

TREK-60N

Intel® & NVIDIA® Jetson Orin™ NX Dual-System AI Computing Solution



Features

- Equipped with DeviceOn/iService software for remote device management
- Intel® & NVIDIA® Dual-System to provide the best computing performance
- Scalable rugged AI platform to enhance efficiency
- Scalable computing performance via CPU boards for specific application requirements
- Rugged platform with automotive-grade shock and vibration tolerance, wide operating temperature, and wide power input range for harsh environments
- Modular design supports the latest RF communication technologies
- Easy pairing with second-generation TREK displays via a single-cable

DeviceOn/iService

Introduction

Aimed at AI for harsh environments, TREK-60N features a dual system integrating Intel® Core™ i7/Atom™ E3940 quad-core processor for high-performance computing, and NVIDIA® Jetson Orin™ NX AI capabilities up to 4x POE camera input channels for AI graphic computing. The RF extension module with automotive-grade FAKRA connector provides GNSS, WLAN, Bluetooth, and WWAN capabilities for real-time communication, vehicle tracking, and data collection. Moreover, inheriting the TREK products' excellent rugged design, it supports a wide operating temperature range, and is compliant with MIL-STD-810G and 5M3 specifications. for vibration/shock resistance, ensuring stable operation in harsh industrial environments.

TREK-60N is also equipped with Advantech's DeviceOn/iService software, which is a next-generation unified device management solution based on the WISE-DeviceOn platform.

Specifications

Core	Processor	Intel® Atom™ X5-E3940 quad-core, 1.8 GHz	Intel® Core™ i7-7600U dual-core, 3.9 GHz
	Memory	1 x SODIMM, up to 8 GB DDR3L 1866 non-ECC memory	2 x SODIMM, up to 32 GB DDR4 2133 non-ECC memory (with dual channel support)
	Graphics	Integrated 2D/3D graphics engine	
	Operating System	Windows 10 IoT Enterprise 2019 LTSC (64 bit), Linux (available upon request)	
Storage	mSATA (OS Disc)	1 x internal mSATA, up to 128 GB (supports UMLC/MLC/TLC industrial-grade storage and system bootup)	
	SSD	1 x externally accessible 2.5" SSD tray with key-lock protection, up to 7.6 TB TLC industrial-grade SSD	
	Micro SD Card (upon request)	1 x externally accessible micro SD card reader with key-lock protection (supports system bootup)	
Display	Smart Display Port 2.0*	12V/2A power output for TREK displays 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) (the SDP settings are configurable via MRM SDK)	
	HDMI	1 x HDMI 1.3	
Sensors		1 x g-sensor and gyroscope	
I/O	VIO2.0 (via VIO cable)	1 x ignition and power input 1 x J1708 (supports J1587) 2 x CAN bus; compliant with J1939, OBD-II/ISO-15765 specifications; supports both 11-bit (CAN 2.0A) and 29-bit (CAN 2.0B) identifiers; high-speed CAN connection (compliant with ISO 11898-2), up to 1 Mbit/s; configurable via MRM SDK	
	Generic I/O 2.0 (via generic I/O cable)	2 x 4-wire RS-232 (default)/RS-485 2 x 2-wire RS-232 6 x isolated DI (dry/wet), 4 x isolated DO 2 x line-out, 2 x mic-in	
	Standard I/O	1 x USB 3.0 Type A (front accessible with key-lock protection) 2 x USB 2.0 Type A 2 x Giga LAN (with optional locking mechanism, or M12 connector)	
	LED Indicators	5 x LED, Power (red), Storage (yellow), WLAN (green), WWAN (green), and GPS (yellow)	
	Power Button	Via second-generation TREK display; system configured to wake-on-ignition as default	
	CCMOS Button	1 x Clear CMOS button (front accessible with key-lock protection)	
	Reset Button	1 x Reset button (front accessible with key-lock protection)	

Specifications Cont.

