Connect Tech Inc CTIM-00463 Rosie Embedded System User Guide

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Contents

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 N1 L 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 the Rosie Embedded System. 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.

Copyright Notice

Trademark Acknowledgment

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	2016-04-12	Initial Release
0.01	2016-04-14	Correction of Serial Features
0.02	2016-04-22	Table Corrections
0.03	2016-08-29	Added CFM Information for Operating Temperature
0.04	2017-04-27	Updated feature set, added TX2 specs
0.05	2017-08-04	Added cable drawing links, removed drawings from doc
0.06	2017-08-14	Updated LED Colour Information
0.07	2017-12-12	Updated TX2 specs
0.08	2018-02-06	Updated introduction and product images
0.09	2018-07-31	Added TX2i compatibility
0.10	2019-04-08	Change pinout console image, Updated HDMI
0.11	2020-03-06	Update LED Indicator table
0.12	2021-10-08	Updated format, Updated address, Removed TX1 references

INTRODUCTION

Connect Tech's Rosie is a small form factor, rugged embedded system based on the NVIDIA® Jetson™ TX2 or TX2i. Housed in a compact enclosure with optional mounting brackets, Rosie features revolutionary NVIDIA Maxwell™ architecture with 256 CUDA cores delivering over 1 Tera FLOP of performance with a 64-bit ARM A57 CPU.

Rosie's rugged system also provides USB, HDMI, 2x Gigabit Ethernet, WiFi, and Bluetooth capabilities.

Rosie is designed to MIL-STD 810G, DO-160G, and IP68.

PRODUCT FEATURES AND SPECIFICATIONS

Specifications	
Processor	NVIDIA Jetson TX2 or TX2i
Memory	TX2/TX2i: 8GB LPDDR4
Storage	TX2/TX2i: 32GB eMMC
Display	1x HDMI Type A Link (Supports up to HDMI 2.0 UHD 4K [2160p] at 60Hz)
Ethernet	2x Gigabit Ethernet (10/100/1000) Links
USB	2x USB 2.0 Links
WiFi	IEEE 802.11 ac
Bluetooth	Bluetooth 4.0 (24 Mbps)
Serial	1x RS-232
Power Operation	Auto Power On in Event of Power Failure External Power On/Off Control Butto n
Power Requirement	+9.0V to +36.0V DC Input Range
Operating Temperature	-20^{o}C to +80^{o}C with Minimum Airflow of 125 CFM for Standalone Operation
Dimensions	Without Mounting Bracket: 163.6mm x 108.0mm x 96.3mm (6.438” x 4.250” x 3.790”) With Mounting Bracket: 163.6mm x 146.1mm x 99.4mm (6.438” x 5.750” x 3.9 15”)
Weight	1.43kg (3.15lbs)
Design Rating	IP68 DO-160G MIL-810G
Accessories	Cable Kit
Warranty and Support	1 Year Warranty and Free Support

Part Numbers / Ordering Information

Part Number	
ESG501-21	Rosie Embedded System with NVIDIA® Jetson™ TX2 (North American Version)
ESG501-31	Rosie Embedded System with NVIDIA® Jetson™ TX2i (North American Version)
ESG501-22	Rosie Embedded System with NVIDIA® Jetson™ TX2 (Europe)
ESG501-32	Rosie Embedded System with NVIDIA® Jetson™ TX2i (Europe)
ESG501-03	Rosie Embedded System with NVIDIA® Jetson™ TX2/TX2i (Israel)
ESG501-04	Rosie Embedded System with NVIDIA® Jetson™ TX2/TX2i (Korea)

