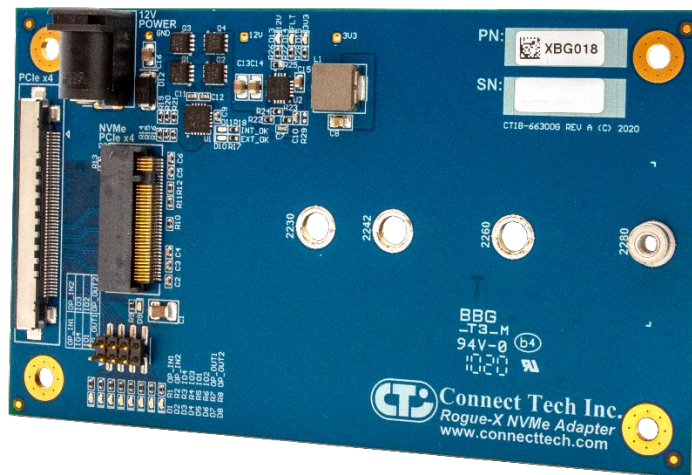




Connect Tech Inc.
Embedded Computing Experts

USERS GUIDE



Rogue-X NVMe Breakout

CTIM-00022 Revision 0.00 2023-10-17



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TABLE OF CONTENTS

Table of Contents	2
Preface.....	3
Disclaimer	3
Customer Support Overview	3
Contact Information.....	3
Limited Product Warranty	4
Copyright Notice	4
Trademark Acknowledgment.....	4
ESD Warning	5
Revision History	5
Introduction	6
Product Features and Specifications	6
Part Numbers / Ordering Information	6
Product Overview.....	7
Block Diagram	7
Connector Summary & Locations	8
Jumper Summary & Locations	8
LED Summary	8
Detailed Feature Description	9
Connectors & Jumpers.....	9
Rogue-X Connector	9
M.2 M-Key - NVMe.....	11
Power Connector	11
Typical Installation	12
Power Consumption & Thermals.....	12
Mechanical Drawings & Models.....	12
Cables	12

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. Support resources are 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 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 (1) 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.

Copyright Notice

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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	2023-10-17	Preliminary Release

INTRODUCTION

Connect Tech’s Rogue-X NVMe Breakout has been developed for when one M.2 storage slot is not enough. This product is ideal for adding additional storage capacity for embedded vision and multi-camera applications.

Product Features and Specifications

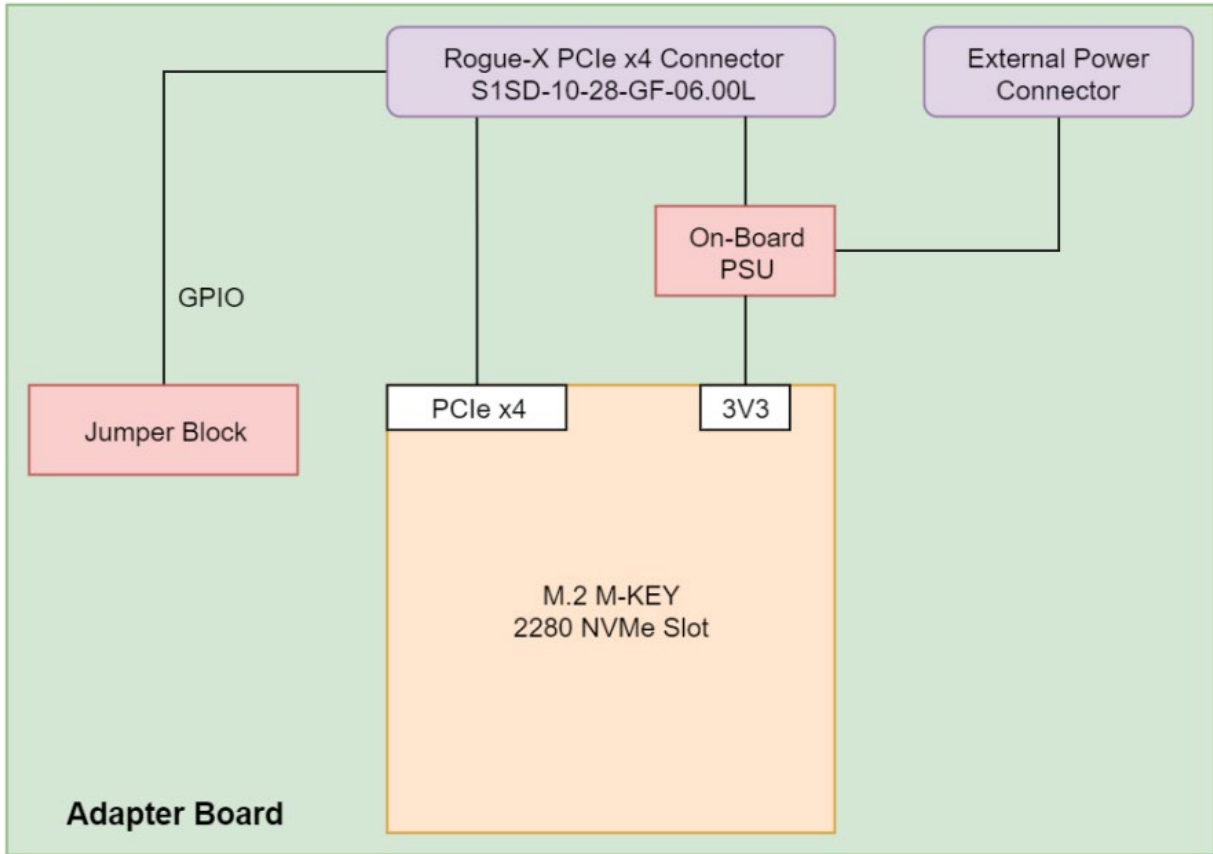
Specifications	
CTI Carrier Compatibility	Rogue-X (AGX103)
Storage	1x NVMe M.2 Key M Slot
Module Lengths	Accepts 2230, 2242, 2260 and 2280 length modules
Host Interfaces	PCIe x4, GPIO x8
Input Power	12V direct from AGX103 or 12V 2.1mm center positive barrel jack
Temperature	-40°C to +85°C (-40°F to +185°F)
Dimensions	107.95 x 63.5 mm (4.25" x 2.50")
Warranty and Support	1-year warranty and free technical support

