



Connect Tech Inc.
Embedded Computing Experts

USERS GUIDE



Rogue-RX Carrier for NVIDIA® Jetson AGX Orin™

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PREFACE

Disclaimer

The information contained within this user's guide, including but not limited to any product specification, is subject to change without notice.

Connect Tech assumes no liability for any damages incurred directly or indirectly from any technical or typographical errors or omissions contained herein or for discrepancies between the product and the user's guide.

Customer Support Overview

If you experience difficulties after reading the manual and/or using the product, contact the Connect Tech reseller from which you purchased the product. In most cases the reseller can help you with product installation and difficulties.

In the event that the reseller is unable to resolve your problem, our highly qualified support staff can assist you. Our support section is available 24 hours a day, 7 days a week on our website at: <https://connecttech.com/support/resource-center/>. See the contact information section below for more information on how to contact us directly. Our technical support is always free.

Contact Information

Contact Information	
Mail/Courier	Connect Tech Inc. Technical Support 489 Clair Rd. W. Guelph, Ontario Canada N1L 0H7
Contact Information	sales@connecttech.com support@connecttech.com www.connecttech.com/ Toll Free: 800-426-8979 (North America only) Telephone: +1-519-836-1291 Facsimile: 519-836-4878 (on-line 24 hours)
Support	Please go to the Connect Tech Resource Center for product manuals, installation guides, device drivers, BSPs and technical tips. Submit your technical support questions to our support engineers. Technical Support representatives are available Monday through Friday, from 8:30 a.m. to 5:00 p.m. Eastern Standard Time.



Limited Product Warranty

Connect Tech Inc. provides a one-year Warranty for this product. Should this product, in Connect Tech Inc.'s opinion, fail to be in good working order during the warranty period, Connect Tech Inc. will, at its option, repair or replace this product at no charge, provided that the product has not been subjected to abuse, misuse, accident, disaster or non-Connect Tech Inc. authorized modification or repair.

You may obtain warranty service by delivering this product to an authorized Connect Tech Inc. business partner or to Connect Tech Inc. along with proof of purchase. Product returned to Connect Tech Inc. must be pre-authorized by Connect Tech Inc. with an RMA (Return Material Authorization) number marked on the outside of the package and sent prepaid, insured and packaged for safe shipment. Connect Tech Inc. will return this product by prepaid ground shipment service.

The Connect Tech Inc. Limited Warranty is only valid over the serviceable life of the product. This is defined as the period during which all components are available. Should the product prove to be irreparable, Connect Tech Inc. reserves the right to substitute an equivalent product if available or to retract the Warranty if no replacement is available.

The above warranty is the only warranty authorized by Connect Tech Inc. Under no circumstances will Connect Tech Inc. be liable in any way for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, such product.

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ESD Warning



Electronic components and circuits are sensitive to ElectroStatic Discharge (ESD). When handling any circuit board assemblies including Connect Tech COM Express carrier assemblies, it is recommended that ESD safety precautions be observed. ESD safe best practices include, but are not limited to:

- Leaving circuit boards in their antistatic packaging until they are ready to be installed.
- Using a grounded wrist strap when handling circuit boards, at a minimum you should touch a grounded metal object to dissipate any static charge that may be present on you.
- Only handling circuit boards in ESD safe areas, which may include ESD floor and table mats, wrist strap stations and ESD safe lab coats.
- Avoiding handling circuit boards in carpeted areas.
- Try to handle the board by the edges, avoiding contact with components.

REVISION HISTORY

Revision	Date	Changes
0.00	2023-11-10	Initial Release
0.01	2024-04-24	Added USB 3 cable length 12 inch and POE note
0.02	2024-06-03	Corrected pinout for P2

INTRODUCTION

Connect Tech's Rogue-RX for AGX Orin™ (AGX203) is a full featured NVIDIA® Jetson AGX Orin™ module carrier board. This carrier board for AGX Orin™ is specifically designed for commercially deployable platforms, and has an extremely small footprint of 92mm x 107mm.

Rogue-RX for AGX Orin™ provides access to an impressive list of latest generation interfaces on the AGX Orin™ while adding additional interfaces of 3x USB 3.2, 2x 10GbE, 1x HDMI and a locking Mini-Fit Jr. input power connector.

Rugged camera add-on expansion boards will also be available for use with the Rogue-RX for AGX Orin™ to interface directly with the AGX Orin™ high density MIPI CSI interfaces.



FEATURES AND SPECIFICATIONS

Specifications	
	Rogue-RX for AGX Orin™ (AGX203)
NVIDIA® GPU SoC Module Compatibility	Jetson AGX Orin Industrial Jetson AGX Orin 64GB Jetson AGX Orin 32GB
Networking	2x 10GBASE-T Ethernet Ports - IX/IP20 Rugged Industrial Ethernet connector
Display Output	1x HDMI (Supports up to HDMI 2.0) with ARF6 High-speed Rugged Latching connector
Camera Input	6x Two lane MIPI CSI-2 or 4x four lane MIPI CSI-2 using a 120 pin (dev kit compatible) QSH expansion connection
USB	3x USB 3.2 Gen2 Ports (10Gbps) - 2x Ports via ARF6 High-speed Rugged Latching connector - 1x Ports with OTG via Type-C Connector
Storage	2x NVMe M.2 Key M 1x Micro SD Slot
UART	2x 3.3V Level UARTs on GPIO Connector 1x Micro USB Debug UART
I2C/SPI	1x 3.3V I2C on GPIO Connector 1x 3.3V SPI on GPIO Connector
CAN Bus	2x CAN 2.0b Port (Non-Isolated)
GPIO	4x 3.3V GPIOs on GPIO Connector (1x PWM)
User Expansion	1x M.2 Key E Slot with PCIe & USB2 (Wi-Fi + BT Modules)
Input Power	+12VDC Input Only (4 pin Mini-fit Jr Connector)
PCB Mechanical Information	92mm x 107mm
Weight	143g (Includes PHY heatsink)
Operating Temperature (Carrier Board Only)	-40°C to +85°C (-40°F to +185°F)



