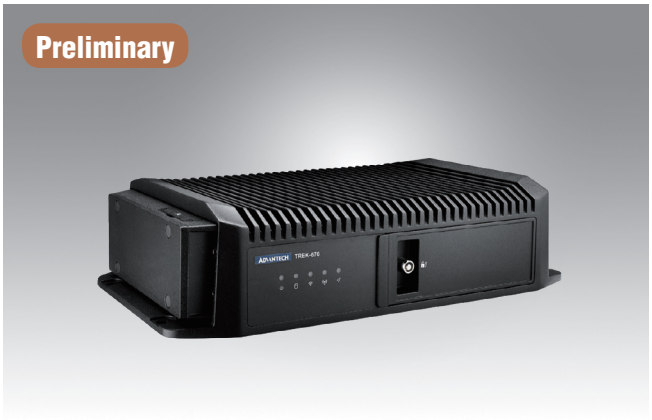
TREK-676

Modular Computing Box for Surveillance and Fleet Management



Features

- Modular design supports Intel® Atom™ Apollo Lake or Intel® Core™ Kaby Lake platform with built-in GNSS for fleet management
- Modular RF extension and automotive grade connector for diverse applications, easy installation and customization
- Modular IO extension to support Edge AI module, 5G communication or DSRC/V2X module with easier feature expansion
- Video surveillance system supports optional 8-ch 1080p/30fps HD CCTV cameras or 8-port 802.3af PoE ports for IP cameras and optional accessible external SSD or HDD tray with key-lock protection
- Easily paired with 2nd generation of TREK in-vehicle smart displays via a single-cable connection
- Supports 12/24V vehicle power with intelligent vehicle power management system
- MIL-STD-810G and 5M3 certified for shock and vibration tolerance

Introduction

TREK-676 is the next generation, intelligent, rugged, and modular computer box for surveillance and fleet management. The modular design supports various CPU platforms and RF extensions utilizing automotive grade connectors (FAKRA) for diverse applications, easy installation and customization, with built-in GNSS, WLAN, Bluetooth and WWAN, and via the Modular I/O Extension supports Edge AI module, 5G communication or DSRC/V2X with the easy of up-to-date technology expansion. The TREK-676 is a hybrid video surveillance system which supports optional 8 channel 1080p/30fps HD CCTV cameras or 8 Port 802.3af POE Ports for IP Cameras. Video Recording is accessible via external SSD or HDD tray with key-lock protection. The TREK-676 is easily paired with a 2nd Generation TREK in-vehicle smart display via a single-cable connection. The rich I/O includes multiple digital Inputs and outputs with wet and dry configurations, four RS-232/RS-485 ports and dual audio codec with 10W amplifiers to be connected in transportation system. The intelligent vehicle power management system supports 12/24V vehicle power and ignition (on/off/delay) functions, wake-up event control and system health monitoring and diagnostics. The TREK-676 is rugged with the wide operating temperature range from -30 to 70 °C (-22 ~ 158 °F), and has MIL-STD-810G and 5M3 certification for shock and vibration tolerance, and has dust and water ingress protection with an optional IP65 cover for harsh environment.

