Connect Tech Inc.
Embedded Computing Experts

USERS GUIDE

Rogue-RX XP Carrier for NVIDIA® Jetson AGX Orin™

CTIM-00139 Revision 0.04 2026-03-26

NVIDIA Elite Partner

CONNECT TECH
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PREFACE

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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 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	2025-07-23	Initial Release
0.01	2025-08-18	Added mechanical drawings
0.02	2025-12-16	Updated CAN specification
0.03	2026-02-11	Updated RS232 mapping
0.04	2026-03-26	Updated GPIO information

INTRODUCTION

Connect Tech's Rogue-RX XP for Jetson AGX Orin™ (AGX207) is a full featured NVIDIA® Jetson AGX Orin™ module carrier board. This carrier board for Jetson AGX Orin™ is specifically designed for commercially deployable platforms, and has an extremely small footprint of 125mm x 108.7mm.

Rogue-RX XP for Jetson AGX Orin™ provides access to an impressive list of latest generation interfaces on the Jetson 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 XP for Jetson AGX Orin™ to interface directly with the Jetson AGX Orin™ high density MIPI CSI interfaces.

FEATURES AND SPECIFICATIONS

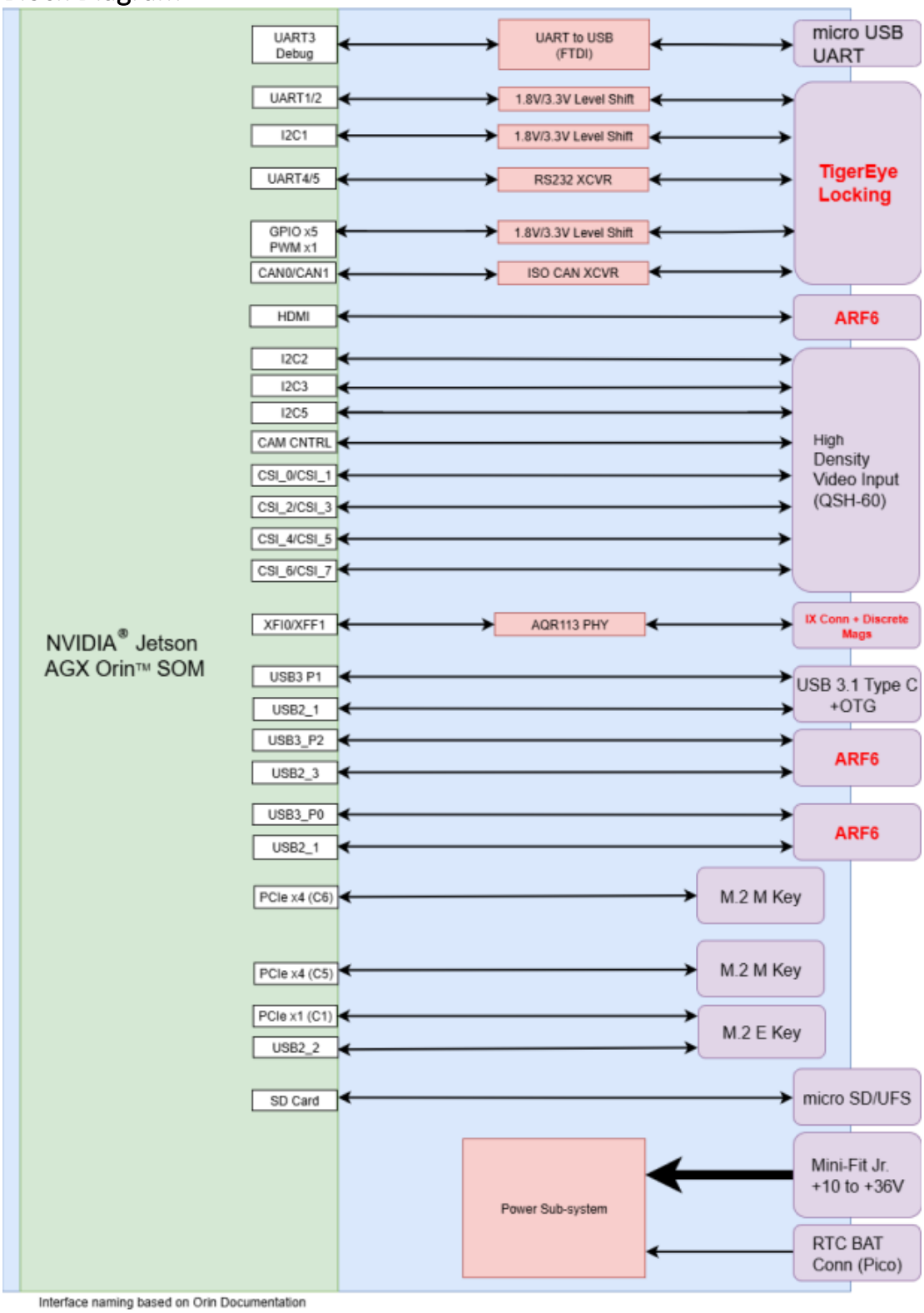
Specifications	
	Rogue-RX XP for Jetson AGX Orin™ (AGX207)
NVIDIA® GPU SoC Module Compatibility	Jetson AGX Orin™ Industrial Jetson AGX Orin™ 64GB Jetson AGX Orin™ 32GB
Networking	2x 10GBASE-T Ethernet Ports - IX/IP20 Rugged Industrial Ethernet connector
Display Output	1x HDMI (Supports up to HDMI 2.0) 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/RS-232	1x 3.3V I2C on GPIO Connector 2x RS-232 on GPIO Connector
CAN Bus	2x CAN FD Port (Non-Isolated) on GPIO connector
GPIO	6x 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	+10 to +36V DC Wide Input (6 pin Mini-fit Jr Connector)
PCB Mechanical Information	125mm x 108.7mm
Weight	147g (Includes PHY heatsink)
Operating Temperature (Carrier Board Only)	-40°C to +85°C (-40°F to +185°F)

PART NUMBERS / ORDERING INFORMATION

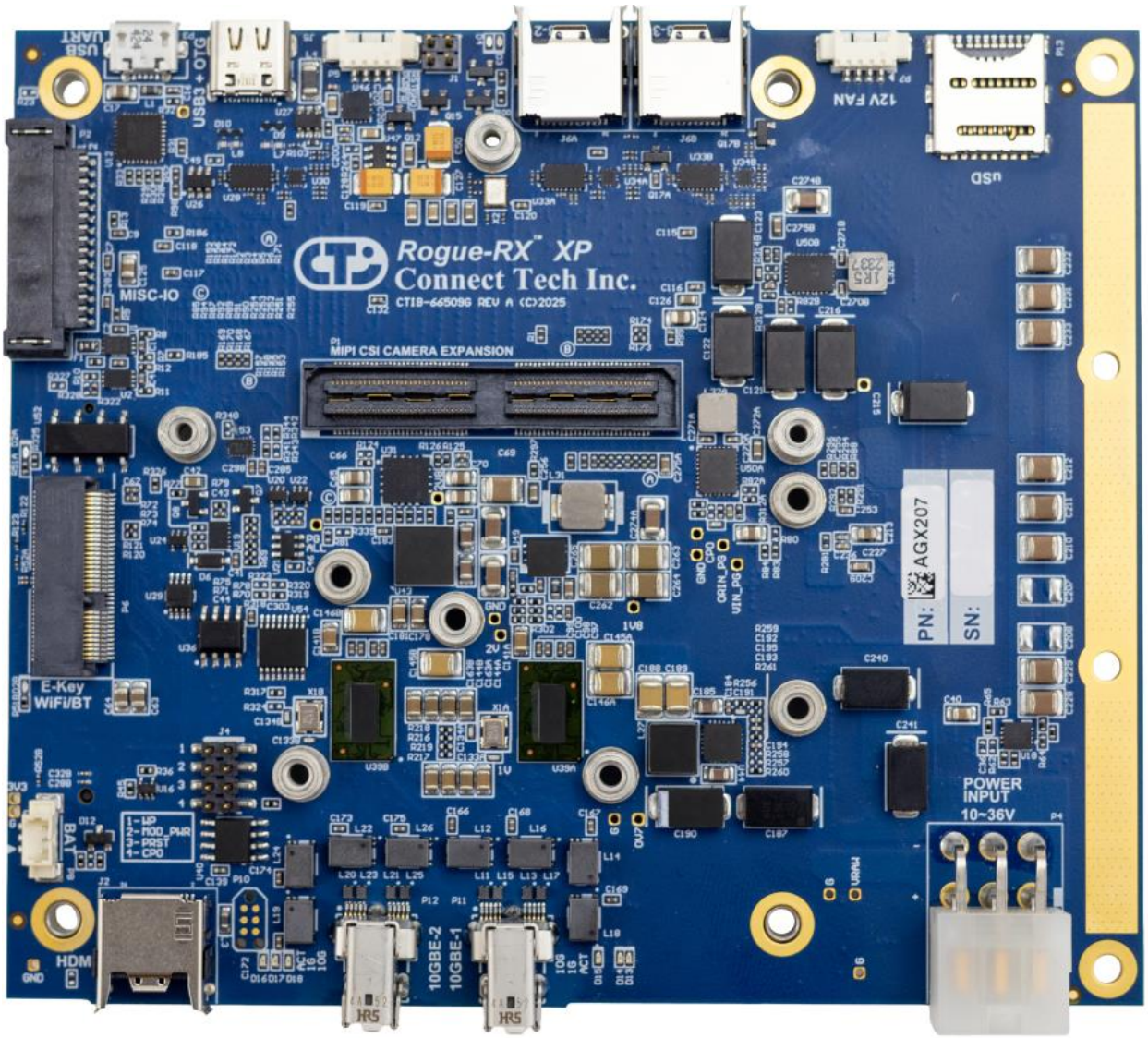
Part Number	Description
AGX207	Rogue-RX XP Carrier Board Only
AGX207-###	Rogue-RX XP Integrated Board-Stack Part Numbers The Rogue-RX XP can be shipped pre-integrated with Industrial/64/32GB Jetson AGX Orin™ Modules, Wi-Fi/BT modules, NVMe Modules, Camera Add-on Modules (GMSL, FPD-Link, MIPI, SDI, HDMI 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
MSG103	PSU 6pin 12V 250W (CTI provided power brick)

