



Connect Tech Inc.
Embedded Computing Experts

USERS GUIDE



Rudi-NX

CTIM-00126(0.00) 2024-04-11



CONNECT TECH

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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: <http://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 | 2024-04-11 | Preliminary Release |

INTRODUCTION

Connect Tech’s Rudi-NX brings a deployable NVIDIA® Jetson Orin™ NX to the market. The Rudi-NX’s design includes a Locking Power Input (+9 to +36V), Dual Gigabit Ethernet, HDMI video, 4 x USB 3.0 Type A, 4 x GMSL 1/2 Cameras, USB 2.0 (w/ OTG functionality), M.2 (B-Key 3042, M-Key 2280, and E-Key 2230 functionality; bottom access panel), 40 Pin Locking GPIO connector, 6-Pin Locking Isolated Full-Duplex CAN, RTC battery, and a dual purpose Reset/Force Recovery pushbutton with Power LED.

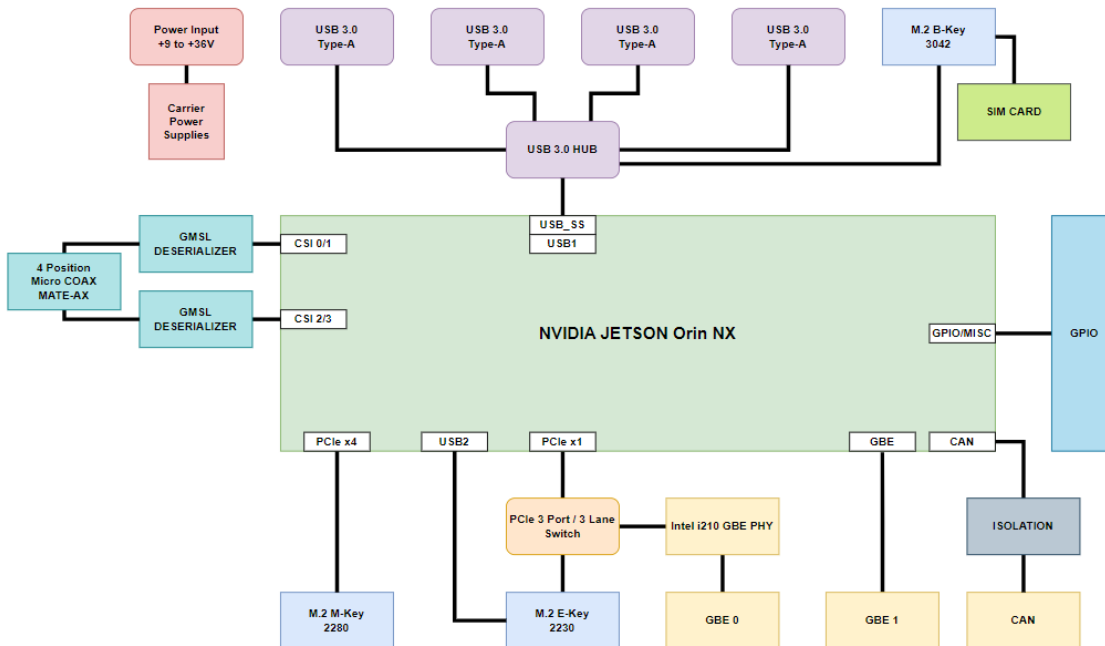
Product Feature and Specifications

| Feature | Rudi-NX |
|------------------------------|---|
| Module Compatibility | NVIDIA® Jetson Orin™ NX |
| Mechanical Dimensions | 109mm x 135mm x 50mm |
| USB | 4x USB 3.0 (Connector: USB Type-A) 1x USB 2.0 OTG (Micro-B) 1x USB 3.0 + 2.0 Port to M.2 B-Key 1x USB 2.0 to M.2 E-Key |
| GMSL Cameras | 4x GMSL 1/2 Camera Inputs (Connector: Quad Micro COAX) Deserializers Embedded On Carrier Board |
| Networking | 2x 10/100/1000BASE-T Uplink (1 Port From PCIe PHY Controller) |
| Storage | 1x NVMe (M.2 2280 M-KEY) |
| Wireless Expansion | 1x WiFi Module (M.2 2230 E-KEY) 1x LTE Module (M.2 3042 B-KEY) w/ SIM Card Connector |
| Misc. I/O | 2x UART (1x Console, 1x 1.8V) 1x RS-485 2x I2C 2x SPI 2x PWM 4x GPIO 3x 5V 3x 3.3V 8x GND |
| CAN | 1x Isolated CAN 2.0b |
| RTC Battery | CR2032 Battery Holder |
| Pushbutton | Dual Purpose Reset/Force Recovery Functionality |
| Status LED | Power Good LED |
| Power Input | +9V to +36V DC Power Input (Mini-Fit Jr. 4-Pin Locking) |
| Operating Temperature | -20 C to +60 C with Minimum Airflow of 70 CFM for Standalone Operation |

| | |
|-----------------------------|---|
| Weight | 646g (with module only – no NVMe, WiFi/BT or LTE installed) |
| Warranty and Support | 1 Year Warranty and Free Support |

