Digital Logistics and Fleet Management

Quality In-Vehicle Computer and Tablet Solutions

- Long Haul Trucks
- Emergency Fleets
- eBus Systems
- Utility Fleets
- Mobile Workers

ADVANTECH DLOG

Digital Logistics & Fleet Management

intel IoT Solutions Alliance Premier

http://www.advantech.com

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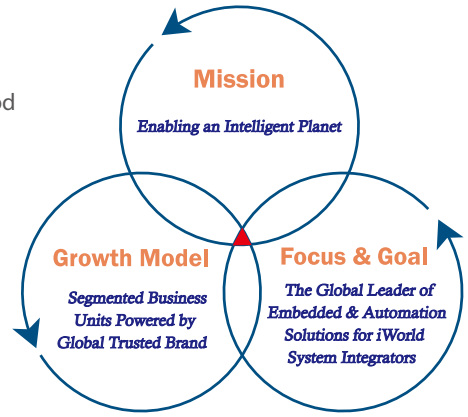
About Advantech

Advantech: Partnering for Smart City & IoT Solutions

Founded in 1983, Advantech is a leader in providing trusted innovative embedded and automation products and solutions.Advantech offers comprehensive system integration, hardware, software, customer-centric design services, and global logistics support; all backed by industry-leading front and back office e-business solutions. Advantech has always been an innovator in the development and manufacture of high-quality, high-performance computing platforms. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. To realize our corporate vision of Enabling an Intelligent Planet, Advantech will continue collaborating and partnering for smart city and IoT solutions.

Advantech's Good-to-Great 3-Circle Principle

The Advantech 3-Circle Principle is based on the book "Good to Great,"by Jim Collins. According to the book, a company looking for longterm success should clearly address these three fundamental principles, and commit to their continuing, solid execution.
Advantech is fully committed to this approach and has defined the Advantech "Good to Great 3-Circle Principle" as a means of adhering to it.



Advantech Corporate Structure and Growth Engines

Advantech Business Group Structure

Networks & Communications (DMS)
- Blade Computing & Systems
- Network Appliances
- Digital Video Platforms
- Embedded Switches

Intelligent Systems
- Industrial Computers & Servers
- Intelligent Video Solutions
- Intelligent IoT Modules
- Transportation Solutions

iConnectivity
- Industrial Communications
- WISE (Wireless IoT Solutions)

Service Automation
- Digital Healthcare
- Industrial Vehicle Computing
- Industrial Portable Computing
- Intelligent Retail & Hospitality

ADVANTECH Digital Healthcare
ADVANTECH DLOG
ADVANPOS

Applied Computing (DMS)
- Medical Computing
- Portable Computing
- POS/POI/Kiosk
- Embedded Systems

ADVANTECH
Embedded Platforms | Smart City Solutions

Embedded Core Computing (Emb'Core)
- Single Board Computers
- Industrial Motherboards
- Computer-On-Modules
- Embedded Software Services
- Industrial Displays & Peripherals
- Gaming Computing
- Embedded Design-To-Order Services

Advansus

Industrial Automation
- Industrial I/O & Controllers
- Industrial HMI
- WebAccess+ IoT Software
- Power & Energy
- FA/EFMS Solutions
- Machine Automation Solutions

ADVANTECH LNC

About Advantech DLoG

Advantech is a leading global manufacturer of industrial PCs and has established a great deal of experience and expertise in specialized industrial vehicle computing, such as that used in trucks and trailers.

DLoG GmbH, established in 1985, made a name for itself as a global player in the field of industrial applications for in-vehicle computing solutions in extremely demanding environments. DLoG has extensive marketing experience in Europe, and is renowned for its excellent German craftsmanship and design capabilities. The company, ranked third in the European market, is a leading provider of rugged industrial computers used in construction machinery, forklifts, mining engineering, and industrial manufacturing.

DLoG was acquired by Advantech in March 2010. Following the acquisition, Advantech began expanding its global industrial in-vehicle computing market under the new brand name Advantech DLoG. Combining the experiences and leading market positions acquired by both companies, Advantech DLoG aims to become the leading supplier of industrial vehicle computing products and services for select vertical markets worldwide, such as warehousing, heavy duty applications and fleet management.

Advantech DLoG delivers the best in German quality and Taiwanese flexibility, leading the industry in innovation, a very high level of quality, and is backed by an extensive support, sales and marketing network of more than 7,000 employees in 21 countries and 92 major cities with fast time-to-market services for worldwide customers.

Mobile Resource Management

Mobile Resource Management (MRM) is the process of optimizing, dispatching and tracking the use of assets and people that are involved in the movement of goods. The focus domains covers asset management, fleet management, and mobile workforce.

Asset Management

Intralogistics and warehouse applications have a single goal: error-free stock management. Knowing item location, quantities on-hand, stock-outs, re-order triggers, space and scheduling, and how to minimize movement and manage assets in a harsh, high pressure environment are only some of the challenges faced. Fast, correct, real-time data capture and access are key issues. Advantech DLoG brings advanced computing to extreme environments, coping with dust, shock, vibration, humidity, impact, physical abuse, and extreme temperatures. From mechanical engineering to radio antenna design, from rugged to extreme, Advantech DLoG ensures the security of your assets and helps you to manage them.

