Connect Tech Inc.

Embedded Computing Experts

USERS GUIDE



Anvil-T5 Embedded System

CTIM-00157 Revision 0.04 2026-09-04

NVIDIA Elite Partner

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: 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 2-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 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	2025-11-17	Preliminary Release
0.01	2026-01-14	Updated product photos, added antenna connector photos
0.02	2026-02-18	Updated branding
0.03	2026-04-23	Updated external connector summary and cabling
0.04	2026-09-04	Updated Limited Product Warranty for units purchased after August 1, 2026

INTRODUCTION

Built to deploy massive AI workloads at the Edge, the Anvil-T5 Embedded System is the AI supercomputer guaranteed to stay cool - even at Jetson Thor™ MAX-N mode. The Anvil-T5 Embedded System can withstand even the most compute intensive AI applications with its power-efficient and feature rich design. Seamlessly deploy your next generation autonomous vehicle, smart city application, or intelligent vision solution with this state-of-the-art NVIDIA Jetson Thor™.

Product Features and Specifications

Specifications	
Product Name	**Anvil-T5 Embedded System**
Module Compatibility	NVIDIA® Jetson Thor™
Mechanical Dimensions	205.6 mm x 157.2 mm x 96.4 mm (8.10” x 6.19” x 3.79”)
USB	1x USB 3.2 (Connector: Type-C) 1x USB 3.2 w/ OTG (Connector: Type-C)
GMSL Cameras (with JCB add-on)	8x GMSL 1/2/3 Camera Inputs (Connector: 2x Quad Mini COAX) Deserializers
Networking	2x 10G BASE-T 2x 1000BASE-T
Storage	2x NVMe (M.2 2280 M-KEY); primary: x4; secondary: x2
Wireless Expansion	1x WiFi Module (M.2 2230 E-KEY, PCIe/USB2) 1x LTE/5G Module (M.2 3042 B-KEY, USB3) w/ Nano SIM Card (4FF)
Video Output	1x DisplayPort++ (HDMI supported with compatible adapter)
Misc. I/O	2x TTL UART_A and UART_B @ 3.3V 2x RS-232/485 UARTs 2x I2C Channel @ 3.3V IO 2x SPI Channel @ 3.3V IO 4x 3.3V GPI Inputs 6x 3.3V GPO Outputs (2x PWM Capable) 1x 3.3V Power Pin at 1A
CAN	4x Non-Isolated CAN 2.0b
RTC Battery	Included (CBG136)
Buttons	Power, Reset and Force Recovery buttons
Power Input	+36V to +60V DC Power Input (Mini-Fit Jr. 6-Pin Locking)
Operating Temperature	-25 C to +60°C (with 100% fan PWM) (Note 1)
Weight	2268g *Note that weight will vary depending on the configuration chosen (NVMe SSDs for storage, WiFi/BT, LTE modems and JCB options)
Warranty and Support	2 Year