PRODUCT OVERVIEW

Connector Locations

Connector Summary

Designator	Connector	Description
GbE 1	Gigabit Ethernet Port 1	Gigabit Ethernet (10/100/1000) Port 1 RJ-45 Connector
GbE 2	Gigabit Ethernet Port 2	Gigabit Ethernet (10/100/1000) Port 2 RJ-45 Connector
USB 1	USB 2.0 Port 1	USB 2.0 Port 1 Type A Connector
USB 2	USB 2.0 Port 2	USB 2.0 Port 2 Type A Connector
HDMI	HDMI	HDMI Type A Connector
ANT 1	Antenna 1	NVIDIA Jetson TX2/TX2i J8 U.FL
ANT 2	Antenna 2	NVIDIA Jetson TX2/TX2i J9 U.FL
PWR	Power Input	Power Input Connector
CONSOLE	Console Port	Console Connector

Switch Summary

Designator	Function	Description
Power Button	Power ON/OFF	Rosie System Power ON/OFF Button

DETAILED FEATURE DESCRIPTION

The Rosie Embedded System is a Ruggedized NVIDIA Jetson TX2/TX2i System. Designed to IP68, DO160G, and MIL-810G, the Rosie comes with the standard NVIDIA Jetson TX2/TX2i Ubuntu Jetpack Image.

Power Input

The Rosie Embedded System accepts a single power input to power the entire System. An input range of +9.0V to +36.0V DC is required. In addition, both reverse polarity protection, and surge protection has been designed into the Rosie Embedded System.

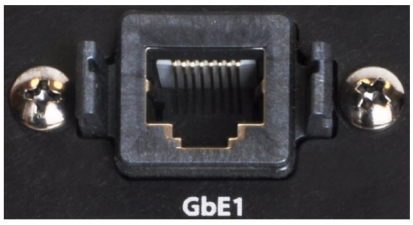
Function	**Power**	
Location	PWR	
Type	Symtec ACR-12 IP68 Sealed Circular Receptacle	
System Connector P/N	ACR-12-01-G-00.25-T-BC-P-1 Manufacturer: Symtec	
Mating Connector P/N	ACP-12-01-G-2.00-S-BC-P-1 Manufacturer: Symtec	
Pinout	Pin	Description
	1	GND
	2	PWR
	3	GND
	4	PWR
	Power Input Range: +9.0V to +36.0V	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

Console

The Rosie Embedded System has a console port to allow for remote or headless use of the System. With an RS-232 Link, the Console port allows for additional debug of the Rosie Embedded System.

Function	Console		
Location	CONSOLE		
Type	Symtec ACR-12 IP68 Sealed Circular Receptacle		
System Connector P/N	ACR-12-03-G-00.25-T-BC-P-3 Manufacturer: Symtec		
Mating Connector P/N	ACP-12-03-G-2.00-S-BC-P-3 Manufacturer: Symtec		
Pinout	Pin	Description	
	1	RX/RX+	
	2	TX/TX+	
	3	GND	
	4	TX-	
	5	RX-	
	6	+3.3V	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.		

10/100/1000 Ethernet (GBE)

Function	Gigabit Ethernet Connector	
Location	GbE1, GbE2	
Type	Symtec RPBE IP68 Sealed Rectangular Receptacle	
System Connector P/N	RPBE Manufacturer: Symtec	
Mating Connector P/N	Industry Standard Gigabit Ethernet	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

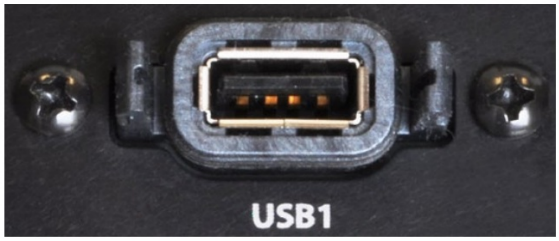
Software Support for the Intel 82574

Additional drivers may be required to properly operate the GBE Port 1 of the System.

