

TREK-50N

NVIDIA® Jetson Orin™ NX / Orin™ Nano Edge AI Platform for In-Vehicle & Harsh Environments



Features

- In-Vehicle Edge AI Platform with NVIDIA® Jetson Orin™ NX and Jetson Orin™ Nano
- In-vehicle specialized: 12V/24V certified car power (E-Mark, ISO-7637-2), dual CANFD
- IP67, 5M3, MIL-STD-810H shock and vibration tolerance
- Supports 4 x GMSL2 or 4 x PoE
- Modular design supports Automotive Ethernet and RF communication

Introduction

As a rugged IP67 edge AI in-vehicle computer, the TREK-50N is powered by NVIDIA® Jetson Orin™ NX and Jetson Orin™ Nano, delivering up to 100 TOPS of outstanding AI inference performance. It is designed for applications in commercial vehicles and heavy duty machinery. To meet the needs of various vision-based AI applications, TREK-50N supports 4 GMSL2 or 4 PoE ports. TREK-50N inherits the trusted design of the TREK series, featuring an ISO 7637-2 compliant automotive power design, EN 60721-3-5 (5M3) vibration and shock resistance, IP67-rated water and dust protection, and an operating temperature range of -25°C to 75°C.

Specifications

		Standard Version	IP67 Version
Processor	CPU	Jetson Orin NX 16GB 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU Jetson Orin NX 8GB 6-core Arm® Cortex®-A78AE v8.2 64-bit CPU Jetson Orin Nano 8GB 6-core Arm® Cortex® A78AE v8.2 64-bit CPU	
	GPU	1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores	
	Memory	8GB/16GB 128-bit LPDDR5 DRAM	
Storage	M.2	1 x M.2 2280 NVMe M-Key up to 2TB	
Display (either SDP2.0 or HDMI)	SDP2.0	12V/2A power output for TREK-303 FL & TREK-306 FL 1 x high-resolution video, 1 x audio signal, 1 x USB 2.0 1 x power button and 1 x reset button	
	HDMI	1 x HDMI	
I/O	Indicated LED	1 x LED - Power on (Solid Red) - Power off (No Lights)	
	Standard I/O	1 x USB Type-C for System Recovery 1 x USB3.0 typeA 1 x RJ45 Giga LAN	
	VIO 2.0	VIO Cable 1 x ignition and power input 1 x J1708 (supports J1587) 2 x CANFD; compliant with CANbus, J1939, OBD-II/ ISO-15765 specifications	M12, L-code 1 x ignition and power input M12, A-code 1 x J1708 (supports J1587) 2 x CANFD; compliant with CANbus, J1939, OBD-II/ ISO-15765 specifications
	Generic I/O 2.0	Generic I/O cable 2 x 4-wire RS-232/RS-485 (default RS232 + 485) 6 x isolated DI (dry/wet), 4 x isolated DO 1 x line-out, 1 x mic-in	M12, A-code 2 x 4-wire RS-232/RS-485 (default RS232 + 485) 6 x isolated DI (dry/wet) M12, A-code 4 x isolated DO 1 x line-out, 1 x mic-in
	PoE Ports (By Sku)	4 x RJ-45 for 10/100 Base-T(X) PoE, 802.3af/at compliant Power output limited to 30W	M12, D-code 4 x 10/100 Base-T(X) PoE, 802.3 af/at compliant Power output limited to 30W
	GMSL Ports (By Sku)	4 x GMSL2 (Z-Code) FAKRA connectors	
GNSS	GNSS	u-blox NEO-M9L (ADR)	
	GNSS Antenna	1 x (C-code) FAKRA connector	
RF Extension* (Option)	WLAN/Bluetooth	1 x M.2 2230(E Key) for Wi-Fi 6E/BT 5.3 or Wi-Fi 7/BT 5.3 module	
	WWAN	1 x M.2 3042/3052 (B key) for 4G or 5G module	
	Antenna	2 x Wi-Fi + BT (I-code) FAKRA 2 x 4G module or 4 x 5G module (D-code) FAKRA connectors	

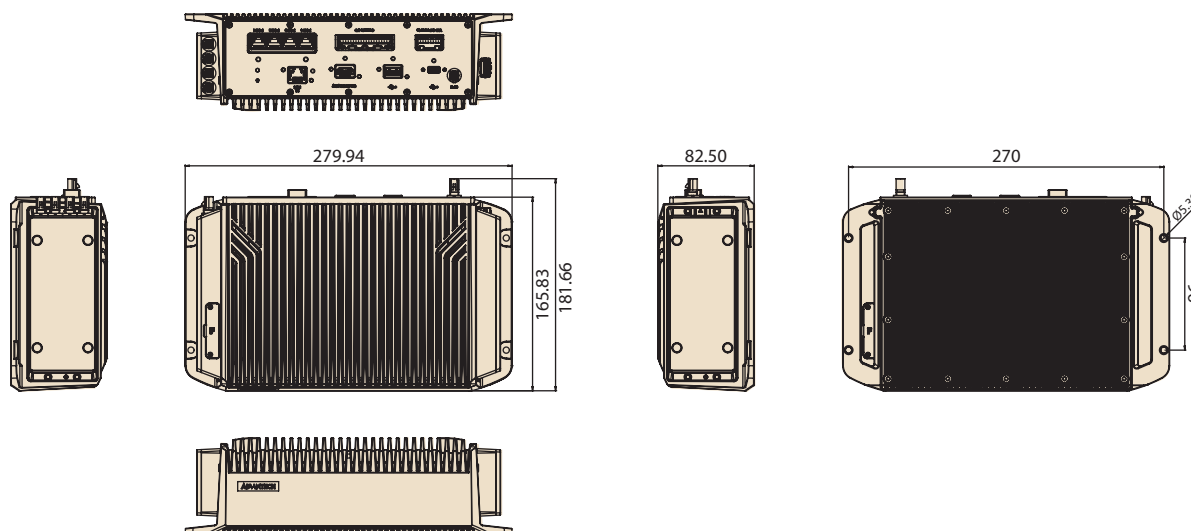
Specifications (Cont.)

