



USERS GUIDE

Connect Tech Inc.

Embedded Computing Experts

www.connecttech.com

Mimic – NVIDIA® Jetson AGX Xavier™ to Jetson™ TX2/TX2i/TX1 Adapter



Connect Tech Inc.

42 Arrow Road
Guelph, Ontario
N1K 1S6

www.connecttech.com

Tel: 519-836-1291

Toll: 800-426-8979 (North America only)

Fax: 519-836-4878

Email: sales@connecttech.com

support@connecttech.com

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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

Mail/Courier

Connect Tech Inc.
Technical Support
42 Arrow Road
Guelph, Ontario
Canada N1K 1S6

Email/Internet

sales@connecttech.com
support@connecttech.com
www.connecttech.com

Note:

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.

Telephone/Facsimile

Technical Support representatives are ready to answer your call Monday through Friday, from 8:30 a.m. to 5:00 p.m. Eastern Standard Time. Our numbers for calls are:

Toll Free: 800-426-8979 (North America only)

Telephone: 519-836-1291 (Live assistance available 8:30 a.m. to 5:00 p.m. EST, Monday to Friday)

Facsimile: 519-836-4878 (on-line 24 hours)



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	2019-03-12	Initial Release

Introduction

The Mimic Adapter from Connect Tech allows the NVIDIA® Jetson AGX Xavier™ module to be installed onto an NVIDIA Jetson™ TX2/TX2i/TX1 carrier. The Mimic Adapter is ideal for NVIDIA Jetson users who want to easily compare performance or upgrade their existing Jetson TX2/TX2i/TX1 designs to the new Jetson AGX Xavier.

This small form factor adapter solution integrates easily onto any existing carrier board in Connect Tech’s Jetson TX2/TX2i/TX1 product line, as well as any custom platform. Mimic Adapter allows users to immediately gain access to Jetson AGX Xavier's impressive 20x compute performance increase and 10x energy efficiency improvement from the Jetson TX2. Enables a giant leap forward in capabilities for autonomous machines and edge devices.

Product Features and Specifications

Specifications	
Adapter Function	Allows the NVIDIA® Jetson AGX Xavier™ module to be installed on to any NVIDIA® Jetson™ TX2/TX2i/TX1 Carrier Board
NVIDIA GPU SoC Module Compatibility	NVIDIA® Jetson AGX Xavier™
Carrier Board Compatibility	Any Carrier Board designed for NVIDIA® Jetson™ TX2/TX2i/TX1 (assuming there is a mechanical fit)
Jetson Xavier Interfaces Passed to TX2/TX2i/TX1 Carrier	<ul style="list-style-type: none"> • 3x USB 2.0 • 3x USB 3.0* • 3x PCIe x1* • 1x SATA • 6x 2-lane CSI / 3x 4-lane CSI • 2x eDP/DP/HDMI (Supports up to HDMI 2.0 UHD 4K [2160p] at 60Hz) • 1x Gigabit Ethernet** • 1x SD Card • 2x CAN • 4x I2C • 4x UART • 3x SPI • GPIO and Misc system control available on TX2/TX2i/TX1
Ethernet	RGMII 1GBE PHY contained on Adapter
Input Power	Adapter automatically regulates and distributes the TX2/TX2i/TX1 Carrier Board VDD_IN to the Xavier SYS_VIN_HV/MV
PCB / Electronics Mechanical Information	92mm x 105mm Weight: 68 grams Compatibility with both Development and Production AGX Xavier™ modules 3D STEP Model: Download Here
Operating Temperature	-40°C to +85°C (-40°F to +185°F)

