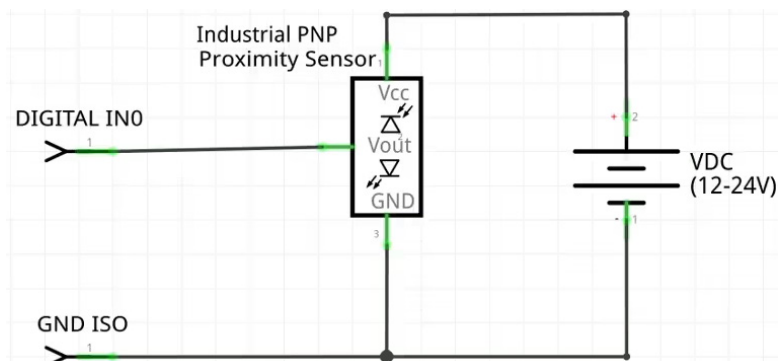
CANBus Termination Resistor



5.2.2 Industrial Input Output Interface

5.2.2.1 Setting and Reading Input Pin

Digital input side accepts signals between 12-24V (rated for 2.25mA). In our application, we used [Heschen M12 Inductive Proximity Sensor \(PNP & Normally Open\(NO\)\)](#) with 24V voltage source.



Find sysfs equivalent of the connected output pin from the table below. For this setup, it is DIGITAL_IN0. After proper hardware connection with industrial LED, we can continue with the software side.

Pin Name	Sysfs Name	
	JetPack-4.x	JetPack-5.x
DIGITAL_IN0	gpio-240	gpio-297
DIGITAL_IN1	gpio-241	gpio-298
GROUND	GND ISO	

For JetPack-4.x

Set DIGITAL_IN0 as input and read sensor value. To do this, you should use the commands below.

```
sudo sh -c "echo 240 > /sys/class/gpio/export"
sudo sh -c "echo in > /sys/class/gpio/gpio240/direction"
sudo sh -c "cat /sys/class/gpio/gpio240/value"
```

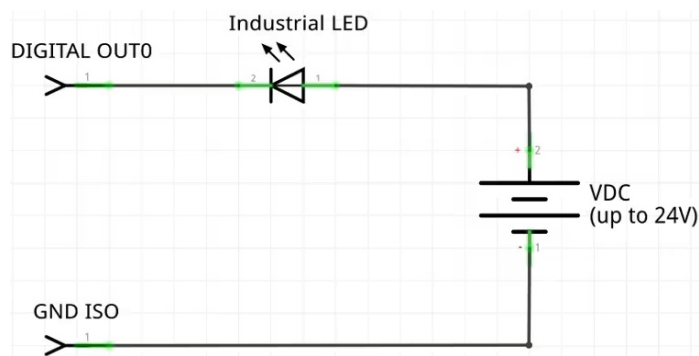
For JetPack-5.x

Set DIGITAL_IN0 as input and read sensor value. To do this, you should use the commands below.

```
sudo sh -c "echo 297 > /sys/class/gpio/export"
sudo sh -c "echo in > /sys/class/gpio/gpio297/direction"
sudo sh -c "cat /sys/class/gpio/gpio297/value"
```

5.2.2.2 Setting Digital Output as High and Low

Digital output side can drive loads up to 24V and has a current limit of 1A. They work as low side switches, open-close between them and GND_ISO. So, you should have a circuitry as in the schematic below. In our application, we used [GASHER 24V Indicator Light](#) with 24V voltage source.



Find sysfs equivalent of the connected output pin from the table below. For this setup, it is DIGITAL_OUT0. After proper hardware connection with industrial LED, we can continue with the software side.

