TREK-688

Premium In-Vehicle Computing Box for Fleet Management and Surveillance

Features

- 4th generation Intel® Core™ processor
- Vehicle diagnostics interface with configurable CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587) protocols
- Embedded Stretch S7 video encoder supports up to 16 analog video inputs and 8 audio inputs
- Built-in GNSS, WLAN, Bluetooth, and WWAN (with dual SIM cards) modules
- Intelligent vehicle power management system supports ignition on/off/delay and power protection functions
- Dual externally accessible HDD/SSD tray with key-lock protection
- Wide operating temperature range (-30 ~ 55 °C/-22 ~ 131 °F)
- Supports 12/24 V vehicle power (ISO 7637-2)
- MIL-STD-810G and 5M3 certified for shock and vibration tolerance
- Easily paired with TREK in-vehicle smart displays (TREK-303/306) via a single-cable connection

Introduction

TREK-688 is an industrial-grade in-vehicle computing box designed to provide high-quality fleet management and video surveillance for eBus and BRT systems. The inclusion of GNSS, WLAN, Bluetooth, GPS, and WWAN (with dual SIM cards) modules allows remote monitoring and vehicle tracking even in tunnels. TREK-688 also features several vehicle protocols (J1939, OBD-II/ISO 15765) for vehicle diagnostics and driver behavior management, and supports up to 16 camera inputs and 8 audio inputs for high-quality, MJPEG, H.264 recording to enable motion detection, on-board recording, and real-time data transmissions. The dual Gigabit Ethernet ports with M12 connectors and dual display/dual audio interfaces support different resolutions for convenient application.

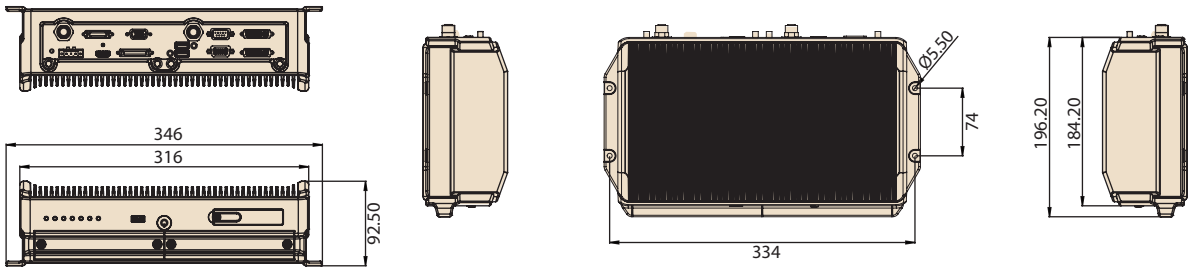
Specifications

Core	Processor	Intel® Core™ i7-4650U dual-core, 2.9 GHz (i3-4010U and i5-4300U available upon request)
	Memory	1 x SODIMM socket Up to 8 GB DDR3L-1066/1333 non-ECC memory (4 GB default)
	Graphic	Intel® HD graphics 4400, 1.1 GHz
	Video HW Encoder	Stretch S7 with H.264 MJPEG support; up to D1 resolution (30fps) per channel
	Operating System	Win7 Pro (32 bit) default with WES8, Win10 IoT LTSB, and Linux Ubuntu 14.04 (Kernel 4.2.0) available upon request
Storage	CFast	1 x externally accessible CFast slot with cover and supports system boot up 16 GB, UMLC SQFlash Cfast (default)
	mSATA	1 x mSATA slot that supports system boot up with optional BOM upon request
	HDD/SSD	2 x externally accessible 2.5" mobile HDD/SSD trays with key-lock protection with optional support for system boot up Supports SATA III (6 Gbz/s)
Display	Smart Display Port [1]	12V/2A power output for TREK-30x 1 x 18-bit LVDS (800 x 480 resolution for TREK-303 or 1024 x 768 for TREK-306); configured for TREK-306 as default 1 x Line-Out [2] (for TREK-30x speakers) 2 x UART (TX/RX, TX/RX/RTS) (for touchscreen, hot keys, brightness, and light sensor control) 1 x USB 2.0 Type A 1 x PWR button 1 x Reset button
	HDMI	1 x HDMI 1.4a (up to 3200 x 2000 resolution @ 60 Hz)
	VGA	1 x DB15 (up to 2560 x 1600 resolution)
I/O	Vehicle I/O	2 x CAN bus (supports raw CAN, J1939, OBD-II/ISO 15765; configurable via firmware) 1 x J1708 (supports J1587) 1 x 4-wire RS-232/422/485 (RS-485 default, configurable via software)
	Generic I/O	2 x 4-wire RS-232 4 x Isolated DI (dry contact) 4 x Isolated DO (open collector output, driven by relay) 1 x Line-Out [2] 1 x Mic-In
	Standard I/O	1 x USB 2.0 Type A (front) 2 x USB 3.0 Type A (rear, with cable clip) 1 x High-speed full RS-232, DB-9 (Pin 9 = ring, 12 V @ 0.5A is BOM optional via jumper setting) 2 x Giga LAN with 8-pin M12 connector
	Video/Audio Input (AV1 and AV2 via dual DVI-I connector)	16 x Video inputs with video compression, H.264, MJPEG support, and up to D1 resolution (30fps) per channel (480fps total) 8 x mono audio inputs with G.711 audio compression
	LED	6 x LEDs: Power (red), CFast (yellow), WLAN (green), WWAN (green), GPS (yellow), and connectivity (yellow)
	Power Button	Via TREK-30x in-vehicle smart display; system power on by ignition as default
	Reset Button	1 x Reset button (front)
RF	WLAN + Bluetooth	6 x LEDs: Power (red), Storage (yellow), WLAN (green), WWAN (green), and GPS (yellow)
	WWAN	4G (LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via full-size mini-PCIe slot (MC7354 for US/MC7304 for EU as default)
	GNSS	Built-in ublox MAX-M8W GPS/GLONASS/BeiDou module with A-GPS support 2 x externally accessible mini SIM card sockets (selectable) with cover
	Antenna	4 x SMA-type antenna holes for GPS, Wi-Fi+BT, WWAN/LTE MIMO [3]
Power	Input Voltage	Supports 12/24 V vehicle power, 9 ~ 32 V_{DC} input (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) 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 H x D)	346 x 92.5 x 196.2 mm (13.62 x 3.64 x 7.72 in)
	Weight	5.9 kg (13 lb) with two HDDs