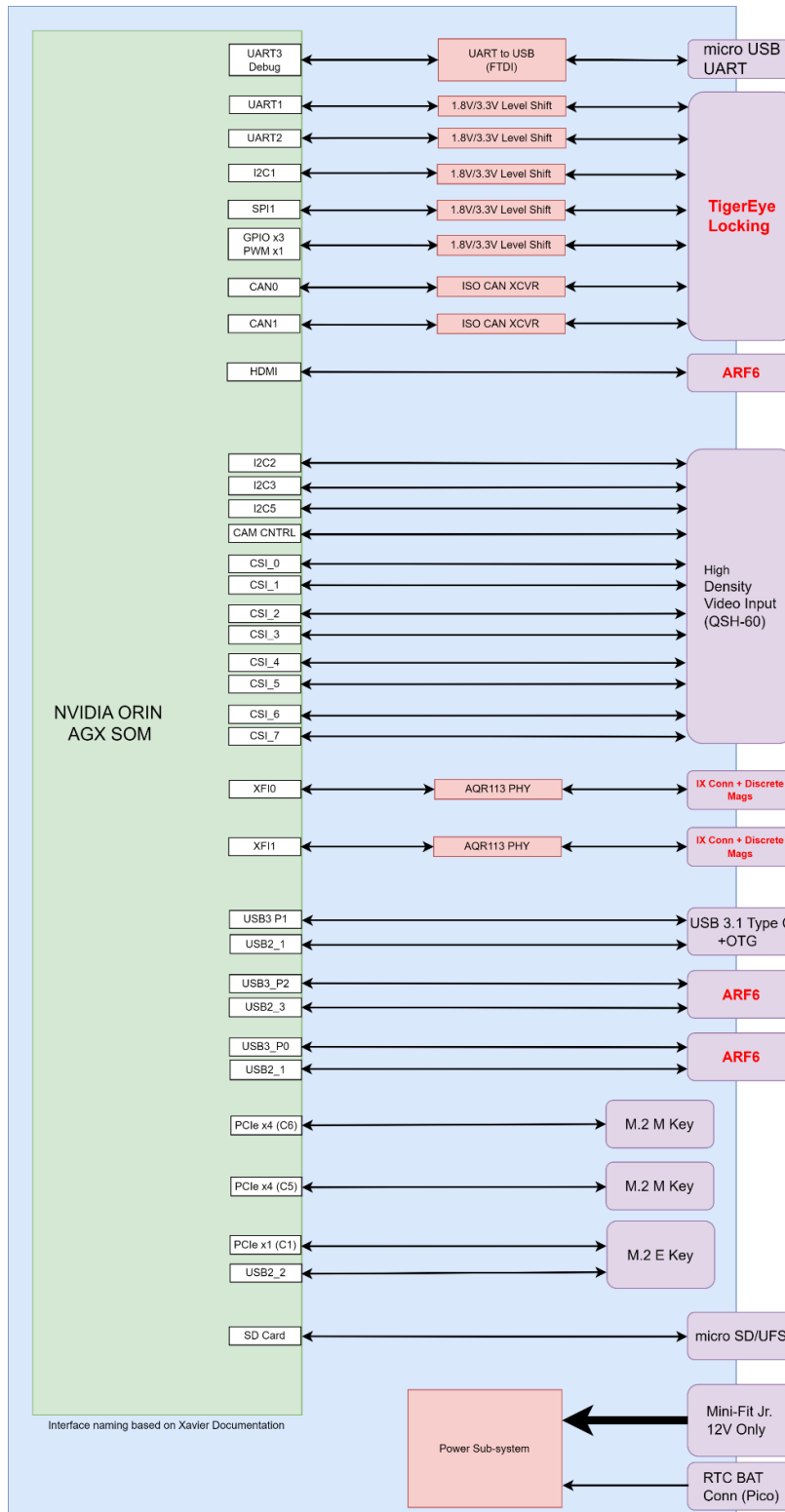
PART NUMBERS / ORDERING INFORMATION

Part Number	Description
AGX203	Rogue-RX Carrier Board Only
AGX203-###	Rogue-RX Integrated Board-Stack Part Numbers The Rogue-RX can be shipped pre-integrated with Industrial/64/32GB AGX Orin Modules, WiFi/BT modules, NVMe Modules, Camera Add-on Modules (GMSL, FPD-Link, MIPI, SDI, HDMI Inputs) Please contact sales@connecttech.com for all configuration options.
XBG026	Rugged IP67 USB Type C Connector Breakout Board
XBG027	Rugged IP67 HDMI Connector Breakout Board
CBG691	Rugged High-speed Samtec ARC6 12" Length Cable (For use with USB and HDMI breakout boards)
CBG695	Rugged IX to RJ45 1.5m Length Ethernet cable
CBG701	MISC IO + CAN Breakout Cable (Flying Leads)
CBG310	USB Type-C Male to Type-A Female Cable
CBG311	USB Type-C Male to Type-A Male Cable
CBG247	USB Micro-B Male to Type-A Male cable (UART Coms)
CBG136	RTC Battery Cable Assembly
CBG314	Input Power Cable (Discrete Wire) – Included with every AGX203 Carrier
MSG098	PSU AC/DC 12V 200W w/ 4-pin Molex Mini-Fit Jr. Plug (Suggested for lab bench use. Confirm PSU derating meets application requirements)



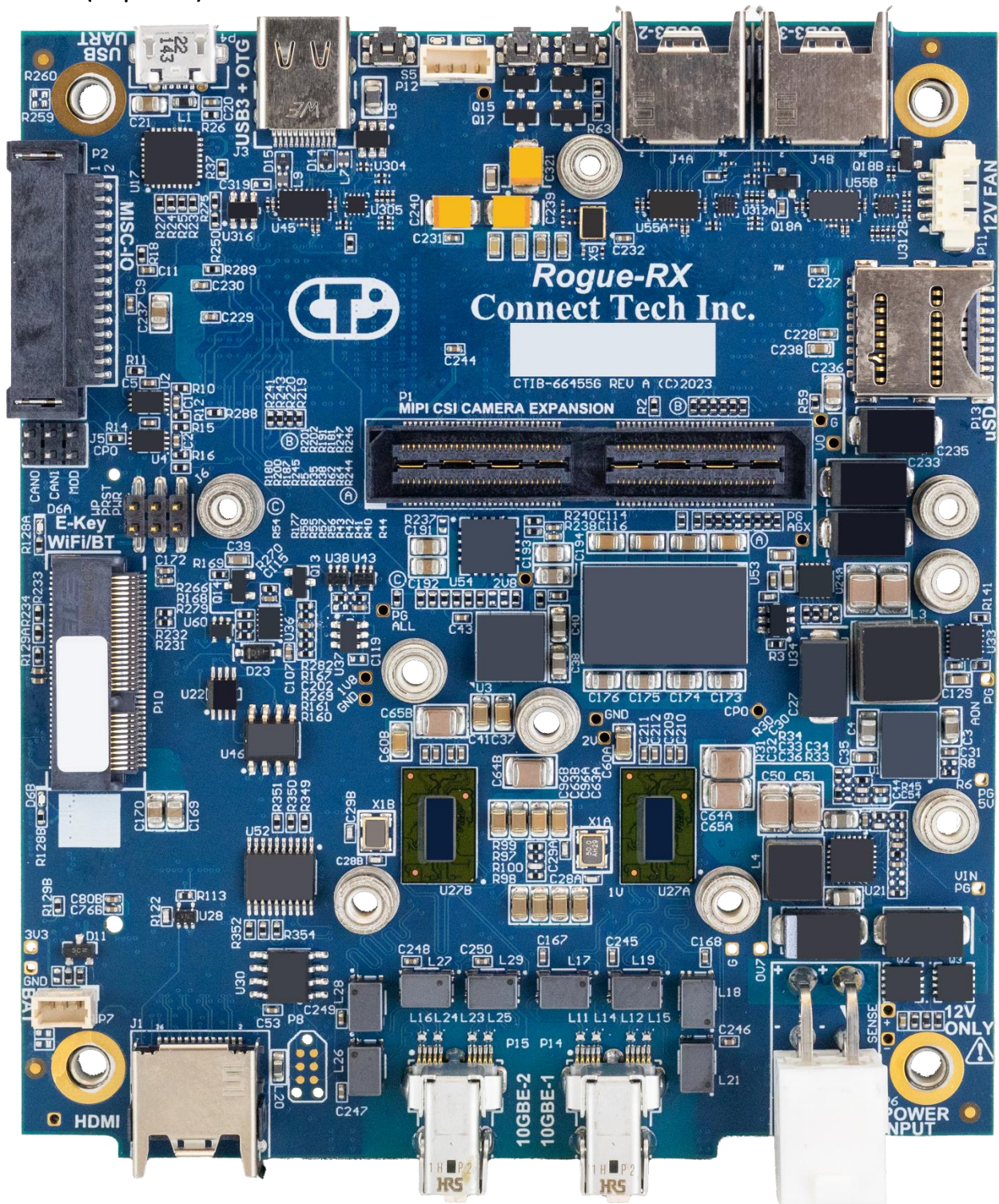
PRODUCT OVERVIEW

Block Diagram



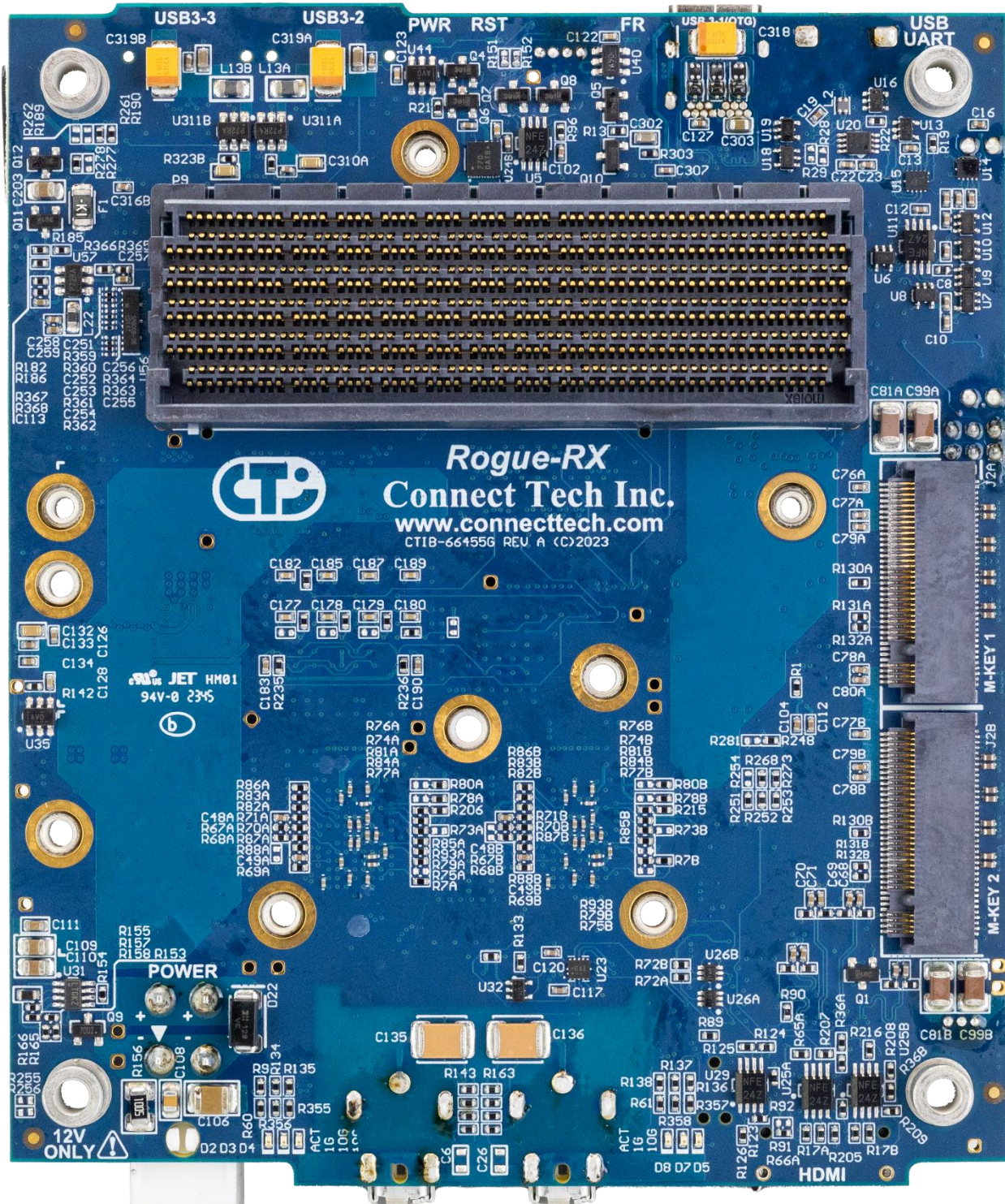


Board (Top Side)