Fleet Tracking

Advantech DLoG in-vehicle computing and fleet management solutions translate real-time data about vehicles, cargo,deliveries and workers into dynamic, understandable displays that help increase productivity and lower operating costs. Operational costs are constantly on the increase. Fleet managers usually try to solve the need for vehicle tracking, followed by driver accountability, on-time delivery, monitoring vehicle usage, number of stops, etc. And high fuel costs, the largest business expense outside of the fleet manager's control, can be offset by automated vehicle location tracking and by reporting and analyzing vehicle data. Vehicle tracking, scheduling software and asset management improves a manager's fleet monitoring abilities to streamline mobile work activity and reduce company operating expenses.

Mobile Workforce

Mobile workers worldwide are empowered by reliable mobile devices that enable them to work productively. Reliable connectivity to networks, ergonomic design to support working outdoors for long periods of time and expanded data capture functions to fit different management systems are key issues when selecting mobile computers. Advantech DLoG understands your needs, and provides industrial-grade mobile computing devices with strong and reliable hardware design to survive in harsh environments; flexible selectable function modules to fit different systems; and light-weight design and accessories to reduce burden over the entire work day.

Ecosystem Benefits Everyone

Compatibility and interoperability are critical concepts for mobile communications products. With these principles in mind, Advantech DLoG works closely with its suppliers to assure both compatibility and interoperability. As a participant in a well-developed industrial ecosystem, Advantech DLoG offers customers pre-vetted options from a stable of standard protocols that ensure communications with maximum mobility and compatibility.

1. For external modules/devices: Advantech DLoG provides solutions and options that our customers craft into different application solutions. A number of devices have been tested and certified compatible with our products; our customers can refer to our peripherals list and select the options they need. Some examples are: RFID, barcode scanner, RAM mount, and external CAN bus solutions. Customers realize savings in effort required for selecting and testing peripheral vendors. This win-win strategy benefits Advantech DLoG suppliers and customers.
2. For internal module vendors: Especially for functions such as GPS/GPRS, WiFi, and Bluetooth, the associated RF communication modules are critical elements for in-vehicle products. Since quality is extremely important, we source only world-recognized RF modules. We check for approved certifications, such as PTCRB, R&TTE, etc., so our customers save time and expense. Close cooperation with our eco-partners benefits all concerned.

Benefits

- Assured hardware compatibility
- Assured protocol compatibility
- Assured interoperability
- Reduced sourcing effort
- Reduced testing
- Faster time to market
- Stable systems

Advantech DLoG partners with the companies below to serve the marketplace and offer leading edge products. In order to keep up to date with new technology and to develop cutting edge solutions for our customers, Advantech DLoG's open philosophy enables us to serve more effectively and to bring valuable new solutions to market more quickly. These are Advantech DLoG's most valued partners:

OS	Intelligent SW	Core Chip	Vehicle Communication Provider	GNSS	RF module	Peripherals
Microsoft	vnomics	intel IoT Solutions Alliance Premier	Simma Software	ublox	SIERRA WIRELESS	alk TECHNOLOGIES
Linux	VOMC	ARM		华大电子	CINTERION	iris INFRARED INTELLIGENT SENSORS
ANDROID	國立交通大學 National Chiao Tung University				Telit	PressurePro
					HUAWEI	taoglas antenna solutions
					ZTE	Brickcom

World Class RF Solution

Fleet operators must manage large vehicle fleets in geographically challenging situations. Advantech DLoG products integrate Assisted GPS (AGPS), dead reckoning, Bluetooth, and WWAN protocols (CDMA/GPRS/HSPA+), ensuring effective operation near tall buildings, mountains, canyons, in tunnels and in underground parking lots—improving management and competitiveness. Advantech DLoG design and production flow are compliant with ISO/TS 16949, with a quick time to first fix on satellite and very effective accur

Radio Communication and PTCRB Certification

Advantech DLoG products utilize industrial modules to transmit and receive data via CDMA, GPRS and HSPA+. With PTCRB certification which is compliant with 3GPP network standards, our products accommodate North American standards and additional requirements from the FCC and IC. By obtaining PTCRB Certification, it also ensures compliance with cellular network standards within the PTCRB Operators' networks (ex. AT&T).

About GPS

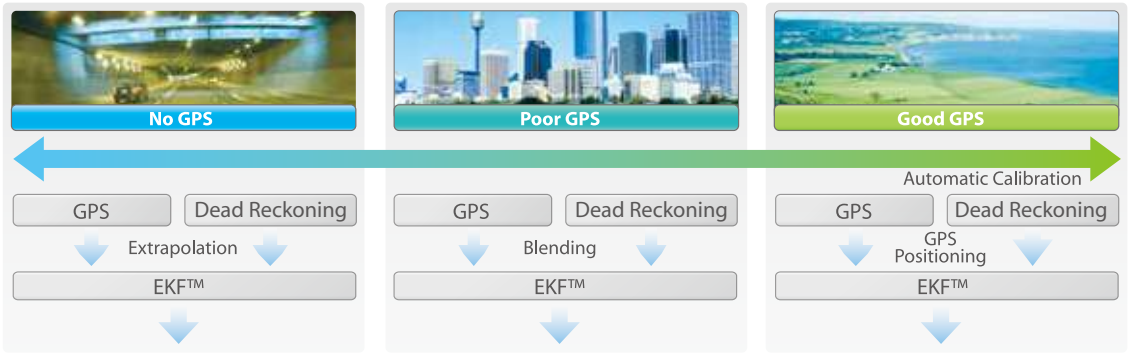
One problem affecting management of vehicle fleets is the accuracy of location data. This accuracy is greatly dependent on the techniques used to determine location. Advantech DLoG has teamed up with a leading chip manufacturer specializing in AGPS and dead reckoning, to develop a unique low-power consuming technology that delivers reliable, advanced GPS solutions. These solutions provide optimal sensitivity, connectivity, noise immunity, and continued tracking in areas where satellite signals are interrupted.

