TREK-60

Modular AI Platform for Scalable Surveillance and Fleet Management

Features

- Equipped with DeviceOn/iService software for remote device management
- Scalable computing performance via CPU boards for specific application requirements
- Advanced video surveillance system with AI accelerator for video AI capabilities
- Modular design supports the latest RF communication technologies
- Rugged platform with automotive-grade shock and vibration tolerance, wide operating temperature, and wide power input range for harsh environments
- Easy pairing with second-generation TREK displays via a single-cable connection

DeviceOn/iService

Introduction

Aimed at fleet management and surveillance applications, TREK-60 features a 7th generation Intel® Core™ i7/i5/Atom™ E3900 quad-core processor for high-performance computing, as well as up to eight camera input channels and an integrated AI accelerator for scalable video stream edge inferencing. 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. The embedded dual CAN bus supports diverse vehicle protocols, including raw CAN, J1939, and OBD-II, for vehicle monitoring and diagnostics, while the intelligent vehicle power management system supports ignition on/off/delay and wake-up event control. Moreover, the rugged design supports a wide operating temperature range (-30 ~ 70 °C/-22 ~ 158 °F), and is compliant with MIL-STD-810G and 5M3 specifications for vibration/shock resistance, ensuring stable operation in harsh industrial environments.
Moreover, TREK-60 is equipped with Advantech's DeviceOn/iService software, which is a next-generation unified device management solution based on the WISE-DeviceOn platform. With support for batch operations and multi-device control, DeviceOn/iService enables easy device configuration and deployment for convenient remote device management.

Specifications

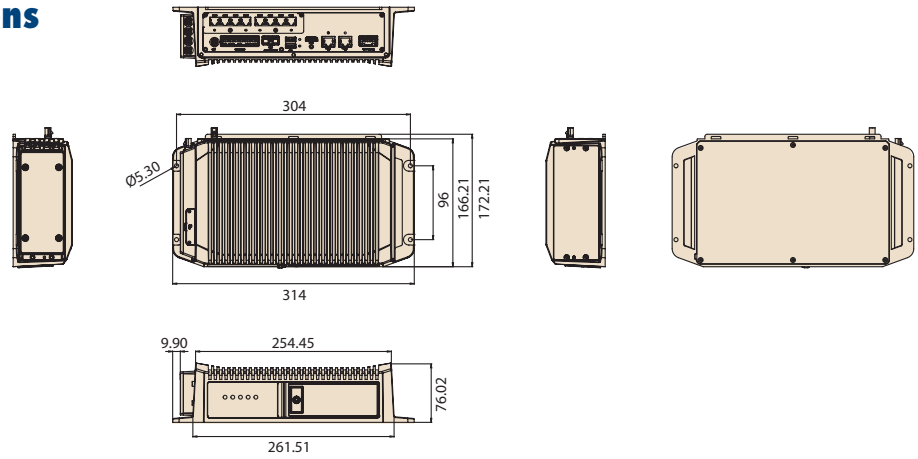
Core	Processor	Intel® Atom™ X5-E3940 quad-core, 1.8 GHz	Intel® Core™ i7-7600U dual-core, 3.9 GHz Intel® Core™ i5-7300U dual-core, 3.5 GHz
	Memory	1 x SODIMM, up to 8 GB DDR3L 1866 non-ECC memory	2 x SODIMM, up to 32 GB DDR4 2133 non-ECC memory (with dual channel support)
	Graphics	Integrated 2D/3D graphics 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	
Expansion	Edge AI (upon request)	1 x full-size mini PCIe (PCIe/USB 2.0) for edge AI; supports up to 2 x Intel® Movidius® Myriad™ X VPUs**	
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)	
Video Surveillance	IP Camera	8 x RJ-45 for 10/100 Base-T(X) PoE, 802.3af/at compliant Power output shared by all cameras is limited to 60W* Supports PoE power control and Ethernet management[1] (via MRM SDK)	
Expansion[2] (via I/O extension)	V2X	1 x full-size mini PCIe (USB2.0) for V2X module	

*Supports pairing with a second-generation TREK-306 display via a single-cable connection.
**The operating temperature range depends on the edge AI module specifications or usage scenario.

Last updated: 25-Aug-2021

Dimensions

Unit: mm

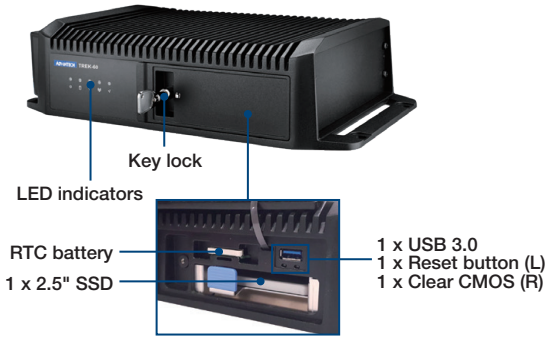


Specifications Cont.