PRODUCT OVERVIEW

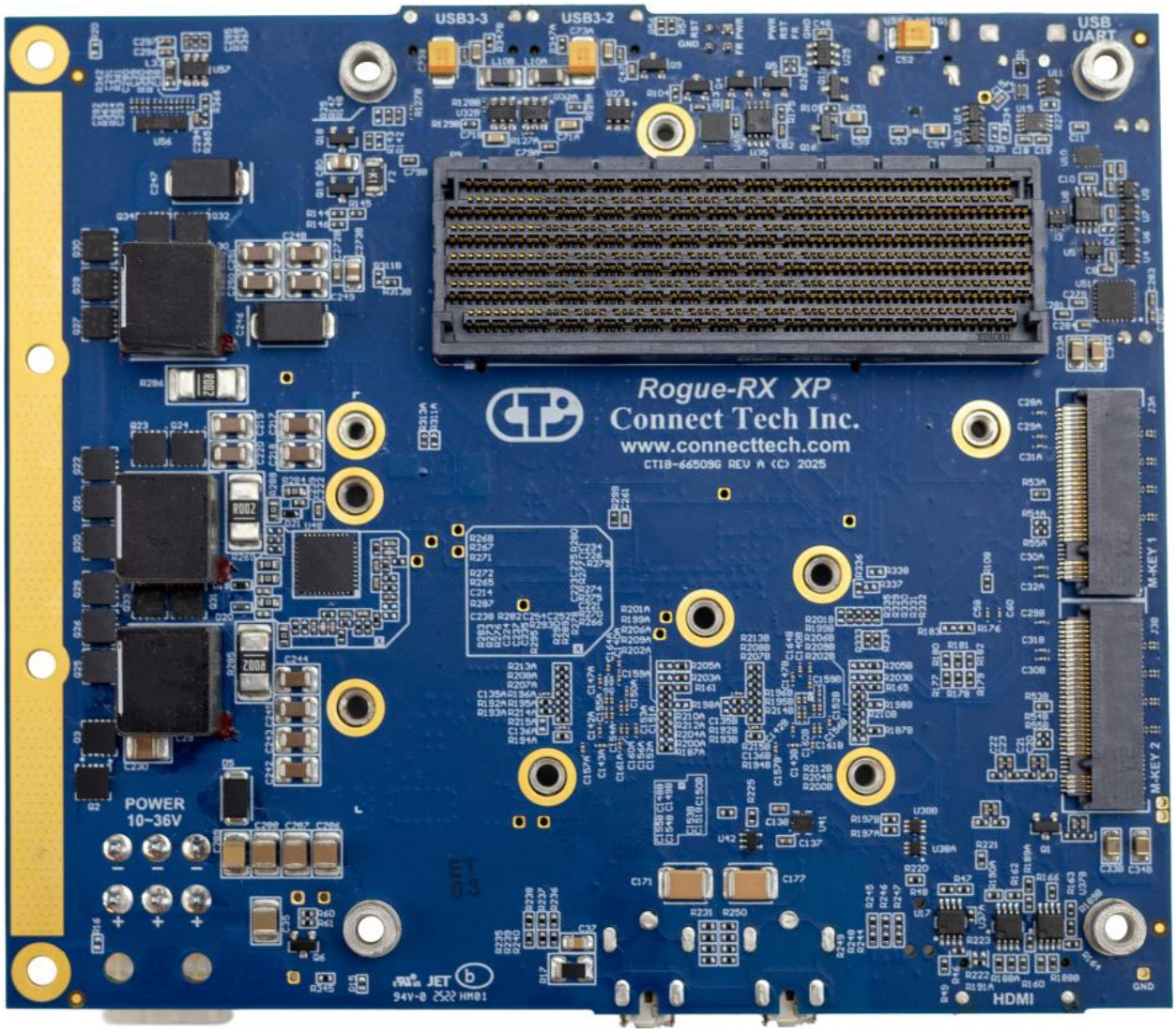
Block Diagram



Board (Top Side)



Board (Bottom Side)



Connector Summary & Locations

Designator	Description
P1	MIPI Camera Expansion connector
P2	MISC I/O connector + CAN Bus Connector
P3	USB UART Debug Console connector
P4	Input Power connector
P5	External Switch Access connector
P6	M.2 E-Key connector
P7	12V Fan connector
P8	RTC Battery connector
P9	Jetson AGX Orin™ connector
P11, P12	10GbE IX connector or IP20 Industrial Ethernet connector
P13	Micro SD
J2	HDMI Display output with ARF6 High-speed Rugged Latching Connector
J3A, J3B	M.2 M-Key (NVMe) connector
J5	USB 3.2 Gen2 Port with OTG Type-C Connector
J6A, J6B	USB 3.2 Gen2 Ports with ARF6 High-speed Rugged Latching Connectors

Jumper Summary & Locations

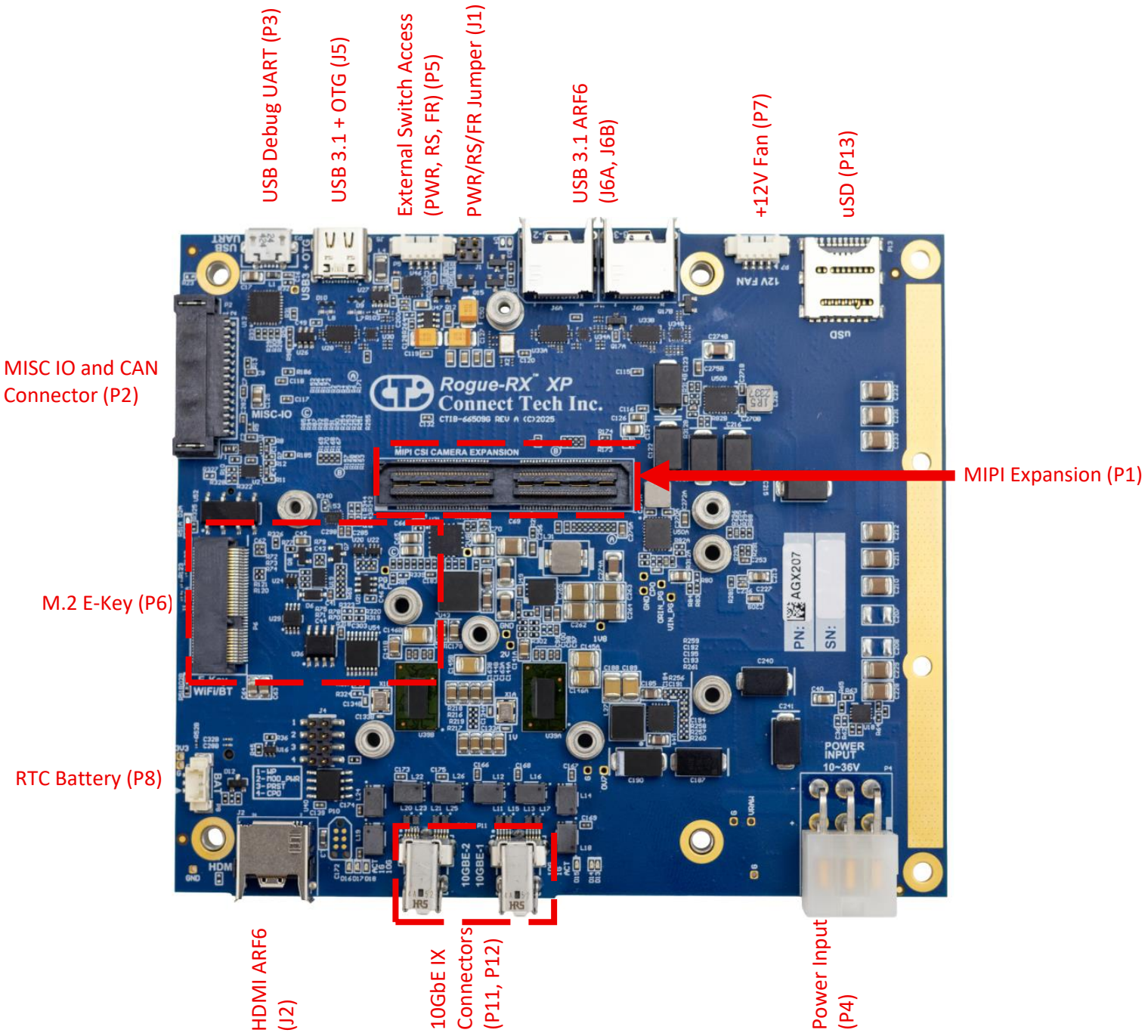
Designator	Description
J1	PWR/RS/FR jumper
J4B	Power Option control jumper

