TREK-60N

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

Features

- Intel® & NVIDIA® dual-system to provide excellent vehicle edge AI computing performance
- 4ch PoE support video streams for AI capacity
- In-vehicle specialized design: 12/24V certified car power (E-Mark, ISO-7637-2), dual CANbus
- Rugged platform with IP65, 5M3 shock and vibration tolerance, -20 ~ 60°C wide temperature w/o airflow
- Modular design supports the latest RF communication technologies
- ONE cable connection with TREK displays

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.

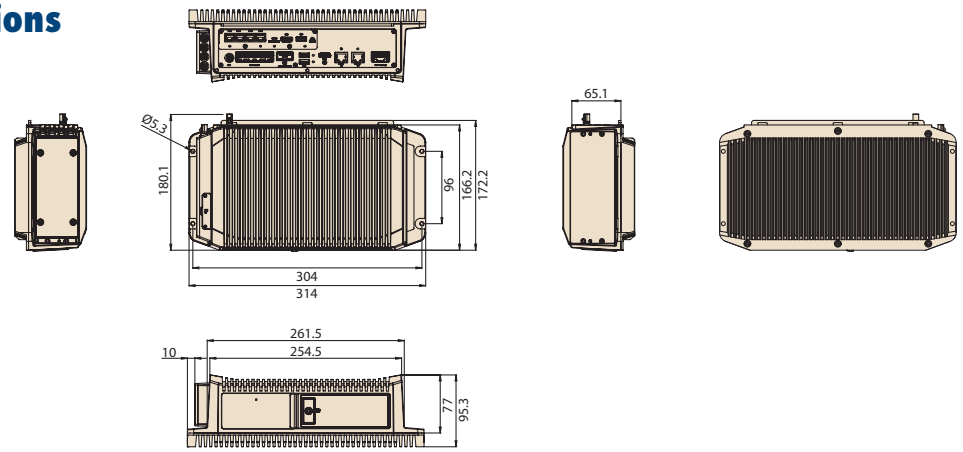
Specifications

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	
	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)	
	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 management1 (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 5.1.1	
Operating System (Via Orin NX)	Linux	Ubuntu 20.04/ JetPack 5.1 above	

Last updated: 23-Aug-2024

Dimensions

Unit: mm

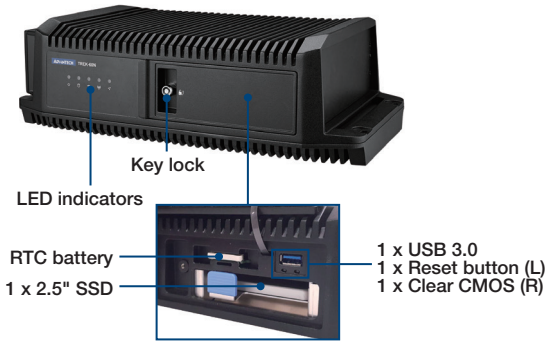


Specifications Cont.

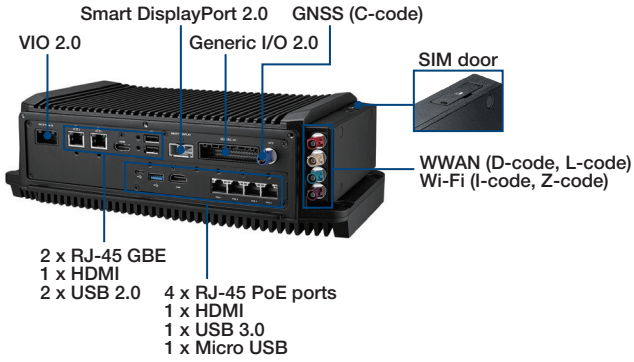
Processor (Via Orin NX)	CPU	NVIDIA® Jetson Orin™ NX 8GB : 6-core Arm® Cortex®-A78AE
	GPU	1,024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores
	Memory	NVIDIA® Jetson Orin™ NX 8GB: 8GB 128-bit LPDDR5102.4GB/s
	Storage	1 x internal M.2 NVMe 128G 3D TLC (industrial-grade storage)
RF (WLAN/WWAN 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 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
	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 (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)
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (programmable ignition on/off/delay) PoE power total/on/off management (via MRM SDK) 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 rating (excluding rear I/O); an optional IP65-rated M12 system I/O cover is 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] *Dependant on device model	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	✓
	Peripherals Watchlist	✓*

[1] Wi-Fi 6 and 5G module expansion available upon request
[2] The operating temperature range depends on total System power consumption and Orin NX usage scenario
[3] Advantech DeviceOn iService Support
Find user guides, developer guides, API references, tutorials, and more. https://docs.deviceon-iservice.com/en

Easy-Access Front Door



Flexible Rear I/O



Ordering Information

Part Number	Description
TREK-60N-A1A0MN00E	X5-E3940, 8/64GB, Orin 8G/NVMe 128G, GPS

