



Connect Tech Inc.
Embedded Computing Experts

USERS GUIDE



FALCON Vehicle System

CTIM-00162 Revision 0.01 2026-05-01



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 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 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	2026-02-13	Preliminary Release
0.01	2026-05-01	Updated capabilities, antenna details

INTRODUCTION

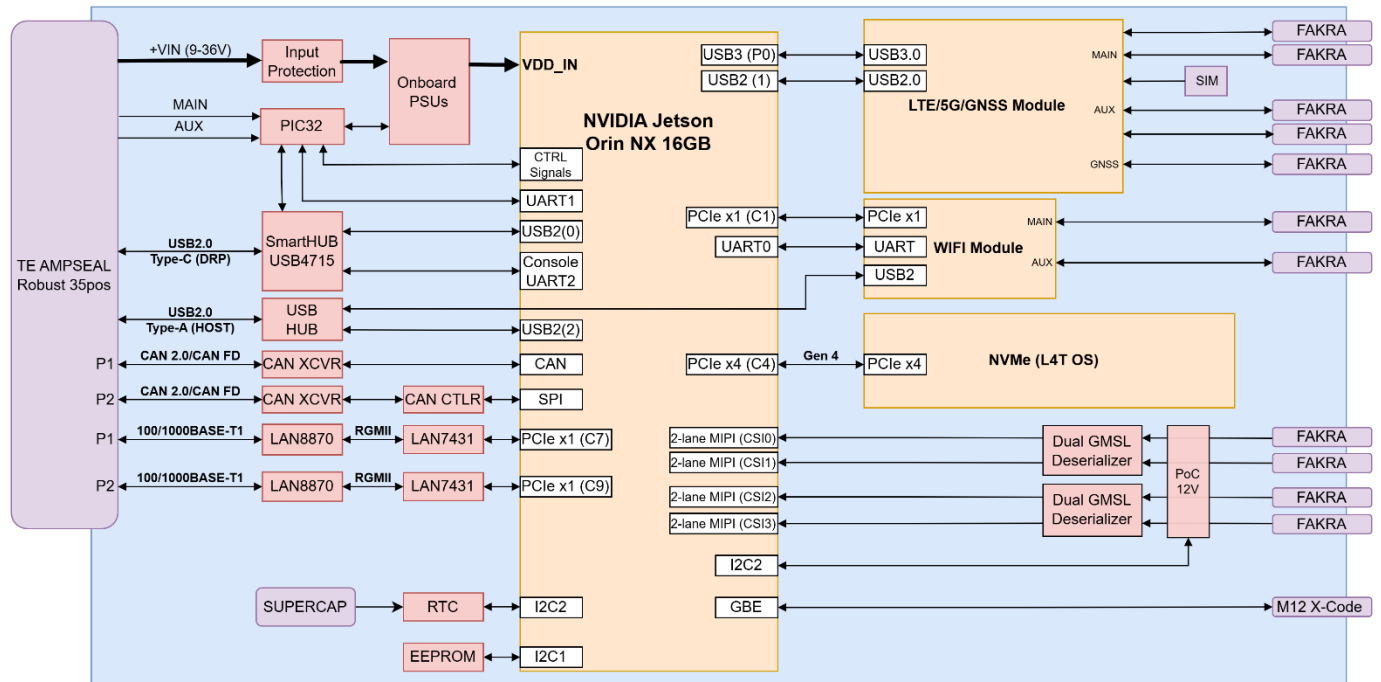
The FALCON Vehicle System delivers reliable edge AI performance in harsh mobile environments. Powered by the NVIDIA® Jetson Orin™ NX, it provides efficient, high-performance computing in a compact, fully sealed IP67 design. Built for vehicle-mounted deployments, FALCON supports demanding AI applications such as autonomous systems, smart fleet solutions, and real-time video analytics—keeping performance stable even in challenging conditions.