* Based on Jetson TX2/TX2i/TX1 Lane Mapping Configuration

** Passed to on-adapter RGMII PHY

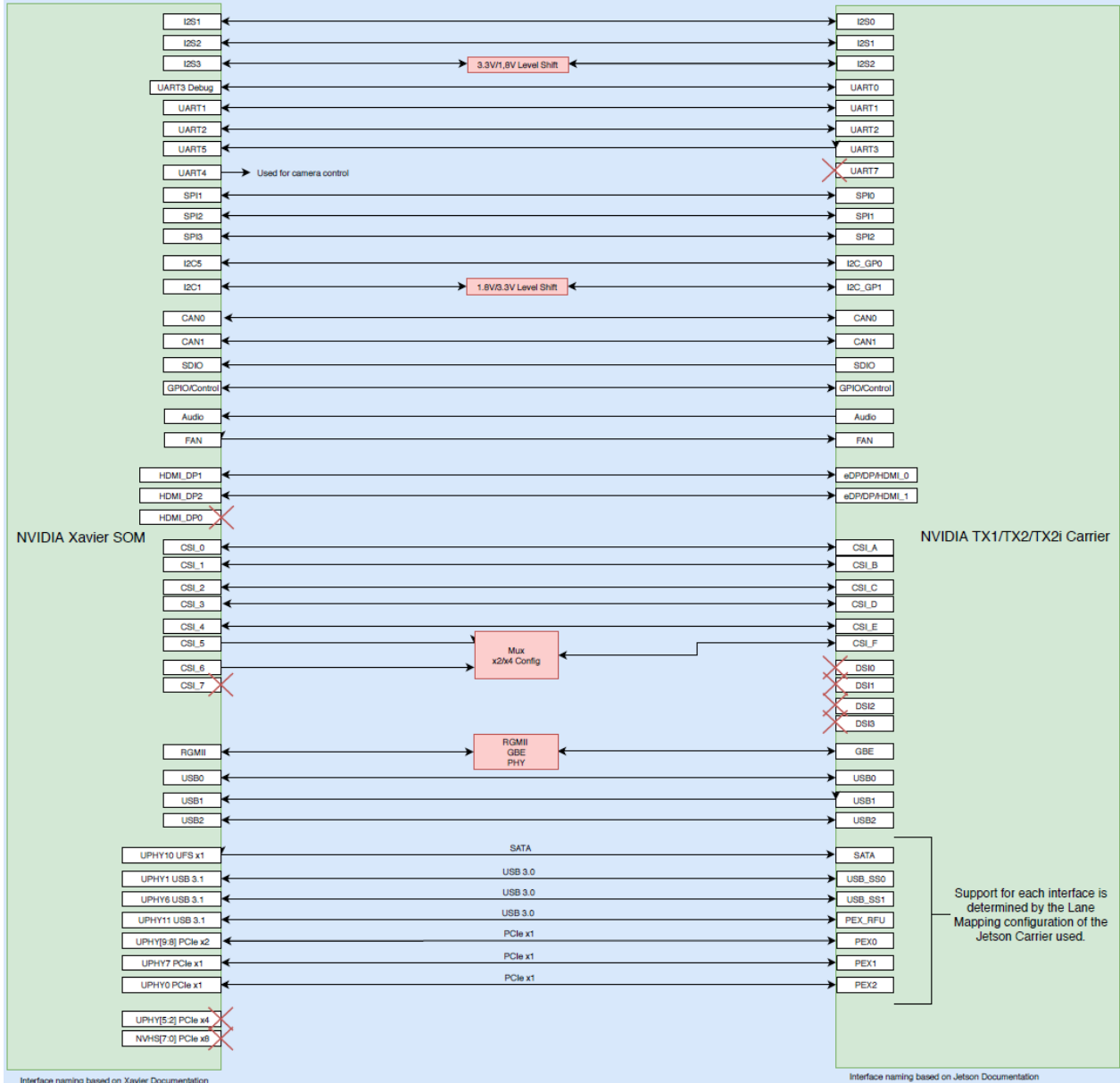


Part Numbers / Ordering Information

Part Number	
AGX001	Mimic - NVIDIA® Jetson AGX Xavier™ to Jetson™ TX2/TX2i/TX1 Adapter

Product Overview

Block Diagram

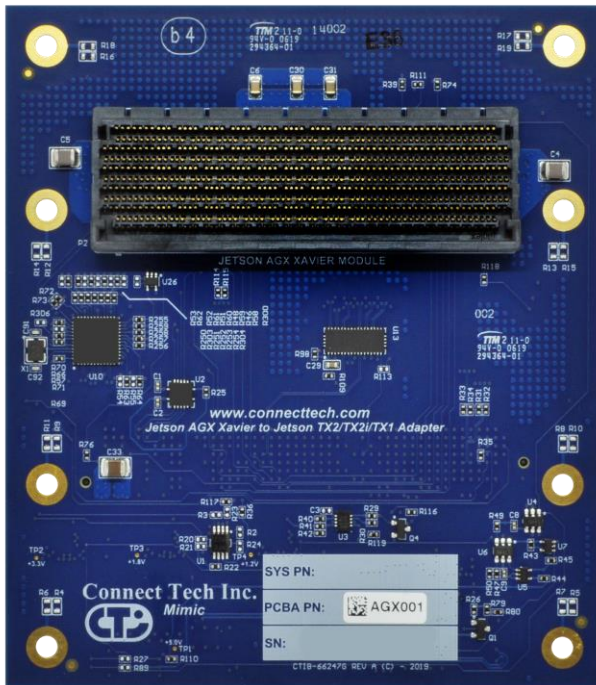


Note: Power to the Jetson AGX Xavier™ Module is sourced from the carrier board through the SEARAY™ connector that would normally power the NVIDIA® Jetson™ TX2/TX2i/TX1 module. This power input is passed through the Mimic Adapter PCB to the Jetson AGX Xavier™ Module connector. The input from the carrier is also used to derive the local power supplies on the Mimic Adapter.