Specifications

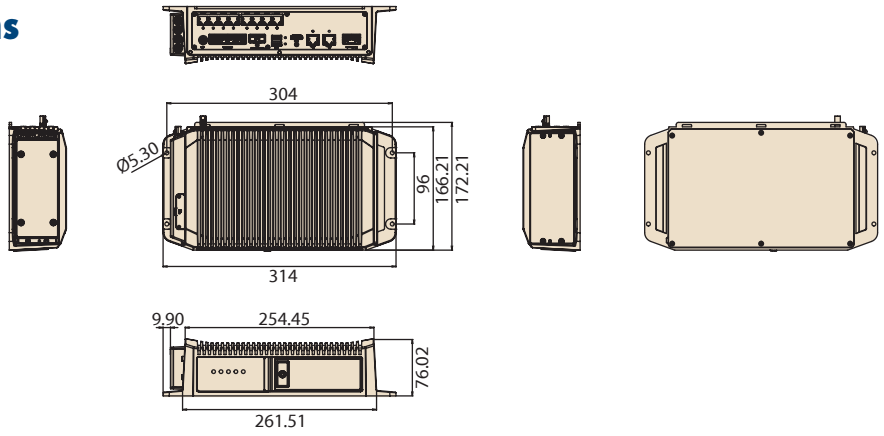
Core	Processor	Intel® Atom™ X5-E3940 quad-core, 1.9 GHz (X7-E3950 and X3-E3930 available upon request)	Intel® Core™ i5-7300U dual-core, 3.5GHz (i7-7600U/i3-7100U/Celeron 3965U available upon request)
	Memory	1 x SODIMM socket up to 8GB DDR3L 1866 non ECC memory (4GB default)	2 x SODIMM socket up to 32GB DDR4 2133 non ECC memory (dual channel supported) (4GB default)
	Graphics	Integrated 2D/3D graphics engine	
	Operating System	Win10 IoT Enterprise LTSC 64bit (default), Ubuntu 18.04 (upon request)	
Storage	mSATA (OS Disc)	1 x internal mSATA slot supports system boot up, up to 128GB UMLC Industrial-grade mSATA storage (32GB UMLC default)	
	SSD/HDD	1 x externally accessible 2.5" SSD tray with key-lock protection, supports system boot up, up to 2TB MLC or 4TB TLC Industrial-grade SSD (2.5" HDD tray with Mechanical anti-vibration design support by project-based)	
	Micro SD card (project-based)	1 x externally accessible Micro SD card reader with key-lock protection, supports system boot up, up to SDHC Class 10 UHS-I 128GB MLC Industrial-grade SD card	
Display	Smart Display Port 2.0*1	12V/2A power output for 2nd generation of TREK in-vehicle smart displays 1 x Hi-resolution signals (Video and Audio) 1 x USB2.0 signal 1 x Power and 1 x Reset button	
	VGA (project-based)	1 x VGA port (up to 1920x1280@60Hz resolution)	
	HDMI	1 x HDMI1.4b (up to 3840x2160@24Hz resolution)	
Sensors		1 x G-sensor 1 x Accelerometer and Gyroscope	
Expansion slot	Edge AI	1x full-size mini PCIE slot reserved for Advantech VEGA-330 Edge AI module	
I/O Interface	Vehicle I/O 2.0	2 x CAN bus (supports raw CAN, J1939, OBD-II/ISO 15765; configurable via firmware) 1 x J1708 (supports J1587) Ignition & Car Battery power input	
	Generic I/O 2.0	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 (10W Amplifier for 1st Line Out and 10W Amplifier for 2nd Line Out by project-based) 2 x Mic in	
	Standard I/O	1 x USB 3.0 Type A (front) 2 x USB 2.0 Type A 2 x Giga LAN (with optional lock design) (optional 12W power injector or M12 connector)	
	LED	5 x LED, Power (red), Storage (yellow), WLAN (green), WWAN (green), and GPS (yellow)	
	Power Button	Via 2nd generation of TREK in-vehicle smart displays; system power on by ignition as default	
	CCMOS Button	1 x Clear CMOS button (front with key-lock protection)	
	Reset Button	1 x Reset button (front with key-lock protection)	
Video Surveillance Options	HD CCTV option	8 x Video inputs with H.264/MJPEG video compression, up to 1080p resolution (30fps) per channel 8 x Audio inputs with G.726/G.711/AAC audio compression Power output shared for all cameras is limited by 60W On-VIF format and video SDK support	
	IP Camera option	8 x RJ-45 for 10/100 Base T(X) PoE (Power Over Ethernet, 802.3af compliant, 802.3at by project-based) Power output shared for all cameras is limited by 60W PoE power control and ethernet management SDK support	
IO extension (DSRC/V2X/5G/LTE support by IO extension)	5G/LTE	1x M.2 3052 B key slot reserved for Sierrawireless EM9190 module, 1x Micro SIM slot reserved	
	DSRC	1x mPCIe slot reserved for Unex V2X System-On-Module	
	Edge AI	1x M.2 2230 A+E key slot reserved for Advantech VEGA-320 Edge AI module	
RF (WLAN/WWAN support by RF extension)	WLAN/Bluetooth	IEEE 802.11a/b/g/n/ac + Bluetooth V4.1 combo module via full-size mini PCIE slot Optional high-power WLAN module or 0.5s fast roaming technology available upon request	
	WWAN	4G (LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless WP76xx via full-size mini-PCIe slot 1 x externally accessible mini SIM card socket with cover, optional 1x embedded SIM available upon request	
	GPS	Built-in u-blox Neo-M8N GPS/GLONASS/BeiDou module with A-GPS support, Optional Neo-M8L (dead reckoning) available upon request	
	Antenna	5 x Fakra type antenna holes for 1x GPS, 2x WI-FI+BT, 2x WWAN/LTE with WI-FI/WWAN MIMO supported	
Power System	Voltage Input	Supports 12/24 V vehicle power, 9 – 32 V_{DC} input (ISO 7637-2 and SAE J1113 compliance)	
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (programmable ignition on/off/delay) 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	Dimension (W x D x H)	314 x 165.5 x 75.1 mm	
	Weight	4.2Kg (excludes SSD)	