Product Features and Specifications

Specifications	
Product Name	FALCON Vehicle System
Module Compatibility	NVIDIA® Jetson Orin™ NX 16GB - Supporting MAXN SUPER mode 40W; requires adequate cooling.
Primary IO/PWR Connector	35-position AMPSEAL Right Angle Connector PN: 2489009-1 MFG: TE Connectivity
Mechanical Dimensions	152mm x 115mm x 52mm (5.98" x 4.53" x 2.05")
USB (Connector: AMPSEAL 35)	1x USB 2.0 – Type-C client/host port (Force recovery flashing) 1x USB 2.0 – Type-A host port
GMSL 1/2 Cameras (with GMSL variant)	4x GMSL 1/2 Compatible Camera Inputs Connector: FAKRA Plug Z-Code x4
Networking	2x 100/1000BASE-T1 (Connector: AMPSEAL 35) 1x 1G BASE-T (Connector: M12 X-code)
Storage	1x M.2 M-Key (NVMe) expansion slot (4 lane PCIe Gen 4) Support for 2280 sized NVMe
Wireless Expansion	Wi-Fi Module LTE/5G Module GNSS Antennas: - 7x FAKRA Plug
Misc. I/O (Connector: AMPSEAL 35)	- 2x USB2.0 (OTG, MCU, UART (console debug)) - 2x CAN 2.0/FD port (non-isolated), Optional termination - 2x Ignition Input
RTC	SuperCap (no battery installed)
Power Input	+9V to +36V DC Power Input (14V Nominal)
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Weight	1.15kg (2.54lbs)

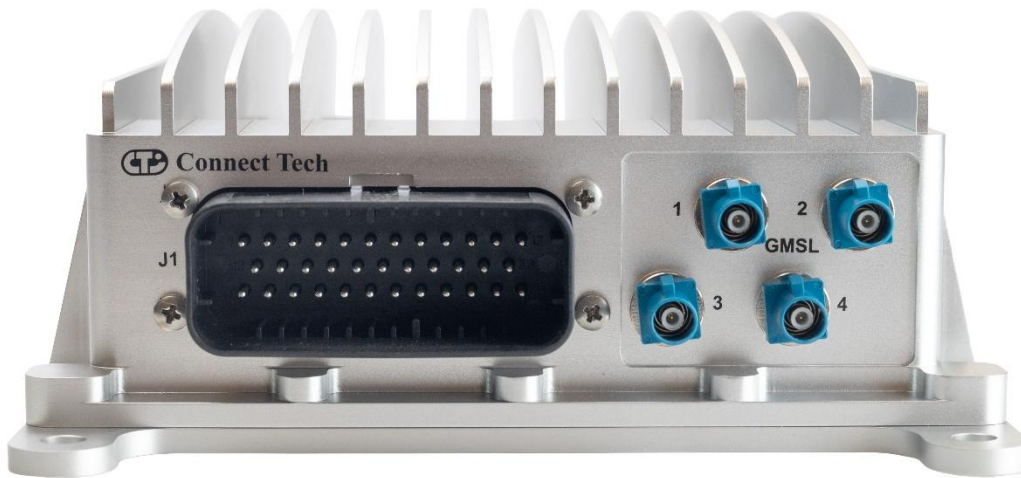
PRODUCT OVERVIEW

Block Diagram



Connector Summary & Locations

FRONT VIEW



REAR VIEW



Top Down View




External Connector Summary

Location	External Connector	Description
Front	AMPSEAL 35(J1)	<ul style="list-style-type: none"> - PWR Input: 9-36VDC (14V Nominal) - USB2.0 (OTG, MCU, UART (console debug)) - 100/1000BASE-T1 - CAN 2.0 FD port (non-isolated), Optional termination - 2x Ignition Input
Front	GMSL 1, 2, 3, 4	GMSL 1/2 Compatible Camera Inputs
Rear	GBE	M12 Gigabit Ethernet Connector
Rear	ANT 1, 2, 3, 4, 5, 6, 7	7x 5G, LTE, Wi-Fi and GNSS

DETAILED FEATURE DESCRIPTION

FALCON Vehicle System NVIDIA® Jetson Orin™ NX

Jetson Orin™ NX Module Connector

Function	NVIDIA® Jetson Orin™ NX Module Interface	
Location	Internal	
Type	SOM	
Pinout	Refer to NVIDIA® Jetson Orin™ System-on-Module datasheet and OEM design guide for pinout details	
Features	Refer to NVIDIA® Jetson Orin™ System-on-Module datasheet and OEM design guide for features details	