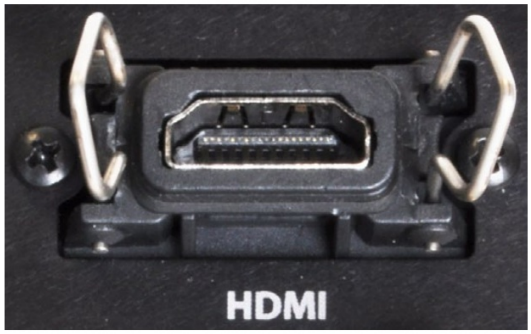
These drivers can be downloaded directly from Intel's website from the link below:
https://downloadcenter.intel.com/SearchResult.aspx? lang = eng & Product Family=Ethernet +

[Components & Product Line=Ethernet +Controllers & Product Product=Intel%C2%AE+82574+Gigabit+Ethernet+Controller]

USB 2.0

Function	**USB 2.0**	
Location	USB1, USB2	
Type	Symtec RPBU IP68 Sealed Rectangular Receptacle	
System Connector P/N	RPBU Manufacturer: Samtec	
Mating Connector P/N	Industry Standard USB 2.0	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

HDMI

Function	**HDMI**	
Location	HDMI	
Type	Amphenol LTW HDMI Type A Receptacle	
System Connector P/N	Manufacturer: Amphenol LTW	
Mating Connector P/N	Industry Standard HDMI	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

Antenna 1

The Rosie Embedded System enables access to the NVIDIA Jetson TX2/TX2i at its core. The external SMA Antenna 1 Connector is attached internally to the J8 U.FL on the Jetson TX2/TX2i.

Function	USB 2.0	
Location	ANT1	
Type	Symtec Micro High Frequency SMA Connector	
System Connector P/N	MH113-MH1RP-01SB1 Manufacturer: Symtec	
Ingress Protection	To meet IP68, the appropriate cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

Antenna 2

The Rosie Embedded System enables access to the NVIDIA Jetson TX2/TX2i at its core. The external SMA Antenna 2 Connector is attached internally to the J9 U.FL on the Jetson TX2/TX2i.

Function	USB 2.0	
Location	ANT2	
Type	Symtec Micro High Frequency SMA Connector	
System Connector P/N	MH113-MH1RP-01SB1 Manufacturer: Symtec	
Ingress Protection	To meet IP68, the appropriate locking cable or sealing cap must be used. Please refer to the Ingress Protection section for details.	

SWITCH DESCRIPTION

The Rosie Embedded System has a single Power Button on the Front Faceplate.

Power Button

Function	Power Button	
Location	Power Symbol ⏻	

GROUND LUG

The Rosie Embedded System has a single Ground Lug on the Front Faceplate.

Ground Lug

Function	Ground Lug	
Location	Ground Symbol	
Screw Type	#10-32	

TYPICAL OPERATION

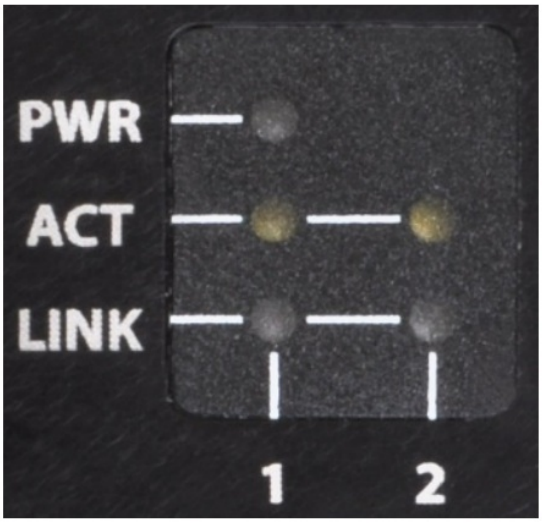
1. Ensure external power supply is turned OFF
2. Connect power cable to the Rosie Embedded System. Ensure that the power supply is in the acceptable range of +9.0V to +36.0V
3. Connect any additional system cables such as sub or ethernet
4. Switch ON the Power Supply. DO NOT power up your system by plugging in live power
5. The Rosie Embedded System will now auto start. Please allow it 15 to 30 seconds to power up into the Ubuntu Operating System

SYSTEM LEDS

The Rosie Embedded System has 5 System LEDs on the front

LED	Description
PWR	System Power
ACT1	Gigabit Ethernet ACT 1
LINK1	Gigabit Ethernet LINK 1
ACT2	Gigabit Ethernet ACT 1
LINK2	Gigabit Ethernet LINK 2

The LEDs can be found on the front faceplate of the Rosie Embedded System and are clearly labelled as shown below.