LED Summary

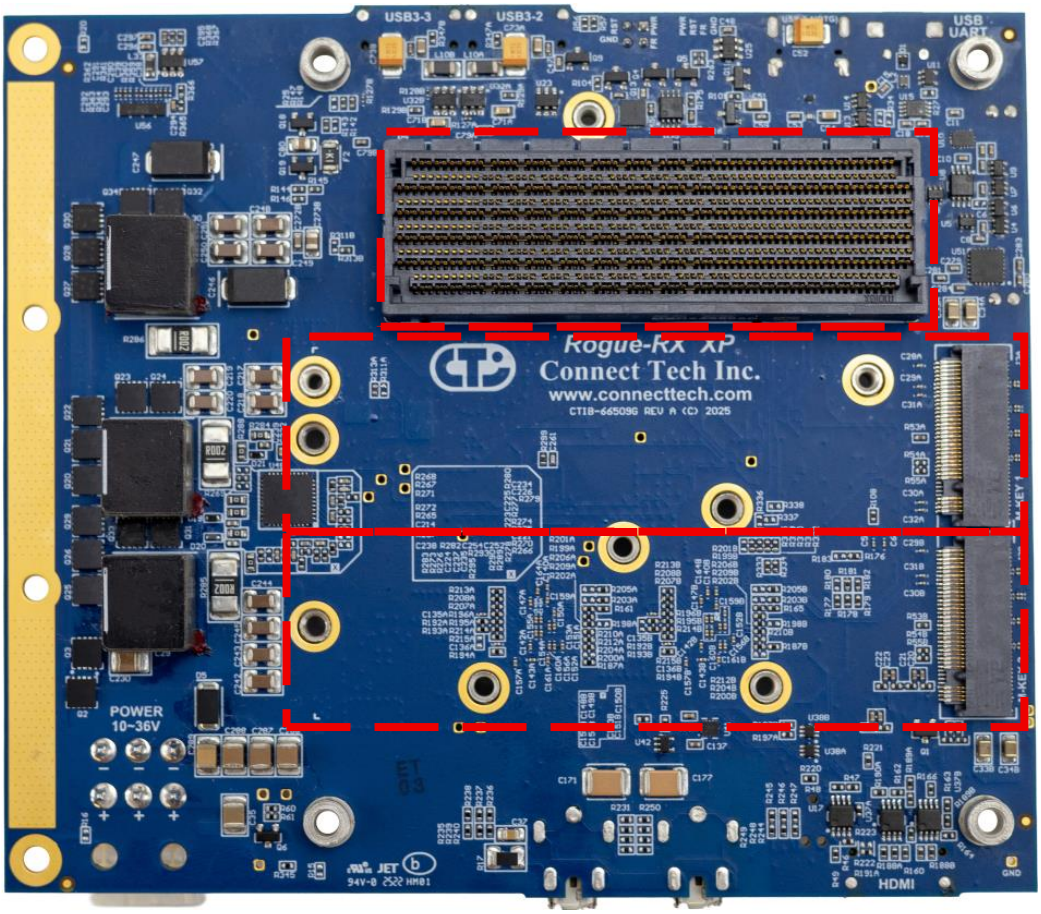
Designator	Description
D2A	M.2 connector (J3A) activity
D2B	M.2 connector (J3B) activity
D3	Input Power is good
D4	System Power is good and system is powering on (booting up). In manual power on mode (via dip switch), this light will power on only after the power button has been pushed. Since the typical default mode is auto power on, the light will come on as on the system starts to boot.

DETAILED ROGUE-RX XP FEATURE DESCRIPTION

Connector and Switch Locations - Connector Side



Connector and Switch Locations - Module Side

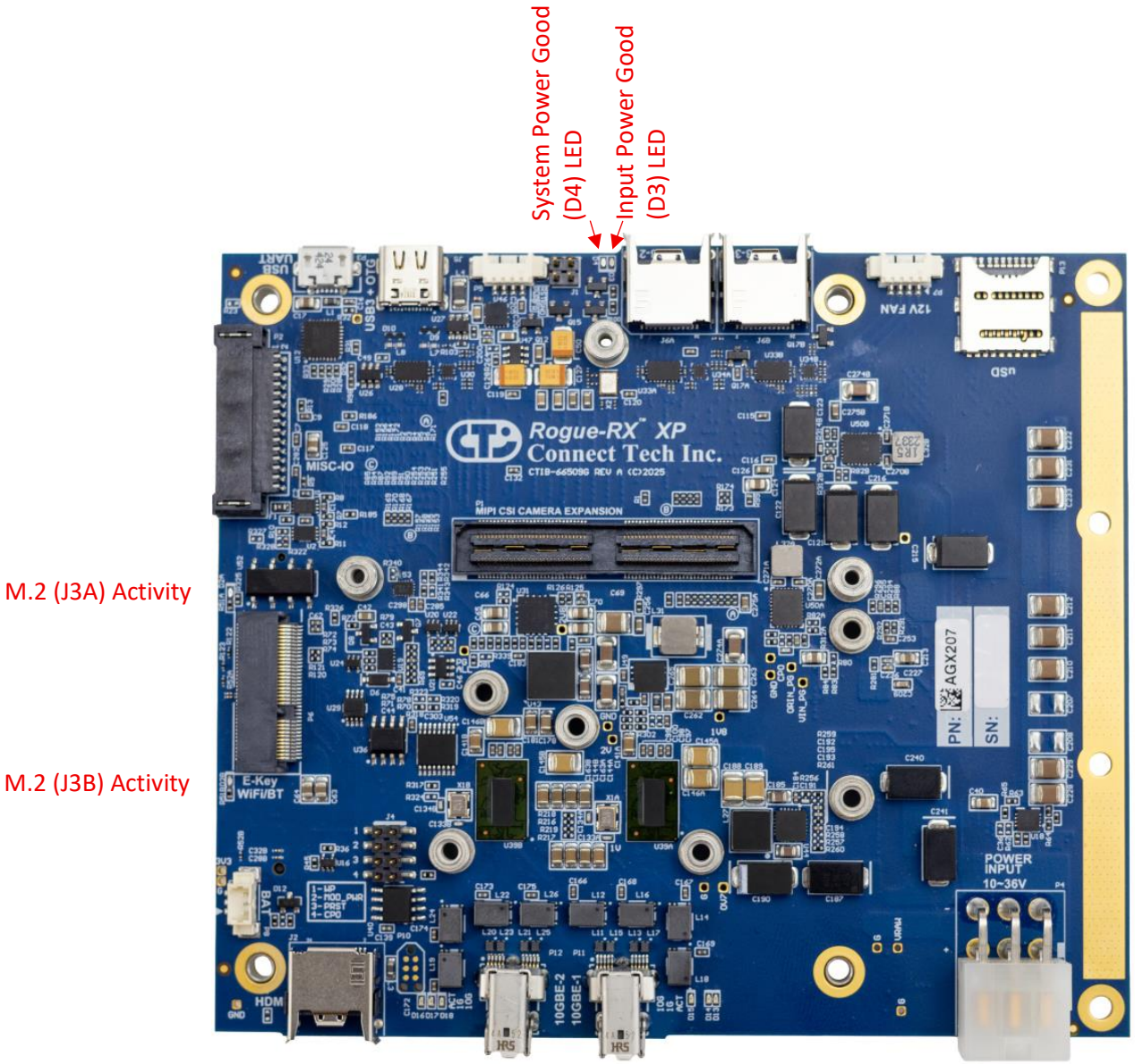


Jetson AGX Orin™ Connector (P9)

M.2 M-Key NVMe 1 (J3A)

M.2 M-Key NVMe 2 (J3B)

LED Locations



Jetson AGX Orin™ Board-to-Board Carrier Connector

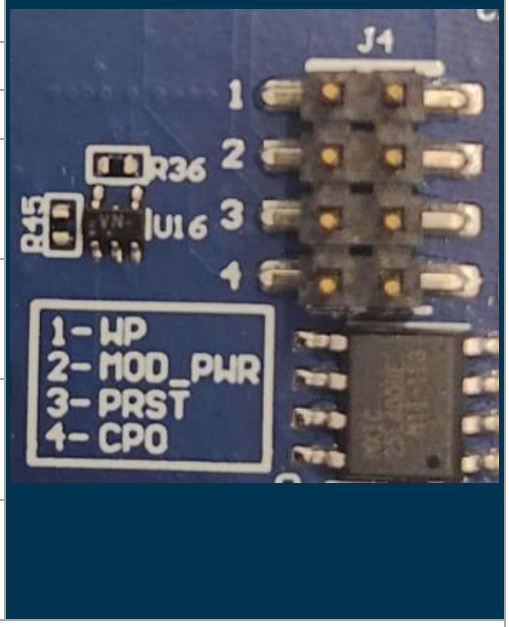
Function	NVIDIA® Jetson AGX Orin™ Module Interface
Location	P9
Type	Molex Mirror Mezz™ Connector
Connector	Part Number: 203456-0003 Manufacturer: Molex
Mating Connector	Same as above.
Pinout	Refer to NVIDIA® Jetson AGX Orin™ System-on-Module datasheet and OEM design guide for pinout details

M.2 M-Key – NVMe

Function	NVMe Storage (x2 PCIe Gen 4)
Location	J3A, J3B
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 3. SATA is not supported. PCIe based devices only.