AGPS Technology

Under adverse signal conditions, however, data downloads from satellites to the GPS receiver and subsequent positional fix can take an unacceptably long time. AGPS boosts acquisition performance by providing satellite positional data to the GPS receiver via wireless networks or the internet. This enables the GPS receiver to compute a position within seconds, even under poor signal conditions. The service is available free-of-charge, in both online and offline versions that are easy to integrate into the system.

Dead Reckoning Technology

Dead reckoning technology supplements GPS data using additional sensors that detect distance travelled with an odometer and turn rate with a gyroscope, providing an accurate position in tunnels, indoor parking facilities, roofed logistics centers, urban canyons and any other environment where obstructed GPS signals hinder positioning.The following chart shows that when there is no GPS signal, drivers must rely completely on dead reckoning technology to extrapolate location. With a poor signal, drivers rely on a blend of both GPS and dead reckoning data for position information.



Benefits

- Integrated AGPS and dead reckoning, improves signal acquisition and maintenance
- Open antenna detection prevents tampering
- Real-time communications with central dispatch
- Multiple WWAN protocol support (CDMA/EV-DO, quad-band GPRS/EDGE, UMTS/HSPA, LTE)
- Bluetooth allows driver to transmit data to the cab via a mobile device
- Wi-Fi eases software upgrades allowing them to be done over the air

Certified Car Power Solution

Wide DC Input Range

Normally, for a 12V/24V vehicle power system, the DC voltage may go down to 6V/8V during peak loading, and it may be subject to engine charging up to a maximum of 32~34 V. If there were no power protection, this dirty power input might cause a fleet management system malfunction.

Power Management

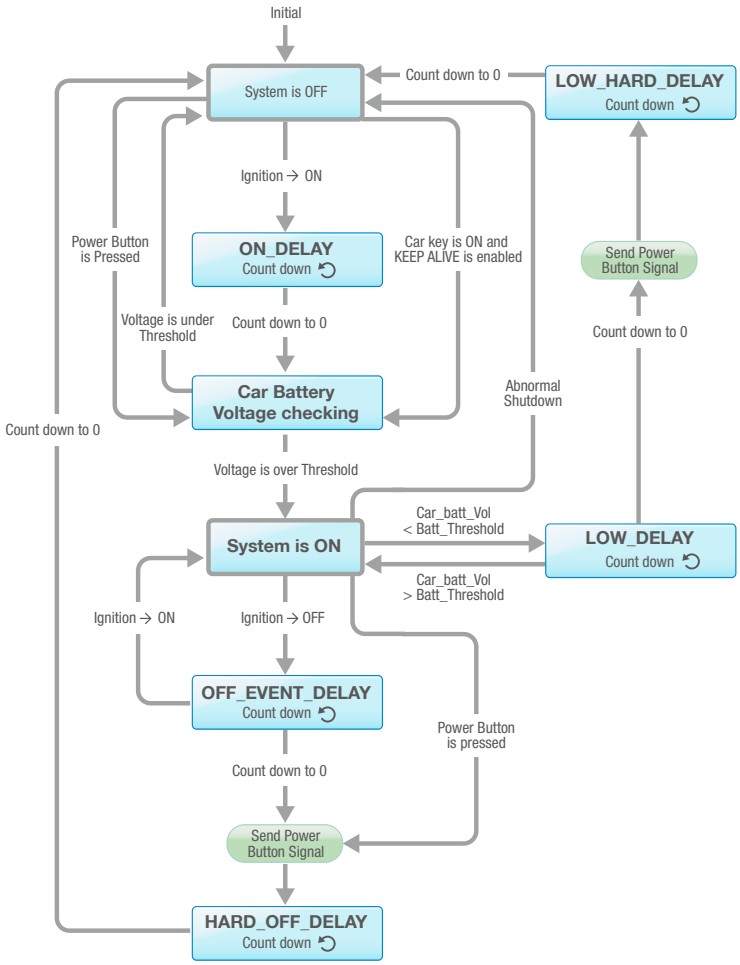
Efficient powernet energy management requires embedded software control. Software design must be integrated with hardware design from the beginning of power development to avoid complications during system implementation.

The power design mechanism integrates a power management algorithm; we provide a power management demo API that lets the customer set timings for their power on/off delay requirements, ignition on/off delay, and hard off delay, all of which benefits customers considerably by reducing application development effort.

SAE J1113/ ISO 7637-2/ E-mark Certifications

The automotive environment is fraught with electrical hazards. These hazards, including electromagnetic interference, electrostatic discharges and other electrical disturbances, are generated by various vehicular sub-systems such as ignition, relay contacts, alternator, injectors, and accessories. These generated hazards can occur directly in the wiring harness in case of conducted hazards, or may affect electronic modules indirectly via induction.

