# TREK-60

## Modular AI Platform for Scalable Surveillance and Fleet Management

## Features

- 8ch PoE support for commercial vehicles and heavy duty
- In-vehicle specialized design: 12V/24V certified car power (E-Mark, ISO-7637-2), dual CANbus
- Rugged platform with IP65, 5M3 shock and vibration tolerance, -30 ~ 70 °C wide temperature w/o airflow
- Modular design supports the latest RF communication technologies
- ONE cable connection with TREK displays
- Multple AI accelerator options: Intel® OpenVINO™, Google Coral, Hailo for edge AI computing

**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<br>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 | |
| | 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<br>1 x high-resolution video, 1 x audio signal, 1 x USB 2.0<br>1 x power button and 1 x reset button (via the smart display)<br>(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<br>1 x J1708 (supports J1587)<br>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<br>2 x 2-wire RS-232<br>6 x isolated DI (dry/wet), 4 x isolated DO<br>2 x line-out, 2 x mic-in | |
| | Standard I/O | 1 x USB 3.0 Type A (front accessible with key-lock protection)<br>2 x USB 2.0 Type A<br>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<br>Power output shared by all cameras is limited to 60W*<br>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 | |

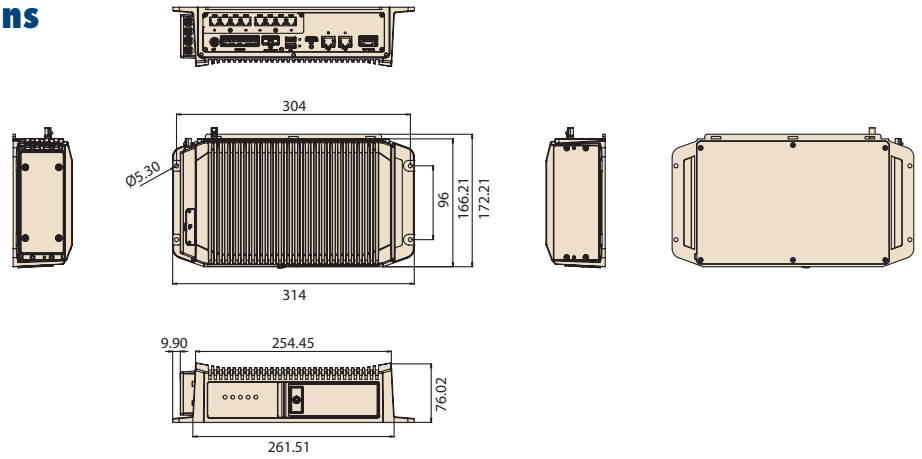
*Supports pairing with a second-generation TREK-306 display via a single-cable connection.
**The operating temperature range depends on the edge AI module specifications or usage scenario.