Board (Back Side)





Connector Summary & Locations

Designator	Description
P9	Jetson AGX Orin™ connector
J2A, J2B	M.2 M-Key (NVMe) connector
P4	USB UART Debug Console connector
J3	USB 3.2 Gen2 Port with OTG Type-C Connector
J4A, J4B	USB 3.2 Gen2 Ports with ARF6 High-speed Rugged Latching Connectors
P2	MISC I/O connector + CAN Bus Connector
P1	MIPI Camera Expansion connector
P10	M.2 E-Key connector
P11	12V Fan connector
P12	External Switch Access connector
P13	Micro SD
J1	HDMI Display output with ARF6 High-speed Rugged Latching Connector
P14, P15	10GbE IX connector or IP20 Industrial Ethernet connector
P6	Input Power connector
P7	RTC Battery connector

Jumper Summary & Locations

Designator	Description
J6	Power Option control jumper
J5	CAN Bus Termination control jumper
J5	Power ON momentary jumper
J6	Force Recovery momentary jumper
J6	Reset momentary jumper

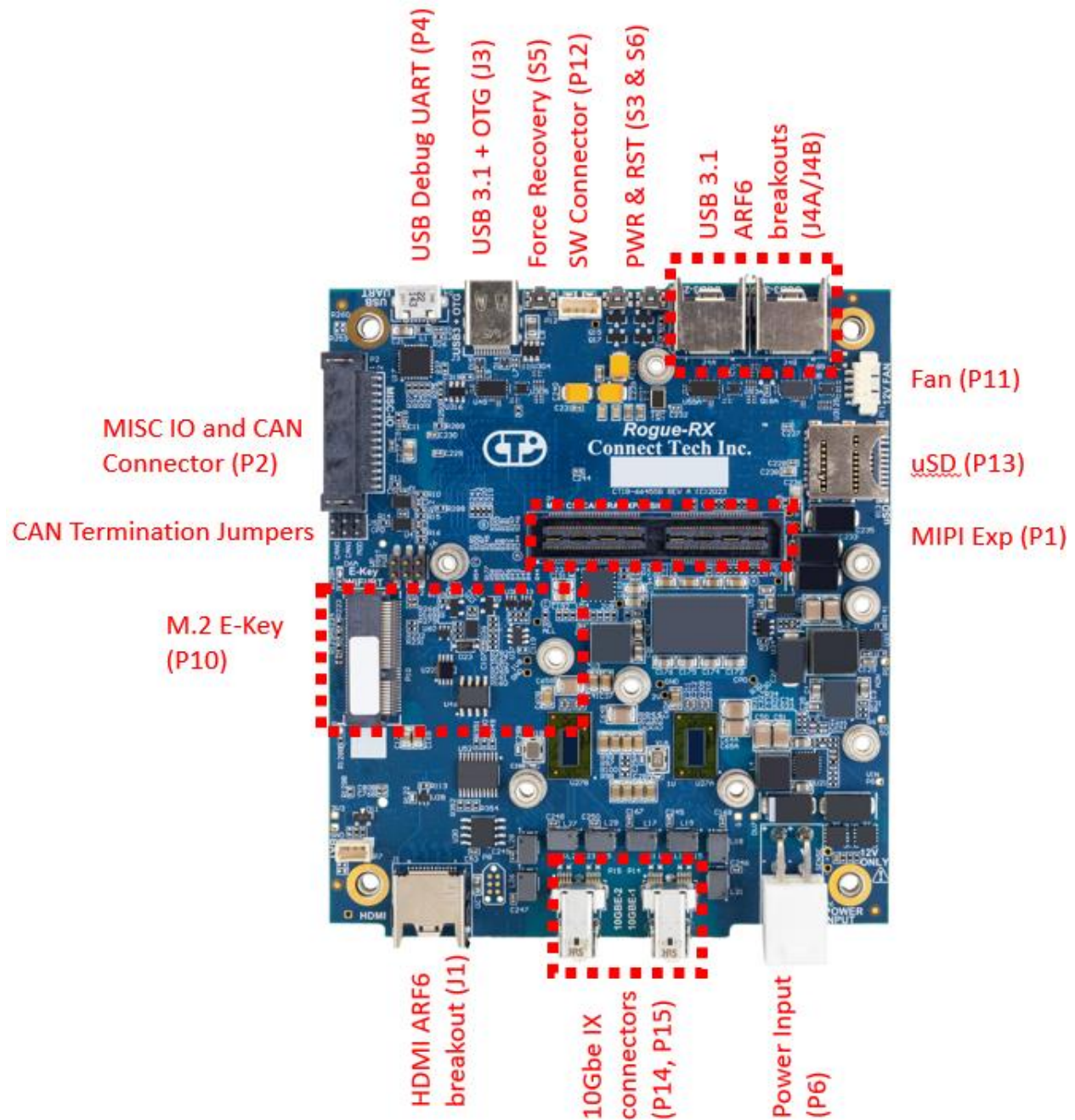
LED Summary

Designator	Description
D6A	M.2 connector (J2A) activity
D6B	M.2 connector (J2B) activity
D9	Input Power is good
D10	System Power is good and system is powering on (booting up). In manual power on mode (via dip switch), this light will power on only after the power button has been pushed. Since the typical default mode is auto power on, the light will come on as on the system starts to boot.

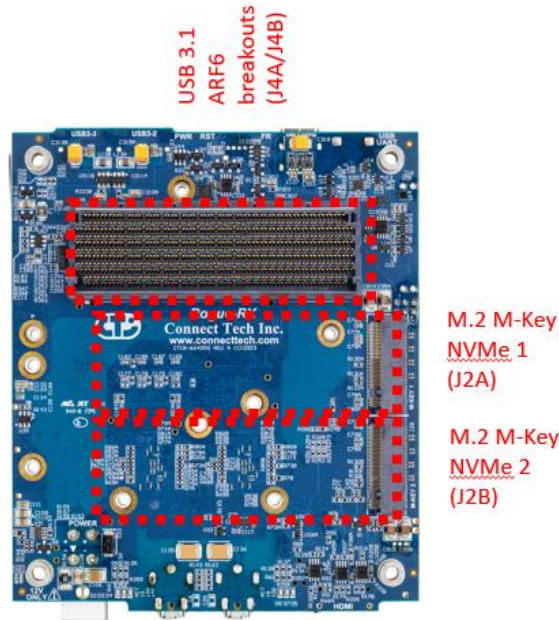


DETAILED ROGUE-RX FEATURE DESCRIPTION

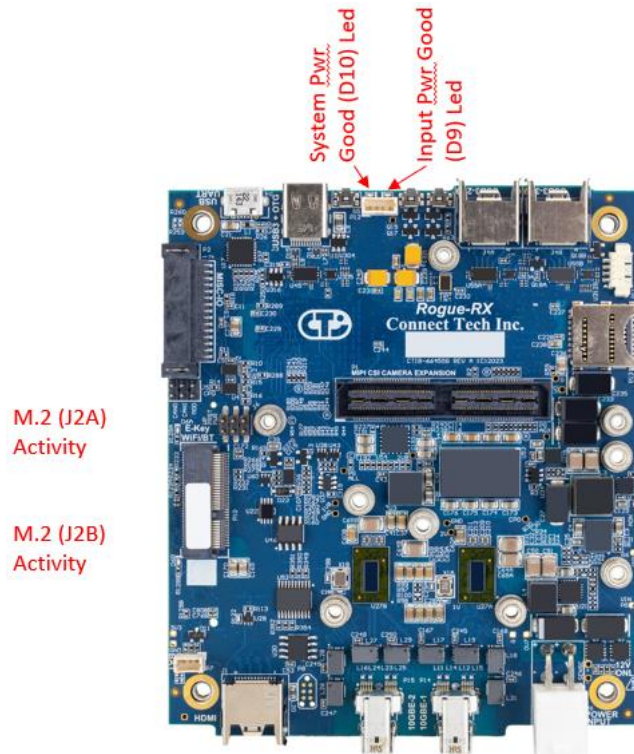
Connector and Switch Locations - Connector Side