Power Management Flow Diagram



Benefits

- Vehicle-Grade Power Certifications:
  - E-mark: Certification for vehicles / vehicle components. E-mark is the indication of conformity with European Union Directives for motor vehicles.
  - ISO 7637-2: Road Vehicles – Standards for electrical disturbance from conduction and coupling. Part 2: Electrical transient conduction along supply lines only on vehicles with nominal 12 V or 24 V supply voltage, second edition, 2004.
  - SAE J1455: Recommended environmental practices for electronic equipment design in heavy-duty vehicle applications.
  - SAE J1113: Electromagnetic susceptibility measurement procedures for vehicle components (except aircraft).
- Wide-range DC input supports 6-36 V.
- Software supports SDK for easy power settings (delay, ignition, on/off control, hard off).
- Protection against low power conditions.

ISO/TS 16949 Drives Continuous Improvements in Automotive

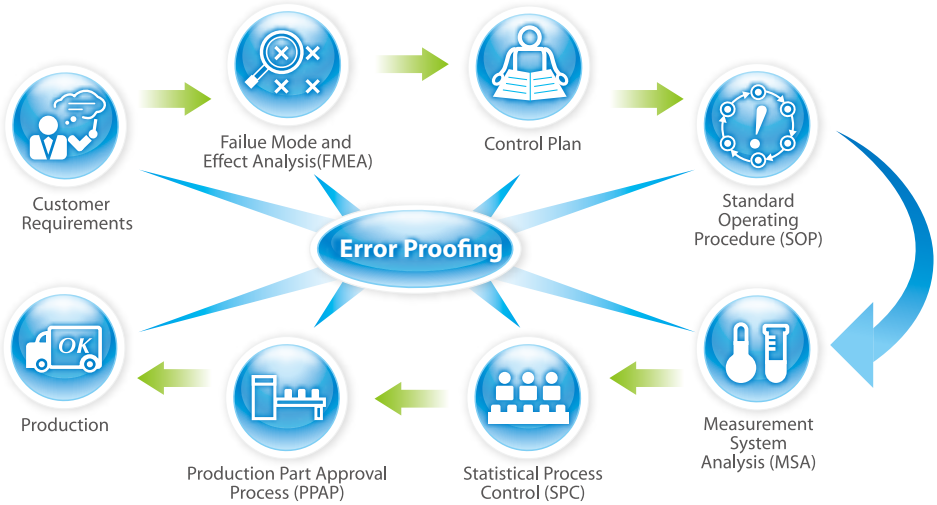
ISO/TS 16949 is a technical standard based on ISO9001. It aligns automotive standards of quality control from the US (QS9000), Italy (AVSQ), France (EAQF), Germany (VDA6.1), and Japan into a process-based system of continual improvement, defect prevention, and optimization of the supply chain through reduction of waste. It was authored by SGS, and requires group members to perform detailed root cause analysis of product defects and failures, as well as waste and variation analysis. The key metrics of ISO/TS16949 are: production part approval process (PPAP), advanced product quality planning (APQP), failure mode and effect analysis (FMEA), measurement system analysis (MSA) including gauge repeatability and reproducibility (R&R), and statistical process control (SPC). As a condition of keeping the certification, mandatory change implementation with measurable improvements must take place after the analysis is done, thereby ensuring a system of continuous improvement.

Advantech DLoG is committed to following the ISO/TS16949 standard in its in-vehicle products, as part of a continuous self-improvement effort. Annual audits will ensure that vehicle-grade standards related to ISO/TS16949 are met and measurable in accordance with the certification requirements. Advantech DLoG is ready to take first-tier customer projects and customized ODM requests.

Process Flow

ISO/TS 16949 methodology follows the advanced product quality planning process (APQP). It begins by defining customer and regulatory requirements, including scope, and team organization. Planning and definition follow, in which a strategy is chosen, benchmarks and goals set, reliability studies performed, and customer input gathered. In the product design and development phase, two types of failure mode and effect analysis (FMEA) are performed: design failure mode and effects analysis (DFMEA), and process failure mode and effects analysis (PFMEA). A control plan including process capability, SOP, and measurement systems analysis (MSA) follow the FMEA. Statistical process controls (SPC) monitor processes ensuring they operate at full potential. The production part approval process (PPAP) provides validation and management signoff. In the final production phase, feedback, assessment, and corrective actions are measured in relation to customer satisfaction, service, delivery, and consistency.

ISO/TS 16949 Process Flow



Benefits

- Solid design and production
- Lower defect rates, which lead to lower manufacturing costs
- Increased efficiencies along the entire supply chain
- A single internationally agreed upon standard for quality management, which is easily recognizable
- Measurement, analysis and continuous improvements

In-vehicle Wide Working Temperature Range

Keep Your Cool with Wide-Range Thermal Solutions

Industrial-grade computing systems are designed to work under extreme conditions. In a vehicle, it is possible for temperatures to reach up 70° C. Hardware expected to perform in these conditions requires special design and materials, special cooling considerations, and extensive temperature testing. Software must be designed with thermal management in mind, and stringent testing should be performed to ensure reliable performance under extreme and rapidly changing temperatures.