PRODUCT OVERVIEW

Block Diagram



Connector Locations

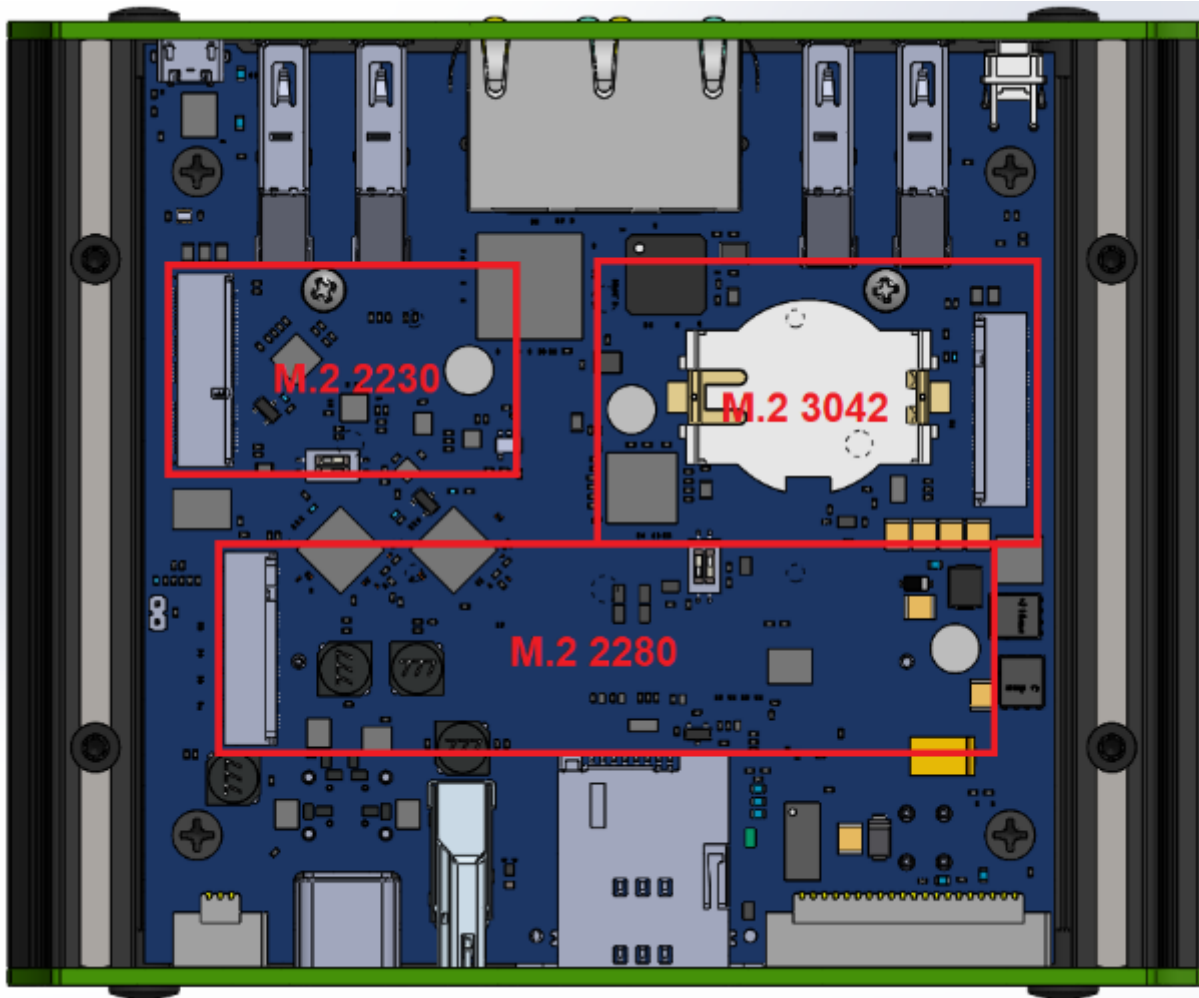
FRONT VIEW



REAR VIEW



BOTTOM VIEW (COVER REMOVED)



Internal Connector Summary

| Designator | Connector | Description |
|------------|---------------------|--|
| P1 | 0353180420 | +9V to +36V Mini-Fit Jr. 4-Pin DC Power Input Connector |
| P2 | 10128796-001RLF | M.2 3042 B-Key 2G/3G/LTE Cellular Module Connector |
| P3 | SM3ZS067U410AER1000 | M.2 2230 E-Key WiFi/Bluetooth Module Connector |
| P4 | 10131758-001RLF | M.2 2280 M-Key NVMe SSD Connector |
| P5 | 2007435-3 | HDMI Video Connector |
| P6 | 47589-0001 | USB 2.0 Micro-AB OTG Connector |
| P7 | JXD1-2015NL | Dual RJ-45 Gigabit Ethernet Connector |
| P8 | 2309413-1 | NVIDIA® Jetson Orin™ NX Module Board-To-Board Connector |
| P10 | 0475530001 | SIM Card Connector |
| P11A, B | 48404-0003 | USB3.0 Type-A Connector |
| P12A, B | 48404-0003 | USB3.0 Type-A Connector |
| P13 | TFM-120-02-L-DH-TR | 40 Pin GPIO Connector |
| P14 | 2304168-9 | GMSL 1/2 Quad Camera Connector |
| P15 | TFM-103-02-L-DH-TR | 6 Pin Isolated CAN Connector |
| BAT1 | BHSD-2032-SM | CR2032 RTC Battery Connector |

External Connector Summary

| Location | Connector | Mating Part or Connector |
|----------|----------------|---|
| Front | PWR IN | +9V to +36V Mini-Fit Jr. 4-Pin DC Power Input Connector |
| Front | HDMI | HDMI Video Connector |
| Back | OTG | USB 2.0 Micro-AB OTG Connector |
| Back | GbE1, GbE2 | Dual RJ-45 Gigabit Ethernet Connector |
| Front | SIM CARD | SIM Card Connector |
| Back | USB 1, 2, 3, 4 | USB3.0 Type-A Connector |
| Front | EXPANSION I/O | 40 Pin GPIO Connector |
| Front | GMSL | GMSL 1/2 Quad Camera Connector |
| Front | CAN | 6 Pin Isolated CAN Connector |
| Front | SYS | Reset / Force Recovery Pushbutton |
| Back | ANT 1, 2 | Antenna |
| Front | ANT 3, 4 | Antenna |