CURRENT CONSUMPTION DETAILS

Below are the maximum ratings of the Rosie Embedded System.

Theoretical Maximum	Amps	Watts
Theoretical absolute maximum total draw of all functionality on the Rosie Embedded System	TBD	TBD

Below are measurements taken with the Rosie Embedded System running in various configurations. Please refer to the NVIDIA Jetson TX2 or TX2i manual for full details on the current consumption and operational details.

Actual Measurements	Amps	Watts
System standalone, powered OFF, with no loads	TBD	TBD
System standalone, powered ON, no operating system, with no loads	TBD	TBD
HDMI video output, USB keyboard, system sitting in Ubuntu Console	TBD	TBD
HDMI video output, USB keyboard/mouse, system sitting in Ubuntu Desktop (GUI)	TBD	TBD
HDMI video output, USB keyboard/mouse, 2x GBE running, system sitting in Ubuntu Desktop (GUI), running NVIDIA Smoke Render Test	TBD	TBD

INGRESS PROTECTION PACKAGE (IP68)

The Rosie Embedded System is designed for IP68 scenarios. To achieve this level of Ingress Protection, the Field Termination Kit is required. This Kit includes sealing caps for all of the connectors. Custom cables are required for sealed mating to also achieve IP68.
Please contact sales for additional information: **sales@connecttech.com**

NVIDIA JETSON TX2/TX2I SOFTWARE

The Rosie comes pre-flashed with an L4T (Linux for Tegra) environment, which includes support for many common APIs, and is supported by NVIDIA's complete development tool chain.

Please refer to NVIDIA's official L4T webpage link for full details:
https://developer.nvidia.com/embedded/linux-tegra