Connector and Switch Locations - Module Side

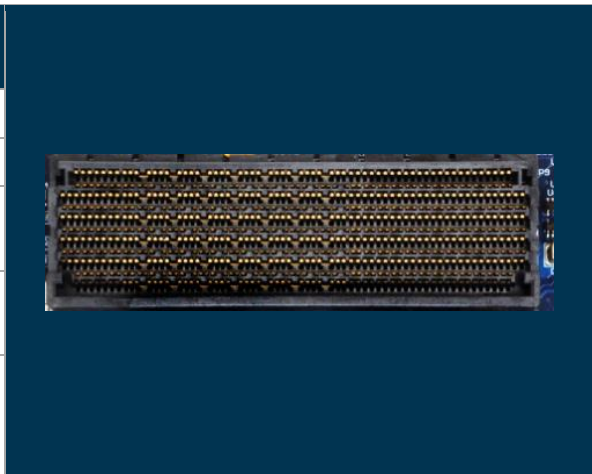


LED Locations



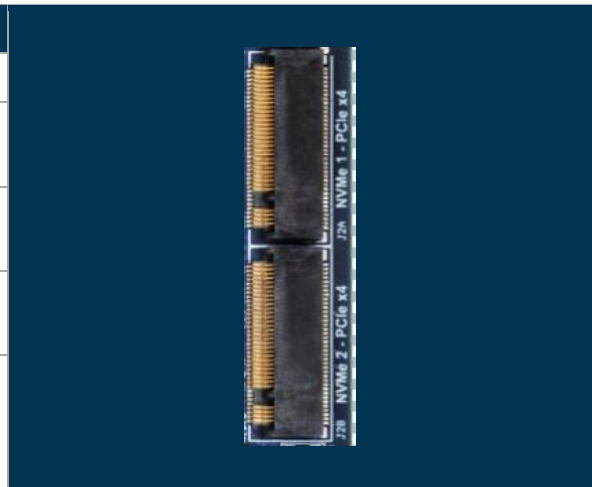
Jetson AGX Orin™ Board-to-Board Carrier Connector

Function	NVIDIA® Jetson AGX Orin™ Module Interface
Location	P9
Type	Molex Mirror Mezz™ Connector
Connector	Part Number: 203456-0003 Manufacturer: Molex
Mating Connector	Same as above.
Pinout	Refer to NVIDIA® Jetson AGX Orin™ System-on-Module datasheet and OEM design guide for pinout details



M.2 M-Key – NVMe

Function	NVMe Storage (x2 PCIe Gen 4)
Location	J2A, J2B
Type	2280 M.2 M-key 3.2mm mating height with M3 mounting standoff.
Connector	Part Number: 1-2199119-5 Manufacturer: TE
Mating Connector	N/A
Pinout	M.2 Specification M-Key pin assignment.
Notes	Interface is x4 PCIe Gen 4. SATA is not supported. PCIe based devices only.



Jumper Block J5 (CAN TERM and CARRIER POWER MODE)

Function	Enable CAN Bus termination on CAN1 and CAN2			
Location	J5			
Type	2mm Jumper 2x3			
Default	CAN Termination = OFF Power Mode = Auto			
Pinout	PIN	Description	Installed	Omitted
	J5A	CAN Bus 1 TERM Enable	120 ohm	No TERM
	J5B	CAN Bus 2 TERM Enable	120 ohm	No TERM
	J5C	Auto or Manual Power On (PWR MODE)	Manual Power On	Auto Power On
Notes	Auto Power ON Mode behavior 1) Upon applying power the system boots immediately. 2) Upon requesting a Software shutdown from the OS, the system will reboot after the shutdown completes without cycling power. 3) Upon a Power Button Event (> 500 ms but < 10 secs) the system OS will prompt with the Restart/Shutdown pop-up menu (only applicable in the GUI). 4) Upon a Power Button Event (> 10 secs) the system OS will prompt with the Restart/Shutdown menu (only applicable in the GUI). Note that the system will NOT shutdown. Manual Power ON Mode behavior 1) Upon applying power the system will sit in standby, awaiting a (> 500ms) Power Button Event. 2) Upon requesting a Software shutdown from the OS, the system will return to standby and await a new Power Button Event (> 500ms). 3) Upon a Power Button Event while operating (> 500 ms but < 10 secs) the system OS will prompt with the Restart/Shutdown menu (only applicable in the GUI). 4) Upon a Power Button Event while operating (> 10 secs) the system will perform a hard shutdown immediately and return to the Power On standby state awaiting a new Power Button Event.			



USB UART Debug console – Micro USB-AB

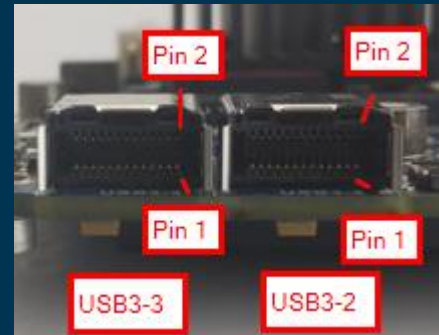
Function	USB UART Debug console	
Location	P4	
Type	5 Pin USB Micro AB connector	
Connector	Part Number: 47589-0001 Manufacturer: Molex	
Mating Cable	Any standard Micro USB to USB Type A	
Notes	This interface utilizes an FTDI USB to Serial device on board to allow access to the Jetson AGX Orin™ Serial debug console using any Micro USB to USB A cable and any PC with a USB interface and serial terminal program.	

USB 3.2 Gen2 (10 Gbps) / OTG Type C

Function	USB 3.2 Host/OTG Data Port	
Location	J3	
Type	24 Pin USB Type C	
Connector	Part Number: 632723300011 Manufacturer: Wurth	
Mating Cable	Any Standard Type C interface cable or device ** Note this port only supports USB devices, it does not include a display interface **	
Notes	This interface doubles as both a standard DFP (Downward facing port) USB 3.2 Gen2 port to support USB 3.2 Gen2 devices and the Jetson AGX Orin™ Programming (flashing) interface port. The port is capable of up to USB 3.2 Gen 2 speeds in normal operation. The USB 2.0 portion of the interface doubles as the OTG programming port when the FORCE RECOVERY function is applied at startup. The power to the port is disabled so an external PC connection is possible in order to reprogram the module using Jetpack. Maximum power available on this output is 1.5A @5V. J3 shares 10Gbps bandwidth with J4B	

USB 3.2 Gen2 (10Gbps) ARF6

Function	USB 3.2 Gen2 device ports	
Location	J4A, J4B on AGX203	
Type	ARF6 connector	
Connector	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Mating Cables	Samtec (ARC6) AcceleRate® Slim Cable Assemblies CBG691	
Pinout for J4A/J4B on AGX203	Pin Number	Function
	Pin 1	GND
	Pin 2	GND
	Pin 3	+5 volt
	Pin 4	USB3_B_RX_P
	Pin 5	+5 volt
	Pin 6	USB3_B_RX_N
	Pin 7	GND
	Pin 8	GND
	Pin 9	+5 volt
	Pin 10	USB3_B_TX_P
	Pin 11	+5 volt
	Pin 12	USB3_B_TX_N
	Pin 13	GND
	Pin 14	GND
	Pin 15	USB2_D_P
	Pin 16	USB3_A_RX_P
	Pin 17	USB2_D_N
	Pin 18	USB3_A_RX_N
	Pin 19	GND
	Pin 20	GND
	Pin 21	CC1
	Pin 22	USB3_A_TX_P
	Pin 23	CC2
	Pin 24	USB3_A_TX_N
	Pin 25	GND





	Pin 26	GND	
Mating Connector	ARC6-08-xx.x-LU-LD-2-1 to optional breakout board XBG026 ** Note this port only supports USB devices, it will not work as a display interface **		
Notes	These interfaces are both standard DFP (Downward facing port) USB 3.2 Gen 2 capable ports used to support USB peripheral devices. Display devices or devices requiring 20V power modes are NOT supported. The power available from either of these ports is 3A @5V. J4A has full 10Gpbs bandwidth available. J4B shares 10Gbps bandwidth with J3 Recommended AGX203 to XBG026 cable configuration is (pin 1 to pin 2) as the pinout is designed for this option. Samtec cable part number is ARC6-08-xx.x-LU-LD-2-1. 10G USB validated with cable length upto 12 inches.		



RTC Battery

Function	RTC Battery Connector		
Location	P7		
Type	3 pin PicoBlade (vertical)		
Connector PN	53047-0310 - Manufacturer: Molex		
Mating PN	51021-0300 - Manufacturer: Molex		
Pinout	Pin	Signal	Description
	1	+3V	RTC Battery Voltage Input
	2	NC	No Connect
	3	GND	Ground/Return



Rogue-RX for AGX Orin™ allows for an external RTC battery to be connected. This battery should be a 3V DC battery, and it will hold settings including date and time. For further information about RTC battery selection and life time estimation, see Application Note 00009:

<https://connecttech.com/pdf/CTIN-00009.pdf>

MISC I/O & CAN Connector

Function	MISC IO + CAN	
Location	P2	
Type	30 Pin	
Connector	Part Number: TFM-115-02-L-DH-TR Manufacturer: Samtec	
Mating Cable	CBG701 SFSD-15-28-G-xx.xx-SR (Single ended with Retention Latch)	
Pinout	Connector Pins	Description
	1	SPI_CS#
	2	GPIO8
	3	SPI_MISO
	4	GPIO5
	5	SPI_MOSI
	6	GPIO4
	7	SPI_CLK
	8	PWM03
	13	UART2_CTS_3V3
	14	SDA_3V3
	15	UART2_RTS_3V3
	16	SCL_3V3
	17	UART2_RX_3V3
	18	UART1_RX_3V3
	19	UART2_TX_3V3
	20	UART1_TX_3V3
	23	CAN1L
	24	CAN0L
	25	CAN1H
	26	CAN0H
	27, 28	NC
	29	3.3V
	9,10,11,12,21,22,30	GND
Notes	This interface provides 3.3V capable generic I/O including: UART1 under /dev/ttyTHS0	



	UART2 under /dev/ttyTHS1 • I2C under i2c-0 • SPI under /dev/spidev0.0 • x4 GPIO under gpiochip2 For more information on I2C usage, please click here. For more information on GPIO usage, please click here.	
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CAMERA Expansion Connector