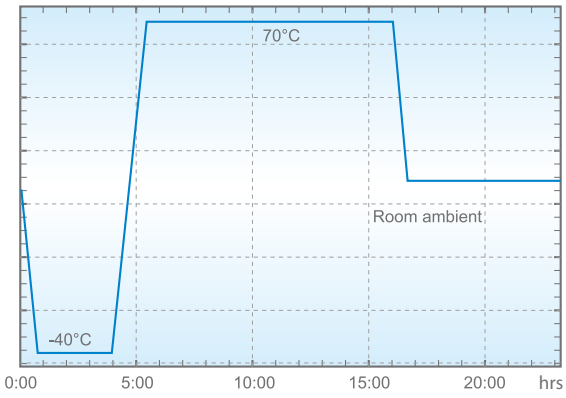
Increased Reliability for Long-Term Peace of Mind

Systems designed to run under a wide range of temperatures operate more reliably, and protect investments. System monitors can be programmed to send warning notifications or to shutdown systems when certain thresholds are reached. More reliable equipment can handle the demand from fluctuating changes in temperature, and operation across large geographic areas, helping fleet managers maintain a competitive edge.

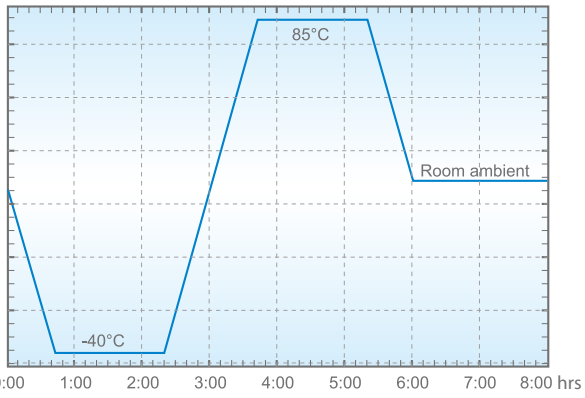
1. About standards

Advantech DLoG products support operation under a wide range of working temperatures. TREK series devices were tested in accordance with SAEJ1455 4.1.3.1 standards over a 24 hr period; the results are shown below for reference:

SAE J1455 Figure 2a - 24 Hour Thermal Cycle



SAE J1455 Figure 2b - Short (8 Hour) Thermal Cycle



2. How we achieve wide range temperature operation

Advantech's experienced fanless thermal solution team designs with prudence in mind. First, only industrial-grade components are used to ensure reliability and durability. During the early design stages, a rigid thermal simulation is performed and reviewed against actual test results. And depending on result outcomes, key components for durability are then put under strict wide range temperature testing as defined for industrial equipment (-40 to 85° C, see Figure 2b). The net result is that systems are able to operate without failure at ranges of -30 to 70° C (see Figure 2a).

Benefits

- More reliable for mission critical applications
- Long-term protection of investment
- Space-efficient design
- Fanless, low noise operations

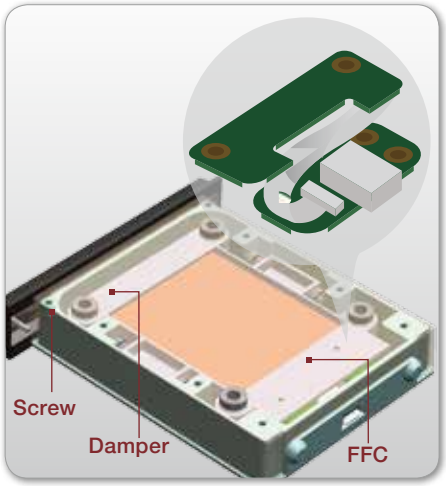
Vibration and Shock Resistance

Fleet Management systems can be installed at many locations in a vehicle. But with varying road conditions and driving situations, shocks and vibrations can impact these systems. In response to this concern, Advantech DLoG performs a series of life cycle profile tests designed to test environmental conditions and physical acceleration on its mobile data products. These tests allow engineers to design products that withstand vibration and shock, and comply with SAE J1455, MIL-STD-810G, and EN60721-3-5 class 5M3 standards.

How does Advantech DLoG technology reduce the impact of shock and vibration?

Advantech DLoG's broad range of mobile data terminal products is suitable for use in any vehicle—including trucks, transit buses, taxis, subways, and light rail. Advantech DLoG strives to produce mobile data terminals that perform ever more reliably under the severe conditions that occur in mobile environments.

Hard disks are protected by some special designs including 2 screws in front of the HDD, 12 dampers and an FFC cable inside the HDD box to prevent environmental shock impact our HDD.

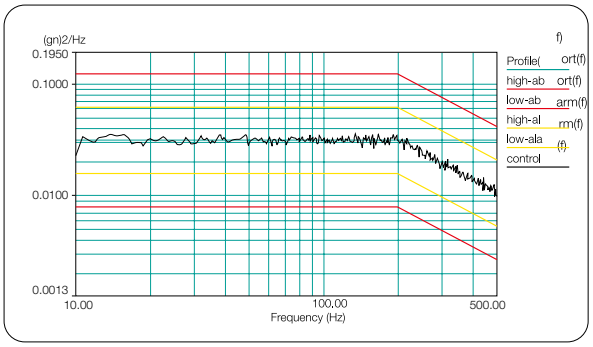


Advantech DLoG responds to the problems associated with electronic systems operating in harsh vehicle environments by thorough research and design. Quality Assurance personnel physically test products in the environment in which they will be used. The development and testing that is conducted follow SAE J1455 4.9.4.2, and MIL-STD-810G 514.5 , and EN60721-3-5 class 5M3 standards.