Switch Summary

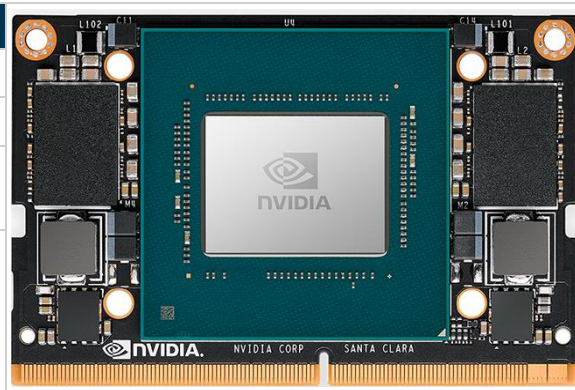
| Designator | Connector | Description |
|----------------|--------------|---|
| SW1-1 SW1-2 | 1571983-1 | Manufacturing Test Only (Internal) CAN Termination Enable/Disable |
| SW2 | TL1260BQRBLK | Dual Function Reset/Recovery Pushbutton (External) |
| SW3 | 1571983-1 | DIP Switch Selection for GMSL 1 or GMSL 2 (Internal) |

DETAILED FEATURE DESCRIPTION

Rudi-NX NVIDIA® Jetson Orin™ NX Module Connector

The NVIDIA® Jetson Orin™ NX processor and chipset are implemented on the NVIDIA® Jetson Orin™ NX Module. This connects to the NVIDIA® Jetson Orin™ NX to the Rudi-NX via a TE Connectivity DDR4 SODIMM 260 Pin connector.


| Function | Description |
|-----------------|---|
| Location | Internal to Rudi-NX |
| Type | Module |
| Pinout | Refer to NVIDIA® Jetson Orin™ NX Datasheet. |
| Features | Refer to NVIDIA® Jetson Orin™ NX Datasheet. |



Note: A Thermal Transfer Plate is mounted to the NVIDIA® Jetson Orin™ NX module internally to the Rudi-NX. Heat will dissipate through to the top of the Rudi-NX chassis.


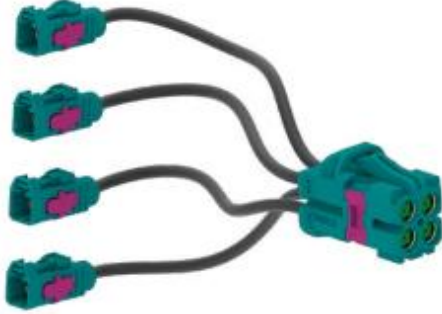
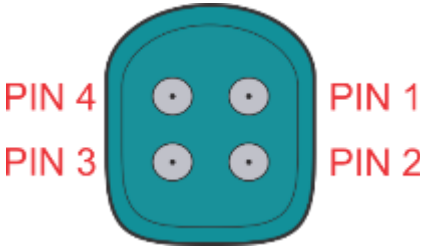
Rudi-NX HDMI Connector

The NVIDIA® Jetson Orin™ NX module will output video via the Rudi-NX vertical HDMI connector that is HDMI 2.0 capable.

| Function | Description | |
|-------------------------|-------------------------|--|
| Location | Front |  |
| Type | HDMI Vertical Connector | |
| Mating Connector | HDMI Type-A Cable | |
| Pinout | Refer to HDMI Standard | |
| | | |

Rudi-NX GMSL 1/2 Connector

The Rudi-NX allows GMSL 1 or GMSL 2 through the Quad MATE-AX connector. The GMSL to MIPI Deserializers are embedded on the carrier board which use 4-Lane MIPI video per 2 cameras. Additionally, the Rudi-NX outputs +12V Power Over COAX (POC) with a 2A current capability (500mA per camera).

| Function | | Description | |
|---------------------|------------|--|--|
| Location | | Front |  |
| Type | | GMSL 1/2 Camera Connector | |
| Mating Cable | | Quad Fakra GMSL Cable 4 Position MATE-AX to 4 x FAKRA Z-code 50Ω RG174 Cable CTI P/N: CBG341 |  |
| Pin | MIPI-Lanes | Description |  |
| 1 | CSI 2/3 | Camera Connector | |
| 2 | CSI 2/3 | Camera Connector | |
| 3 | CSI 0/1 | Camera Connector | |
| 4 | CSI 0/1 | Camera Connector | |

Rudi-NX USB 3.0 Type-A Connector

The Rudi-NX incorporates 4 vertical USB 3.0 Type-A connectors with a 2A current limit per connector. All USB 3.0 Type-A ports are 5Gbps capable.


| Function | Description |
|-------------------------|-----------------------|
| Location | Rear |
| Type | USB Type-A Connector |
| Mating Connector | USB Type-A Cable |
| Pinout | Refer to USB Standard |




Rudi-NX 10/100/1000 Dual Ethernet Connector

The Rudi-NX implements 2 x RJ-45 ethernet connectors for internet communication. Connector A is connected directly to the NVIDIA® Jetson Orin™ NX module. Connector B is connected through a PCIe Gigabit Ethernet PHY.


| Function | Description |
|-------------------------|----------------------------|
| Location | Rear |
| Type | RJ-45 Connector |
| Mating Connector | RJ-45 Ethernet Cable |
| Pinout | Refer to Ethernet Standard |



Rudi-NX USB 2.0 OTG/Host Mode Connector

The Rudi-NX implements a USB2.0 Micro-AB connector to allow host mode access to the module or OTG flashing of the module.

| Function | Description |
|-------------------------|-----------------------------------|
| Location | Rear |
| Type | Micro-AB USB Connector |
| Mating Connector | USB 2.0 Micro-B or Micro-AB Cable |
| Pinout | Refer to USB Standard |



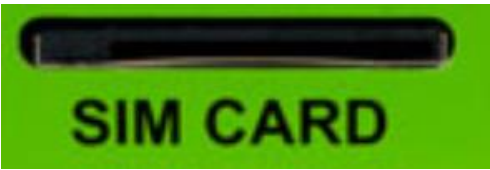
Note 1: A USB Micro-B cable is required for OTG Flashing.

Note 2: A USB Micro-A cable is required for Host Mode.

Rudi-NX SIM Card Connector

The Rudi-NX implements a Standard Size SIM Card connector.