Function	8 MIPI CSI-2 Camera Interfaces + I2C and GPIO Control			
Location	P1			
Type	120 Pin QSH with M2.5, 5mm mounting standoffs			
Default	Part Number: QSH-060-01-L-D Manufacturer: Samtec			
Mating Connector	QTH			
Pinout	Pin #	Description		Pin #
	1	CSI0_D0_P	CSI1_D0_P	2
	3	CSI0_D0_N	CSI1_D0_N	4
	5	GND	GND	6
	7	CSI0_CLK_P	CSI1_CLK_P	8
	9	CSI0_CLK_N	CSI1_CLK_N	10
	11	GND	GND	12
	13	CSI0_D1_P	CSI1_D1_P	14
	15	CSI0_D1_N	CSI1_D1_N	16
	17	GND	GND	18
	19	CSI2_D0_P	CSI3_D0_P	20
	21	CSI2_D0_N	CSI3_D0_N	22
	23	GND	GND	24
	25	CSI2_CLK_P	CSI3_CLK_P	26
	27	CSI2_CLK_N	CSI3_CLK_N	28
	29	GND	GND	30
	31	CSI2_D1_P	CSI3_D1_P	32
	33	CSI2_D1_N	CSI3_D1_N	34
	35	GND	GND	36
	37	CSI4_D0_P	CSI6_D0_P	38
	39	CSI4_D0_N	CSI6_D0_N	40





41	GND	GND	42
43	CSI4_CLK_P	CSI6_CLK_P	44
45	CSI4_CLK_N	CSI6_CLK_N	46
47	GND	GND	48
49	CSI4_D1_P	CSI6_D1_P	50
51	CSI4_D1_N	CSI6_D1_N	52
53	GND	GND	54
55	+12V	+12V	56
57	+12V	+12V	58
59	CSI5_D0_P	CSI7_D0_P	60
61	CSI5_D0_N	CSI7_D0_N	62
63	GND	GND	64
65	CSI5_CLK_P	CSI7_CLK_P	66
67	CSI5_CLK_N	CSI7_CLK_N	68
69	GND	GND	70
71	CSI5_D1_P	CSI7_D1_P	72
73	CSI5_D1_N	CSI7_D1_N	74
75	I2C3_SCL	CAM_ERROR1	76
77	I2C3_SDA	PWM1/CAM_BL	78
79	GND	GND	80
81	+2.8V	+2.8V	82
83	+2.8V	CAM_ERROR3	84
85	FSYNC1	PWM2	86
87	I2C2_SCL	CAM_MCLK3	88
89	I2C2_SDA	CAM1_PWDN	90
91	CAM_MCLK2	CAM1_RST#	92
93	CAM0_PWDN	CAM_MCLK4	94
95	CAM0_RST#	FRSYNC4	96
97	FRSYNC3	FRSYNC2	98
99	GND	GND	100
101	NC	1.8V	102
103	CAM_INT3	CAM_INT4	104
105	I2C5_SCL	CAM_INT2	106
107	I2C5_SDA	3.3V	108
109	NC	3.3V	110





	111	CAM_SPI_SCK	CAM_SPI_MOSI	112	
	113	CAM_SPI_CS0	CAM_SPI_MISO	114	
	115	GND	GND	116	
	117	CAM_INT1	3.3V	118	
	119	CAM_VDD_SYS_EN	3.3V	120	
Notes	Only 6 of the CSI2 interfaces can be used at once in 2 lane configuration. Only 4 interfaces when using 4 lane configuration. All non-CSI-2 I/O is 1.8V levels. CAUTION! – The 12V pins shown above differ from that of the NVIDIA® dev kit pinout. This 12V power can be used for Camera expansion requirements up to 2A @12V.				



M.2 E-Key – WiFi and Bluetooth Expansion port

Function	M.2 E-Key Expansion port	
Location	P10	
Type	75 Pin M.2 Connector with M2.5 mounting standoff	
Connector	Part Number: 2199230-4 Manufacturer: TE	
Mating Cable	N/A	
Pinout	As per the M.2 E-Key specification	
Notes	This port contains a x1 PCIe Gen 4 interface and one USB 2.0 interface. Support for M.2 2230 sizes only.	



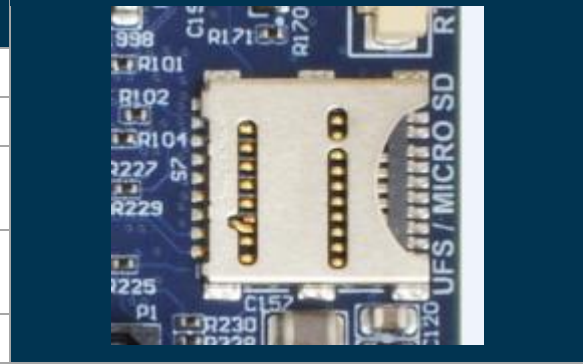
Fan Connector (12V)

Function	Fan control for XHG306	
Location	P11	
Type	4 pin PicoBlade (right angled)	
Connector	Part Number: 53261-0471 Manufacturer: Molex	
Mating Connector	Part Number: 51021-0400 (housing), 50058-8000 (contact) Manufacturer: Molex	
Pinout	Connector Pins	Description
	1	GND
	2	12V Power
	3	TACH from fan to module
	4	PWM from module to fan
Notes	Installation note: This Fan connection is specifically for 12V fans ONLY. Forcing a connection of a 5V fan will result in a damaging the card and/or the fan.	



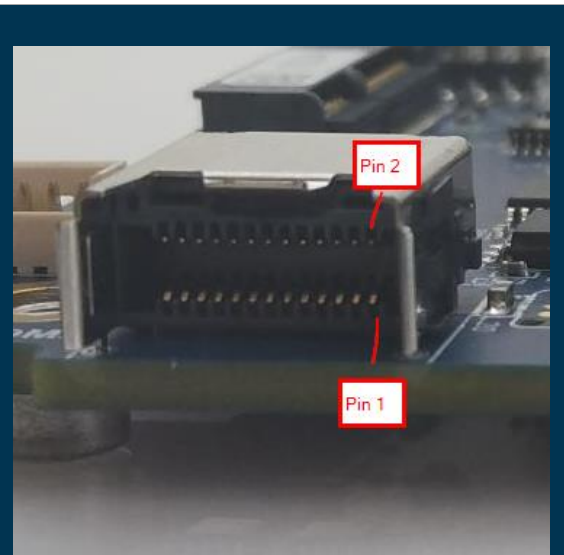
Micro SD Card Expansion port

Function	Micro SD or UFS Card Expansion
Location	S7
Type	19 Pin Multi card connector
Connector	Part Number: 10101704J6#2A Manufacturer: Amphenol
Mating Cable	N/A
Pinout	As Per the micro SD Specification



HDMI Video Output

Function	HDMI Display Output	
Location	J1	
Type	ARF6 connector	
Connector	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Mating Cable	Samtec (ARC6) AcceleRate® Slim Cable Assemblies CBG691	
Pinout for J4A/J4B on AGX203	Pin Number	Function
	Pin 1	GND
	Pin 2	GND
	Pin 3	+5 volt
	Pin 4	OC_HDMI_LANE2_P
	Pin 5	NC
	Pin 6	OC_HDMI_LANE2_N
	Pin 7	GND
	Pin 8	GND
	Pin 9	NC
	Pin 10	OC_HDMI_LANE0_P
	Pin 11	NC
	Pin 12	OC_HDMI_LANE0_N
	Pin 13	GND
	Pin 14	GND
	Pin 15	HDMI_DDC_5V0_DAT





	Pin 16	OC_HDMI_CLK_N	
	Pin 17	HDMI_DDC_5V0_CLK	
	Pin 18	OC_HDMI_CLK_P	
	Pin 19	GND	
	Pin 20	GND	
	Pin 21	HDMI_CEC	
	Pin 22	OC_HDMI_LANE1_N	
	Pin 23	HDMI_DP_HPD	
	Pin 24	OC_HDMI_LANE1_P	
	Pin 25	GND	
	Pin 26	GND	
Mating Connector	ARC6-08-xx.x-LU-LD-2-1		
Notes	Outputs are capable of a resolution up to 3840x2160 @60Hz. Recommended AGX203 to XBG027 cable configuration is (pin 1 to pin 2) as the pinout is designed for this option. Samtec cable part number is ARC6-08-xx.x-LU-LD-2-1.		

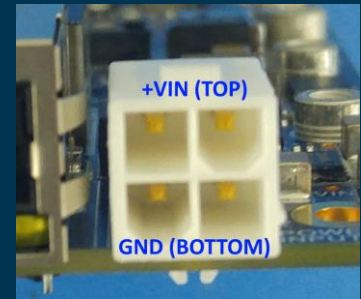
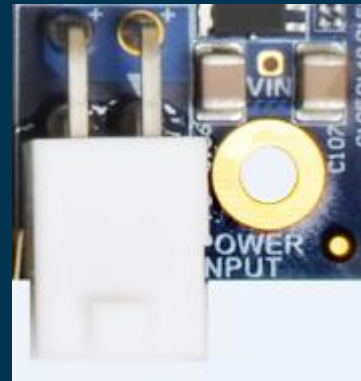
10GBE IX Connectors

Function	GBE Network Connectivity	
Location	P14, P15	
Type	8 pin RJ45 with integrated Magnetics	
Connector	Part Number: IX61G-A-10P Manufacturer: Hirose	
Mating Cable	Any ix Industrial™ Compliant Cable Assemblies. CBG695	
Pinout	Pin Number	Function
	1	MDIO_P
	2	MDIO_N
	3	GND
	4	MDIO2_P
	5	MDIO2_N
	6	MDI1_P
	7	MDI1_N
	8	GND
	9	MDI3_P
	10	MDI3_N
Notes	Both Channels go through AQR113 PHYs originating from MGBE0 and MGBE1 on the AGX Orin™ Module. These Ports will support 10GBASE-T, 1000BASE-T and 100BASE-T. Connection to POE enabled switches or other POE upstream devices is not recommended.	