Part Numbers / Ordering Information

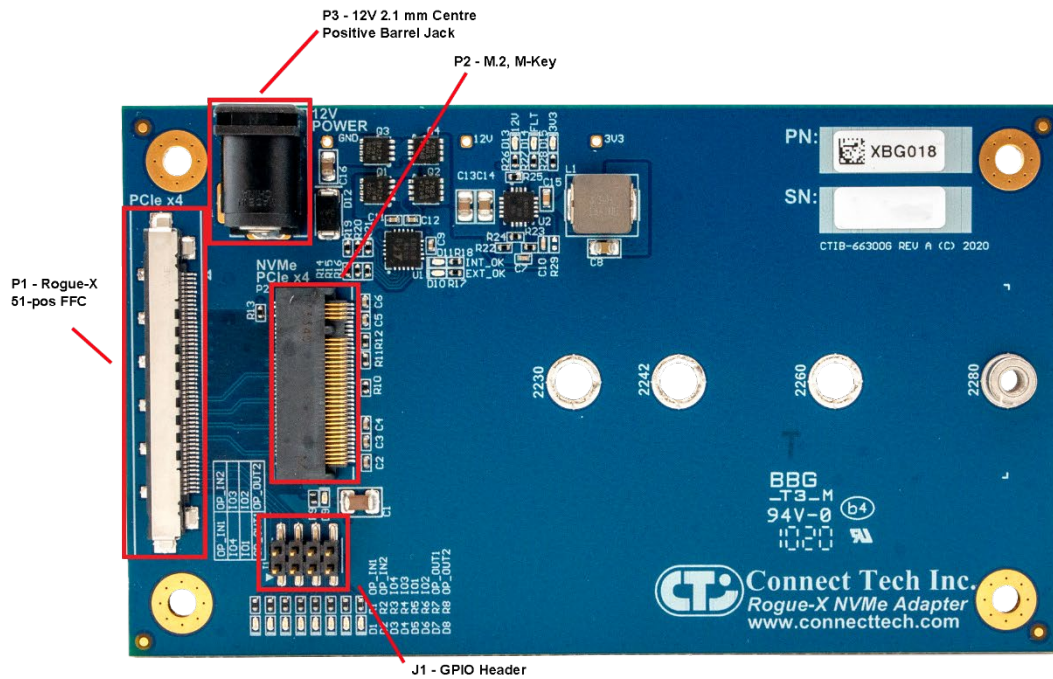
Part Number	
XBG018	Rogue-X NVMe Breakout (includes cable and mounting for 2280 length module)