Pin Name	Sysfs Name	
	JetPack-4.x	JetPack-5.x
DIGITAL_OUT0	gpio-244	gpio-301
DIGITAL_OUT1	gpio-245	gpio-302
DIGITAL_OUT2	gpio-246	gpio-303
GROUND	GND ISO	

For JetPack-4.x

Then, set DIGITAL_OUT0 as output and control light state. To do this, you should use the commands below.

```
sudo sh -c "echo 244 > /sys/class/gpio/export"  
sudo sh -c "echo out > /sys/class/gpio/gpio244/direction"
```

To short output:

```
sudo sh -c "echo 1 > /sys/class/gpio/gpio244/value"
```

To open output:

```
sudo sh -c "echo 0 > /sys/class/gpio/gpio244/value"
```

For Jetpack-5.x

Then, set DIGITAL_OUT0 as output and control light state. To do this, you should use the commands below.

```
sudo sh -c "echo 301 > /sys/class/gpio/export"  
sudo sh -c "echo out > /sys/class/gpio/gpio301/direction"
```

To short output:

```
sudo sh -c "echo 1 > /sys/class/gpio/gpio301/value"
```

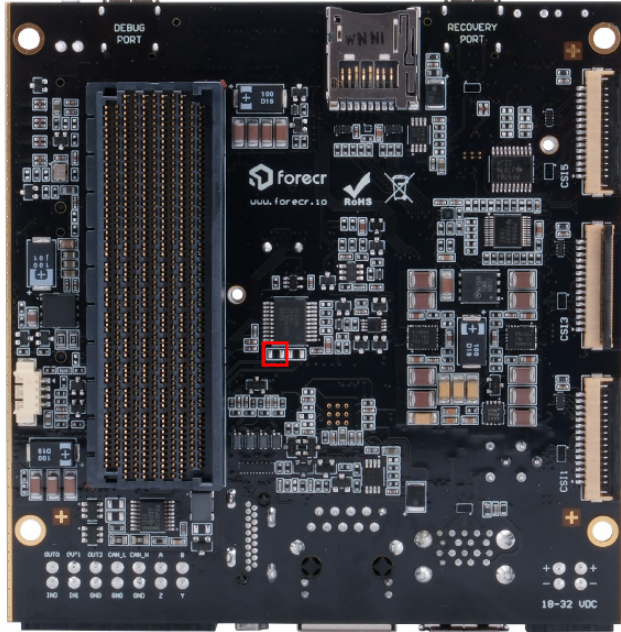
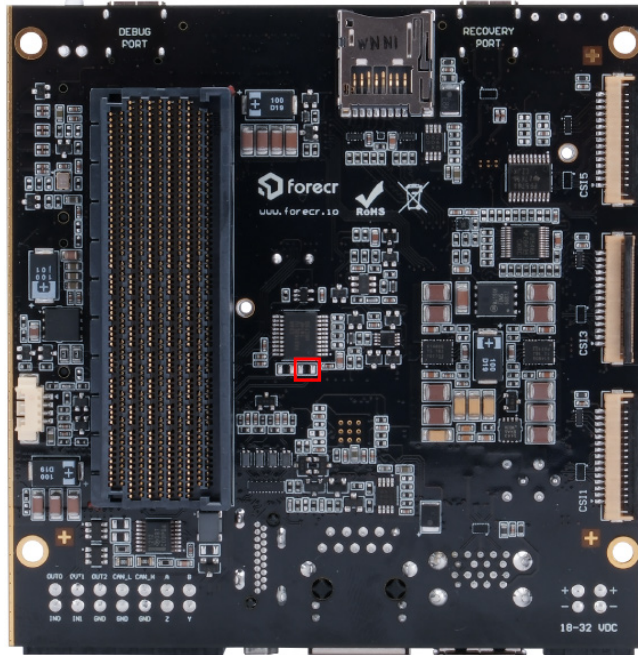
To open output:

```
sudo sh -c "echo 0 > /sys/class/gpio/gpio301/value"
```