Connector Locations (Top Side)



Connector Locations (Back Side)





Connector Summary

Designator	Description
P1	Jetson TX2/TX2i/TX1 Carrier Connector
P2	Jetson AGX Xavier Module Connector


Jumper/Switch Summary & Locations

Designator	Description
S2	Misc. Control Switch

Detailed Feature Description

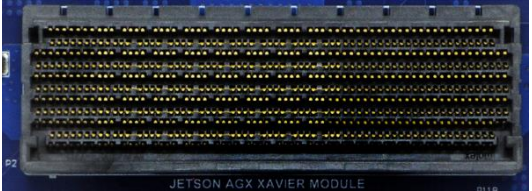
Jetson™ TX2/TX2i/TX1 Board-to-Board Carrier Connector

With the NVIDIA Jetson™ TX2, TX2i, or TX1, the processor and chipset are implemented on the Jetson™ TX2/TX2i/TX1 Module. To mimic this connection on the Mimic Adapter, it connects to NVIDIA Jetson™ TX2, TX2i, or TX1 carriers via a Samtec SEARAY™ Board to Board Connector.

Function	NVIDIA Jetson™ TX2/TX2i/TX1 Carrier Interface	
Location	P1	
Type	Samtec SEARAY™ Connector	
Connector	Part Number: SEAF-50-05.0-S-08-2-A-K-TR Manufacturer: Samtec	
Mating Connector	Part Number: SEAM-50-0x.x-S-08-2-A-K-TR Installed on Jetson™ TX2/TX2i/TX1 carrier (stacking height determined by connector installed on carrier board) Manufacturer: Samtec	
Pinout	Refer to NVIDIA's Jetson™ TX2/TX2i/TX1 System-on-Module datasheet for pinout details	

Jetson AGX Xavier™ Board-to-Board Carrier Connector

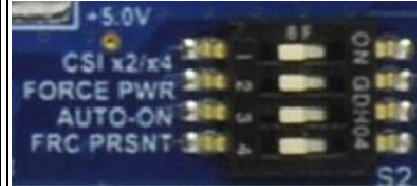
With the NVIDIA® Jetson AGX Xavier™, the processor and chipset are implemented on the module. The Mimic Adapter connects to the module via a Molex Mirror Mezz™ Connector.

Function	NVIDIA® Jetson AGX Xavier™ Module Interface	
Location	P2	
Type	Molex Mirror Mezz™ Connector	
Connector	Part Number: 203456-0003 Manufacturer: Molex	
Mating Connector	Same as above.	
Pinout	Refer to NVIDIA Jetson AGX Xavier™ System-on-Module datasheet and OEM design guide for pinout details	



S2 DIP Switch – Misc. Control Switch

Function	Miscellaneous Control			
Location	S2			
Pinout	Switch	Function		
		Description	ON	OFF
	S2A	CSI x2/x4 – selects CSI5 or CSI6 depending if you are using 2-lane or 4-lane CSI cameras	2-lane CSI for CSI6 from module	4-lane CSI for CSI5 from module
	S2B	FORCE PWR – forces the CARRIER_PWR_ON signal from the module	Force carrier power on	Normal Operation
	S2C	AUTO-ON – selects whether to power on when power is applied or require a push button event	Auto-on when power applied	Push button event required
S2D	FRC PRSNT – forces the module present signal to be asserted	Assert the module present signal	Normal Operation	



Typical Installation

1. Ensure all external system power supplies are off.
2. Install the Jetson AGX Xavier™ Module onto the Molex Mirror Mezz™ Connector P2. 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 Mimic Adapter/Jetson AGX Xavier™ Module assembly onto the carrier. Mounting hardware will vary depending on which type of module you are using, which carrier you are using, and the application in which this system is placed.
4. 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.

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

Power Consumption

Below is the theoretical maximum stand-alone power consumption of the Mimic Adapter. This does not include the module or any other carriers.

Theoretical Maximum	Watts
Theoretical absolute maximum total draw of The Mimic Adapter (not including Jetson™ module or any carrier)	5

The actual power consumption of the Mimic Adapter will vary depending on the application and use case.