PRODUCT OVERVIEW

Block Diagram



Connector Summary & Locations



Designator	Description
P1	Rogue-X (AGX103) connector
P2	M.2 M-Key (NVMe) connector
P3	12V Barrel Jack input, 2.1mm centre positive

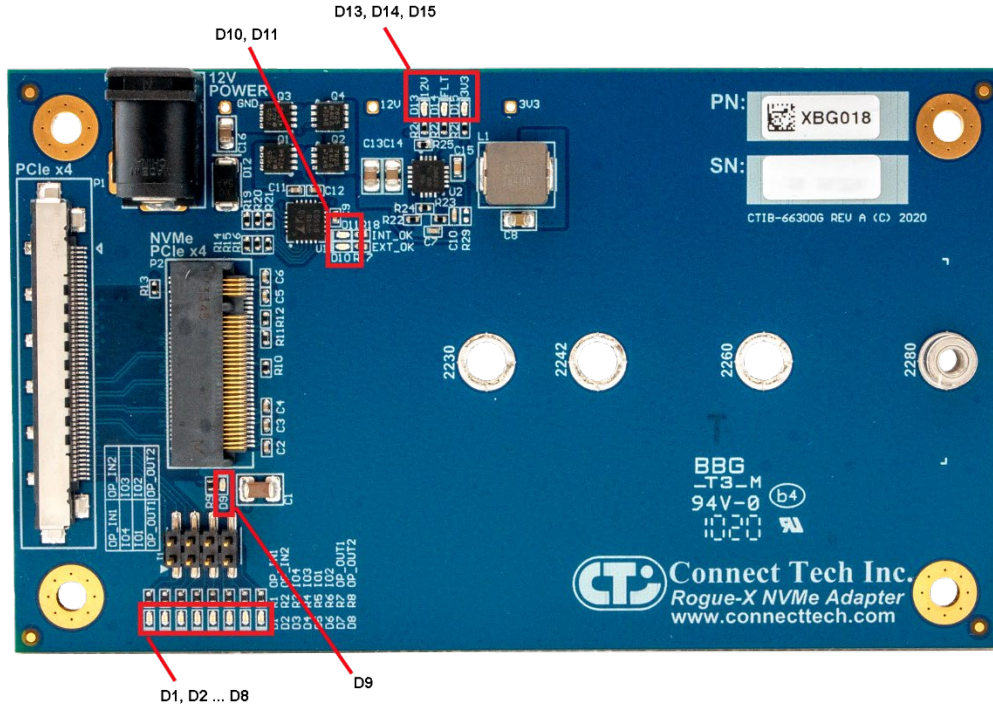
Jumper Summary & Locations

Designator	Description
J1	GPIO 0.1" header

LED Summary

Designator	Description
D1, D2 ... D8	GPIO LEDs
D9	M.2 connector (P2) activity
D10	Aux power (P3) power valid
D11	Rogue-X (P1) power valid

D13	12V power good
D14	Voltage regulator fault
D15	3.3V good



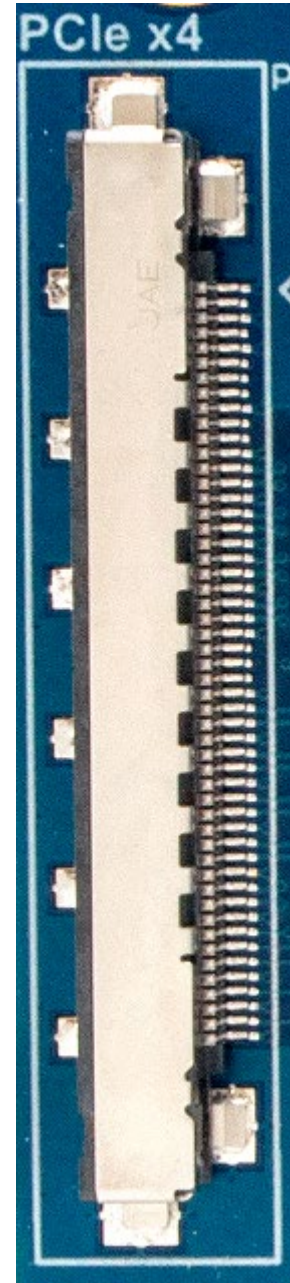
DETAILED FEATURE DESCRIPTION

Connectors & Jumpers

Rogue-X Connector

Function	Rogue-X Connector
Location	P1
Type	51 Position Receptacle Connector Surface Mount, Right Angle
Connector	Part Number: FI-RE51S-HF-R1500 Manufacturer: JAE Electronics
Mating Connector	Connector Only: Part Number: FI-RE51HL Manufacturer: JAE Electronics Cable Assembly: Part Number: JF08R0R0510x0UA