AMPSEAL 35

Function	AMPSEAL 35	
Location	Front Panel	
Type	AMPSEAL 35	
Connector	Part Number: 2489009-1 Manufacturer: TE Connectivity AMP Connectors	
Mating Connector	2389807-1	
Pinout	Pin 1	Power Input (+VIN) 9-36V
	Pin 2	Power Input (+VIN) 9-36V
	Pin 3	MAIN Ignition
	Pin 4	USB-A_VBUS
	Pin 5	USB-C_GND
	Pin 6	USB-C_VBUS
	Pin 7	CAN2_GND
	Pin 8	CAN2_H
	Pin 9	CAN2_L
	Pin 10	CAN1_GND
	Pin 11	CAN1_H
	Pin 12	CAN1_L
	Pin 13	Power Input (+VIN) 9-36V
	Pin 14	AUX Ignition
	Pin 15	USB-A_D_N
	Pin 16	USB-A_D_P
	Pin 17	USB-C_CC1
	Pin 18	USB-C_CC2
	Pin 19	RSVD - SPE_GUARD_GND
	Pin 20	RSVD - SPE_GUARD_GND
	Pin 21	RSVD - SPE_GUARD_GND
	Pin 22	RSVD - SPE_GUARD_GND
	Pin 23	RSVD - SPE_GUARD_GND
	Pin 24	Power Input (-VIN)
	Pin 25	Power Input (-VIN)
	Pin 26	Power Input (-VIN)



Pin 27	USB-A_GND
Pin 28	USB-C_D_N
Pin 29	USB-C_D_P
Pin 30	RSVD - SPE_GUARD_GND
Pin 31	100/1000BASE_T1_P2_N
Pin 32	100/1000BASE_T1_P2_P
Pin 33	RSVD - SPE_GUARD_GND
Pin 34	100/1000BASE_T1_P1_P
Pin 35	100/1000BASE_T1_P1_N

GBE Ethernet (1 Port)

Function	GBE Network Connectivity
Location	Rear Panel
Type	M12 X-Code 8-Pin
Mating Cable	Standard M12 X-Code to RJ45 CAT 6
Pinout	As per the IEEE-802.3 specification
Notes	GBE output comes directly from the Orin NX Module Ethernet port.



GMSL 1/2 Connector

The FALCON Vehicle System allows GMSL 1 or GMSL 2 through single FAKRA connectors. The GMSL to MIPI Deserializers are included on board which uses four 4-Lane MIPI video lanes per 2 cameras. Additionally, the FALCON Vehicle System provides +12V Power over Coax (PoC) with a maximum current capacity of 0.5A per port.

Contact [Connect Tech Support](#) for details on camera support.

Function	Description
Location	Front
Type	IP67* Single FAKRA Plug Z-Code
Mating Cable	FAKRA Jack Z-code




* With IP6X mating connectors

Antenna Connectors – LTE/5G/Wi-Fi/GNSS

The FALCON Vehicle System chassis implements 7x IP67* FAKRA Plug for the internal 5G/LTE/Wi-Fi/GNSS antenna channels.

Function	Description	
Location	Rear	
Type	IP67* FAKRA Plug	
Mating Connector	FAKRA Jack	
	Function	Key
ANT1	5G/LTE	D-Code
ANT2	5G/LTE	D-Code
ANT3	5G/LTE	D-Code
ANT4	5G/LTE	D-Code
ANT5	GNSS	C-Code
ANT6	Wi-Fi	I-Code
ANT7	Wi-Fi	I-Code



* With IP6X mating connectors

M.2 M-Key – NVMe

The FALCON Vehicle System supports 2280 sized NVMe.

Function	Description
Location	Internal
Pinout	As per the M.2 M-key specification
Notes	Interface is x4 PCIe Gen 4. Support for M.2 2280 size.

THERMAL DETAILS

The FALCON Vehicle System has an Operating Temperature Range of -25°C to +70°C.

However, it is important to note that the NVIDIA® Jetson Orin™ NX Module has its own properties separate to that of the FALCON Vehicle System.

Customer responsibility requires proper implementation of a thermal solution that maintains the NVIDIA® Jetson Orin™ NX and Thermal Transfer Plate (TTP) 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

Please contact [Connect Tech Support](#) for details on thermal.

MECHANICAL DRAWINGS & MODELS

For a complete 3D STEP Model file of the FALCON Vehicle System, please contact [Connect Tech Support](#).

ACCESSORIES

Part Number	Description
CBG858	FALCON Development Cable
MSG124	Development Cable and PSU