MECHANICAL MOUNTING PACKAGE

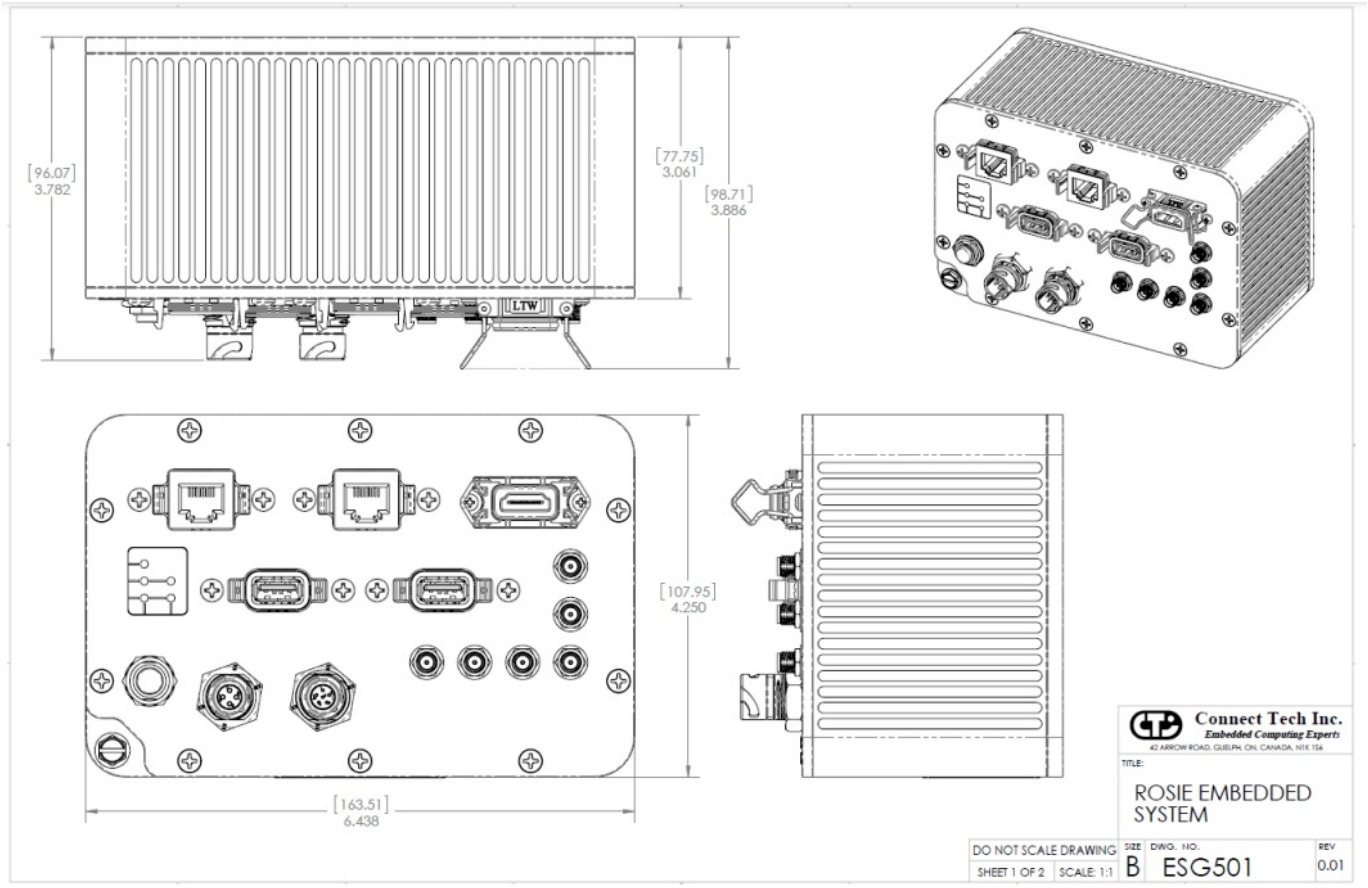
The Rosie Embedded System has an optional mounting package to allow for wall or rack mount use. Details of this mounting hardware can be seen in the Mechanical Detail ISO Views show in the Mechanical Details section.