*1 For direct pairing with TREK-306D2 via a single-cable connection

Last updated: 2-Oct-2019

Dimensions

Unit: mm

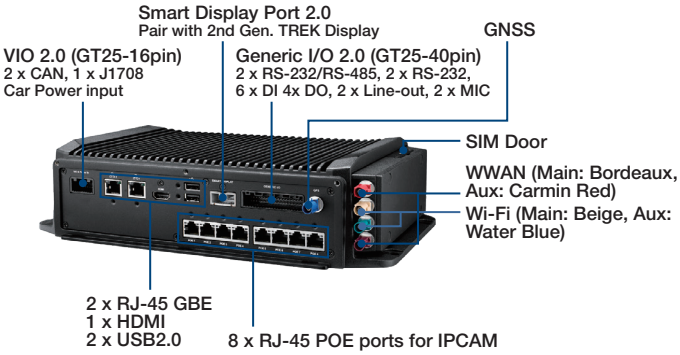


Specifications Cont.

Environment	IP Rating	IP30, optional IP65 I/O Cover (project-based)
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC class B
	Safety	UL/cUL, CB (EN60950/EN62368)
	Vehicle Regulation	E-Mark (E24), SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE (RED), FCC ID, IC ID
	Operating Temperature	-30 to 70°C (Atom™ X5-E3940), -20~50°C (Core™ i7/i5, -20 to 60°C by projec-based)
	Storage Temperature	-40 to 80 °C

Accessible Front Door

Flexible Rear I/O



Order Information

Part Number	Description
TREK-676-5LWBXA0P1*	i5-7300U/4GB/32GB/GPS/WIFI/LTE(EU)/8PoE/SSDKit/W10(64bit)
TREK-676-5LWBXB0P 1*	i5-7300U/4GB/32GB/GPS/WIFI/LTE(US)/8PoE/SSDKit/W10(64bit)
TREK-676-MLWBXA0P2*	E3940/4GB/32GB/GPS/WIFI/LTE(EU)/8PoE/SSDKit/W10(64bit)
TREK-676-MLWBXB0P2*	E3940/4GB/32GB/GPS/WIFI/LTE(US)/8PoE/SSDKit/W10(64bit)
TREK-676-00A0E1*	i5-7300U/4GB/GPS/SSDKit barebone
TREK-676-01A0E2*	E3940/4GB/GPS/SSDKit barebone

1*: will be available in Dec'19
2*: will be available in Feb'19

Packing List

Part Number	Description	QTY
1750008765-01	Outdoor FAKRA LTE/GPS(Glonass) combo antenna, 5M	1
1750008764-01	Outdoor FAKRA LTE antenna, 5M	1
1750008763-01	Outdoor FAKRA WI-FI antenna, 5M	2
1700030201-01	2M Power cable with 30cm Vehicle I/O	1
1700030180-01	60cm Generic I/O cable	1

Note: The TREK-676 barebone unit excludes Outdoor FAKRA antennas

Embedded OS

Part Number	Description
TBD	Image Win10 IoT LTSC x64 EN (64bit)

Optional Accessories

Part Number	Description
TREK-306D-H2A0E	10.4" XVGA Resistive Smart Display (SDP2.0)
TREK-306P-H2A0E	10" XVGA PCAP Smart Display (SDP2.0)
TREK-303R-H2A0E	7" WVGA Resistive Smart Display (SDP2.0)
1700030182-01	2M Smart Display 2.0 Cable
1700030183-01	5M Smart Display 2.0 Cable
1700030181-01	10M Smart Display 2.0 Cable
TBD	5M Power cable with 30cm Vehicle I/O
TBD	20cm Power cable with 30cm Vehicle I/O (in-house testing)
96PSA-A150W12W7	Adapter 100-240V 150W 12V DC (in-house testing)
96PSA-A90W19V1-2	Adapter 100-240V 90W 19V W/PFC DC PLUG 180° (in-house testing)
TBD	IP65-rated I/O cover (VIO/SDP2.0/8P RJ45)

TREK-676 CTOS Information

Part Number	Description
98R8T676E01	TREK-676 RF extension barebone unit
98R8T676R00	TREK-676 WLAN module kit (802.11ac/BT combo), 2x FAKRA
98R8T676R01	TREK-676 LTE module kit (US), 2x FAKRA
98R8T676R02	TREK-676 LTE module kit (EU), 2x FAKRA
98R8T676V00	TREK-676 Surveillance Kits for 8ch IPCAM with IO plate