The “EN60721-3-5 class 5M3” standard certification means the product can withstand three times the shock and vibration of most military MIL-810G grade computing devices.

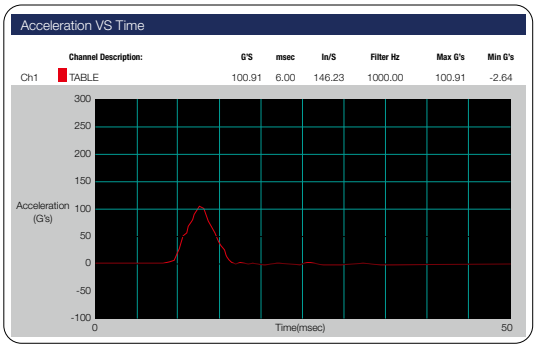
Note: EN60721-3-5 : Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 5: Ground vehicle installations.

Test Vibration Curve



EN 60721-3-5 Class 5M3 Random Vibration Test (3.38Grms)
10~500Hz, 3.38Grms, 1hr/per axis
Test PSD: 10~200Hz: 3 m^2/S^3, 200~500Hz, 1 m^2/S^3

Test Shock Curve



EN 60721-3-5 Class 5M3 Shock Test – Level II (100G /6ms)

MRM SDK Accelerates Product Development and Time-to-Market

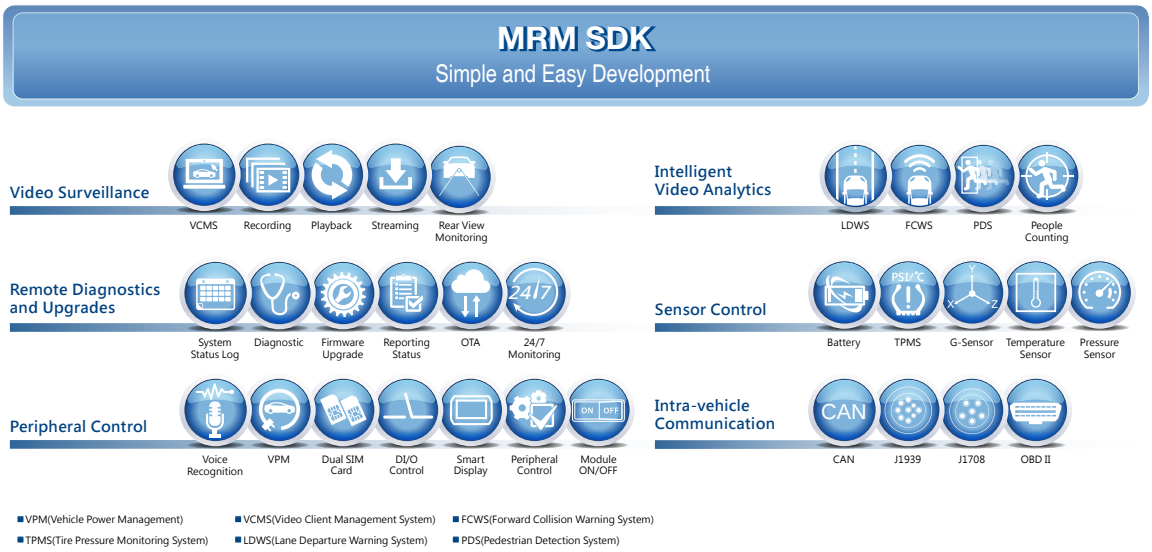
Introduction

Advantech DLoG's MRM SDK (Mobile Resource Management Software Development Kit) is a software API layer that sits between the operating system and user applications, providing programmatic access to all hardware interfaces and device modules. By enabling system integrators to communicate directly with the system hardware, such as the power management, enable/disable, digital input/output control, brightness control, and hotkey function modules, MRM SDK eliminates the complex programming typically required to initiate low-level system commands, thereby accelerating the development and deployment of user applications.

MRM SDK can be used to send automatic event triggers based on key system information and parameter data, and applications can be configured to respond to specific event triggers. MRM SDK also enables video data to be captured, encoded, previewed, and streamed to a back-end server for monitoring and subsequent analysis.

Next-Generation Vehicle Platform Kit

This latest generation MRM SDK software package is more than just an API level development kit, instead it embodies the concept of vehicle platform kits and features configurable firmware and protocols for the following functionalities: video surveillance, remote diagnostics and upgrades, local peripheral control, in-vehicle intelligent video analytics, sensor control, and intra-vehicle communication. Additionally, the inclusion of voice-recognition technology alters the data input mechanism and enables drivers to focus on driving.