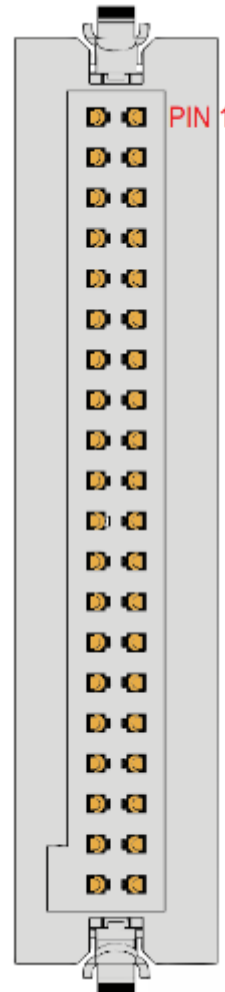
| Function | Description |
|-----------------|----------------------------|
| Location | Front |
| Type | SIM Card Connector |
| Pinout | Refer to SIM Card Standard |



Rudi-NX GPIO Connector

The Rudi-NX implements a Samtec TFM-120-02-L-DH-TR Connector to allow for additional user control. 3 x Power (+5V, +3.3V), 9 x Ground, 4 x GPIO (GPIO09, GPIO10, GPIO11, GPIO12), 2 x PWM (GPIO13, GPIO14), 2 x I2C (I2C0, I2C1), 2 x SPI (SPI0, SPI1), 1 x UART (3.3V, Console), and RS485 interfaces.

| Function | | Description | |
|--------------------------|--------|--------------------------|----------|
| Location | | Front | |
| Type | | GPIO Expansion Connector | |
| Carrier Connector | | TFM-120-02-L-DH-TR | |
| Mating Cable | | SFSD-20-28C-G-12.00-SR | |
| Pinout | Colour | Description | I/O Type |
| 1 | Brown | +5V | Power |
| 2 | Red | SPI0_MOSI | O |
| 3 | Orange | SPI0_MISO | I |
| 4 | Yellow | SPI0_SCK | O |
| 5 | Green | SPI0_CS0# | O |
| 6 | Violet | +3.3V | Power |
| 7 | Gray | GND | Power |
| 8 | White | SPI1_MOSI | O |
| 9 | Black | SPI1_MISO | I |
| 10 | Blue | SPI1_SCK | O |
| 11 | Brown | SPI1_CS0# | O |
| 12 | Red | GND | Power |
| 13 | Orange | UART2_TX_DEBUG | O |
| 14 | Yellow | UART2_RX_DEBUG | I |
| 15 | Green | GND | Power |
| 16 | Violet | I2C0_SCL | I/O |
| 17 | Gray | I2C0_SDA | I/O |
| 18 | White | GND | Power |
| 19 | Black | I2C2_SCL | I/O |
| 20 | Blue | I2C2_SDA | I/O |
| 21 | Brown | GND | Power |
| 22 | Red | GPIO09 | O |
| 23 | Orange | GPIO10 | O |



| | | | |
|----|--------|------------------|-------|
| 24 | Yellow | GPIO11 | I |
| 25 | Green | GPIO12 | I |
| 26 | Violet | GND | Power |
| 27 | Gray | GPIO13 (PWM1) | O |
| 28 | White | GPIO14 (PWM2) | O |
| 29 | Black | GND | Power |
| 30 | Blue | RXD+ (RS485) | I |
| 31 | Brown | RXD- (RS485) | I |
| 32 | Red | TXD+ (RS485) | O |
| 33 | Orange | TXD- (RS485) | O |
| 34 | Yellow | RTS (RS485) | O |
| 35 | Green | +5V | Power |
| 36 | Violet | UART1_TX | O |
| 37 | Gray | UART1_RX | I |
| 38 | White | +3.3V | Power |
| 39 | Black | GND | Power |
| 40 | Blue | GND | Power |


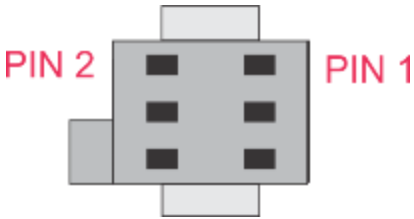
| | |
|--------|---|
| Notes: | <p>+3.3V and +5V power pins are outputs only, <u>DO NOT</u> feed power to these pins.</p> <p>GPIO/UART/SPI/I2C are +3.3V.</p> <p>Software information refers to JetPack 5 and may change if using a different JetPack version.</p> |
|--------|---|

| SW Cross Reference to GPIO Controllers | | | Orin NX SW Interface Cross Reference | | |
|--|-----------|---------------|--------------------------------------|-----------|----------------|
| Signal Name | Module ID | Controller ID | Signal Name | SW/Dev ID | DTB ID |
| GPIO09 | GPIO09 | PAC.06 | SPI0 | spidev0.0 | spi@3210000 |
| GPIO10 | GPIO10 | PEE.02 | SPI1 | spidev2.0 | spi@3230000 |
| GPIO11 | GPIO11 | PQ.06 | I2C0 | i2c-1 | I2c@c240000 |
| GPIO12 | GPIO12 | PN.01 | I2C2 | i2c-0 | I2c@3160000 |
| GPIO13 (PWM) | pwmchip1 | 32c0000.pwm | RS485 | ttyTHS1 | serial@3110000 |
| GPIO14 (PWM) | pwmchip0 | 32a0000.pwm | UART1 | ttyTHS0 | serial@3100000 |

Rudi-NX Isolated CAN Connector

The Rudi-NX implements a Samtec TFM-103-02-L-DH-TR Connector to allow for Isolated CAN with built-in 120Ω termination. 1 x Isolated Power (+5V), 1 x Isolated CANH, 1 x Isolated CANL, 3 x Isolated Ground.


| Function | | Description |
|--------------------------|--------|------------------------|
| Location | | Front |
| Type | | Isolated CAN Connector |
| Carrier Connector | | TFM-103-02-L-DH-TR |
| Mating Cable | | SFSD-03-28C-G-12.00-SR |
| Pinout | Colour | Description |
| 1 | Brown | GND |
| 2 | Red | +5V Isolated |
| 3 | Orange | GND |
| 4 | Yellow | CANH |
| 5 | Green | GND |
| 6 | Violet | CANL |

Note: Built-in 120Ω termination can be removed with customer request. Please contact Connect Tech Inc. for further details.