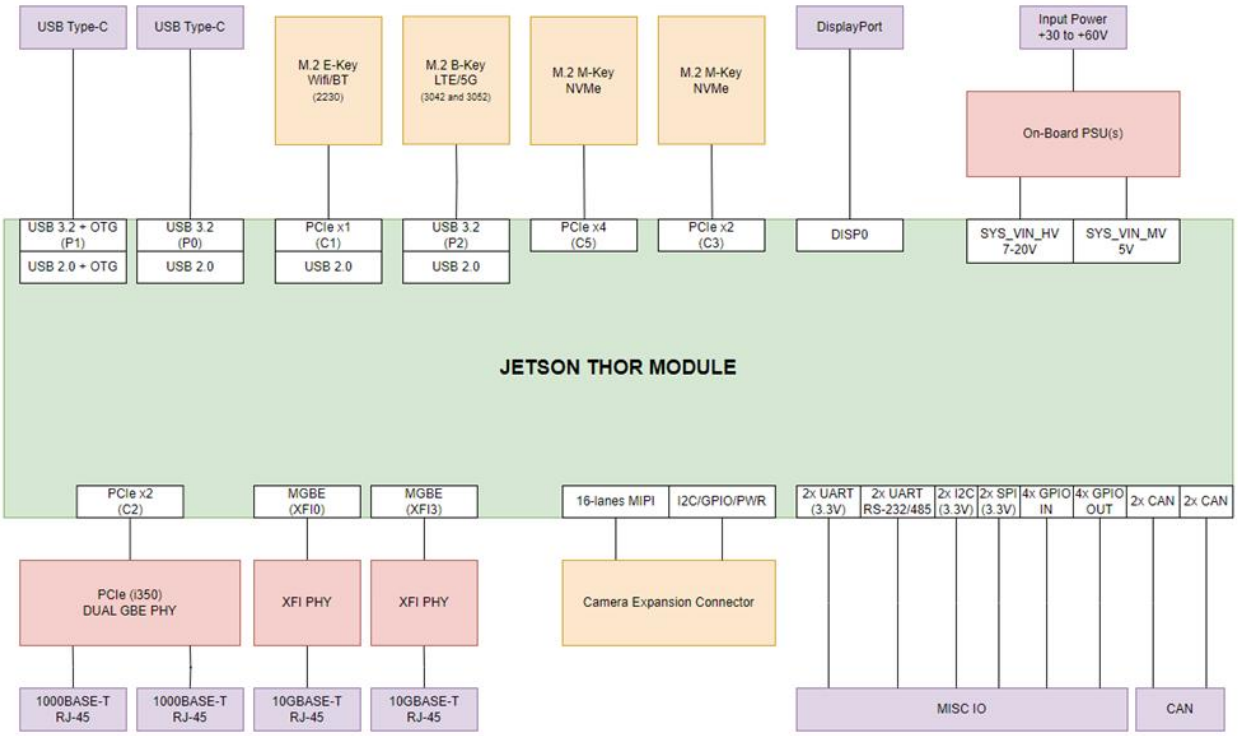
Note 1: Thor™ module operating temperature is from -25°C to a maximum TTP temperature of 80°C. See Power Consumption & Thermals for more details.

Part Numbers / Ordering Information

Part Number	
Part Number	***Description***
ESG625-xyz*	Anvil-T5 Actively Cooled version with embedded fans
	*Note that various configurations exist to fill out the features of the system. For example: Adding NVMe SSDs for storage, and/or WiFi/BT and/or LTE modems. Also different JCB combinations to externalize the camera interfaces can be used, like the JCB022 or JCB009. Contact sales@connecttech.com to configure your system.
	Included Accessories
CTIA-01277	Two (2) Mounting brackets are included for multiple mounting options. Each unit includes rubber feet pre-installed on the bottom, but can be swapped out with the included mounting brackets.
MMASM003M006FLP01BX	Four (4) Black Flat Head M3 6mm screws to fasten the brackets to the housing.
CBG630	12” Misc I/O Breakout to flying leads
CBG631	12” CAN Bus Breakout to flying leads
CBG632	12” 6-pin to 6-pin power connection cable
	Optional Accessories
MSG121	PSU 6pin 48V 360W (CTI sourced power brick)
MSG122	5G/LTE Antenna
MSG123	WiFi 6/BT Antenna
CBG341	Quad FAKRA GMSL1/2/3 Cable