Last updated: 28-Nov-2018

Dimensions

Unit: mm

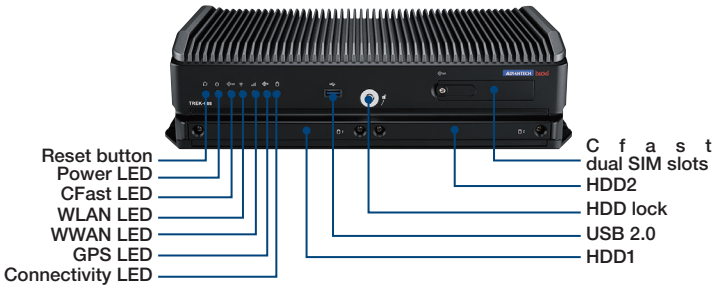


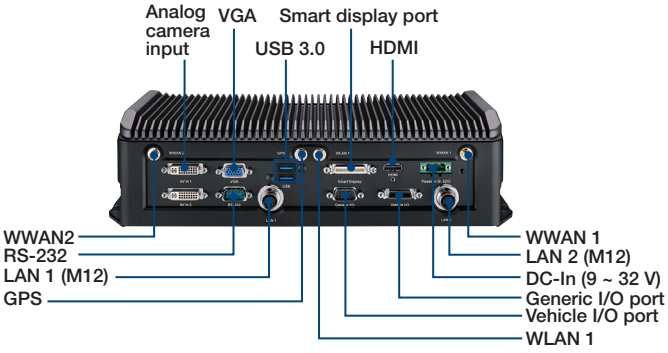
Specifications Cont.

Environment	IP Rating	IP30
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13), SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30 ~ 55 °C (-22 ~ 131 °F)
	Storage Temperature	-40 ~ 80 °C (-40 ~ 176 °F)

[1] For direct pairing with TREK-303/306 via a single-cable connection
[2] Supports dual independent audio streams (the Line-Out interfaces of the smart display and generic I/O are driven by different audio codecs)
[3] The TREK-688 connector type is female RP-SMA (e.g., a female connector body (outside threads) with a male inner pin contact)

I/O Connectors





Note: WLAN 1 = WLAN main, WWAN 1 = WWAN main, WWAN 2 = WWAN auxiliary

Ordering Information

Part Number	Description
TREK-688-7LWB7PA0E	i7-4650U/LTE/HSPA+(EU)/GPS/WLAN/BT/Win7 Pro (32 bit)
TREK-688-7LWB7PB0E	i7-4650U/LTE/HSPA+(US)/GPS/WLAN/BT/Win7 Pro (32 bit)
TREK-688-01A0E	i5-4300U/4G RAM/GPS, barebone unit
TREK-688-02A0E	i7-4650U/8G RAM/GPS, barebone unit

Note: WES8, Win10 IoT LTSB, and Linux OS images are available upon request.

Packing List

Part Number	Description
1700019031	1 x 2M power cable
1700023050-11	1 x generic I/O cable, 2M
1700023051-01	1 x vehicle I/O cable, 30 cm
170022702-01	2 x audio/video cables, 20cm
1700020123	1 x USB cable for HDD data backups
1750007927-01	1 x LTE/GPS outdoor combo antenna, 3M
1750007928-01	1 x LTE outdoor antenna, 4M
1750007564-11	1 x Wi-Fi only antenna, 3M

Note: The TREK-688 barebone units (e.g., TREK-688-01A0E/TREK-688-02A0E) are without LTE and Wi-Fi antennas.

Optional Accessories

Part Number	Description
TREK-303R-HA0E	7" WVGA in-vehicle smart display
TREK-306D-HA0E	10" WVGA in-vehicle smart display
1700020007-11	2M smart display cable
1700020008	5M smart display cable
1700020128	5M power cable
1700020170-01	M12 to RJ45 waterproof LAN cable, 50 mm (for in-house testing)
1700019464	Power cable, 155 mm (for in-house testing)
96PSA-A60W12V1-1	Adapter AC 100 ~ 240 V, 60 W, 12 V 5A w/o PFC (for in-house testing)