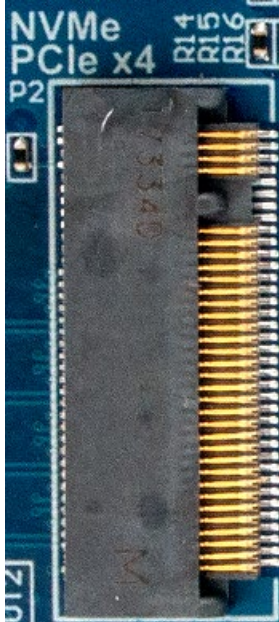
where x = 2,3,4 for 20,30,40cm versions		
Pinout	Connector Pins	Function / Description
	1,3,5,9,12,15,18,21,24,28,31,34,37,40,43,47,49,51	GND
	2	GPIO #5
	4	GPIO #6
	6	GPIO #4
	7	GPIO #3
	8	PCIe PERST# active low reset signal
	10	PCIe Ref Clkp
	11	PCIe Ref Clkn
	13	PCIe Rx Lane 3p
	14	PCIe Rx Lane 3n
	16	PCIe Rx Lane 2n
	17	PCIe Rx Lane 2p
	19	PCIe Rx Lane 1n
	20	PCIe Rx Lane 1p
	22	PCIe Rx Lane 0n
	23	PCIe Rx Lane 0p
	25,26,27	12V 0.9A PWR
	29	PCIe Tx Lane 3p
	30	PCIe Tx Lane 3n
	32	PCIe Tx Lane 2p
	33	PCIe Tx Lane 2n
	35	PCIe Tx Lane 1n
	36	PCIe Tx Lane 1p
	38	PCIe Tx Lane 0n
	39	PCIe Tx Lane 0p
	41	Not Connected
	42	Not Connected
	44	Not Connected
	45	GPIO #2
	46	GPIO #1
	48	GPIO #8



	50	GPIO #7	
Notes	Mating cable is rated to 0.3A per contact for 0.9A total GPIO 1-6: Pulled up to 3.3V w/1K resistor, 25mA open-drain output GPIO 7-8: Pulled up to 5V w/1K resistor, 25mA open-drain output		

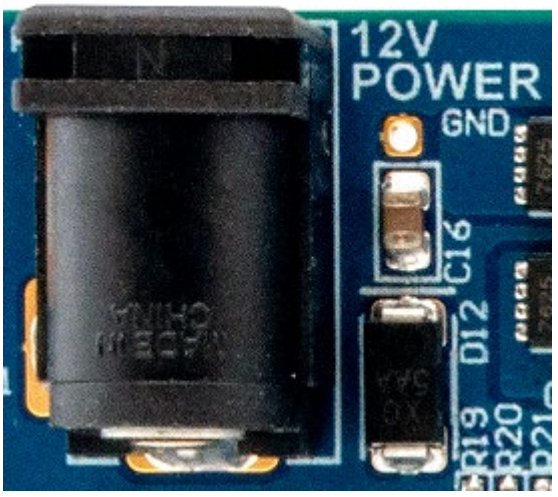
M.2 M-Key - NVMe

Function	NVMe Storage (x2 PCIe Gen 3)	
Location	P2	
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.	



Power Connector

Function	Input Power	
Location	P3	
Type	2.1mm centre positive barrel jack	
Connector	Part Number: PJ-057A Manufacturer: CUI	
Mating Cable	2.1mm plug	
Pinout	Connector Pins	Function / Description
	1	GND
	2	GND
	3	+VIN
	4	+VIN



Notes	Voltage Input Range 10.5V – 14.8V input range Unit will always select power from this supply as long as it is in the valid range
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TYPICAL INSTALLATION

1. Ensure all external system power supplies are off.
2. Install NVMe - Insert NVMe card edge into P2. Use included screw to secure card in place.
3. Install cable between Rogue-X and XBG018
4. If required, insert AUX power
5. Power on Rogue-X

POWER CONSUMPTION & THERMALS

The Rogue-X NVMe breakout has an operating temperature range of -40°C to 85°C. Please note that NVMe modules will have thermal properties separate to that of the NVMe breakout.

MECHANICAL DRAWINGS & MODELS

Links to models and drawings will be included in a future document update.

CABLES

The XBG018 includes the required cable but more can be ordered using part number JF08R0R051020UA