

TREK-60

Modular AI Platform for Scalable Surveillance and Fleet Management



Features

- 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

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.

Specifications

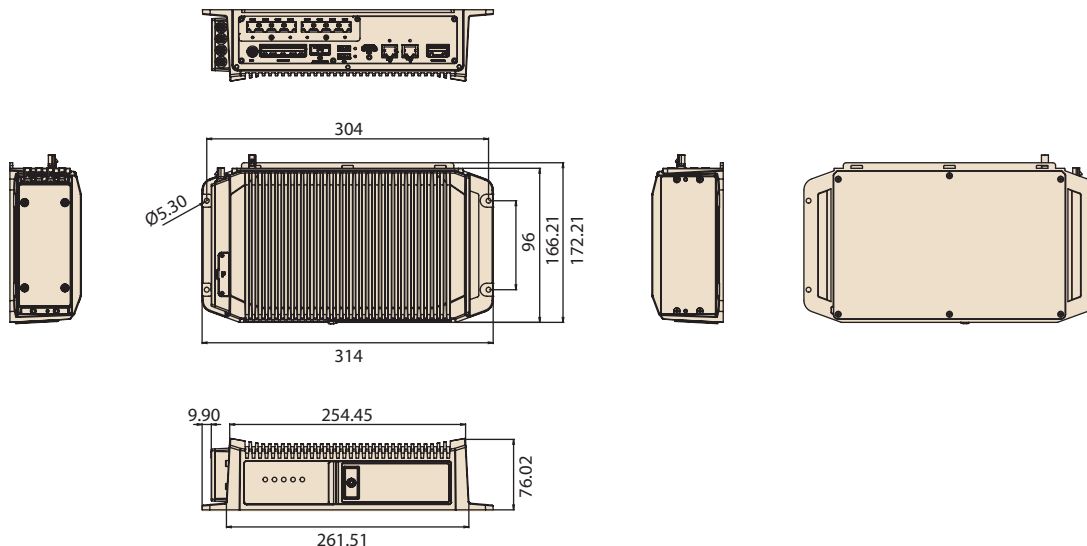
Core	Processor	Intel® Atom™ X5-E3940 quad-core, 1.8 GHz	Intel® Core™ i7-7600U dual-core, 3.9 GHz Intel® Core™ i5-7300U dual-core, 3.5 GHz
	Memory	1 x SODIMM, up to 8 GB DDR3L 1866 non-ECC memory	2 x SODIMM, up to 32 GB DDR4 2133 non-ECC memory (with dual channel support)
	Graphics	Integrated 2D/3D graphics 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)	

*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.

Dimensions

Unit: mm



Specifications Cont.

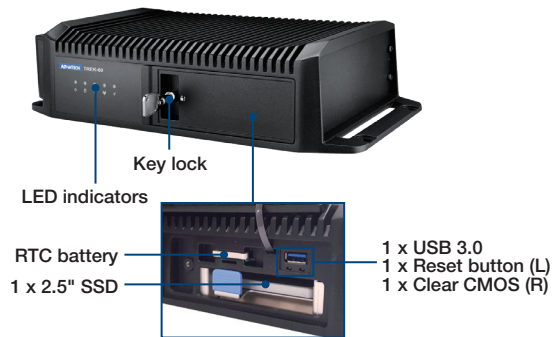
Video Surveillance	IP Camera	8 x RJ-45 for 10/100 Base-T(X) PoE, 802.3af/at compliant Power output shared by all cameras is limited to 60W* Supports PoE power control and Ethernet management (via MRM SDK)
Expansion** (via I/O extension)	V2X	1 x full-size mini PCIe (USB2.0) for V2X module
RF (WLAN/WWAN 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***
	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)***
	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) System power on/off/hibernate management (programmable ignition on/off/delay)
	Intelligent Vehicle Power Management (iVPM 2.0)	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) (-20 ~ 60 °C/-4 ~ 140 °F available upon request)
Storage Temperature	-40 ~ 80 °C/-40 ~ 176 °F	

*The PoE power limit depends on the system configuration and usage scenario.

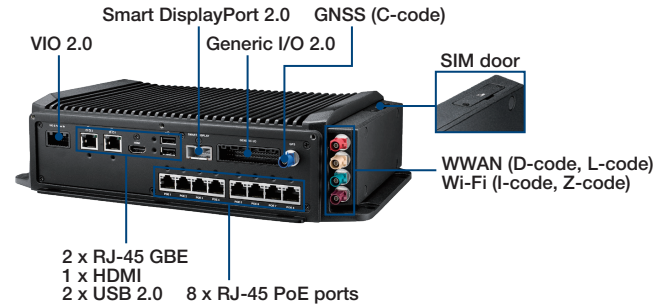
** Expansion available upon request.

***Preliminary for Q3 of 2021.

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" X VGA resistive touch smart display (SDP 2.0)
TREK-303R-H2A0E*	7" WVGA resistive touch smart display (SDP 2.0)
TREK-306P-H2A0E	10.4" X VGA 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 June 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