PRODUCT OVERVIEW

Block Diagram



Connector Summary & Locations

FRONT VIEW



REAR VIEW



External Connector Summary

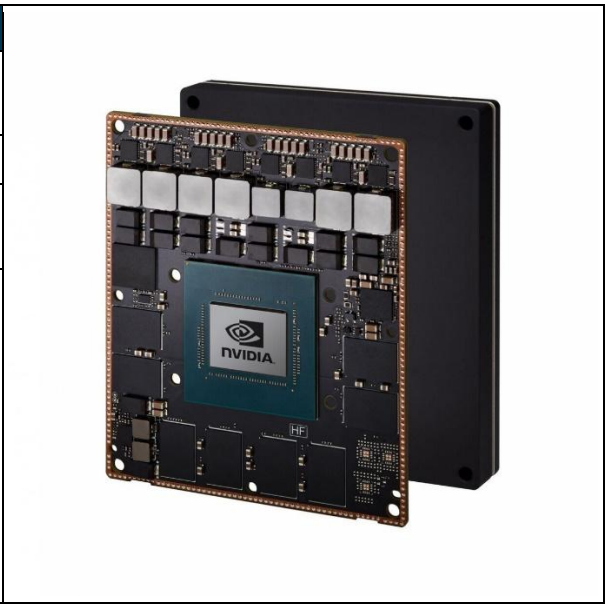
Location	External Connector	Description
Back	PWR IN	+36V to +60V Mini-Fit Jr. 6-Pin DC Power Input Connector
Front	DisplayPort	DisplayPort ++ connector
Front	USB 3.2 + OTG	USB 3.2 Type-C Connector (Left most USB)
Front	USB 3.2	USB 3.2 Type-C Connector (Right most USB)
Front	1GbE_1, 1GbE_2	Dual RJ-45 Gigabit Ethernet Connector
Front	10GbE_1, 10GbE_2	Dual RJ-45 10Gigabit Ethernet Connector
Back	Debug USB (serial)	Micro USB for connection to debug serial console
Back	EXPANSION I/O	40 Pin GPIO/MISC Connector
Front	GMSL 1-4, 5-8	GMSL 1/2/3 Quad Camera Connectors (JCB022 shown)
Back	CAN Busses 1,2,3,4	2x 10 Pin Non-Isolated CAN Connector
Back	P – PWR BUTTON R – RESET BUTTON F - FORCE RECOVERY	Power, Reset and Force Recovery Pushbuttons (small pinhole switches)
Front	ANT 1, 2	Antenna (WiFi/BT is defaulted to these locations)
Back	ANT 3, 4, 5, 6	Antenna (5G/LTE Modem is defaulted to these locations)

DETAILED FEATURE DESCRIPTION

NVIDIA® Jetson Thor™ Module Connector

The NVIDIA® Jetson Thor™ processor and chipset are implemented on the Jetson Thor™ Module. This connects to the Thor™ module to the Anvil-T5 Embedded System via Molex Mirror Mezz 699 pin connector.

Function	Description
Location	Within the Anvil-T5 Embedded System
Type	Module
Pinout	Refer to NVIDIA® Jetson Thor™ Datasheet.
Features	Refer to NVIDIA® Jetson Thor™ Datasheet.



Note: A Thermal Transfer Plate is incorporated on the NVIDIA® Jetson Thor™ module that dissipates heat through the top of the Anvil-T5 Embedded System Chassis.

Power Connector

Power Input: 36-60V input range

Function	Forge Power Supply Connector
Location	P20
Type	Mini Fit Jr 2x3 Right Angled
Connector	Part Number: 39301061 Manufacturer: Molex
Mating Connector	CBG632 Receptacle Housing 5557 series Cable Assembly 45135 series
Pinout	Pin 1-3 are Power Input (VIN) 36-60V Pin 4-6 are Ground (GND)



10G Ethernet (2 Ports)

Two ports of RJ45 10G BASE-T Ethernet for high-speed networking.

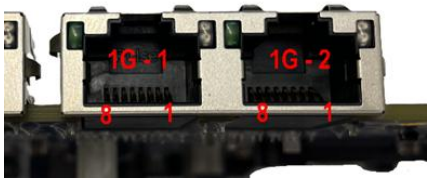
Function	10 GBE Network Connectivity
Location	P6
Type	2x 8 pin RJ45 with integrated Magnetics
Connector	Manufacturer: Pulse
Mating Cable	Standard RJ45 CAT 6a
Pinout	As per the IEEE-802.3 specification
Notes	Both Channels use AQR113 PHYs Originating from MGBE0 and MGBE3 on the Thor™ Module.