Rudi-NX Reset & Force Recovery Pushbutton


The Rudi-NX implements a dual functionality pushbutton for both Reset and Recovery of the platform. To Reset the module, simply press and hold the pushbutton for a minimum of 250 milliseconds. To put the Jetson Orin™ NX module into Force Recovery mode, press and hold the pushbutton for a minimum of 10 seconds.

| Function | Description | |
|------------------------------|----------------------|--|
| Location | Rear |  |
| Type | Pushbutton | |
| Reset Button Press | Minimum 250ms (typ.) | |
| Recovery Button Press | Minimum 10s (typ.) | |

Note: A full power cycle of the Rudi-NX Platform must be performed after module flashing.

Rudi-NX Power Connector

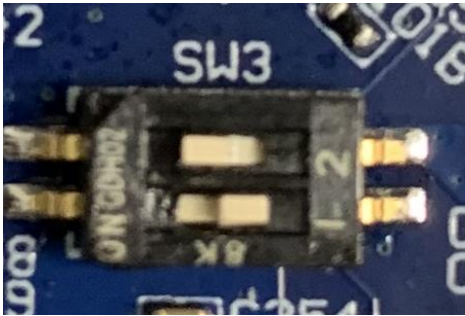
The Rudi-NX implements a Mini-Fit Jr. 4-Pin Power Connector that accepts +9V to +36V DC power.

| Function | Description | |
|------------------------------|------------------------------|--|
| Location | Front |  |
| Type | Mini-Fit Jr. 4-Pin Connector | |
| Minimum Input Voltage | +9V DC | |
| Maximum Input Voltage | +36V DC | |
| CTI Mating Cable | CTI PN: CBG408 | |

Note: A Power Supply capable of 100W or more is required to operate the Rudi-NX with all peripherals running at their respective maximum rating.

Rudi-NX GMSL 1/2 DIP Switch Selection

The Rudi-NX internally implements 2 position DIP Switch for the selection of GMSL 1 or GMSL 2.

| Function | Description | |
|--------------------|--------------------------|---|
| Location | Internal To Rudi-NX |  |
| Type | DIP Switch | |
| SW3-1 – OFF | GMSL1 | |
| SW3-2 – OFF | High Immunity Mode - ON | |
| SW3-1 – ON | GMSL2 | |
| SW3-2 – OFF | 3 Gbps | |
| SW3-1 – OFF | GMSL2 | |
| SW3-2 – ON | 6 Gbps | |
| SW3-1 – ON | GMSL1 | |
| SW3-2 – ON | High Immunity Mode – OFF | |

SW3

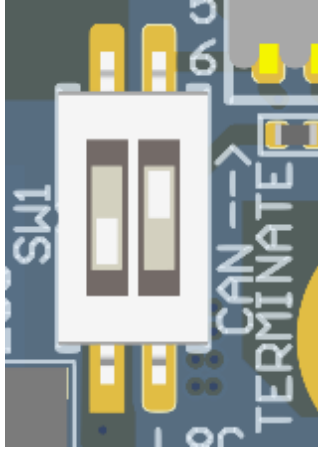
| | |
|-----------------------|-------------------------|
| LEFT SIDE (ON) | RIGHT SIDE (OFF) |
| SW3-2 | SW3-2 |
| SW3-1 | SW3-1 |

Note: Please contact Connect Tech Inc. if you would like to set a default GMSL mode before shipment.

Rudi-NX CAN Termination Enable/Disable DIP Switch Selection

The Rudi-NX internally implements 2 position DIP Switch for Enabling or Disabling the CAN Termination Resistor of 120Ω.





| Function | Description |
|--|---|
| Location | Internal to Rudi-NX |
| Type | DIP Switch |
| SW1-1 – OFF SW1-2 – OFF | Manufacturing Test Only CAN Termination Disable |
| SW1-1 – ON SW1-2 – ON | Manufacturing Test Only CAN Termination Enable |



Note: CAN Termination Disabled by default upon shipment to customer.
Please contact Connect Tech Inc. if you would like to set the Termination to be Enabled before shipment.

Rudi-NX Antenna Connectors

The Rudi-NX chassis implements 4x SMA Antenna Connectors (Optional) for the internal M.2 2230 E-Key (WiFi/Bluetooth) and M.2 3042 B-Key (Cellular).

| Function | Description | |
|-------------------------|-------------------|---|
| Location | Front and Rear |     |
| Type | SMA Connector | |
| Mating Connector | Antenna Connector | |
| | | |

TYPICAL INSTALLATION

1. Ensure all external system power supplies are off and disconnected.
2. Install the necessary cables for your application. At a minimum these would include:
 - a) Power cable to the input power connector.
 - b) Ethernet cable into its port (if applicable).
 - c) HDMI video display cable (if applicable).
 - d) Keyboard, Mouse, etc. via USB (if applicable).
 - e) SIM Card (if applicable).
 - f) GMSL Camera(s) (if applicable).
 - g) GPIO 40-Pin Connector (if applicable).
 - h) CAN 6-Pin Connector (if applicable).
 - i) Antennas for WiFi/Bluetooth (if applicable).
 - j) Antennas for Cellular (if applicable).
- 3) Connect the Power Cable of the +9V to +36V Power Supply into the Mini-Fit Jr. 4-Pin power connector.
- 4) Plug the AC cable into the Power Supply and into the wall socket.
 DO NOT power up your system by plugging in live power.

THERMAL DETAILS

The Rudi-NX has an Operating Temperature Range of -20°C to +60°C.

However, it is important to note that the NVIDIA® Jetson Orin™ NX Modules have their own properties separate to that of the Rudi-NX.

Customer responsibility requires proper implementation of a thermal solution that maintains the Rudi-NX temperatures below the specified temperatures (shown in the tables below) under the maximum thermal load and system conditions for their use case.