Packing List

Part Number	Description	QTY
1750008765-01	Outdoor FAKRA LTE/GPS (GLONASS) combo antenna, 5 m	1
1750008764-01	Outdoor FAKRA LTE antenna, 5 m	1
1750008763-01	Outdoor FAKRA Wi-Fi antenna, 5 m	2
1700030201-11	VIO cable, supports power cable (100cm) and 2 x CAN/J1708 cable (30 cm)	1
1700030180-01	Generic I/O cable, supports RS-232/ Line-Out/Line-In/DI/DO (60 cm)	1

Optional Accessories

Part Number	Description
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-A150W12W7-4	ADP A/D 100-240V 150W 12V LOCKABLE DC JACK (indoor use with AC power adapter)

CTOS Ordering Information

RF Extension

Part Number	Description
TREK-60-EXTRF1A0	RF extension for Wi-Fi/LTE, 4 x FAKRA connectors (EU)
TREK-60-EXTRF1B0	RF extension for Wi-Fi/LTE, 4 x FAKRA connectors (US)
TREK-60-EXTRF1C0	RF extension for Wi-Fi/LTE, 4 x FAKRA connectors (AU)
TREK-60-EXTRF000	RF extension barebones unit (requires RF CTOS kit)

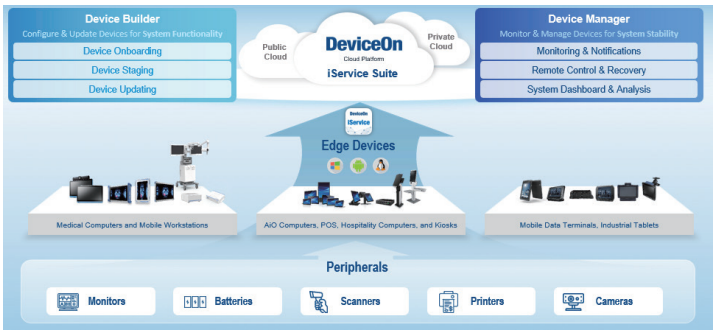
RF CTOS Kits

Part Number	Description
98R8T676R00	WLAN module kit (802.11ac/BT combo), 2 x FAKRA connectors
98R8T676R01	LTE module kit (US, B2/B4/B5/B13) Cat-4, 2 x FAKRA connectors
98R8T676R02	LTE module kit (EU, B1/3/7/8/20/28) Cat-4, 2 x FAKRA connectors

Embedded OS

Part Number	Description
20708WX9HS0006	OS image Win 10 IoT Enterprise 2019 LTSC-H (i7) (64 bit) EN/TC/SC
20708WX9VS0013	OS image Win 10 IoT Enterprise 2019 LTSC-V (i5) (64 bit) EN/TC/SC
20708WX9ES0061	Img WIN10 LTSC-ELE TREK-60A V1.00aD x64 3MUI

DeviceOn - iService Suite



Introduction

Advantech's DeviceOn - iService Suite is an advanced remote device management solution that enables you to centrally manage your devices, minimizing the need for expensive on-site visits and saving your valuable time and resources. Device Builder ensures that your devices are always up-to-date with the latest configuration and software updates, reducing the risk of data breaches and other security threats. Meanwhile, Device Manager helps to ensure that your devices are functioning correctly, reducing downtime and enhancing productivity.

Key Functions

Device Builder

Device Onboarding

- Support Windows, Linux, Android devices
- Quick enrollment process

Device Staging

- OS configuration
- Software/peripheral watchlist
- Device label, alarm rules

Device Updating

- Cloud software storage
- Installation package for multiple software updating

Device Manager

Monitoring & Notifications

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

Remote Control & Recovery

- Reboot & power controls
- Audio & backlight settings
- Screenshots & remote desktop

System Dashboard

- Devices working status
- Software version sync status
- Results of scheduled tasks

Services & Specifications

Functions List	OS Platform			Service Type	
	Windows	Android	Linux (Ubuntu)	Builder	Manager
	10, 11	8, 10, 12	TBD		
Device Onboarding - Enrollment, Locations and Labels	✓	✓		✓	✓
Profile – OS Settings (KIOSK Mode, ON/Off Schedule, others are OS dependent)	✓ (LTSC)	✓		✓	✓
Profile – Alarm Rules, Software Monitoring, Peripheral Monitoring	✓	✓			✓
OTA Update – Installation Packs, Software Cloud Storage	✓	✓		✓	✓
Monitoring – Device Hardware (CPU/RAM/Storage/Battery)	✓	✓			✓
Monitoring – Advanced Battery Management	✓ (Dependant on device model)				✓
Monitoring – Device Software (Running Status/CPU & Memory Usage)	✓	✓			✓
Monitoring – Peripherals & Display (Connect Status)	✓				✓
Control – Audio volume & Backlight	✓	✓			✓
Control – Screenshot, Reboot, Shutdown	✓	✓			✓
Control – Schedule Tasks	✓	✓			✓
Control – Remote Desktop	VNC				✓

Ordering Information

Ordering P/N	Cloud Type	Description
36CSDOISSASP01	SaaS subscription	DeviceOn - iService Suite device annual fee (365 days)
36CSDOISPSRP01	On-premise server	DeviceOn - iService Suite device license (perpetual)
36CSDOISPSRP02	On-premise server	Software and installation fee for new server deployment
36CSDOISPSRP03	On-premise server	Annual maintenance fee after warranty