1G Ethernet (2 Ports)

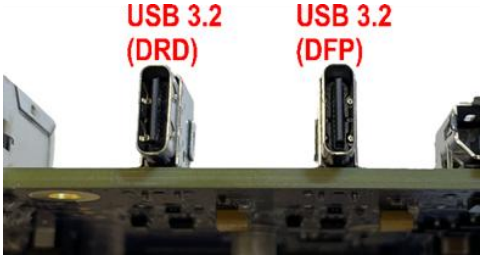
Two ports of RJ45 1G BASE-T Ethernet for networking.

Function	GBE Network Connectivity
Location	P5
Type	2x 8 pin RJ45 with integrated Magnetics
Connector	Manufacturer: Pulse
Mating Cable	Standard RJ45 CAT 5e or better
Pinout	As per the IEEE-802.3 specification
Notes	Both channels go through the PCIe ethernet controller (Intel i350 or equivalent)



USB 3.2 (2 Ports)

Two ports of USB 3.2 Type-C interfaces with 3A at 5V output capable per port.

Function	USB 3.2 General Purpose Ports	
Location	P3A, P3B	
Type	2x 26 pin Type C USB Connectors	
Connector	Part Number: 632723300011 Manufacturer: Wurth	
Mating Cable	Standard USB 3.0 Type C or better	
Pinout	As per the USB 3.2 specification	
Notes	One USB port is only a DFP (Downward facing port), the second is capable of both DFP and UFP (Upward Facing Port). The DRD port (P3B) is used for module Flashing access in recovery mode. Each USB port is capable of delivering up to 3A at 5V at USB 3.2 Gen 2 (10Gbps) speeds for both ports. Note that alternate modes for power or video are NOT supported on these USB interfaces. USB devices only.	

DISPLAYPORT Video Output

The Anvil-T5 Embedded System supports one DISPLAYPORT capable of 4k output resolution.

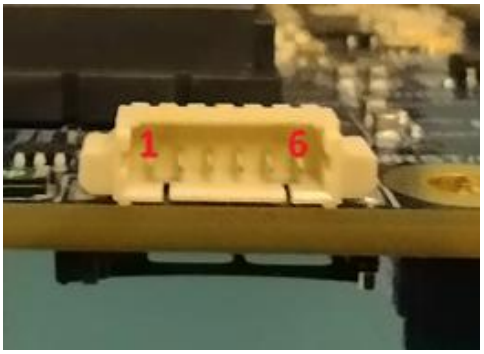
Function	Display Output	
Location	P10	
Type	Full size DisplayPort connector	
Connector	Part Number: 472720001 Manufacturer: Molex	
Mating Cable	Standard DISPLAYPORT or DISPLAYPORT to HDMI adapter cable	
Pinout	As per DISPLAYPORT	
Notes	The DISPLAYPORT output is capable of supporting HDMI using a DP++ compliant cable adapter.	

External Power/Reset/Force Recovery Connector

The Anvil Embedded System has a connector to provide external connections for PWR, RESET and FORCE RECOVERY.

Function	External Power/Reset control
Location	P21
Type	6 pin Pico blade
Connector	53261-0671 from Molex
Pinout	See table below
Notes	Note all signals here are active low and have internal 5.0V 10kohm pullups. Connect to GND to activate.

