

# TREK-50N

## NVIDIA® Jetson Orin™ NX Edge AI Computer for In-Vehicle & Harsh Environments



### Features

- In-vehicle Edge AI computer with NVIDIA® Jetson Orin™ NX
- In-vehicle power design: 12V/24V automotive power design compliant with ISO 7637-2 and E-Mark
- Rugged design compliant with IP67, EN 60721-3-5 (5M3) vibration and shock standards, -20°C to 70°C operating temperature without airflow
- Supports 2 x CAN FD and either 4 x GMSL2 or 4 x PoE
- Modular design supports Automotive Ethernet, RF communication, and C-V2X

### Introduction

As a rugged IP67 edge AI in-vehicle computer, the TREK-50N is powered by NVIDIA® Jetson Orin™ NX, 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 -20°C to 70°C.

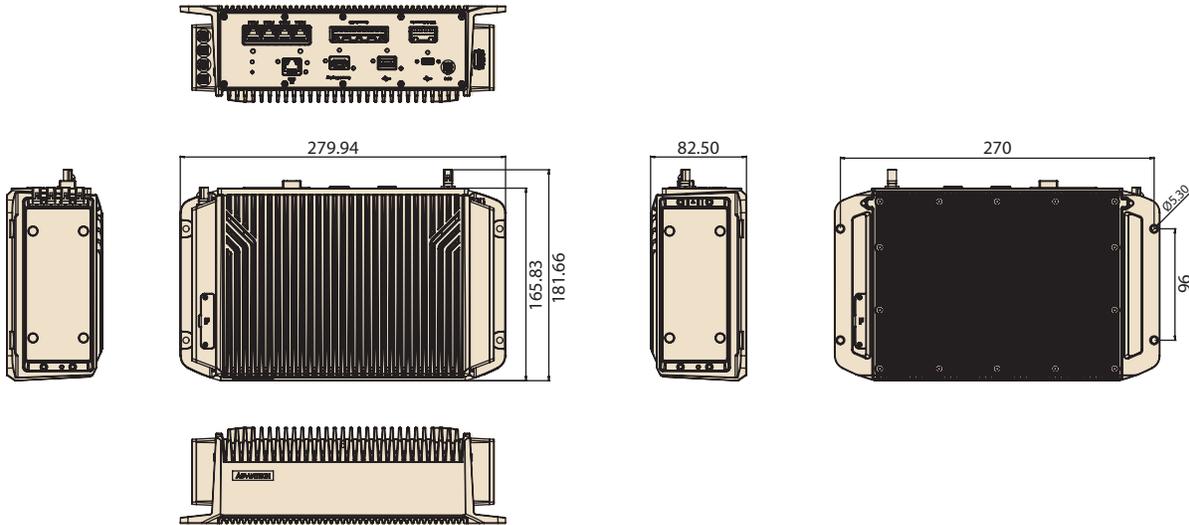
### Specifications

Processor	CPU	Jetson Orin NX 8GB 6-core Arm® Cortex®-A78AE v8.2 64-bit CPU (Orin NX 16GB by request)
	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 M-Key (NVMe, PCIe x1)
Display	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 (via the smart display)
	HDMI	1 x HDMI (by request, either SDP2.0 or HDMI)
IO	Indicated LED	1 x LED - Power on (Solid Red) - Power off (No Lights) - Programmable (Solid Yellow)
	Standard IO	1 x USB Type-C for System Recovery 1 x USB3.0 typeA 1 x RJ45 Giga LAN
	VIQ2.0 (via 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
	Generic I/O 2.0 (via 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
	PoE Ports	4 x RJ-45 for 10/100 Base-T(X) PoE, 802.3at/at compliant Power output shared by all cameras/devices is limited to 30W
	GMSL Ports	4 x FAKRA Z GMSL2 (by SKU, either PoE Ports or GMSL Ports)
Develop Tools	SDK	iVS DevStack
OS	Linux	Ubuntu 20.04 / JetPack 5.1
RF (WLAN/WWAN via RF extension)	WLAN/Bluetooth	1 x full-size mini PCIe (PCIe/USB 2.0) for 802.11a/b/g/n/ac Wi-Fi 5 + Bluetooth V5.0 combo module 1 x M.2 2230 (A+E Key) for 802.11a/b/g/n/ac/ax Wi-Fi 6 + Bluetooth V5.0 above combo module
	WWAN	1 x full-size mini PCIe (USB 2.0) for 4G module (LTE Cat-4, HSPA+, GSM/GPRS/EDGE) 1 x externally accessible mini SIM card socket with cover, 1 x embedded SIM (available upon request) 1 x M.2 3042/3052 (B key, USB 3.0) for 4G/5G module
	GNSS	Built-in u-blox NEO-M9L (ADR), GPS management (via MRM SDK)
	Antenna	5 x FAKRA connectors for 1 x GPS (C-code), 2 x Wi-Fi + Bluetooth (I/Z-code), 2 x WWAN/LTE (D/L-code) with Wi-Fi/WWAN MIMO support
Others (via IO extension)	Automotive Ethernet	2 x Automotive Ethernet
	V2X	1 x C-V2X or 1 x DSRC
Expansion	Internal slot	1 x M.2 3042 Key B (USB 2.0, USB 3.1) 1 x M.2 2230 Key E (USB 2.0, PCIe)
	Voltage Input	12V/24V automotive power (ISO 7637-2 and SAE J1113 compliant)
Power Supply	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
	Dimension	280 x 82.5 x 182 mm
Mechanical	Weight	3.3 kg
	IP rating	Generic & IP67 (by SKU)
Environmental	Vibration/Shock	MIL-STD-810H, EN60721-3-5 (5M3: Shock 100G 6ms, Random Vibration 3Grms)
	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*	-20 ~ 70 °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
	DeviceOn iService	Compatible with DeviceOn iService remote device management, supporting but not limited to the following features: OTA software installation, remote SSH, device anomaly monitoring, and device control

\* The product has successfully passed QA testing with an operating temperature range of -25°C to 75°C and -25°C to 65°C. The 5°C variation in the specifications is intended to ensure more reliable and trustworthy operating conditions.

**Dimensions**

Unit: mm



**Standard version**

**IP67 version**

4ch PoE

4ch PoE



4ch GMSL



**Ordering Information**

Part Number	Description
TREK-50N-GOPLXF-10	Jetson Orin NX 8GB, NVMe 128G, GPS, VIO cable

**Optional Accessories**

Part Number	Description	Qty
1700030180-01	Generic I/O cable, supports RS-232/RS-485/line-out/mic-in/DI/DO	1
1700030201-11	VIO cable, supports power cable and 2 x CAN/J1708 cable	1
1751000735-01	FAKRA GPS antenna, 5m	1
1700030387-01	Power cable (20 cm) with 30 cm vehicle I/O (use with adapter)	1
96PSA-A150W12W7-4	ADP A/D 100-240V 150W 12V LOCKABLE DC JACK (indoor use with AC power adapter)	1