Jumper Block J4

Function	Carrier Power Mode			
Location	J4			
Type	2mm Jumper 2x4			
Default	Power Mode = Auto			
Pinout	**PIN**	**Description**	**Installed**	**Omitted**
	J4-1	*Used for Manufacturing Test Only*	N/A	N/A
	J4-2	Auto or Manual Power On (PWR MODE)	**Manual** Power On	**Auto** Power On
	J4-3	*Used for Manufacturing Test Only*	N/A	N/A
	J4-4	*Used for Manufacturing Test Only*	N/A	N/A



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.

Jumper Block J1

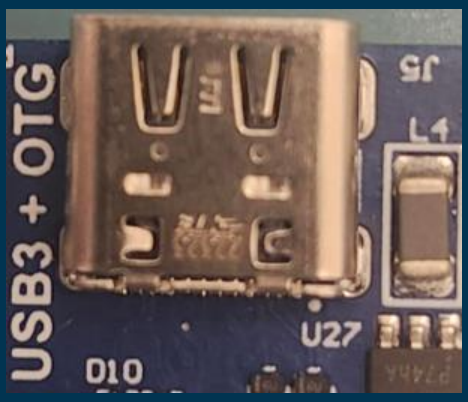
Function	PWR/RS/FR Access		
Location	J1		
Type	2mm Jumper 2x2		
Pinout	**PIN**	**Description**	
	J1-1	Power Button	
	J1-2	Reset	
	J1-3	Force Recovery	
	J1-4	GND	
Notes	To activate any of the features, connect the signal to GND provided on the connector using momentary close switches only.		

USB UART Debug console – Micro USB-AB

Function	USB UART Debug console
Location	P3
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.

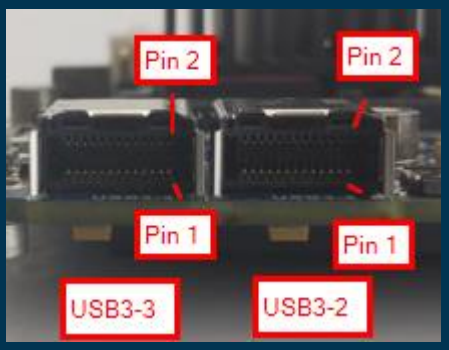
USB 3.2 Gen2 (10 Gbps) / OTG Type C

Function	USB 3.2 Host/OTG Data Port
Location	J5
Type	24 Pin USB Type C
Connector	Part Number: 2385692-1 Manufacturer: TE
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. J5 shares 10Gbps bandwidth with J6B



USB 3.2 Gen2 (10Gbps) ARF6

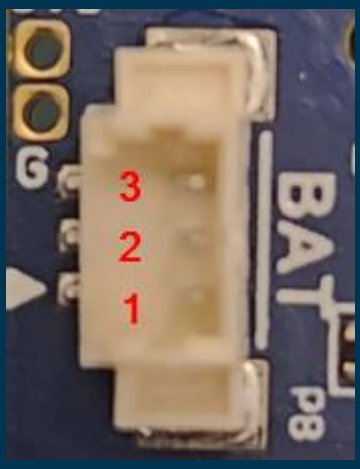
Function	USB 3.2 Gen2 device ports	
Location	J6A, J6B	
Type	ARF6 connector	
Connector	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Mating Cables	Samtec (ARC6) AcceleRate® Slim Cable Assemblies **CBG691**	
Pinout for J6A/J6B on AGX207	**Pin Number**	**Function**
	Pin 1	GND
	Pin 2	GND
	Pin 3	+5 volt
	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. J6A has full 10Gpbs bandwidth available. J6B shares 10Gbps bandwidth with J5 Recommended AGX207 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 up to 12 inches. **Mechanical Specification:** Mating Durability: EIA-364-09C Vibration: EIA-364-28, 50-2000Hz, 7.56 G Shock: EIA-364-27 For more details on the connector's mechanical details and testing please see Samtec's datasheet at the following link: https://suddendocs.samtec.com/productspecs/arx6.pdf		

RTC Battery

Function	RTC Battery Connector		
Location	P8		
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 XP for Jetson 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	RS232A_TX
	2	GPIO8
	3	RS232A_RX
	4	GPIO5
	5	RS232B_TX
	6	GPIO4
	7	RS232B_RX
	8	PWM03
	13	UART2_CTS
	14	SDA_3V3
	15	UART2_RTS
	16	SCL_3V3
	17	UART2_RX
	18	UART1_RX
	19	UART2_TX
	20	UART1_TX
	23	CAN1L
	24	CAN0L
	25	CAN1H
	26	CAN0H
	27	GPIO9
	28	GPIO18
	29	3.3V
	9,10,11,12,21,22,30	GND

Notes	+3V3 Power output can provide up to 2A of current.
	
	UART, GPIO, PWM and I2C interfaces are +3.3V.
	
	GPIO04 and GPIO09 can tolerate +5V input.
	
	CAN bus termination can be added via SW configuration. Termination if enabled is only active when the unit is powered on. Enable CAN bus termination via commands:
	
	$ ds4520 -b 0 -a 0x57 -w 1
	$ ds4520 -b 0 -a 0x57 5=0 6=0
	$ ds4520 -b 0 -a 0x57 w 0	

Jetson AGX Orin™ Interface Cross Reference

Signal Name	ID	Gpiochip	DS4520 Direction Control Bit
GPIO04[1]	PA.02	gpiochip0	3
GPIO05	PA.01	gpiochip0	1
GPIO08	PBB.01	gpiochip1	2
GPIO09[1]	PBB.00	gpiochip1	3
GPIO18	PQ.04	gpiochip0	8

1. GPIO04 and GPIO09 are controlled by the same DS4520 control bit.

GPIO direction comes from a DS4520 I2C to GPIO controller located on bus 0 (address 0x57). Setting the direction bit as high will configure the GPIO to be an output and setting the direction bit as low will configure the GPIO to be an input.

Example code:
$ ds4520 -b 0 -a 0x57 -w 1 (unlock eeprom)
$ ds4520 -b 0 -a 0x57 3=1 (ds4520 on bus 0, address 0x57, bit 3 (GPIO04) set as output)
$ ds4520 -b 0 -a 0x57 -w 0 (lock eeprom for permanent configuration)

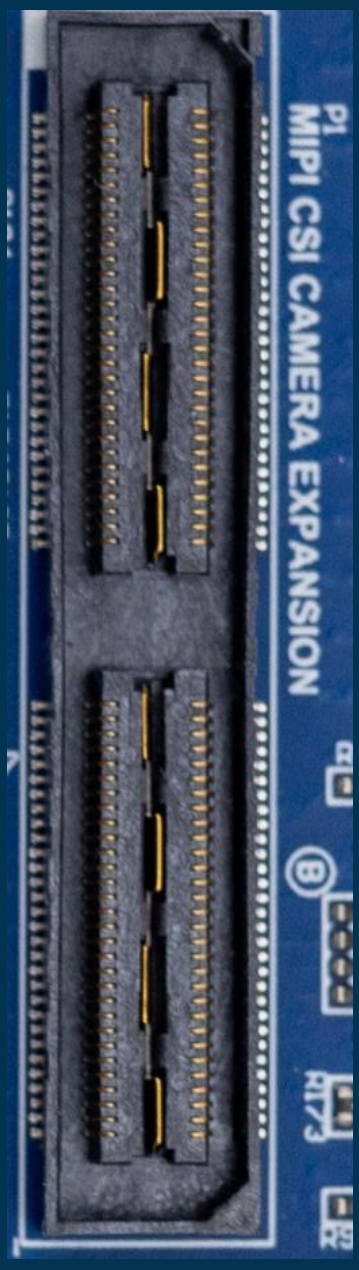
For more information on GPIO usage, please click here.