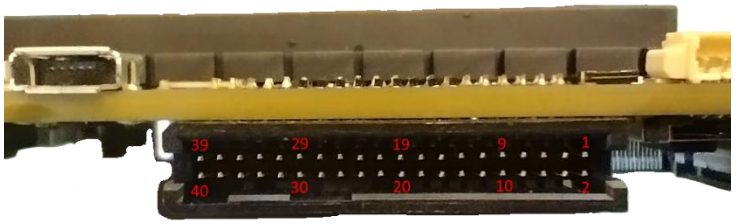
Pin #	Description
1	Force Recovery Button
2	GND
3	Reset Button
4	GND
5	Power Button
6	GND

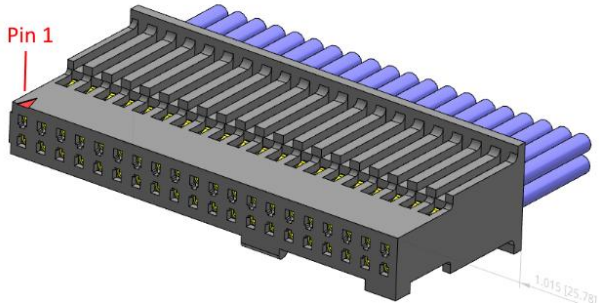


GPIO/SPI/I2C/UARTs Connector

Several General purpose I/O features are available on this interface including: 2x SPI, 2xI2C, 2xUART, 4xGPOut, 4xGPIn, 2xPWM_Out, 2xRS232/485.

Function	General Purpose I/O		
Location	P12		
Type	40 pin General Purpose 3.3V I/O Connector (note: All I/O are 3.3V levels except the RS232/RS485 interfaces)		
Connector	Samtec TFML-020 series		
Mating Cable	CBG630 / SFSD-20-28-G-12.00SL (SL or DL = Friction Lock required for locking fit)		
Pinout	**Pin #**	**Description**	**Description**	**Pin #**
	1	3V3 Power Output (1A)	GND	2
	3	SPI_A_CLK	SPI_A_MOSI	4
	5	SPI_A_CS0#	SPI_A_MISO	6
	7	SPI_B_CLK	SPI_B_MOSI	8
	9	SPI_B_CS0#	SPI_B_MISO	10
	11	GND	GND	12
	13	TTL_UART_A_TX	TTL_UART_B_TX	14
	15	TTL_UART_A_RX	TTL_UART_B_RX	16
	17	I2C_A_CLK	I2C_B_CLK	18
	19	I2C_A_SDA	I2C_B_SDA	20
	21	GP_Out_0	GP_In_0	22
	23	GP_Out_1	GP_In_1	24
	25	GP_Out_2	GP_In_2	26
	27	GP_Out_3	GP_In_3	28
	29	PWM_Out_A	PWM_Out_B	30
	31	GND	GND	32
	33	RS232A_TX/ RS485A_TXP	RS232A_RX/ RS485A_RXP	34
	35	RS232A_RTS/	RS232A_CTS/	36





	RS485A_TXN	RX485A_RXN	
37	RS232B_TX/ RS485B_TXP	RS232B_RX/ RS485B_RXP	38
39	RS232B_RTS/ RS485B_TXN	RS232B_CTS/ RS485B_RXN	40

Notes:

- All I/O are 3.3V unless otherwise specified.
- GP_Out_*x* - are driven outputs and can sink or source 12mA
- GP_In_*x* - VIH (Input High Voltage minimum) = 2V. No pullup or pulldown is pre-configured, user discretion to add externally if required for their application.
- PWM_Out_x - are driven outputs and can sink or source 24mA
- 3V3 Power output can provide up to 1A of current.