POWER Connector

Function	Input Power	
Location	P6	
Type	4 Pin Molex Mini-Fit Jr.	
Connector	Part Number: 39-30-1042 Manufacturer: Molex	
Mating Cable	Any Molex 4-pin Mini Fit Jr compliant cable assembly CBG314	
Pinout	Connector Pins	Description
	1	GND
	2	GND
	3	+VIN
	4	+VIN
Notes	Voltage Input is 12V ONLY with input reverse polarity protection. Note that this connector is compatible with a 12V 4pin ATX Power supply connection.	



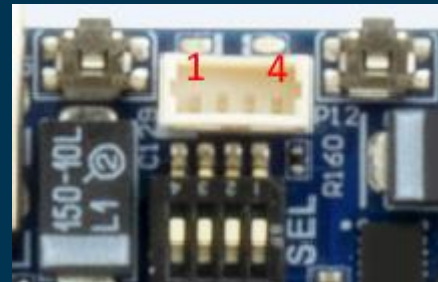
Push Button Switches

Function	Power/Reset/Force Recovery Buttons
Location	S3, S6, S5
Type	Momentary Push button micro switches
Function	Power ON switch (S3): a press of >500ms when in manual mode will trigger system to power ON. Reset Switch (S6): a press of >500ms will trigger a full system Reset. Force Recovery (S5): No function during normal operation. Will place the AGX Orin™ Module into Force Recovery Mode when held during power ON.



External Switch Access Connector

Function	External Switch Access (Power, Reset, Force Recovery)	
Location	P12	
Type	4 pin PicoBlade (vertical)	
Connector	Part Number: 53047-0410 Manufacturer: Molex	
Mating Connector	Part Number: 51021-0400 (housing), 50058-8000 (contact) Manufacturer: Molex	
Pinout	Connector Pins	Description
	1	GND
	2	Force_Recovery_BTN#
	3	Reset_BTN#
	4	Power_BTN#
Notes	To activate any of the features, momentarily connect the signal the GND provided on the connector using momentary close switches only.	



CTI INTERNAL USE ONLY JUMPER BLOCK

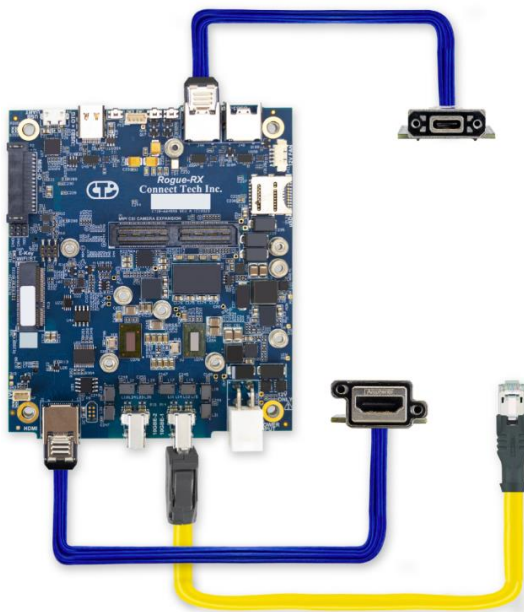
Function	Power Mode selection
Location	J6
Connector	This jumper block is for Connect Tech internal use only, DO NOT use for standard operation of product. Please ensure all jumper positions are NOT installed.



BREAKOUT BOARD DETAILS

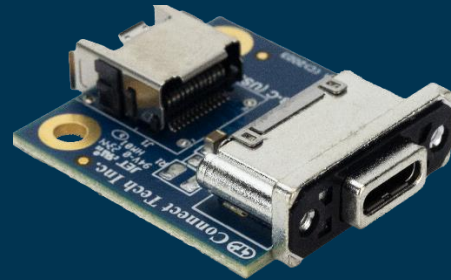
The Rogue-RX employs Samtec ARF6 Rugged Latching High-Speed connectors for the USB 3.2 and HDMI. These ports utilize Samtec (ARC6) AcceleRate® Slim Cable Assemblies to route out to customer defined IO Panels (MIL Circular, M12, Other) or to Connect Tech breakout boards.

Part Number	Description
XBG026	Rugged IP67 USB Type C Connector Breakout Board
XBG027	Rugged IP67 HDMI Connector Breakout Board
CBG691	Rugged High-speed Samtec ARC6 12" Length Cable (For use with USB and HDMI breakout boards)



XBG026 Breakout Board for USB 3.2 Gen2 (10Gbps)

Function	USB 3.2 Gen2 Data Port	
Location	J1 (XBG026 USB Breakout Board)	
Type	Breakout board / USB adapter	
AGX203 Facing Connector J1	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Pinout for J1 on XBG026	Pin Number	Function
	Pin 1	GND
	Pin 2	GND
	Pin 3	USB3_B_RX_P
	Pin 4	+5 volt
	Pin 5	USB3_B_RX_N
	Pin 6	+5 volt
	Pin 7	GND
	Pin 8	GND
	Pin 9	USB3_B_TX_P
	Pin 10	+5 volt
	Pin 11	USB3_B_TX_N
	Pin 12	+5 volt
	Pin 13	GND
	Pin 14	GND
	Pin 15	USB3_A_RX_P
	Pin 16	USB2_D_P
	Pin 17	USB3_A_RX_N
	Pin 18	USB2_D_N
	Pin 19	GND
	Pin 20	GND
	Pin 21	USB3_A_TX_P
	Pin 22	CC1
	Pin 23	USB3_A_TX_N
	Pin 24	CC2
	Pin 25	GND
	Pin 26	GND



Notes	Recommended AGX203 to XBG206 cable configuration is (pin 1 to pin 2) as the pinout is designed for this option. Samtec cable part number is ARC6-08-xx.x-LU-LD-2-1. The USB port is hardware limited to source 3 Amps. Using a cable longer than the ARC6-08-12.0-LU-LD-2-1 (12 inches) may result in voltage drop exceeding the USB VBUS specifications.
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XBG027 Breakout Board for HDMI Video

Function	USB 3.2 Gen2 device ports	
Location	J1 (XBG027 HDMI Breakout Board)	
Type	Breakout board / HDMI adapter	
AGX203 Facing Connector J1	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Pinout for J1 on XBG027	Pin Number	Function
	Pin 1	GND
	Pin 2	GND
	Pin 3	HDMI_LANE2_P
	Pin 4	+5 volt
	Pin 5	HDMI_LANE2_N
	Pin 6	NC
	Pin 7	GND
	Pin 8	GND
	Pin 9	HDMI_LANE0_P
	Pin 10	NC
	Pin 11	HDMI_LANE0_N
	Pin 12	NC
	Pin 13	GND
	Pin 14	GND
	Pin 15	HDMI_CLK_N
	Pin 16	HDMI_DDC_5V0_DAT
	Pin 17	HDMI_CLK_P
	Pin 18	HDMI_DDC_5V0_CLK
	Pin 19	GND
	Pin 20	GND



	Pin 21	HDMI_LANE1_N	
	Pin 22	HDMI_CEC	
	Pin 23	HDMI_LANE1_P	
	Pin 24	HDMI_DP_HPD	
	Pin 25	GND	
	Pin 26	GND	
External Facing Connector P1 Connector	As per the HDMI Specification		
Notes	Recommended AGX203 to XBG206 cable configuration is (pin 1 to pin 2) as the pinout is designed for this option. Samtec cable part number is ARC6-08-xx.x-LU-LD-2-1.		

TYPICAL INSTALLATION

1. Ensure all external system power supplies are off.
2. Install the Jetson AGX Orin™ Module onto the Molex Mirror Mezz™ Connector. Be sure to follow the manufacturer's directions for proper installation of mounting hardware, heatsink/heatspreader, and any other applicable requirements from the manufacturer.
3. Install the necessary cables for application. At a minimum these would include:
 - a) Power cable to the input power connector on the carrier
 - b) HDMI video display cable
 - c) Keyboard and mouse via USB

For additional information on the relevant cables, please see the Cables and Interconnects section of this manual.

4. Connect the Power Cable to the Power Supply.
5. Switch ON the Power Supply. DO NOT power up your system by plugging in live power.

SOFTWARE

For L4T (Linux for Tegra) BSPs and Software Support NVIDIA® Jetson™ AGX Orin™ please follow this link:
<https://connecttech.com/resource-center/l4t-board-support-packages/>

FORCE RECOVERY MODE

The USB 3.2/OTG Port (J3) on Rogue-RX for AGX Orin™ can be used to reprogram the AGX Orin™ from another host platform running NVIDIA® Jetpack™.