5.2.3 Serial Communication Interface

5.2.3.1 RS232/422/485

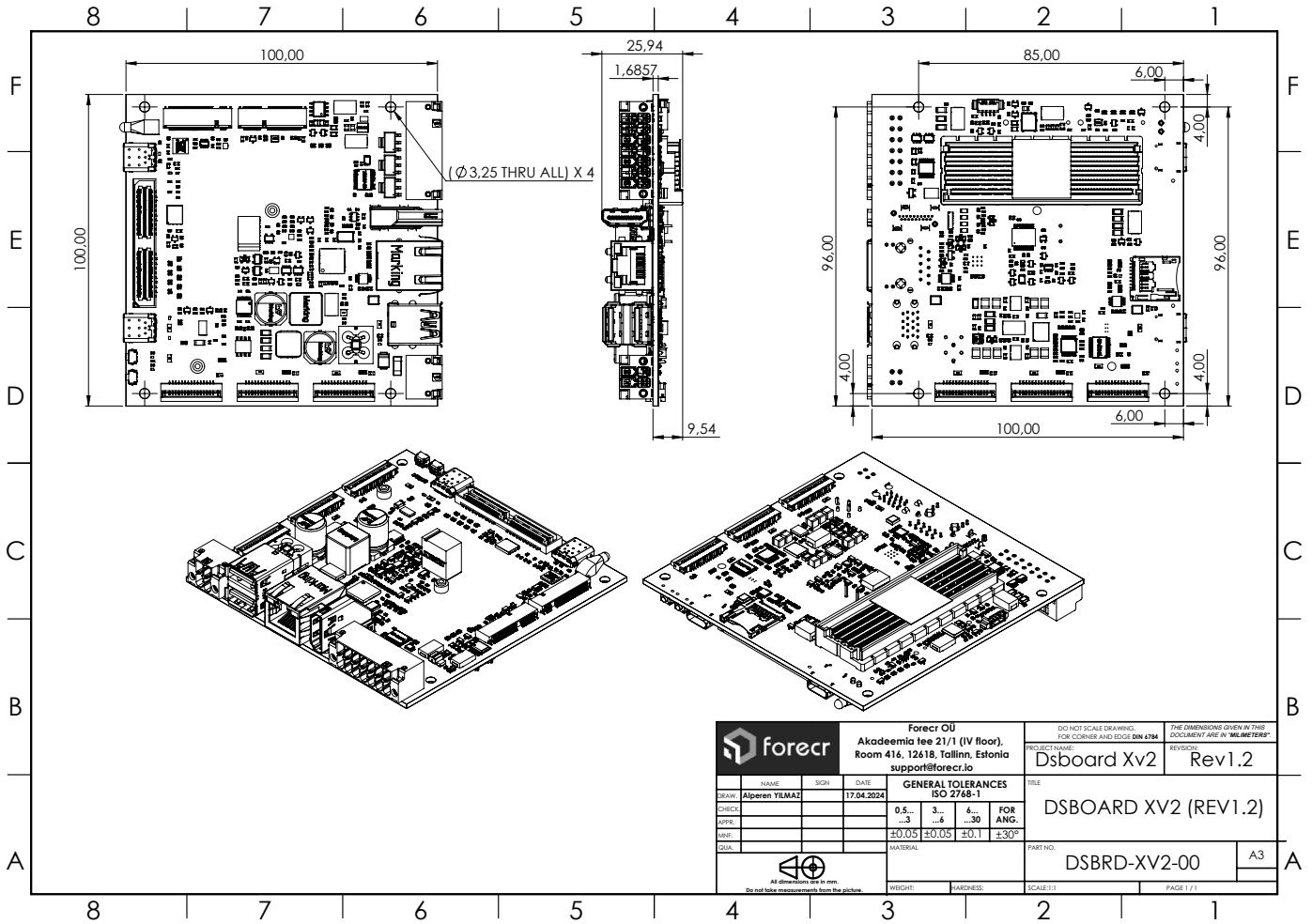
There are two 0805 size 120R termination resistors, one between transmit lanes and one between receive lanes. These are not populated by default. In case termination resistors are needed on the DSBOARD-XV2 side, standard resistors with above specs can be fitted.