SW Cross reference to GPIO controllers

Connector Name	Module ID	Controller ID
GP_IN_0	GPIO32	PL.01
GP_IN_1	GPIO18	PL.04
GP_IN_2	GPIO31	PL.07
GP_IN_3	GPIO67	PAA.00
GP_OUT_0	I2S7_DIN	PU.00
GP_OUT_1	GPIO56	PY.07
GP_OUT_2	GPIO46	PAL.02
GP_OUT_3	GPIO30	PAA.02

Connector Name	Module ID	DTB ID
PWM_OUT_A	pwm5	pwm@810c600000 (PU.07)
PWM_OUT_B	pwm10	pwm@810c620000 (PV.01)

SW Interface Cross reference

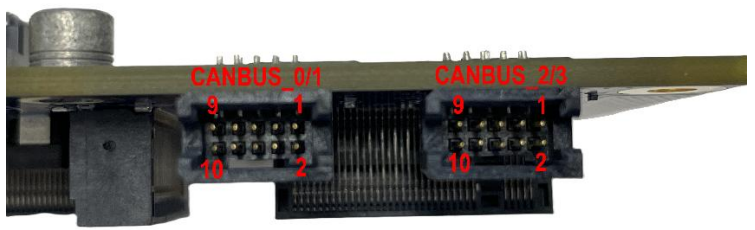
Connector Name	SW /dev ID	DTB ID
I2C_A	i2c0	i2c@810c630000
I2C_B	i2c11	i2c@810c6c0000
UART_A	ttyAMA9	serial@810c530000
UART_B	ttyAMA4	serial@810c500000
RS232A	ttyAMA5	serial@810c510000
RS232B	ttyAMA10	serial@810c540000
SPI_A	spi4	spi@810c460000
SPI_B	spi2	spi@810c440000

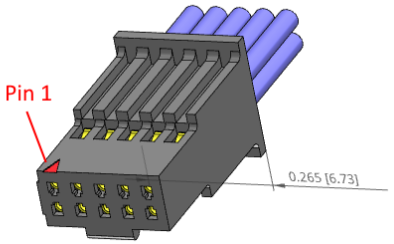
CAN BUS Interfaces

Four non-isolated CAN Bus interfaces are available on

Function	CAN Bus Interface
Location	P13 (CAN0_1), P14 (CAN2_3)
Type	10 pin dual CAN Bus Connector
Connector	Samtec TFML-05 series
Mating Cable	CBG631 / SFSD-05-28-G-12.00SL (SL or DL = Friction Lock required for locking fit)
Pinout	See table below
Notes	For P14, the pinout is as described above, except CAN0 is CAN2 and CAN1 is CAN3. Connector pinout allows for it to be rotated without causing damage.

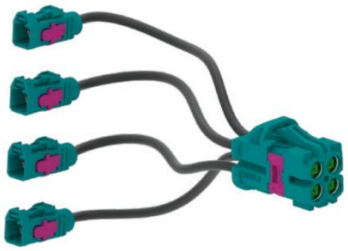
Pin #	Description	Description	Pin #
1	CAN0_H	CAN0_L	2
3	GND	GND	4
5	NC	NC	6
7	GND	GND	8
9	CAN1_L	CAN1_H	10





GMSL 1/2/3 Connector (with an included JCB022/JCB009)

The Anvil-T5 Embedded System allows GMSL 1, GMSL 2, or GMSL 2 through the Quad MATE-AX connectors. The GMSL to MIPI Deserializers are embedded on the carrier board which use 4-Lane MIPI video per 2 cameras. Additionally, the Anvil-T5 Embedded System outputs +12V Power Over COAX (POC).

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

Antenna Connectors

The Anvil-T5 Embedded System chassis has an option for 2x RP-SMA antenna connectors for the internal M.2 2230 E-Key (WiFi/Bluetooth) and 4x SMA antenna connectors for the internal M.2 3042 B-Key (Cellular).

Function	Description	
Location	Front (WiFi) and Rear (Cellular)	WiFi  Cellular 
Type	RP-SMA FEMALE connector (WiFi) SMA FEMALE connector (Cellular)	
Mating Connector	Antenna Connector RP-SMA MALE (WiFi) SMA MALE (Cellular)	

POWER CONSUMPTION & THERMALS

The Anvil-T5 Embedded System has an Operating Temperature Range of -25°C to +60°C.

It is important to note that the NVIDIA® Jetson Thor™ module has its own properties separate to that of the peripherals.