- 1) Power down the system completely. The system power MUST be OFF, not in suspend or sleep mode.
- 2) Connect the OTG USB port to another host device that will be supplying the new system file.
- 3) Hold down the Force Recovery Button (S5) and then power the board.
- 4) After three (3) seconds release the Recovery button.
- 5) The AGX Orin™ will show up on the host system USB list as a new NVIDIA® target device.
- 6) After successfully updating the system software, power off the system. A clean power up will revert the OTG port back into host mode.



POWER CONSUMPTION

Below is the theoretical maximum stand-alone power consumption of Rogue-RX for AGX Orin™ Carrier with the AGX Orin™ Module installed. (System power)

Theoretical Maximum System power		Watts
AGX ORIN™ Module (MAXN Power Mode)	68W	~150W
2x NVMe	12W	
2x 10GbE	6W	
3x USB 3.1 Gen 2 fully loaded (2x3A, 1x1.5A)	37.5W	
3x Camera (12V2A through MIPI exp Connection)	24W	
1x WiFi	2W	

The typical power consumption will vary depending on the application and use case. This table will be updated as use cases are tested to show some common setups and sampled for power consumption.

Measured Maximum System power	Watts
AGX Orin™ (MAXN Power Mode), Running CUDA benchmarks, CPU stress, 1x Display	68W
Idle, AGX Orin™ (MAXn), 1x display	15W

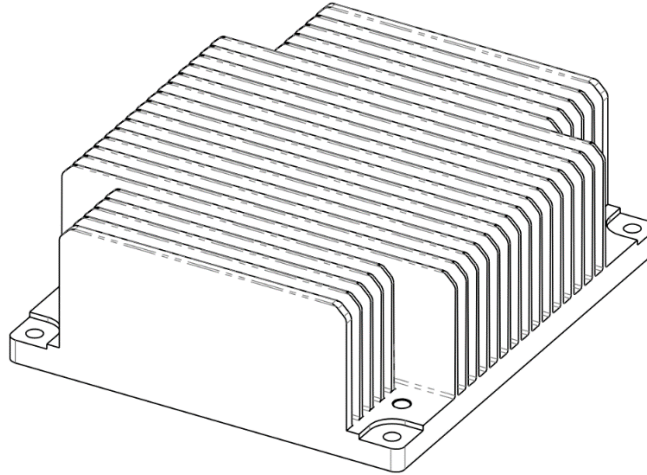


MECHANICAL DRAWINGS & MODELS

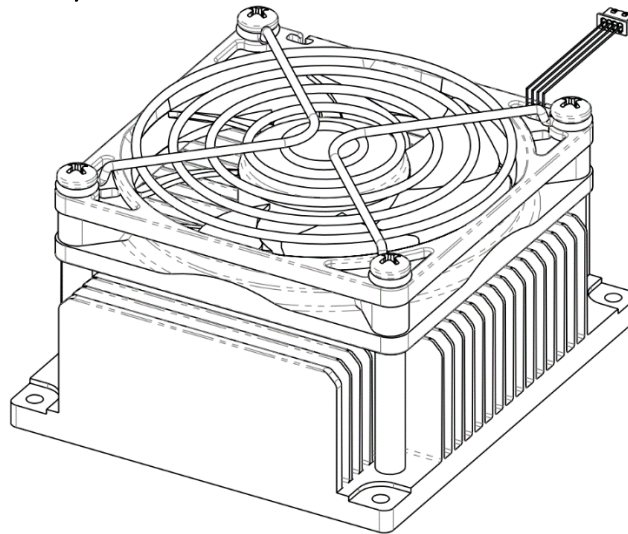
See product page on the Connect Tech Website for latest 3D models or send an email request to:
support@connecttech.com

THERMAL OPTIONS

Passive Heatsink (XHG320)



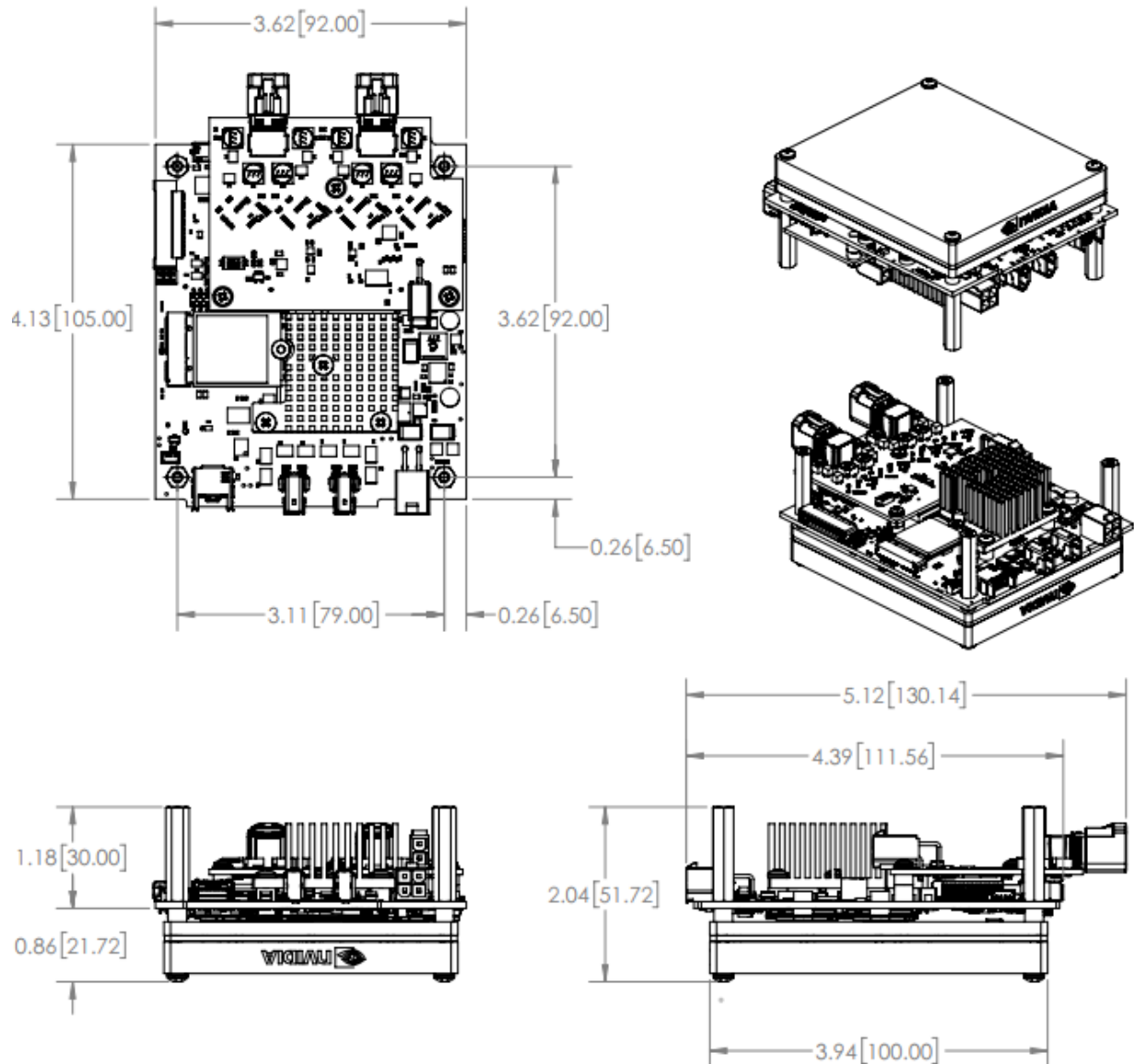
Active Heatsink (XHG319)