RS422 RX (A/B) Termination Resistor

RS422 TX (Z/Y) / RS485 Termination Resistor


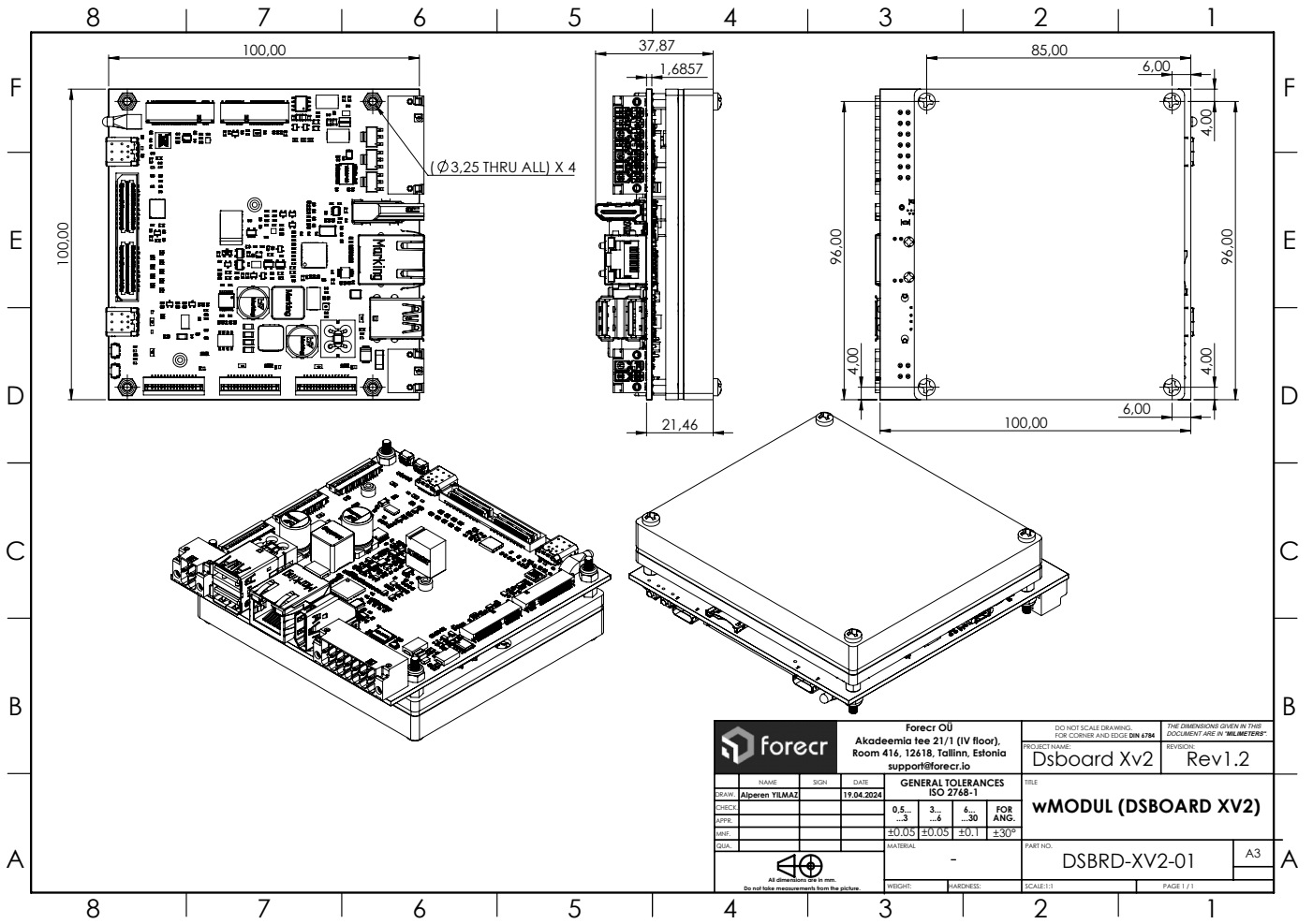
6. 3D Model & Mechanical Information

Full 3D models of all DSBOARD-XV2 Carrier Board can be found here: https://github.com/forecr/forecr_3d_models/tree/master/DSBOARD-XV2