NVIDIA® Jetson Thor™

Parameter	Value	Units
Jetson Thor™ SoC maximum operating temperature top of case (TTP)	80	°C
Jetson Thor™ SoC recommended operating temperature	90	°C
Jetson Thor™ SoC maximum temperature	115	°C

Module TDP is approximately 130W, with system transient power draws up to 300% of TDP. Appropriate selection of input power source is required to ensure system stability. **Connect Tech recommends an input power source of 48V / 360W PSU that is capable of 400W+ peak power.**

Theoretical Maximum System power	Watts
Theoretical maximum system power with T5000 module (MAXN Power Mode): - Module = 130W - 2x USB 3.2 load 5V@3A each = 30W - 2x 10GbE linked = 6W - 2x 1GbE linked = 3W - 8x GMSL camera with PoC (12V power over coax) = 40W - 2x NVMe = 20W - 1x Wi-Fi = 3W - 1x LTE = 6W	238W

The typical power consumption will vary depending on the application and use case.

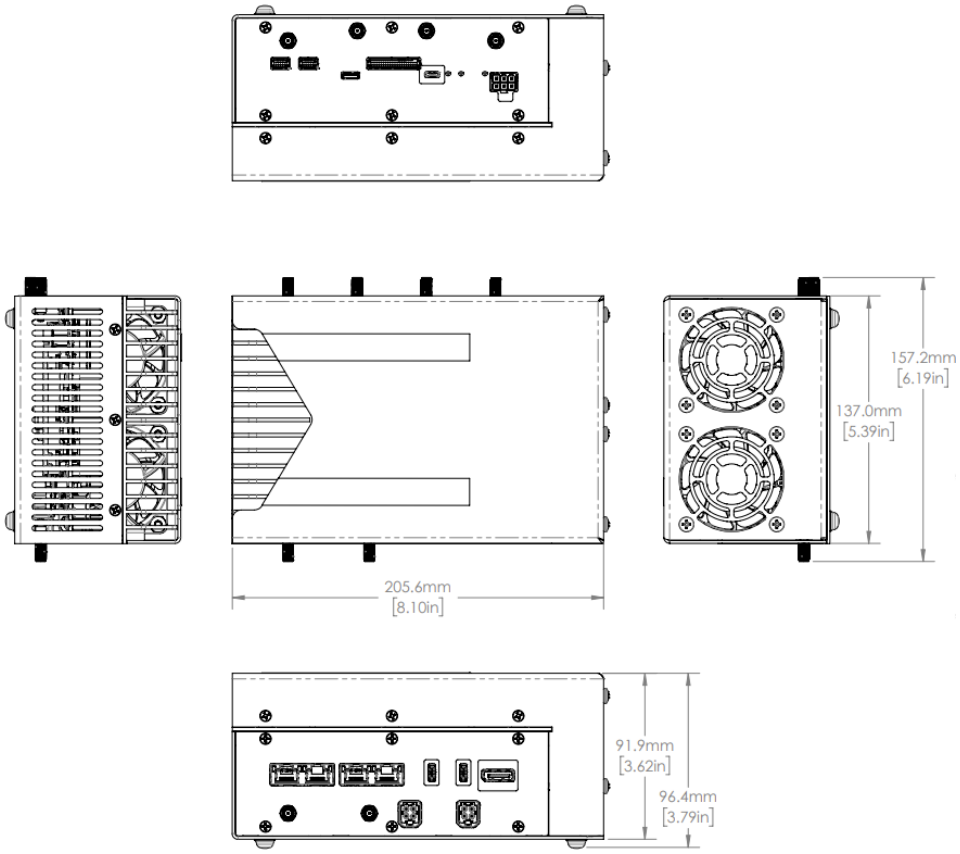
Tested System Power Scenarios	Watts
- Module (MAXN Power Mode) - 1x display - Apps running: video search and summarization + a local LLM - 2x NVMe, main used for AI models, secondary undergoing stress test (repetitive dd) - 1x 3A USB load - 10G loopback test	140W average, 385W instantaneous
- Idle system - Module in 120W power mode - 1x display	24W