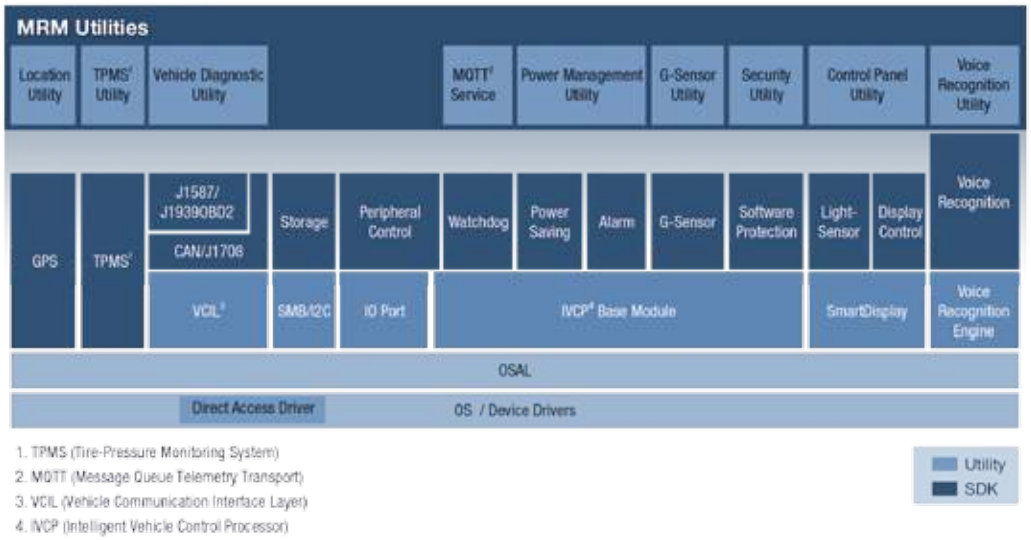
MRM SDK Utility Stacks

The new MRM SDK retains the benefits of previous generations, such as providing easy access to system peripherals and eliminating the complex programming required for low-level system calls; however, rather than the previous demo sample code, it features SDK utility stacks to enable rapid integration and optimization.

Advantech DLoG Capabilities

The architecture of the MRM SDK software package is organized into several layers. At the bottom, there is the OS kernel layer, which provides the core system functions for managing the vehicle power and peripherals. Above that are the utility stacks, which are sets of integrated tools that enable users to create their own applications. Next is the operating system abstraction layer, which provides the application development interface, making it easier to develop code for multiple software and hardware platforms. At the top is the standard device driver access layer. This reorganized SDK structure enables programmers to write neat readable code that can applied across platforms.

MRM SDK Stacks



1. TPMS (Tire-Pressure Monitoring System)
2. MQTT (Message Queue Telemetry Transport)
3. VCIL (Vehicle Communication Interface Layer)
4. IVCP (Intelligent Vehicle Control Processor)

Additional software protection enables customers to save security keys in VPM, encrypt/decrypt data stored on the security chip, protect confidential data, and bundle applications on Advantech's TREK platforms without fear of piracy. The video surveillance technology supports intelligent video analytics, with over-the-air (OTA) file deployment capabilities reducing the overall system maintenance costs and downtime. The connected sensors and CAN bus protocols facilitate system integration and driver behavior analysis, as well as pairing with IOT-ready software. Finally, the inclusion of the MQTT (message queue telemetry transport) SDK makes connecting to a cloud easier and more convenient.

Benefits

- Retains the functions of previous generations, provides access to low-level hardware functions, and eliminates the complex programming required for low-level system calls
- Voice-controlled, touchless operation increases driving safety
- OTA file deployment enables remote device updates, reducing maintenance costs and system downtime
- Makes user applications portable across different operating systems
- Accelerates product time-to-market
- Event-driven callback triggers are faster and more proactive
- Supports a complete portfolio of protocols and standards for in-vehicle computing solutions
- Provides a single system interface for developers and integrators
- Supports multiple operating systems (WinCE, WES7, WES8, Linux, and Android), ensuring cross-platform portability

High Flexibility to Satisfy Varied Requirements

Complete Product Offerings for In-Vehicle Applications

Advantech's application-ready platforms (ARPs) combine all essential system hardware and software into a comprehensive in-vehicle solution with high scalability and customization flexibility. Advantech's extensive product range offers sufficient options to configure platforms according to customer needs. Considering an eBus application, for example, Advantech's eBus solution comprises numerous peripherals, such as IP and analog cameras, infotainment display mounting kits, RF antennas (GNSS/Wi-Fi/WWAN), in-vehicle signage systems, passenger counters, vehicle power adapter, Ethernet/PoE switch, and tire pressure monitoring system (TPMS) signal emitters and receivers to provide a complete and fully functional fleet management platform.

Simplifies System Sourcing, Verification, and Integration Efforts

ARPs substantially reduce system sourcing, verification, and integration efforts by minimizing the time spent testing, selecting, and integrating equipment and existing system, ultimately accelerating the time-to-market for new products. Advantech's TREK/PWS products have proven integration compatibility, which allows for convenient system installation, maintenance, and upgrades. Relevant software development kits, utilities, and sample codes are also included with Advantech's ARPs to facilitate the development of unique applications and programs.

Extension Module Allows Easy Customization for Various Field Applications

Advanced communication technologies 4G LTE and 802.11 a/b/g/n/ac and wide variety of I/O options make Advantech's PWS-870 ideal for various field service applications. Featuring an Intel® Core™ i3/i5/i7 processor with integrated graphics processor and turbo boost, as well as built-in WiFi, Bluetooth, WWAN, and GNSS modules, PWS-870 delivers substantial computing power and wireless connectivity. Besides standard peripherals that include two USB 3.0 ports, one USB 2.0 port, one audio jack, one HDMI connector, and a vehicle and desk docking station, PWS-870 is equipped with front and rear-facing 2M/5M cameras, a 1D/2D barcode reader, and a RFID reader to provide multiple tools for in-field data collection. Optional accessories include desk docking station and vehicle docking station and a universal cover that can be used as a handle, stand, bag, and hand strap, providing users with four hands-free carry options, as well as an UHF RFID/MSR extension module. The extension module ports can be customized for USB, LAN, and HDMI support, according to user requirements. Additionally, the 10.1" display panel has options for high brightness (800 cd/m2), capacitive touch, sunlight-readable use, as well as a digitizer pen for more user-friendly operation.