NVIDIA® Jetson Orin™ NX

| Parameter | Value | Units |
|--|-------------|-------|
| Maximum Orin™ NX SoC Operating Temperature | T.cpu = 99 | °C |
| | T.gpu = 99 | °C |
| Orin™ NX SoC Shutdown Temperature | T.cpu = 105 | °C |
| | T.gpu = 105 | °C |

Rudi-NX

| Parameter | Value | Units |
|--|---------------|-------|
| Maximum Operating Temperature @70CFM 970 Evo Plus 1TB Installed, NVMe Cooling Block Installed | T.cpu = 90.5 | °C |
| | T.gpu = 90.5 | °C |
| | T.nvme = 80.0 | °C |
| | T.amb = 60.0 | °C |

CURRENT CONSUMPTION DETAILS

NVIDIA® Jetson Orin™ NX

| Parameter | Value | Units | Temperature |
|---|-------|-------|-------------|
| NVIDIA® Jetson Orin™ NX Module, Passive Cooling, MAXN mode, Idle, HDMI, Ethernet, Mouse, and Keyboard plugged in | 13 | W | 25°C (typ.) |
| NVIDIA® Jetson Orin™ NX Module, Passive Cooling, MAXN mode, CPU stressed, GPU stressed, HDMI, Ethernet, 4x USB-A ports loaded at 1.5A each, 1x Micro USB port loaded at 0.5A, 4 cameras streaming | 78 | W | 25°C (typ.) |

SOFTWARE / BSP DETAILS

All Connect Tech NVIDIA® Jetson based products are built upon a modified Linux for Tegra (L4T) Device Tree that is specific to each CTI product.

WARNING: The hardware configurations of CTI’s products differ from that of the NVIDIA® supplied evaluation kit. Please review the product documentation and install ONLY the appropriate CTI L4T BSPs. Failure to follow this process could result in non-functional hardware.

CABLES INCLUDED

| Description | Part Number | Qty |
|-------------------|------------------------|-----|
| Power Input Cable | CBG408 | 1 |
| GPIO Cable | SFSD-20-28C-G-12.00-SR | 1 |
| CAN Cable | SFSD-03-28C-G-12.00-SR | 1 |

ACCESSORIES

| Description | Part Number |
|--------------------------|-------------|
| AC/DC Power Supply | MSG085 |
| Quad FAKRA GMSL1/2 Cable | CBG341 |

| | |
|-------------------|--------|
| Mounting Brackets | MSG067 |
|-------------------|--------|

APPROVED VENDORS CAMERAS

| Manufacturer | Description | Part Number | Image Sensor |
|-----------------|--------------|----------------------|--------------|
| e-con Systems | GMSL1 Camera | NileCAM30 | AR0330 |
| Leopard Imaging | GMSL2 Camera | LI-IMX390-GMSL2-060H | IMX390 |

MECHANICAL DETAILS

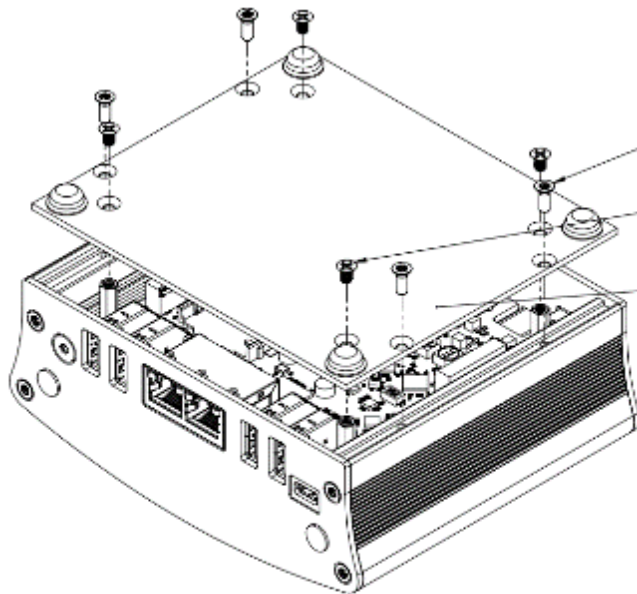
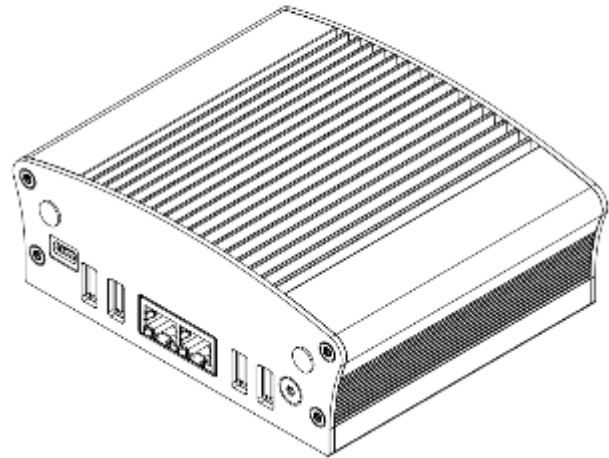
Rudi-NX Disassembly Procedure

INSTRUCTIONS FOR DISASSEMBLY

THE FOLLOWING PAGES SHOW THE DISASSEMBLY OF THE BASE PANEL TO GAIN ACCESS INTO THE SYSTEM TO ALLOW FOR PLUG-INS INTO M.2 SLOTS.

ALL OPERATIONS MUST BE COMPLETED IN A ESD CONTROLLED ENVIRONMENT. WRIST OR HEEL ESD STRAPS MUST BE WORN DURING ANY OPERATION OUTLINED.

ALL FASTENERS TO BE REMOVED AND RE-ASSEMBLED USING PROPER TORQUE DRIVERS



STEP 1: LAY THE SYSTEM UPSIDE DOWN AS SHOWN.