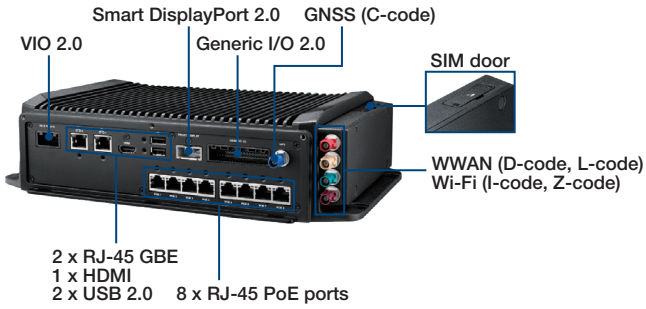
RF (WLAN/WWAN via RF extension)	WLAN/Bluetooth	1 x full-size mini PCIe (PCIe/USB 2.0) for SparkLAN 802.11a/b/g/n/ac Wi-Fi 5 + Bluetooth V5.0 combo module; optional high-power Wi-Fi module 1 x M.2 2230 (A+E Key) for 802.11a/b/g/n/ac/ax Wi-Fi 6 + Bluetooth V5.0 combo module[3]
	WWAN	1 x full-size mini 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)[3]
	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 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 165.5 x 75.1 mm/12.36 x 6.51 x 2.95 in
	Weight	4.2 kg/9.25 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	-30 ~ 70 °C/-22 ~ 158 °F (Atom™ X5-E3940), -20 ~ 50 °C/-4 ~ 122 °F (Core™ i7/i5)[4] (-20 ~ 60 °C/-4 ~ 140 °F available upon request)
	Storage Temperature	-40 ~ 80 °C/-40 ~ 176 °F
DeviceOn/iService Remote Device Management[5] *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	✓
	Software Start/Stop	✓*
	Peripherals Watchlist	✓*

[1] PoE power consumption depends on the system configuration and usage scenarios.
[2] Expansion available upon request.
[3] Preliminary for Q3 of 2021.
[4] The TREK-60 in-vehicle platform with Intel® Atom™ X5-E3940 processor supports a maximum operating temperature of 70 °C/158 °F. Moreover, with 24V input power, the maximum power consumption is 70W; and with 12V input power, the maximum power consumption is 60W.
[5] DeviceOn/iService software must be downloaded from the Advantech website at https://www.advantech.com/search/?q=DeviceOn%2FiService&st=support&sst=Utility

Easy-Access Front Door



Flexible Rear I/O



Ordering Information

Part Number	Description
TREK-60-5APAXN0E	Intel i5-7300U CPU, 4GB RAM/64GB mSATA, GPS/Wi-Fi/LTE (EU), 8 PoE, Win 10 (64 bit)
TREK-60-5APBXN0E	Intel i5-7300U CPU, 4GB RAM/64GB mSATA, GPS/Wi-Fi/LTE (US), 8 PoE, Win 10 (64 bit)
TREK-60-MBPAXN0E	Intel X5-E3940 CPU, 4GB RAM/32GB mSATA, GPS/Wi-Fi/LTE (EU), 8 PoE, Win 10 (64 bit)
TREK-60-MBPBXN0E	Intel X5-E3940 CPU, 4GB RAM/32GB mSATA, GPS/Wi-Fi/LTE (US), 8 PoE, Win 10 (64 bit)

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

*Included with the TREK-60 barebones unit

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)
1700030182-01	Smart display 2.0 cable, 2 m
1700030183-01	Smart display 2.0 cable, 5 m
1700030387-01	Power cable (20 cm) with 30 cm vehicle I/O (tested in-house)
96PSA-A150W12W7-3	Adapter 100 ~ 240 V, 150W, 12 V, lockable DC jack (tested in-house)

*Available from December 2021

CTOS Ordering Information

Barebones Unit

Part Number	Description
TREK-60-720N0E	Intel i7-7600U CPU, 8GB RAM, GPS, VIO, LTE/GPS antenna
TREK-60-72PN0E	Intel i7-7600U CPU, 8GB RAM, GPS/8 PoE, VIO, LTE/ GPS antenna
TREK-60-73PN0E	Intel i7-7600U CPU, 16GB RAM, GPS/8 PoE, VIO, LTE/ GPS antenna
TREK-60-52PN0E	Intel i5-7300U CPU, 8GB RAM, GPS/8 PoE, VIO, LTE/ GPS antenna
TREK-60-M1PN0E	Intel X5-E3940 CPU, 4GB RAM, GPS/8 PoE, VIO, LTE/ GPS antenna
TREK-60-M2PN0E	Intel X5-E3940 CPU, 8GB RAM, GPS/8 PoE, VIO, LTE/ GPS antenna

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
98R8T676R03	LTE module kit (AU, B1/3/5/7/8/28) 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
20708WX9HS0013	OS image Win 10 IoT Enterprise 2019 LTSC-V (i5) (64 bit) EN/TC/SC
20708WX9HS0020	OS image Win 10 IoT Enterprise 2019 LTSC-E (64 bit) EN/TC/SC

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

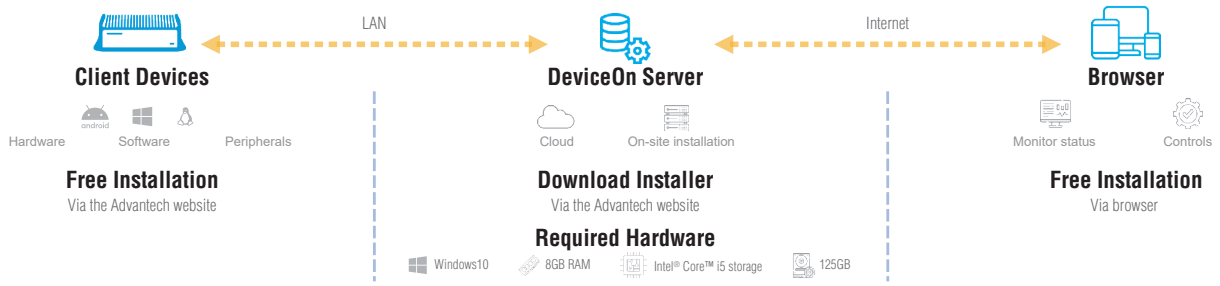
OTA updates
- System/software updates
- File repository management
- App store

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



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Authorized Distributor

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