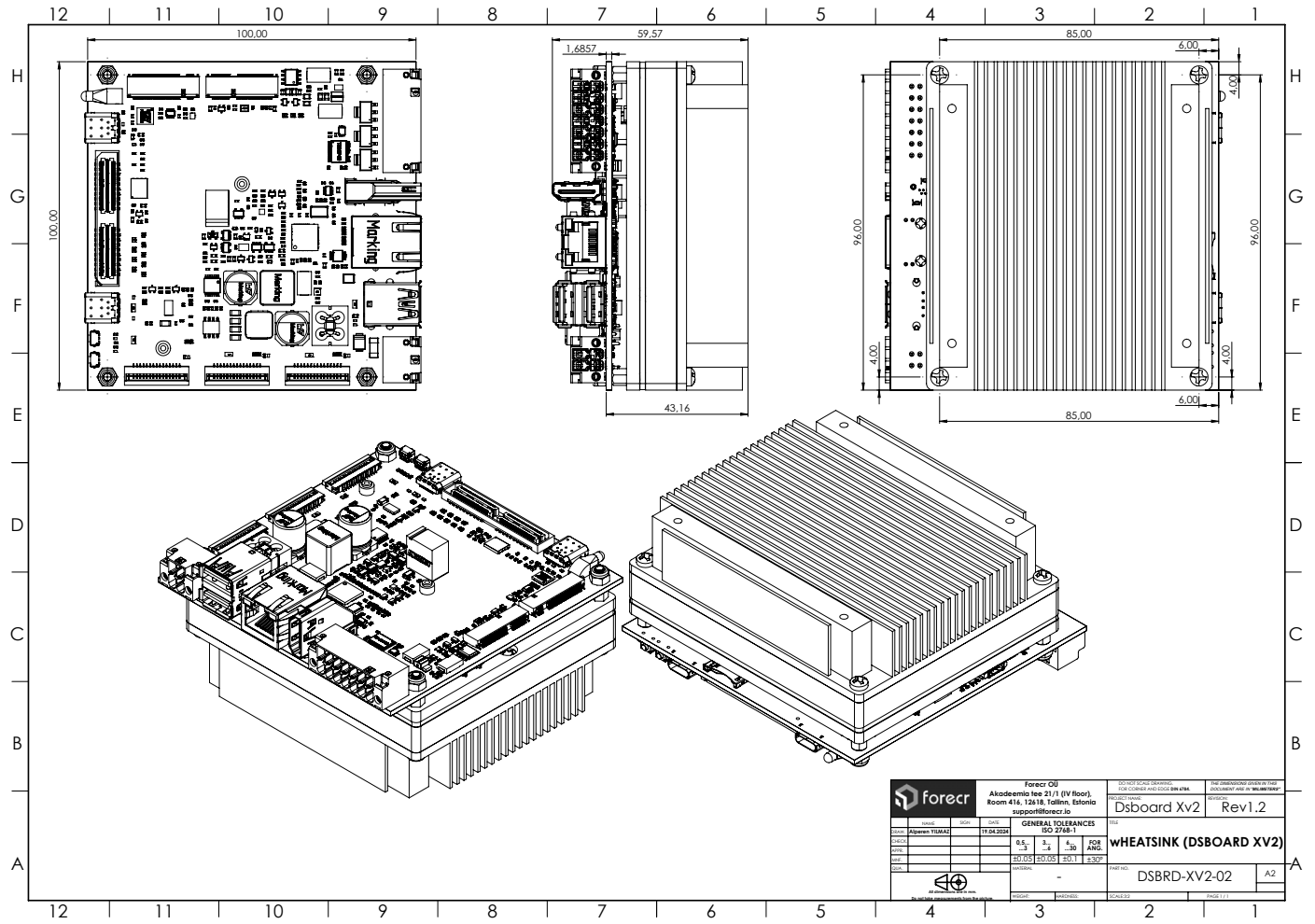
DSBOARD-XV2 Stand Alone



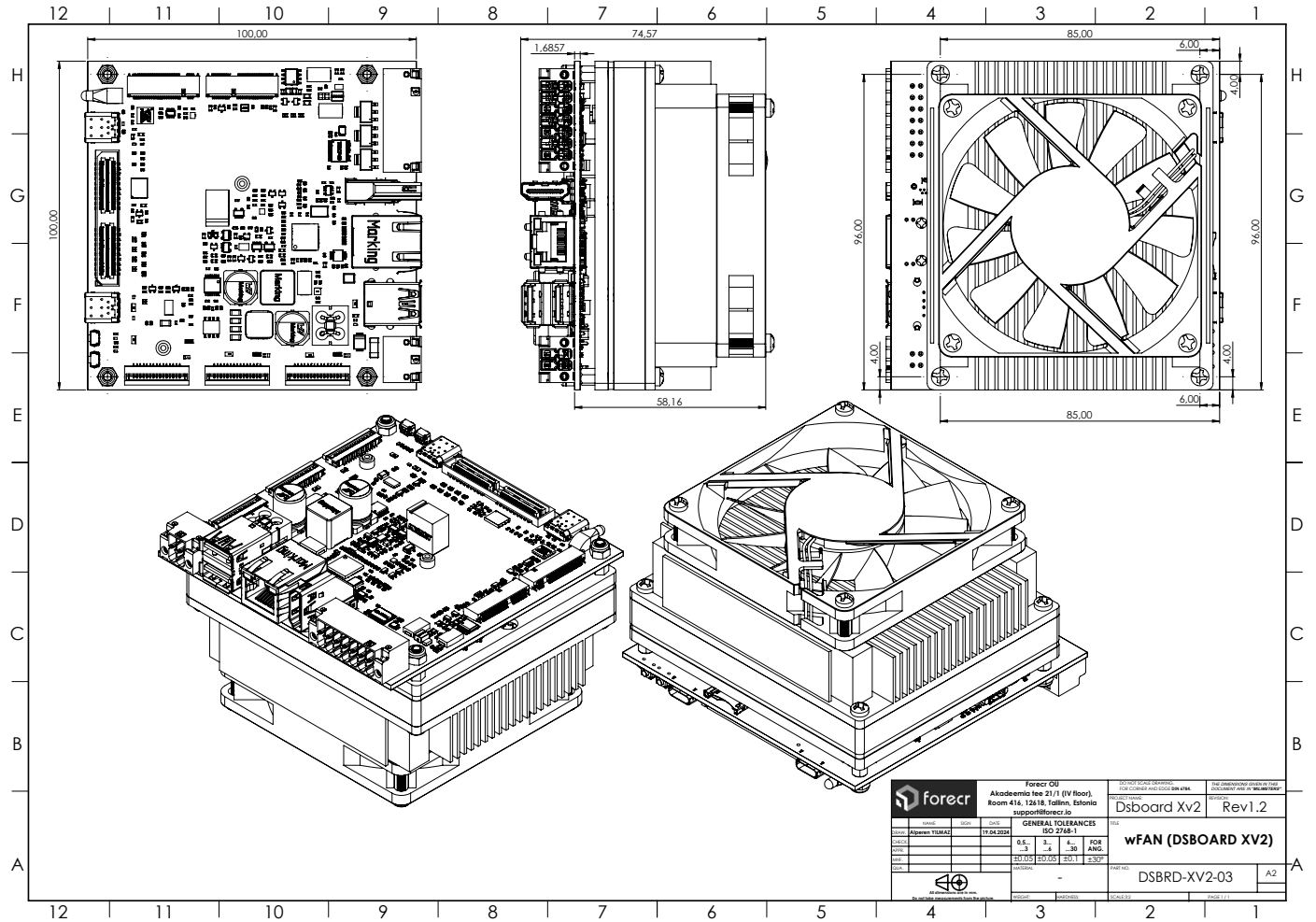
DSBOARD-XV2 with Jetson AGX Xavier Module



DSBOARD-XV2 with Jetson AGX Xavier Module and Heatsink Integration Details



DSBOARD-XV2 with Jetson AGX Xavier Module, Heatsink and Thermal Integration Details



7. Power Consumption

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.