Please contact sales for additional information: **sales@connecttech.com**

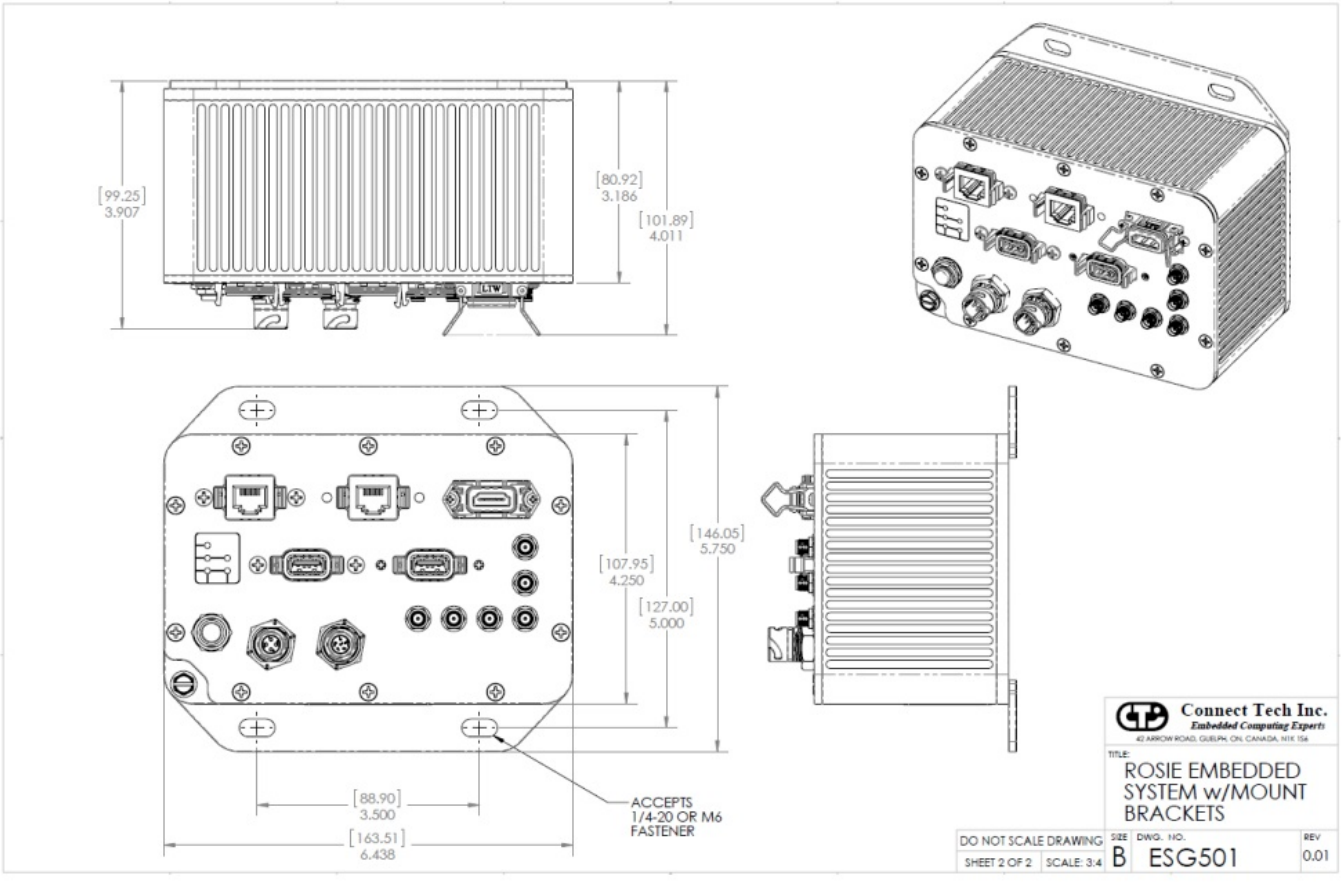
MECHANICAL DETAILS

A complete 3D STEP Model file of Rosie Embedded System can be downloaded here:
https://www.connecttech.com/ftp/3d_models/ROSIE.zip

ISO View – Rosie Embedded System without Mounting Brackets



ISO View – Rosie Embedded System with Mounting Brackets



CABLES

The following table summarizes the Rosie Embedded System cables available.

Available Cables

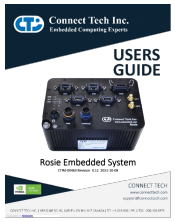
Drawing No.	Part No.	Description
CTIC-00557	CBG219	Rosie External Power Cable
CTIC-00558	CBG220	Console Cable

Customer Support

CONNECT TECH
www.connecttech.com
support@connecttech.com

CONNECT TECH INC. I 489 CLAIR RD. W., GUELPH, ON NIL 0H7 CANADA I TEL: + 1.519.836.1291 I TOLL: 800.426.8979 Downloaded from Arrow.com.

Documents / Resources

	Connect Tech Inc CTIM-00463 Rosie Embedded System [pdf] User Guide CTIM-00463 Rosie Embedded System, CTIM-00463, Rosie Embedded System, Embedded System, System

References

- Connect Tech Inc., Embedded Computing Experts
- Resource Center - Connect Tech Inc.
- Jetson Linux | NVIDIA Developer
- User Manual