Signal Name	SW/Dev ID	DTB ID
I2C0	i2c-0	i2c@3160000
RS232_A	/dev/ttyTHS3	serial@3130000
RS232_B	/dev/ttyTHS1	serial@3110000
UART1	/dev/ttyTHS0	serial@3100000

	UART2	/dev/ttyTHS4	serial@3140000
	PWM03	pwmchip2	pwm@32c0000

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

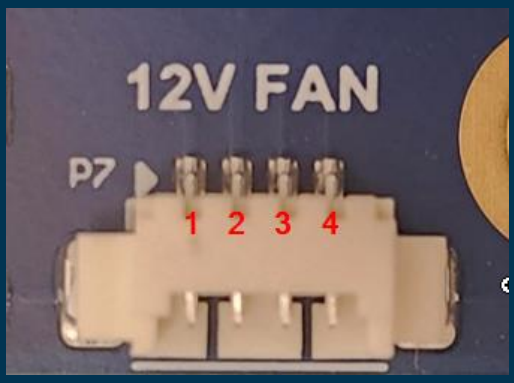
	119	CAM_VDD_SYS_EN	3.3V	120	
Notes	Only 6 of the CSI2 interfaces can be used at once in 2 lane configuration. Only 4 interfaces when using 4 lane configuration. All non-CSI-2 I/O is 1.8V levels. CAUTION! – The 12V pins shown above differ from that of the NVIDIA® dev kit pinout. This 12V power can be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

M.2 E-Key – Wi-Fi and Bluetooth Expansion port

Function	M.2 E-Key Expansion port
Location	P6
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	P7	
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 damaging the card and/or the fan.	

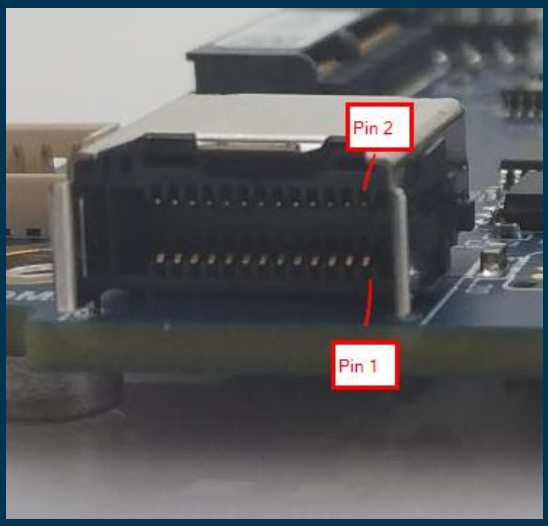


Micro SD Card Expansion port

Function	Micro SD or UFS Card Expansion
Location	P13
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

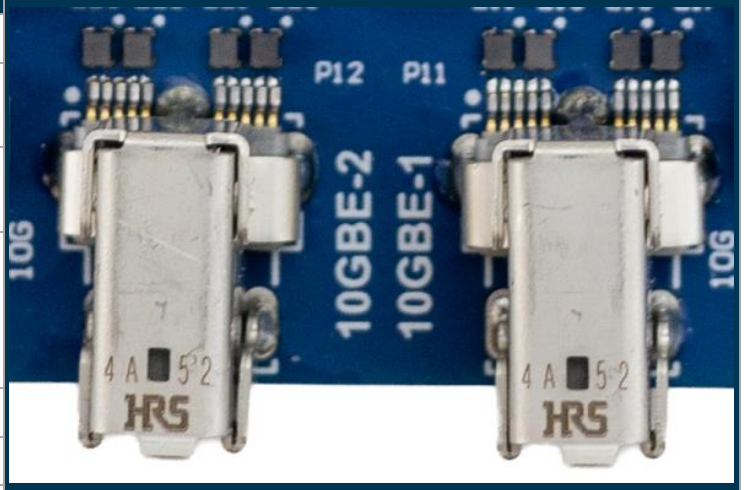
Function	HDMI Display Output	
Location	J2	
Type	ARF6 connector	
Connector	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Mating Cable	Samtec (ARC6) AcceleRate® Slim Cable Assemblies **CBG691**	
Pinout for J2 on AGX207	**Pin Number**	**Function**
	Pin 1	GND
	Pin 2	GND
	Pin 3	+5 volt
	Pin 4	OC_HDMI_LANE2_P
	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 AGX207 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	P11, P12	
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	MDI0_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



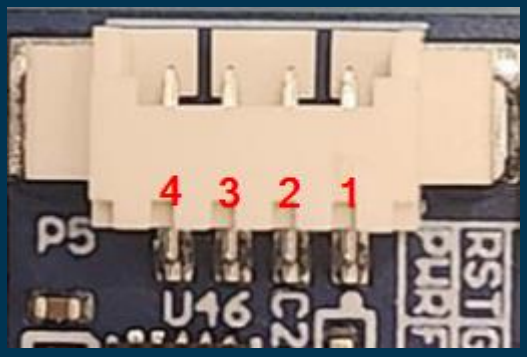
Notes	Both Channels go through AQR113 PHYs originating from MGBE0 and MGBE1 on the Jetson AGX Orin™ Module. These ports will support 10GBASE-T, 1000BASE-T and 100BASE-T. Connection to POE enabled switches or other POE upstream devices is not recommended. **Mechanical Specification:** Mating Durability: 5,000 insertion/extraction cycles Vibration: 10-500Hz, Half Amplitude 0.35mm, 5.10 G Shock: 30.6 G, 11ms For more details on the connector's mechanical details and testing please see Hirose's datasheet at the following link: https://www.hirose.com/product/document?clcode=CL0251-0021-0-00&productname=IX61G-A-10P&series=IX&documenttype=Catalog&lang=en&documentid=D144096_en

POWER Connector

Function	Input Power	
Location	P4	
Type	6 Pin Molex Mini-Fit Jr.	
Connector	Part Number: 39301060 Manufacturer: Molex	
Mating Connector	Receptacle Housing 5557 series Cable Assembly 45135 series	
Pinout	Connector Pins	Description
	1	+VIN
	2	+VIN
	3	+VIN
	4	GND
	5	GND
	6	GND

External Switch Access Connector

Function	External Switch Access (Power, Reset, Force Recovery)	
Location	P5	
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	Power_BTN#
	2	Reset_BTN#
	3	Force_Recovery_BTN#
	4	GND
Notes	To activate any of the features, connect the signal to GND provided on the connector using momentary close switches only.	



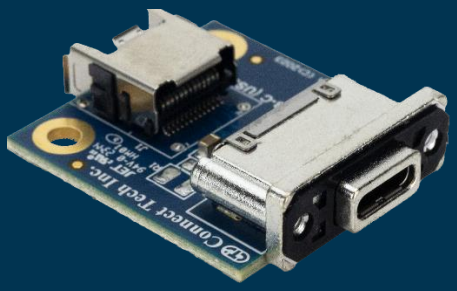
BREAKOUT BOARD DETAILS

The Rogue-RX XP 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)

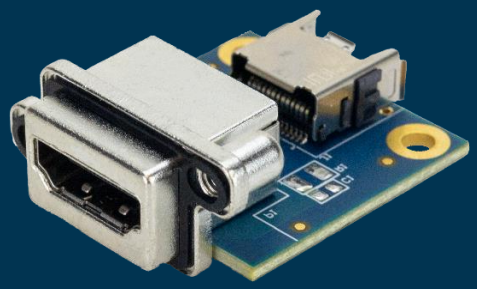
Function	USB 3.2 Gen2 Data Port	
Location	J1 **(XBG026 USB Breakout Board)**	
Type	Breakout board / USB adapter	
AGX207 Facing Connector J1	Part Number: ARF6-08-L-RA Manufacturer: Samtec	
Pinout for J1 on XBG026	**Pin Number**	**Function**
	Pin 1	GND
	Pin 2	GND
	Pin 3	USB3_B_RX_P
	Pin 4	+5 volt
	Pin 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 AGX207 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.

XBG027 Breakout Board for HDMI Video

Function	USB 3.2 Gen2 device ports	
Location	J1 **(XBG027 HDMI Breakout Board)**	
Type	Breakout board / HDMI adapter	
AGX207 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	+5V
	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 AGX207 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 (J5) on Rogue-RX XP for Jetson AGX Orin™ can be used to reprogram the Jetson 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) Connect the Force Recovery Signal from the External Switch Access header (P5-3) or J1-3 to GND and then power the board.
4) After three (3) seconds disconnect the Force Recovery Signal from GND.
5) The Jetson 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 XP for Jetson AGX Orin™ Carrier with the Jetson AGX Orin™ Module installed. (System power)

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

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.