Last updated: 23-Aug-2024

## Dimensions

Unit: mm

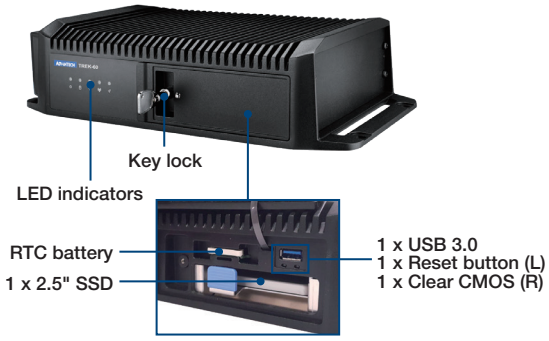



## Specifications Cont.

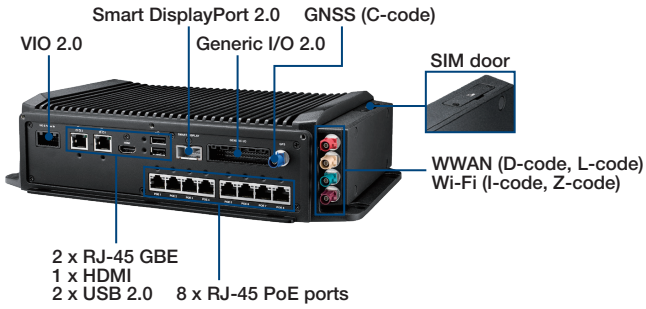
| | | |
|---|---|---|
| RF (WLAN/WWAN via RF extension) | WLAN/Bluetooth | 1 x full-size mini PCIe (PCIe/USB 2.0) for SparkLAN 802.11a/b/g/n/ac Wi-Fi 5 + Bluetooth V5.0 combo module; optional high-power Wi-Fi module<br>1 x M.2 2230 (A+E Key) for 802.11a/b/g/n/ac/ax Wi-Fi 6 + Bluetooth V5.0 combo module |
| | WWAN | 1 x full-size mini PCIe (USB 2.0) for 4G module (LTE Cat-4, HSPA+, GSM/GPRS/EDGE)<br>1 x externally accessible mini SIM card socket with cover, 1 x embedded SIM (available upon request)<br>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)<br>2.5-meter accuracy, GPS management (via MRM SDK)<br>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 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)<br>PoE power total/on/off management (via MRM SDK)<br>Supports wake-up events: wake-on-alarm (RTC), wake-on-call/SMS, and wake-on-G-sensor<br>System power protection (vehicle battery low-voltage protection)<br>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 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 | -30 ~ 70 °C/-22 ~ 158 °F (Atom™ X5-E3940), -20 ~ 50 °C/-4 ~ 122 °F (Core™ i7/i5)[3]<br>(-20 ~ 60 °C/-4 ~ 140 °F available upon request) |
| | Storage Temperature | -40 ~ 80 °C/-40 ~ 176 °F |
| DeviceOn/iService Remote Device Management[4]<br>*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] PoE power consumption depends on the system configuration and usage scenarios.
[2] Expansion available upon request.
[3] 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.
[4] 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-60-7KPXN0E | Ci7, 16/64GB, GPS/PoE/W10/GPS & LTE Ant |
| TREK-60-5EPXN0E | Ci5, 8/64GB, GPS/POE/W10/GPS & LTE Ant |
| TREK-60-5EPAXN0E | Ci5, 8/64GB, GPS/PoE/SSDKits, WIFI/LTE(EU), W10 |
| TREK-60-5EPBXN0E | Ci5, 8/64GB, GPS/PoE/SSDKits, WIFI/LTE(US),W10 |
| TREK-60-MBPAXN0E | Intel X5-E3940 CPU, 4GB RAM/32GB mSATA, GPS/Wi-Fi/LTE (EU), 8 PoE, Win 10 (64 bit) |
| TREK-60-MCPXN0E | X5-E3940, 8/64GB, GPS/POE/W10/GPS & LTE Ant |

## 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 | A cable 1x10P-1.5/1x10P-1.5 1000CM |
| 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-A150W12W7-4 | ADP A/D 100-240V 150W 12V LOCKABLE DC JACK (indoor use with AC power adapter) |

## CTOS Ordering Information

### Barebones Unit

| Part Number | Description |
|---|---|
| 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-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) |

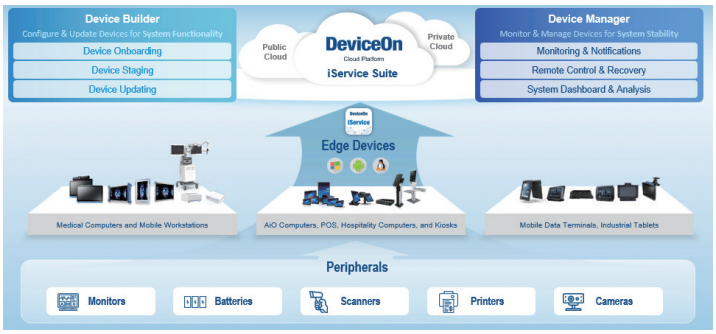
### RF CTOS Kits

| 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 |

### 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 |