I/O (Via Orin NX)	PoE	4 x RJ-45 for 10/100 Base-T(X) PoE, 802.3af/at compliant Power output shared by all cameras/devices is limited to 30W Supports PoE power control and Ethernet management ¹ (via MRM SDK)
	Display	HDMI (Max. resolution 3840 x 2160 @ 60Hz)
	USB	1 x USB 3.0 Type A
	OTG USB	1 x Micro USB
Develop Tools (Via Orin NX)	SDK	JetPack 5.1
Processor (Via Orin NX)	CPU	NVIDIA® Jetson Orin™ NX 8GB : 6-core Arm® Cortex®-A78AE
	GPU	1,024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores
	Memory	NVIDIA® Jetson Orin™ NX 8GB: 8GB 128-bit LPDDR5102.4GB/s
	Storage	1 x internal M.2 NVMe 128G 3D TLC (industrial-grade storage)
Operating System (Via Orin NX)	Linux	Ubuntu 20.04/ JetPack 5.1 above
RF (WLAN/WWAN via RF extension)	WLAN/Bluetooth	1 x full-size mini PCIe (PCIe/USB 2.0) for SparkLAN 802.11a/b/g/n/ac Wi-Fi 5 + Bluetooth V5.0 combo module; optional high-power Wi-Fi module 1 x M.2 2230 (A+E Key) for 802.11a/b/g/n/ac/ax Wi-Fi 6 + Bluetooth V5.0 combo module ¹
	WWAN	1 x full-size mini PCIe (USB 2.0) for Sierra Wireless 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 Sierra Wireless 5G module (5G NR Sub-6 GHz, LTE Cat-16) ¹
	GPS	Built-in u-blox Neo-M8N supports concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou) 2.5-meter accuracy, GPS management (via MRM SDK) Optional Neo-M8U/Neo-M8L (dead reckoning) available upon request
	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
Power Supply	Voltage Input	12/24 V Vehicle power (ISO 7637-2 and SAE J1113 compliant) System power on/off/hibernate management (programmable ignition on/off/delay) PoE power total/on/off management (via MRM SDK)
	Intelligent Vehicle Power Management (iVPM 2.0)	Supports wake-up events: wake-on-alarm (RTC), wake-on-call/SMS, and wake-on-G-sensor System power protection (vehicle battery low-voltage protection) System monitoring and diagnostics
Mechanical	Dimensions (W x D x H)	314 x 172.2 x 95.3 mm/12.36 x 12.36 x 3.75 in
	Weight	5.8 kg/12.79 lb (excludes SSD)
Environmental	IP Rating	IP65 (excludes rear I/O) (optional IP65-rated M12 system I/O cover available upon request)
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC, RCM, CCC
	Safety	UL/cUL, CB, CCC
	Vehicle Regulation	E-Mark (E13), SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE (RED), FCC ID, IC ID
	Operating Temperature	-20 ~ 60 °C/-4 ~ 140 °F (Atom™ X5-E3940), without airflow -20 ~ 50 °C/-4 ~ 122 °F (Core™ i7/i5), (-20 ~ 55 °C/-4 ~ 131 °F available upon request) ² , without airflow
	Storage Temperature	-40 ~ 80 °C/-40 ~ 176 °F
DeviceOn/iService Remote Device Management ³	Operating System	Windows 10
	Common Controls (Reboot, Shutdown)	✓
	Remote desktop	✓ (VNC)
	Device-Specific Controls (Audio, Backlight)	✓*
	Connection Status	✓
	Hardware Status	✓*
	Hard Disk Status	✓*
	Batch Operation Support	✓
	OTA Storage Management	FTP
	OTA Software Updates	✓
	Software Watchlist	✓
	Software Start/Stop	✓*
	Peripherals Watchlist	✓*

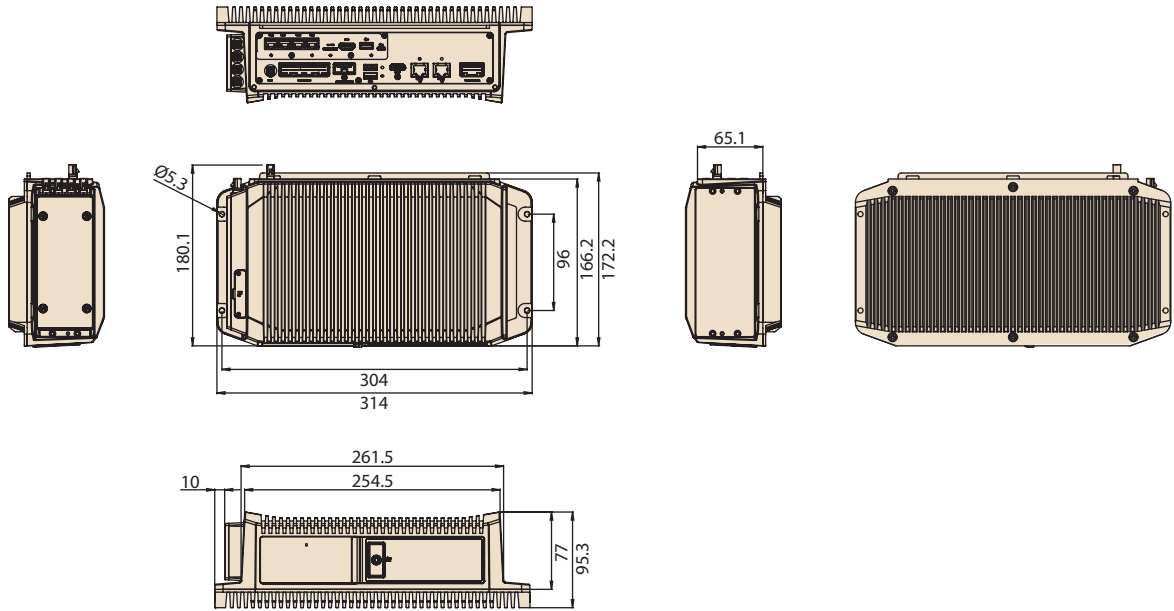
¹ Wi-Fi 6 and Sierra Wireless 5G module expansion available upon request