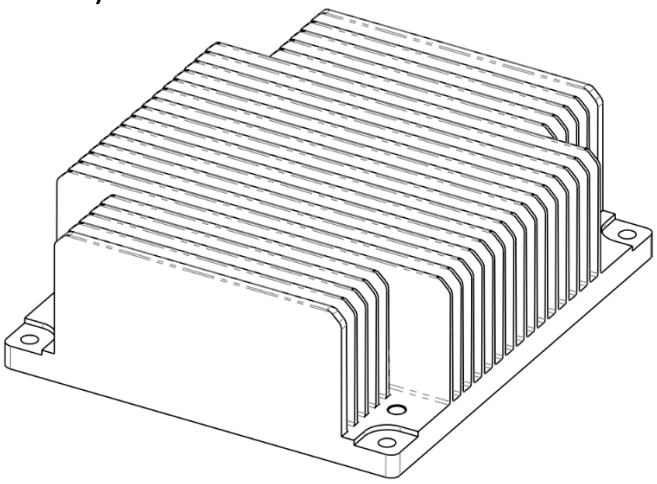
Measured Maximum System power	Watts
Jetson AGX Orin™ (MAXN Power Mode), Running CUDA benchmarks, CPU stress, 1x Display	68W
Idle, Jetson AGX Orin™ (MAXn), 1x display	15W

MECHANICAL DRAWINGS & MODELS

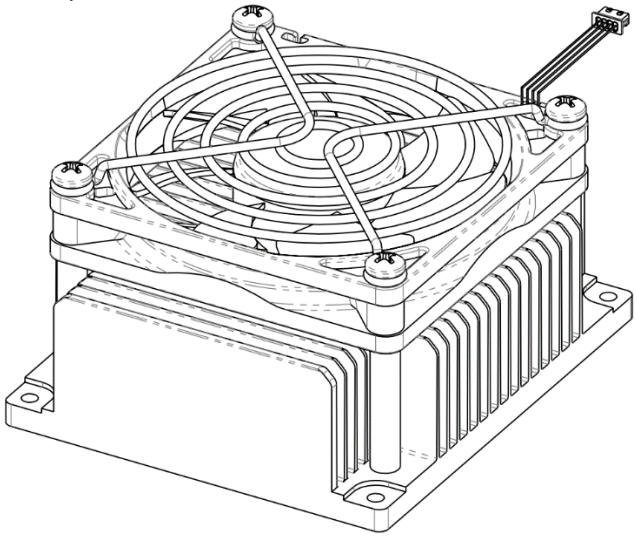
See product page on the Connect Tech Website for latest 3D models or send an email request to: support@connecttech.com

THERMAL OPTIONS

Passive Heatsink (XHG320)

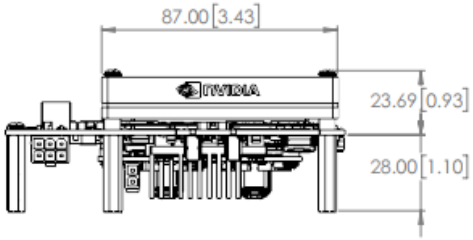


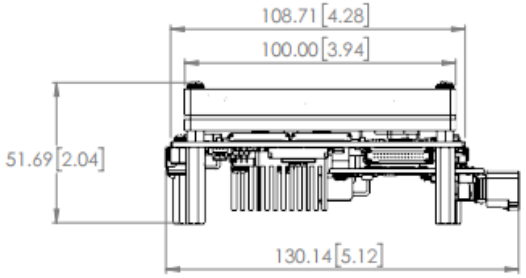
Active Heatsink (XHG319)

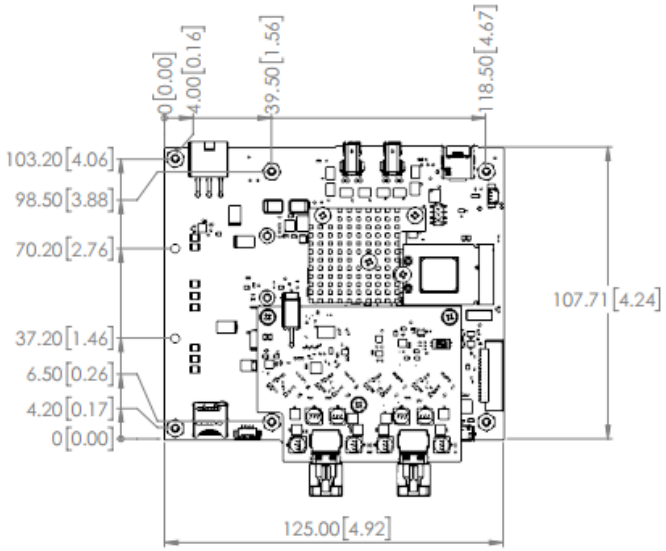


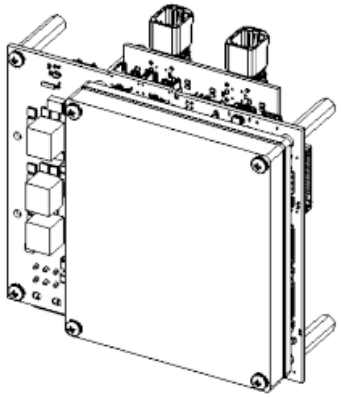
Assembly drawings

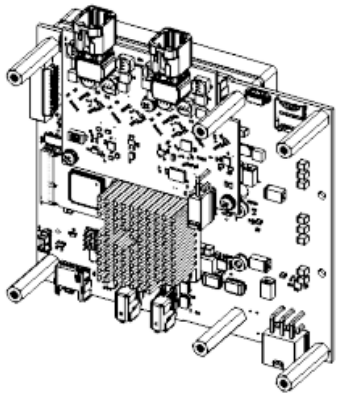
TTP (No-Heatsink)