I/O Extension* (Option)	Automotive Ethernet	2 x 1000 Base-T1 Automotive Ethernet
IMU		Accelerometer, Gyroscope
OS	Linux	Ubuntu 22.04 / JetPack 6.1
Power Supply	Voltage Input	12V/24V automotive power (9~32V) ISO 7637-2 and SAE J1113-11 compliant
	Vehicle Power Management (VPM)	System power on/off/hibernate management (programmable ignition on/off/delay) Supports wake-up events System power protection System monitoring and Device Diagnostic Tool
Mechanical	Dimension	280 x 82.5 x 182 mm
	Weight	3.3 kg 3.6 kg
Environmental	IP rating	N/A IP67
	Vibration	MIL-STD-810H, 514.8C Procedure 6, EN60721-3 (5M3, 10~200Hz, 3Grms) (10~1013Hz, 2.57~6.8Grms)
	Shock	MIL-STD-810H, 516.8 Procedure I, EN60721-3-5 (5M3, 100G, 6ms)
	EMC	CE, FCC, RCM, CCC*
	Safety	UL/cUL, CB, CCC*
	Vehicle Regulation	E-Mark (E13), ISO 7637-2, SAE-J1113-11 RS test (Level 1) : ISO 11452-2 BCI test (Level 1) : ISO 11452-4
	RF Regulation	CE (RED), FCC ID, IC ID
	Operating Temperature	-25 ~ 75 °C (Orin NX 8G/16G 10W), w/o airflow -20 ~ 60 °C (Orin NX 8G/16G MAXN), w/o airflow
	Storage Temperature	-40 ~ 85°C
Develop Tools	SDK	iVS DevStack

*By project based

Dimensions

Unit: mm



Standard version

4ch PoE



4ch GMSL



IP67 version

4ch PoE



4ch GMSL



Ordering Information

Part Number	Housing	CPU	Storage	GPS	Vision Interface	Display
TREK-50N-AOPHLN0	Standard	Orin NX 8GB	128G	Y	PoE	HDMI
TREK-50N-AOGHLN0	Standard	Orin NX 8GB	128G	Y	GMSL	HDMI
TREK-50N-DOPHLN0	Standard	Orin Nano 8GB	128G	Y	PoE	HDMI
TREK-50N-BOGHLN0	Standard	Orin NX 16GB	128G	Y	GMSL	HDMI
TREK-50N-APPHLN0	IP67	Orin NX 8GB	128G	Y	PoE	HDMI
TREK-50N-BPGHLN0	IP67	Orin NX 16GB	128G	Y	GMSL	HDMI
TREK-50N-APGHLN0	IP67	Orin NX 8GB	128G	Y	GMSL	HDMI
TREK-50N-BPPHLN0	IP67	Orin NX 16GB	128G	Y	PoE	HDMI

Packing List

- 1 x TREK-50N
- 1 x 1700030201-21 VIO cable(Standard Version)
- 1 x 1700036309-01 Power cable(IP67 Version)
- 1 x 1751000735-01 GPS antenna

RF Extension

Part Number	Description
TREK-60-EXTRF0E0	Telit5G Extension Module
TREK-60-EXTRF0D0	Telit4G Extension Module
TREK-60-EXTRF2E0	Telit5G + WIFI7 Extension Module
TREK-60-EXTRF2D0	Telit4G + WIFI7 Extension Module
TREK-60-EXTRF200	WIFI7 Extension Module

Antenna

Part Number	Description
1751000841-01	IP67 Ant. 4G/5G FAKRA-D/F, 5M
1751000818-01	IP67 Ant. WIFI FAKRA-I/F, 5M

Required Antennas: 4G*2, 5G*4, WIFI*2

I/O Extension

Part Number	Description
TREK-50-EXTRAUE00	Automotive Ethernet Module, 2x 1000BASE-T1, 802.3bp

Optional Accessories

Part Number	Description
1700030180-11	Generic I/O cable, supports RS-232/RS-485/line-out/mic-in/DI/DO, 1m
1700030201-21	VIO cable, supports power cable and 2 x CAN/J1708 cable, 1m
1751000735-01	FAKRA GPS antenna, 5m
1700030387-11	Power cable, 20cm with vehicle I/O, 30cm (use with adapter)
96PSA-A150W12W7-4	ADP A/D 100-240V 150W 12V LOCKABLE DC JACK (indoor use with AC power adapter)
1700036309-01	IP67 Power Cable, 1m
1700036632-01	IP67 DC Jack Power Input, 2m (use with adapter)
1700036771-01	IP67 2x CANFD, 1x J1708, 2m
1700036631-01	IP67 2x RS-232/485, 6x Digital Input, 2m
1700036629-01	IP67 1x LineOut, 1x MIC, 4x Digital Output, 2m
1700036633-01	IP67 PoE cable, 802.3af/at, 2m
1700036496-01	Automotive Ethernet FW Cable, 20cm