STEP 2: USING A TORQUE DRIVER CAPABLE OF 5.2 in-lb WITH A T-10 TORX BIT, REMOVE THE 4X SCREWS.

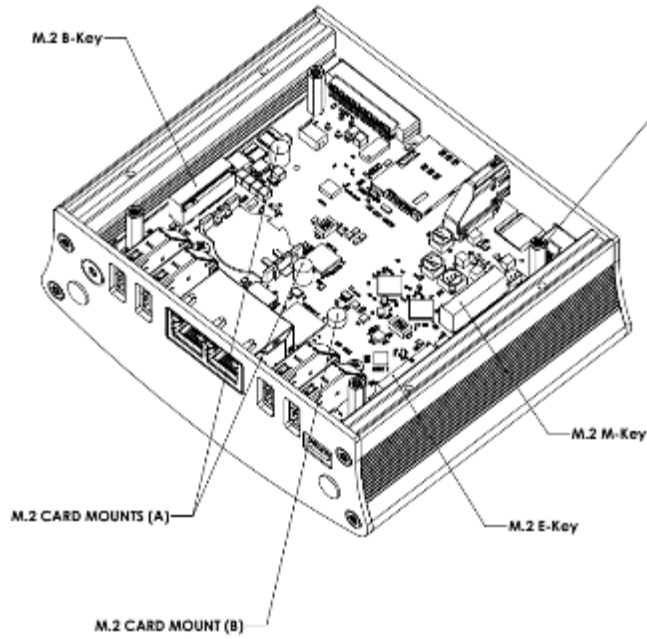
STEP 3: USING A TORQUE DRIVER CAPABLE OF 5.2 in-lb WITH A #1 PHILLIPS BIT, REMOVE THE 4X SCREWS.

STEP 4: CAREFULLY REMOVE THE BASE PANEL FROM HEAT SINK COVER.

NOTE - THE SYSTEM MUST REMAIN IN THIS POSITION DURING ALL OPERATIONS.

THE SYSTEM MUST REMAIN IN THIS POSITION SINCE THE PCB IS NOT FASTENED AND ONLY BEING HELD IN PLACE WITH THE CONNECTORS THAT ARE GOING THROUGH THE FRONT AND REAR PANELS.

DISASSEMBLY PROCEDURE



MAKE CERTAIN THESE STANDOFFS (4X) DID NOT COME LOOSE DURING DISASSEMBLY OF THE BASE PANEL

AFTER PLUGGING IN, THE M.2 CARDS ARE MOUNTED ON THE STANDOFF MOUNTS A & B AS SHOWN.

IT IS RECOMMENDED TO USE THE FOLLOWING TO FASTEN M.2 CARDS ON MOUNT A:

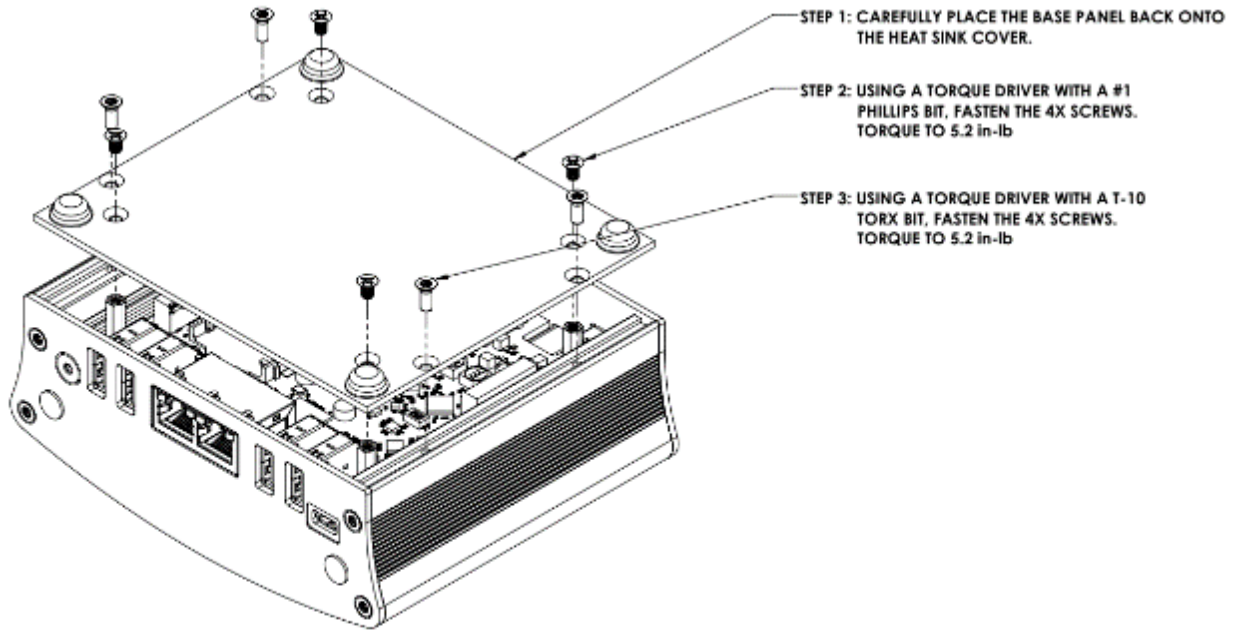
- M2.5X0.45, 8.0mm LONG, PHILLIPS PAN HEAD
- M2.5 LOCK WASHER (IF NOT USED - SUITABLE THREADLOCKER MUST BE USED)

IT IS RECOMMENDED TO USE THE FOLLOWING TO FASTEN M.2 CARD ON MOUNT B:

- M2.5X0.45, 6.0mm LONG, PHILLIPS PAN HEAD
- M2.5 LOCK WASHER (IF NOT USED - SUITABLE THREADLOCKER MUST BE USED)