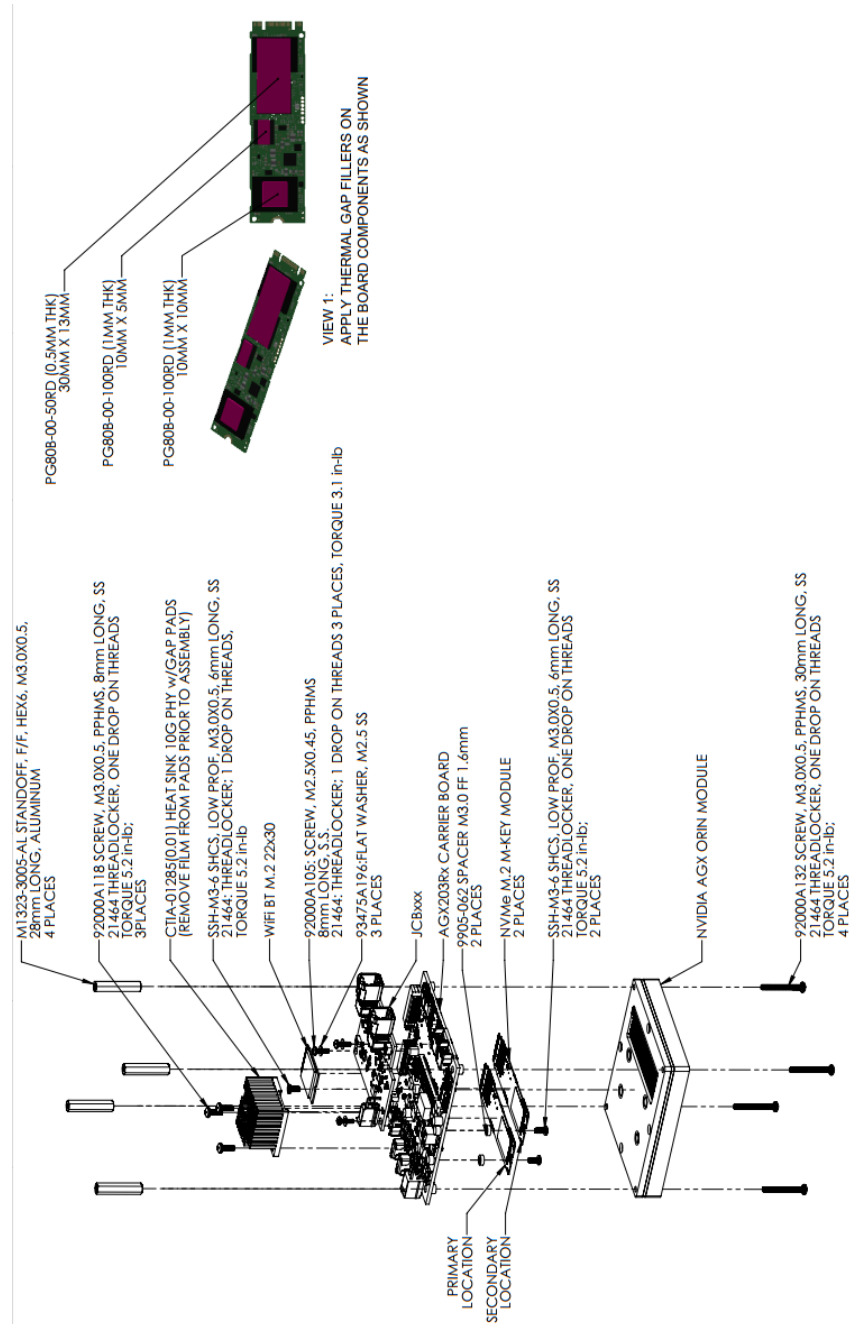




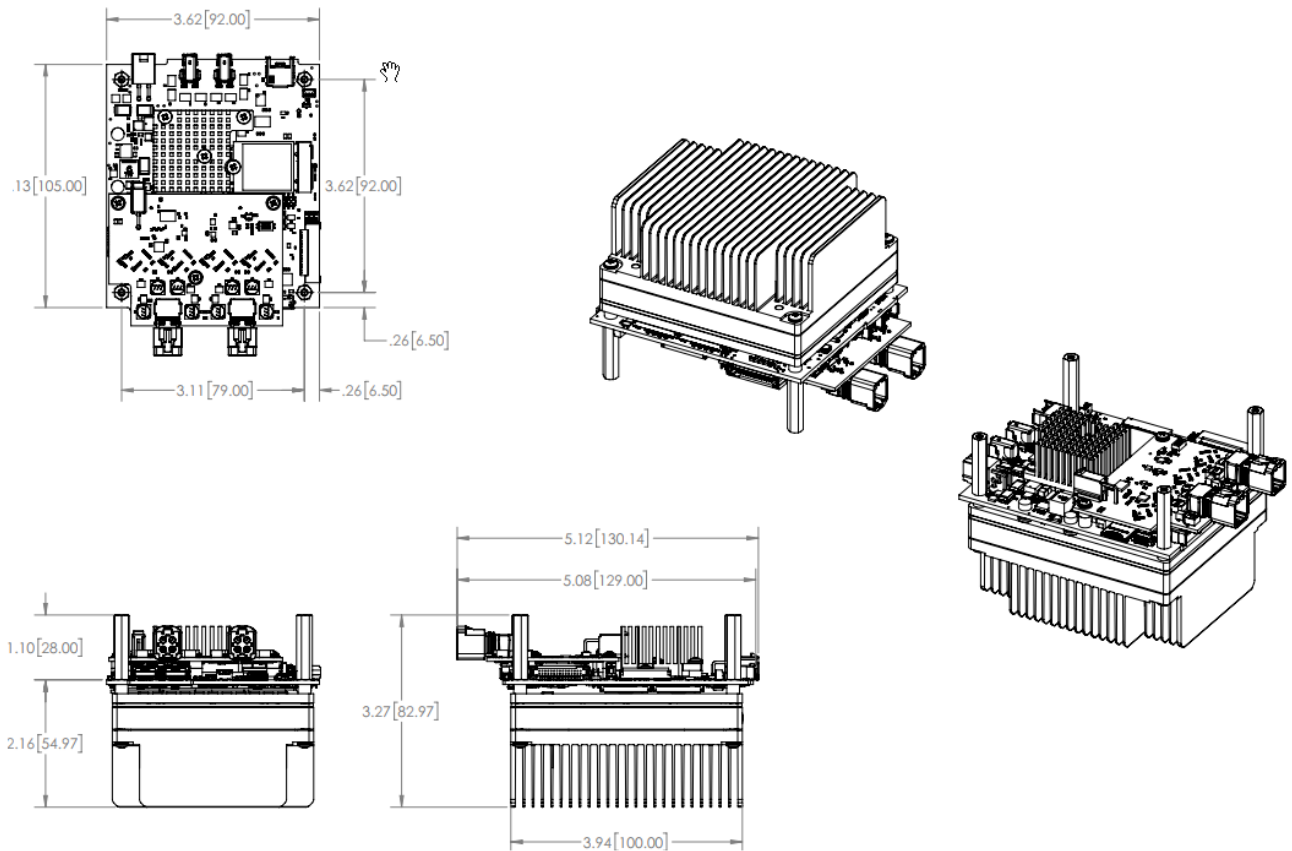
Assembly drawings

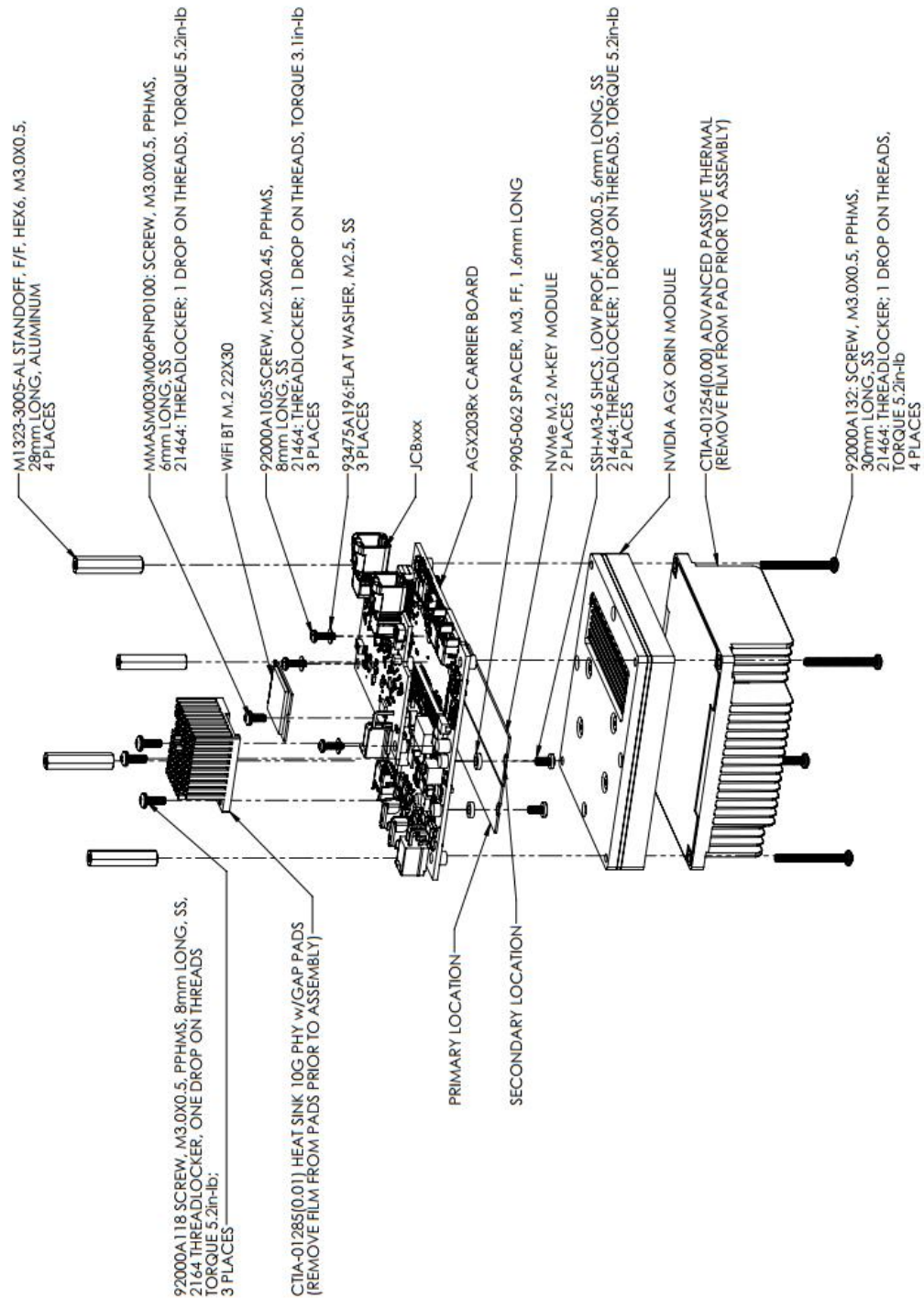
TTP (No-Heatsink)





Passive Heatsink





Active Heatsink