² The operating temperature range depends on total System power consumption and Orin NX usage scenario

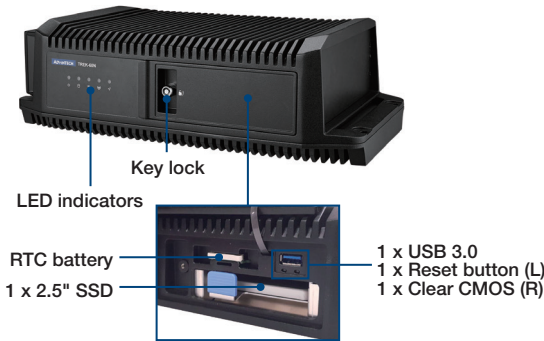
³ DeviceOn/iService software must be downloaded from the Advantech website at <https://www.advantech.com/search/?q=DeviceOn%2FiService&st=support&sst=Utility>

Dimensions

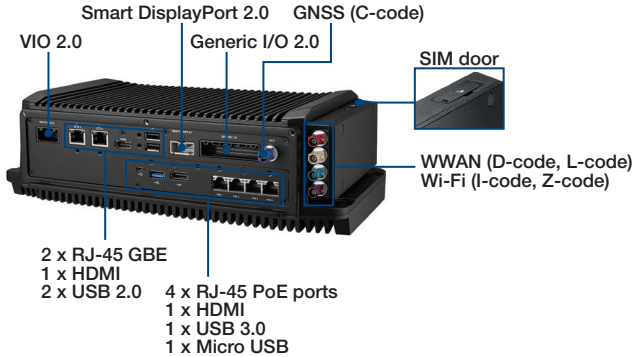
Unit: mm



Easy-Access Front Door



Flexible Rear I/O



Ordering Information

Part Number	Description
TREK-60N-72NN0E ^{*1}	Intel i7-7600U, 8/64GB, GPS/Orin NX 8G/NVMe 128G, VIO, GPS_LTE
TREK-60N-M2NN0E ^{*2}	Intel X5-E3940, 8/64GB, GPS/Orin NX 8G/NVMe 128G, VIO, GPS_LTE

^{*1} Available from 2023/Q3
^{*2} Available from 2023/May

Optional Accessories

Part Number	Description
TREK-306D-H2A0E	10.4" XVGA resistive touch smart display (SDP 2.0)
TREK-303R-H2A0E	7" WVGA resistive touch smart display (SDP 2.0)
TREK-306P-H2A0E	10.4" XVGA P-CAP touch smart display (SDP2.0)
1700030181-01	Smart display 2.0 cable, 10 m
1700030183-01	Smart display 2.0 cable, 5 m
1700030387-01	Power cable (20 cm) + DC Jack with 30 cm vehicle I/O
96PSA-A150W12W7-3	Adapter 100 ~ 240 V, 150W, 12 V, lockable DC jack (tested in-house)

DeviceOn/iService

Unified Remote Device Management Software



Features

- Supports Advantech devices equipped with Windows, Android, and Linux OS
- Flexible device, location, user, and permissions management
- Enables remote monitoring and control of hardware, software, and peripherals
- Supports over-the-air (OTA) firmware and software updates
- Ensures quick, easy, and secure device onboarding
- RESTful APIs for third-party system integration

Introduction

Advantech's DeviceOn/iService is a next-generation unified device management solution based on the WISE-DeviceOn platform. Designed to enable centralized monitoring and remote management, DeviceOn/iService supports Advantech devices equipped with Windows, Linux, or Android operating systems. The software also supports the management of applications and integrated peripherals, such as a barcode scanner, card reader, camera, and printer. Users can remotely access and control connected devices, take screenshots, rollout OTA upgrades, and use remote desktop capabilities for troubleshooting from any location at any time. Moreover, DeviceOn/iService supports batch operations to facilitate the management of multiple devices simultaneously for easy and convenient device configuration and deployment.

Total Management



Devices & Hardware

- Windows, Linux, Android
- Hardware, storage, battery



Software & Peripherals

- Software monitoring & access
- Screens, USB devices, printers



Open for Expansion

- Peripheral integration
- Open APIs for integration

Remote Access



Real-Time Monitoring

- Connection/hardware status
- Software/peripheral status
- Failure notifications



Remote Controls

- Power controls
- Audio, backlight controls
- Software controls



Troubleshooting

- Screenshots
- Remote desktop support

Operational Efficiency



OTA updates

- System/software updates
- File repository management
- App store



Batch Controls

- 1-to-many batch reboot, etc.
- Time-saving tasks



Setup Booster

- Software/peripheral watchlist
- Roles, rule templates

Note: Some functions may vary according to the product

System Architecture