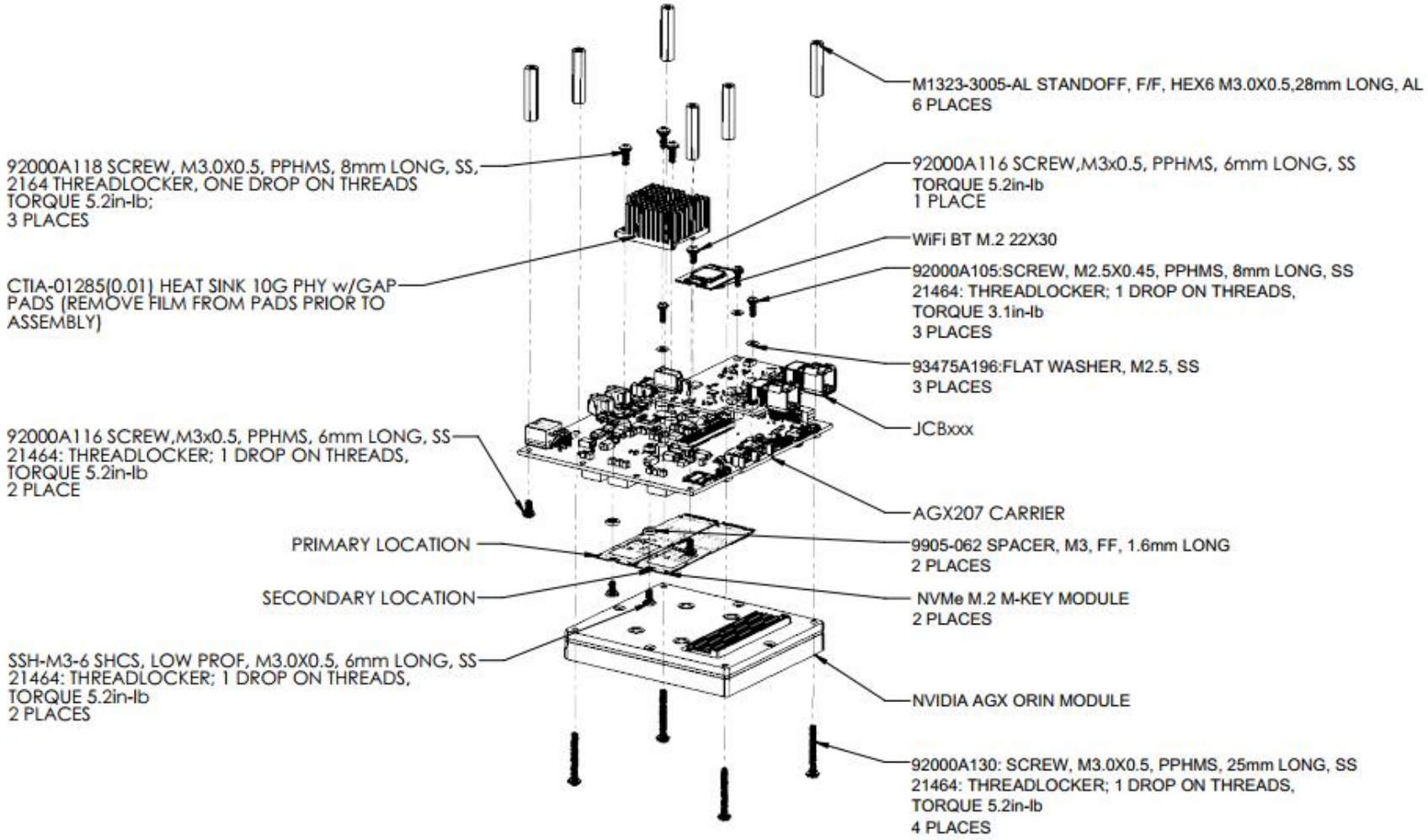




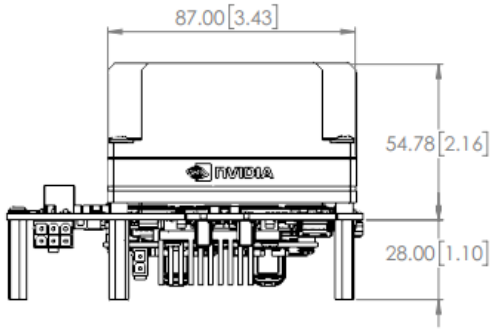


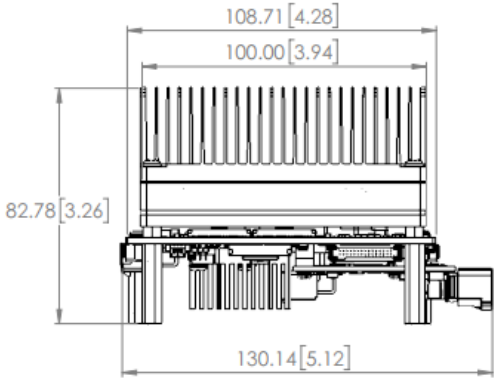


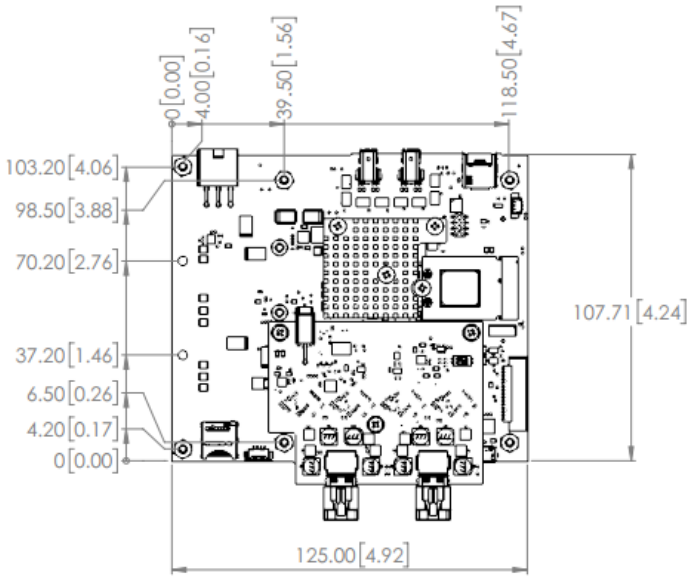


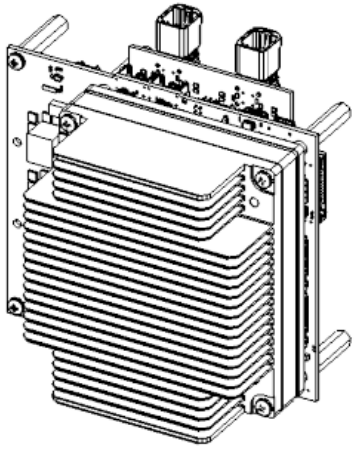

M1323-3005-AL STANDOFF, F/F, HEX6 M3.0X0.5,28mm LONG, AL
6 PLACES
92000A118 SCREW, M3.0X0.5, PPHMS, 8mm LONG, SS,
2164 THREADLOCKER, ONE DROP ON THREADS
TORQUE 5.2in-lb;
3 PLACES
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
TORQUE 5.2in-lb
1 PLACE
WiFi BT M.2 22X30
CTIA-01285(0.01) HEAT SINK 10G PHY w/GAP
PADS (REMOVE FILM FROM PADS PRIOR TO
ASSEMBLY)
92000A105:SCREW, M2.5X0.45, PPHMS, 8mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 3.1in-lb
3 PLACES
93475A196:FLAT WASHER, M2.5, SS
3 PLACES
JCBxxx
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACE
AGX207 CARRIER
PRIMARY LOCATION
9905-062 SPACER, M3, FF, 1.6mm LONG
2 PLACES
SECONDARY LOCATION
NVMe M.2 M-KEY MODULE
2 PLACES
SSH-M3-6 SHCS, LOW PROF, M3.0X0.5, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACES
NVIDIA AGX ORIN MODULE
92000A130: SCREW, M3.0X0.5, PPHMS, 25mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
4 PLACES