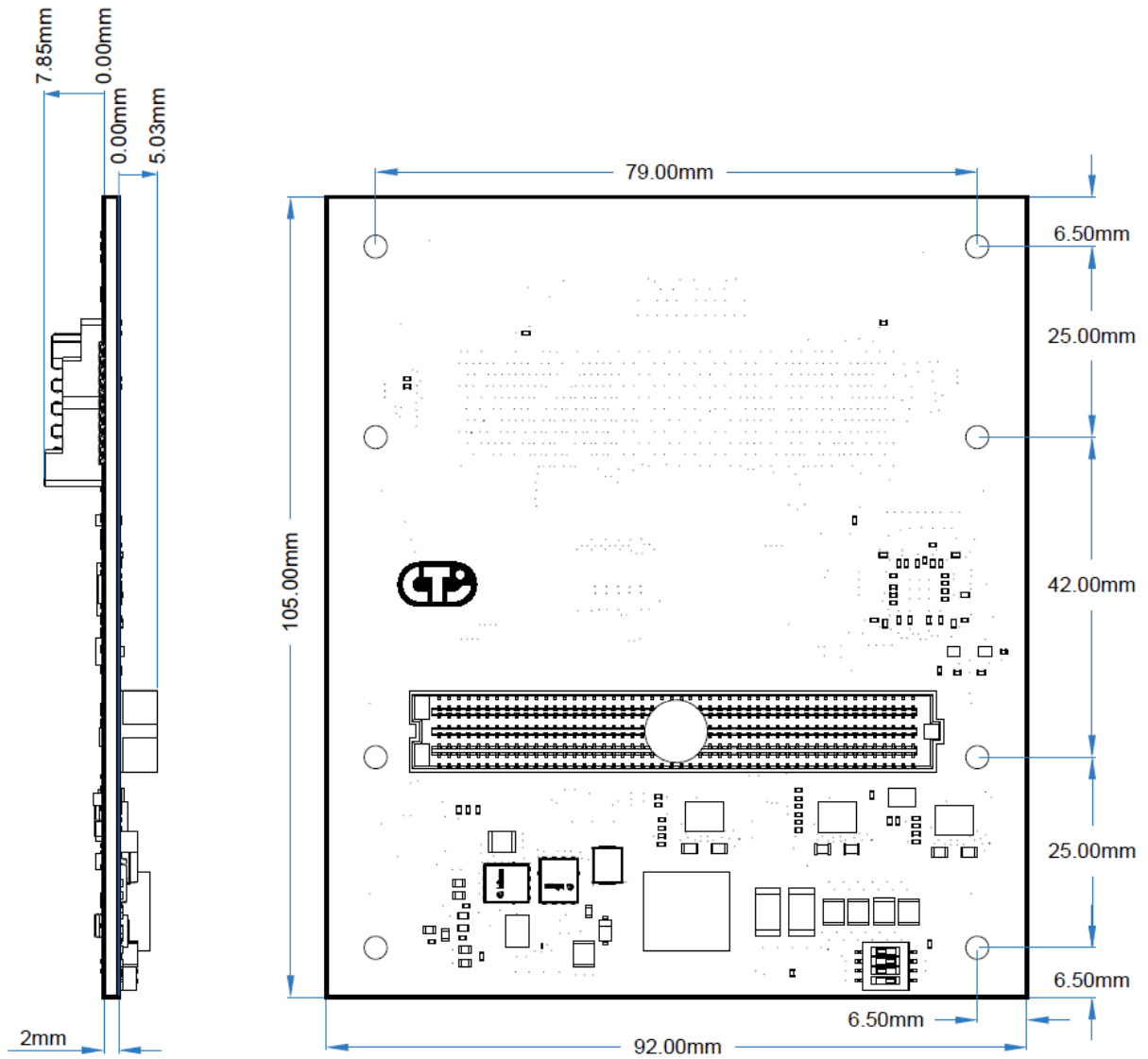
Power to the Jetson AGX Xavier™ Module is sourced from the carrier board through the SEARAY™ connector that would normally power the NVIDIA® Jetson™ TX2/TX2i/TX1 module. This power input is passed through the Mimic Adapter PCB to the Jetson AGX Xavier™ Module connector. This input from the carrier is also used to derive the local power supplies on the Mimic Adapter.



Your carrier power supplies will have been designed to provide power to a NVIDIA Jetson™ TX2, TX2i, or TX1. However these supplies will now be providing power to the Jetson AGX Xavier™ module which can consume more power depending on the application. It is important to qualify and measure your power delivery network to ensure it can withstand the additional power required by the Jetson AGX Xavier™ module.



Mechanical Drawings & Models



A complete **3D STEP Model file** of the Mimic Adapter can be downloaded here:
http://www.connecttech.com/ftp/3d_models/AGX001_3D_MODEL.zip



Cables

Drawing No.	Part No.	Description
CTIC-00660	CBG316	Xavier™ AGX Module to ASG FAN Cable



The CBG316 Fan cable allows for a connection to the FAN connector on CTI Jetson™ TX2/TX2i/TX1 carriers. The customer can use the cable as-is, or modify the length and fan termination to easily connect any fan within their application. This offers the flexibility to use this cable in a wide variety of applications.

Cable drawings are available upon request. Send an email request to: [**support@connecttech.com**](mailto:support@connecttech.com)