Tested System Thermal Scenarios	Watts	SoC Temperatures
- Module (MAXN Power Mode) - 1x display - LLM doing repetitive Q&A - Stress -c 14 - Thermal chamber temperature range: 60 – 65°C	CPU: 51 – 54W GPU: 55 – 59W 5V: 21 – 23W	CPU: 102.2 – 109.3°C GPU: 97.1 – 108.2°C SOC012: 101.1 – 107°C SOC345: 96.9 – 107°C

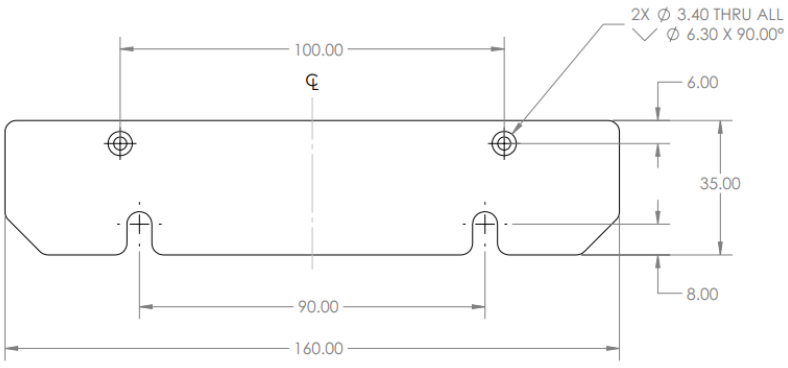
Notes:
1: System load is variable, and changes depending on actual processor usage.
2: Module starts thermally throttling at 109°C. During testing, throttling was observed when the chamber temperature and module power draws were on the higher end of the specified ranges. To ensure your system does not throttle, do not exceed an ambient temperature of 60°C.
3: If you want to keep the temperature of the SoC below 90°C, decrease module usage or ambient temperature, or both.

MECHANICAL DRAWINGS & MODELS

For a complete **3D STEP Model** file of the Active Cooled Anvil Embedded System (with mounting brackets shown), please contact Connect Tech Support.

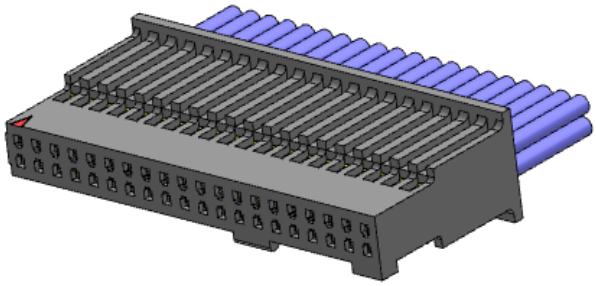


Included Mounting Backets: Each unit comes with rubber feet pre-installed. If required remove the rubber feet first before attaching the included mounting bracket using the supplied black 6mm M3 screws. Material of the bracket is 12GA aluminum (approx. 2mm thick).

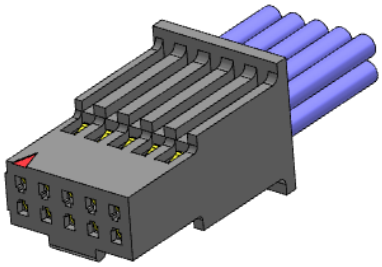


CABLES INCLUDED

CBG630 (MISC connector) – 12” breakout cable with flying leads is supplied with the board purchase.



CBG631 (CAN Bus) – 12” breakout cable with flying leads is supplied with the board purchase.



CBG632 (POWER) – 12” 6 pin to 6 pin Mini-Fit Jr for use with power connections is supplied with the board purchase.