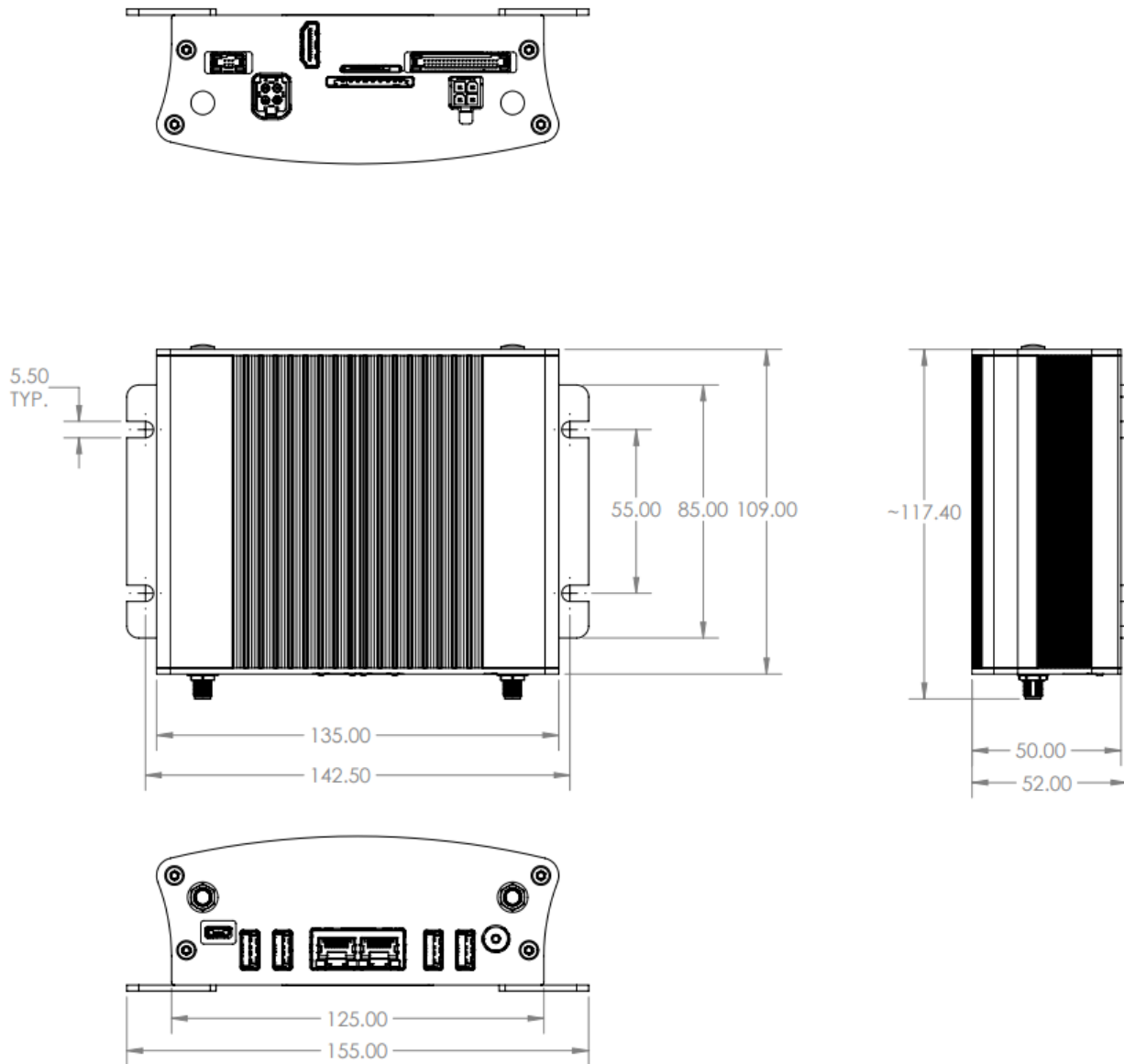
FASTEN TO A TORQUE OF 3.1in-lb

Rudi-NX Assembly Procedure

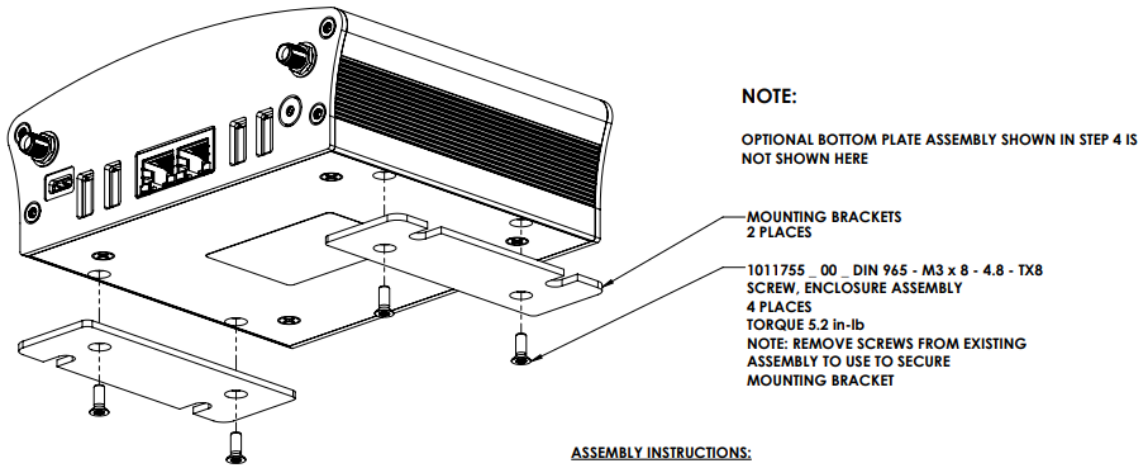


ASSEMBLY PROCEDURE

Rudi-NX Optional Mounting Brackets Plan View



Rudi-NX Optional Mounting Brackets Assembly Procedure



ASSEMBLY INSTRUCTIONS:

1. REMOVE THE RUBBER FEET FROM THE BOTTOM OF ASSEMBLY.
2. SECURE THE MOUNTING BRACKET ONE SIDE AT A TIME USING EXISTING SCREWS.
3. TORQUE THE FASTENERS TO 5.2 in-lb.