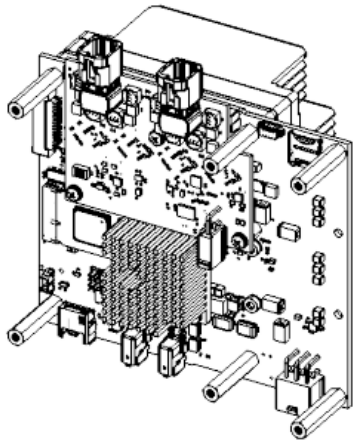
Passive Heatsink

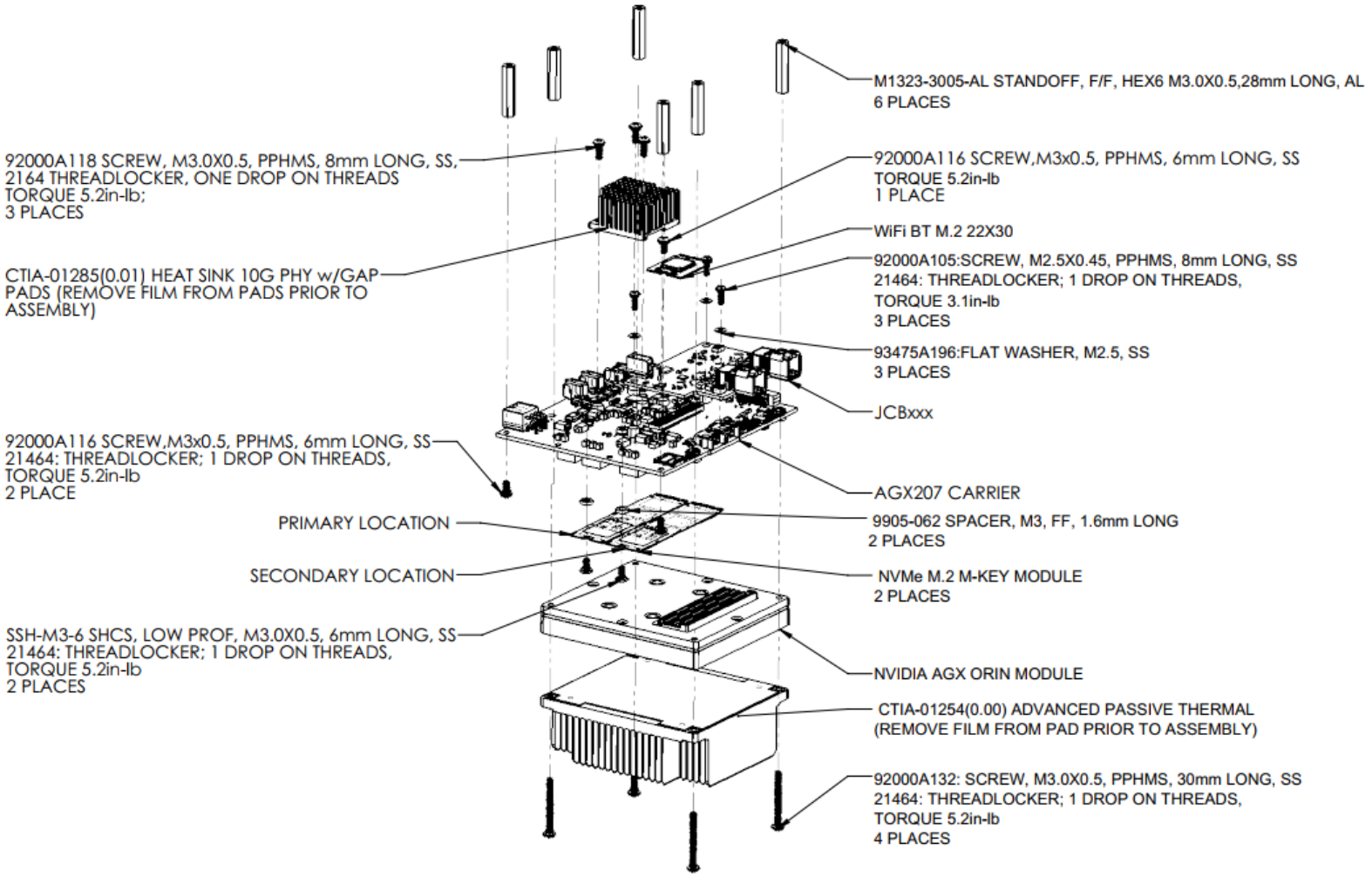




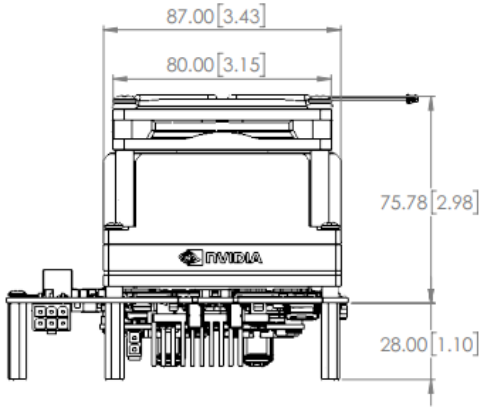


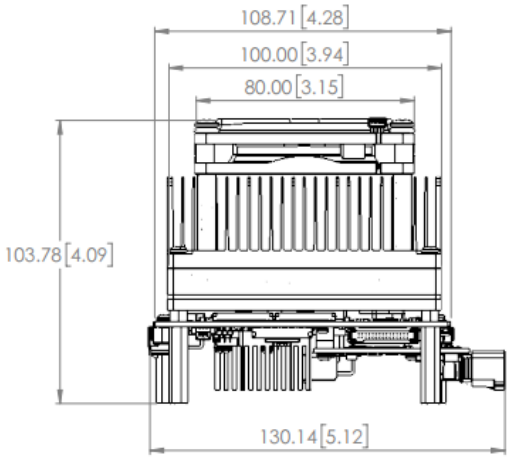


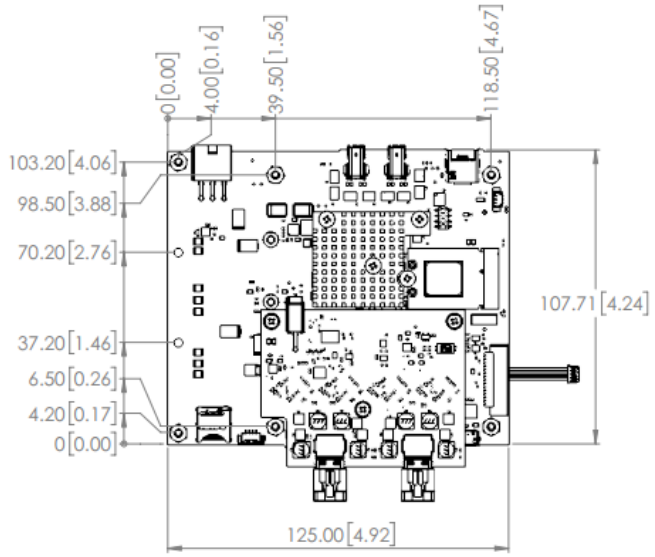


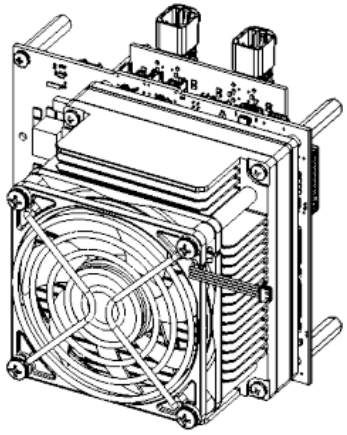

M1323-3005-AL STANDOFF, F/F, HEX6 M3.0X0.5,28mm LONG, AL
6 PLACES
92000A118 SCREW, M3.0X0.5, PPHMS, 8mm LONG, SS,
2164 THREADLOCKER, ONE DROP ON THREADS
TORQUE 5.2in-lb;
3 PLACES
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
TORQUE 5.2in-lb
1 PLACE
WiFi BT M.2 22X30
CTIA-01285(0.01) HEAT SINK 10G PHY w/GAP
PADS (REMOVE FILM FROM PADS PRIOR TO
ASSEMBLY)
92000A105:SCREW, M2.5X0.45, PPHMS, 8mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 3.1in-lb
3 PLACES
93475A196:FLAT WASHER, M2.5, SS
3 PLACES
JCBxxx
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACE
AGX207 CARRIER
PRIMARY LOCATION
9905-062 SPACER, M3, FF, 1.6mm LONG
2 PLACES
SECONDARY LOCATION
NVMe M.2 M-KEY MODULE
2 PLACES
SSH-M3-6 SHCS, LOW PROF, M3.0X0.5, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACES
NVIDIA AGX ORIN MODULE
CTIA-01254(0.00) ADVANCED PASSIVE THERMAL
(REMOVE FILM FROM PAD PRIOR TO ASSEMBLY)
92000A132: SCREW, M3.0X0.5, PPHMS, 30mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
4 PLACES

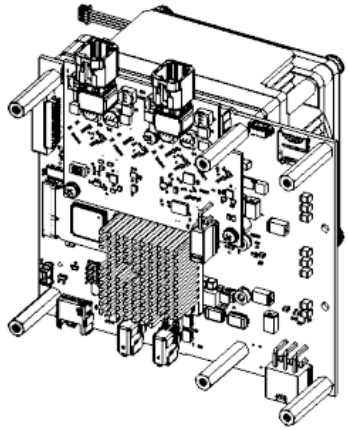
Active Heatsink

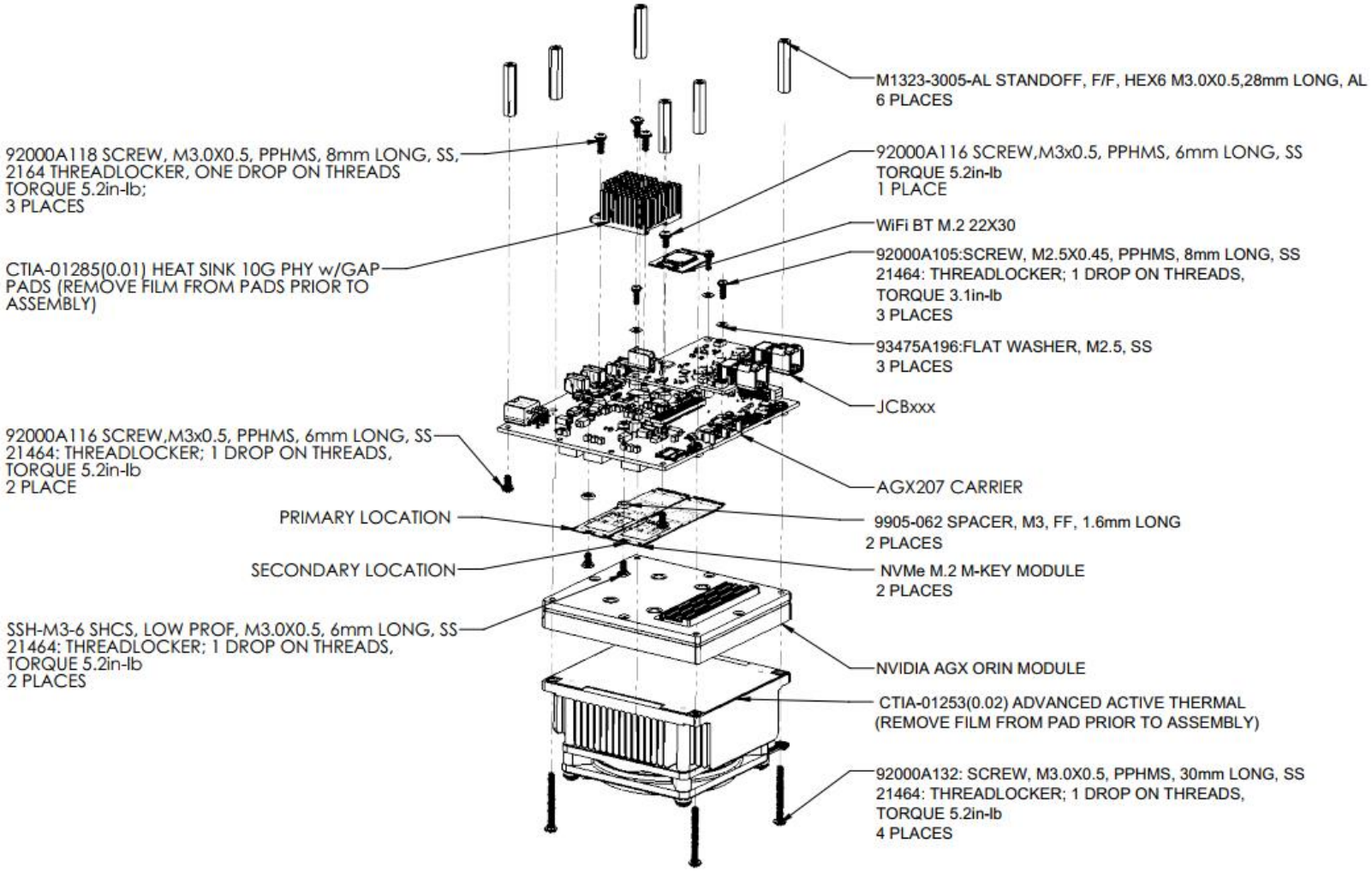











M1323-3005-AL STANDOFF, F/F, HEX6 M3.0X0.5,28mm LONG, AL
6 PLACES
92000A118 SCREW, M3.0X0.5, PPHMS, 8mm LONG, SS,
2164 THREADLOCKER, ONE DROP ON THREADS
TORQUE 5.2in-lb;
3 PLACES
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
TORQUE 5.2in-lb
1 PLACE
WiFi BT M.2 22X30
CTIA-01285(0.01) HEAT SINK 10G PHY w/GAP
PADS (REMOVE FILM FROM PADS PRIOR TO
ASSEMBLY)
92000A105:SCREW, M2.5X0.45, PPHMS, 8mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 3.1in-lb
3 PLACES
93475A196:FLAT WASHER, M2.5, SS
3 PLACES
JCBxxx
92000A116 SCREW,M3x0.5, PPHMS, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACE
AGX207 CARRIER
PRIMARY LOCATION
9905-062 SPACER, M3, FF, 1.6mm LONG
2 PLACES
SECONDARY LOCATION
NVMe M.2 M-KEY MODULE
2 PLACES
SSH-M3-6 SHCS, LOW PROF, M3.0X0.5, 6mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
2 PLACES
NVIDIA AGX ORIN MODULE
CTIA-01253(0.02) ADVANCED ACTIVE THERMAL
(REMOVE FILM FROM PAD PRIOR TO ASSEMBLY)
92000A132: SCREW, M3.0X0.5, PPHMS, 30mm LONG, SS
21464: THREADLOCKER; 1 DROP ON THREADS,
TORQUE 5.2in-lb
4 PLACES