Long Operation Time and Rugged Design for Harsh in-Field Environments

Built to withstand rough handling, PWS-870 meets MIL-STD-810G and IP65 standards for durability and tolerance to dust, water, vibration, and temperature extremes, as well as other factors that rapidly damage commercial-grade tablets. The hot-swappable external battery provides up 11 hours of continuous operation, and the device vehicle dock can be used to recharge the battery during transit.

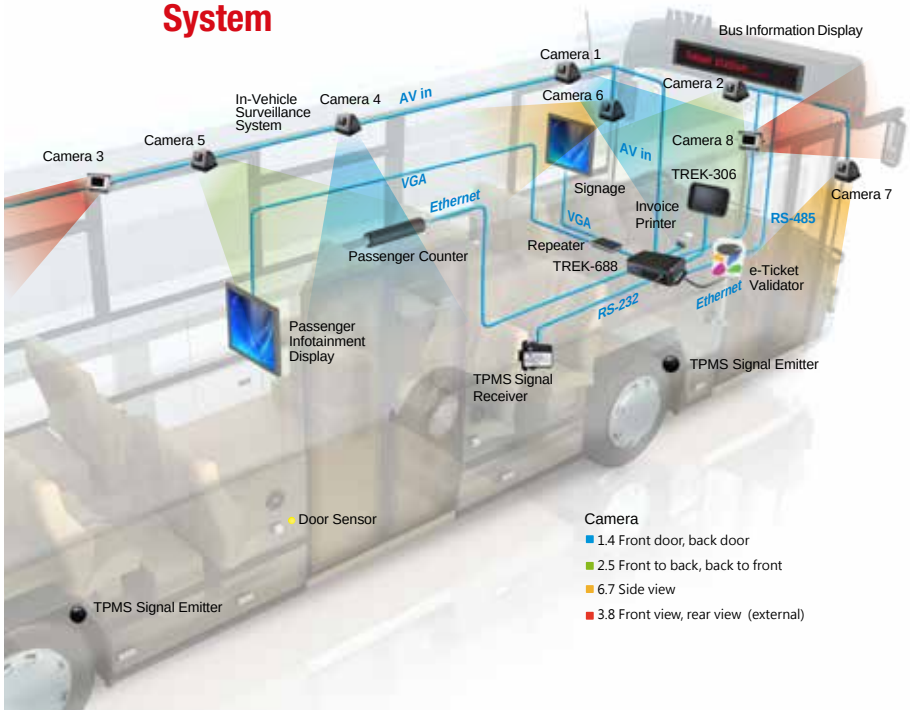
Application Story

TREK-688 Provides Intelligent In-Vehicle Surveillance Solutions for eBus Systems

Introduction

Customers seeking smart vehicle solutions for sophisticated eBus systems typically have diverse needs. Advantech DLoG assists system integrators with designing comprehensive wireless infrastructures for eBus systems to support the advancement of mobile onboard computing and back-end communications in the transportation industry. Using its knowledge and industry experience, Advantech DLoG developed an industrial-grade in-vehicle computing box with Intel® Atom™ processor that is ideal for municipal and inter-urban bus fleets.

System



TREK-306DH

10" In-Vehicle Smart Display

- Vehicle-grade 10" (4:3) XGA TFT LCD with rugged resistive type touchscreen
- Five user-programmable function keys
- Two 2-watt speakers
- Built-in light sensor for automatic dimming
- Easily installed and paired with TREK computing box via a single-cable connection
- Extended I/O ports (USB 2.0 Type A, power button and reset button) for easy TREK computing box maintenance
- Wide working temperature range (-30° C ~ 70° C)

Solution

Advantech's eBus solution comprises the TREK-688 in-vehicle computing box and TREK-306 smart display and satisfies the needs of metropolitan bus fleets for vehicle tracking and mobile resource management. Built-in sensors collect all intra-vehicle data, including engine speed, tire pressure, improper braking, throttle position, passenger and eTicket numbers, and video recordings, to provide a detailed record of vehicle driving operations. This data is then transmitted to a back-end cloud to facilitate subsequent analysis by fleet managers and coordinators to further increase operational efficiency and safety. Besides voice recognition technology for hands-free operation, Advantech's eBus solution is equipped with an in-vehicle surveillance (IVS) system to ensure that driver and passenger safety is prioritized at all times. Additional technologies include a lane departure warning system (LDWS), forward collision warning system (FCWS), and pedestrian detection system (PDS) that enable TREK-688 to provide useful warnings to the driver.

Benefits

Advantech DLoG's in-vehicle mobile computing system is a comprehensive fleet management solution that provides the following benefits:

- Reliable and compact industrial design
- Proactive vehicle diagnostics monitoring
- Improved efficiency for fleet managers and route planners
- Real-time communications and data transmissions
- Real-time billing and invoicing
- Enhanced safety for passengers and drivers

TREK-688

Premium In-vehicle Computing Box for Surveillance & Fleet Management

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

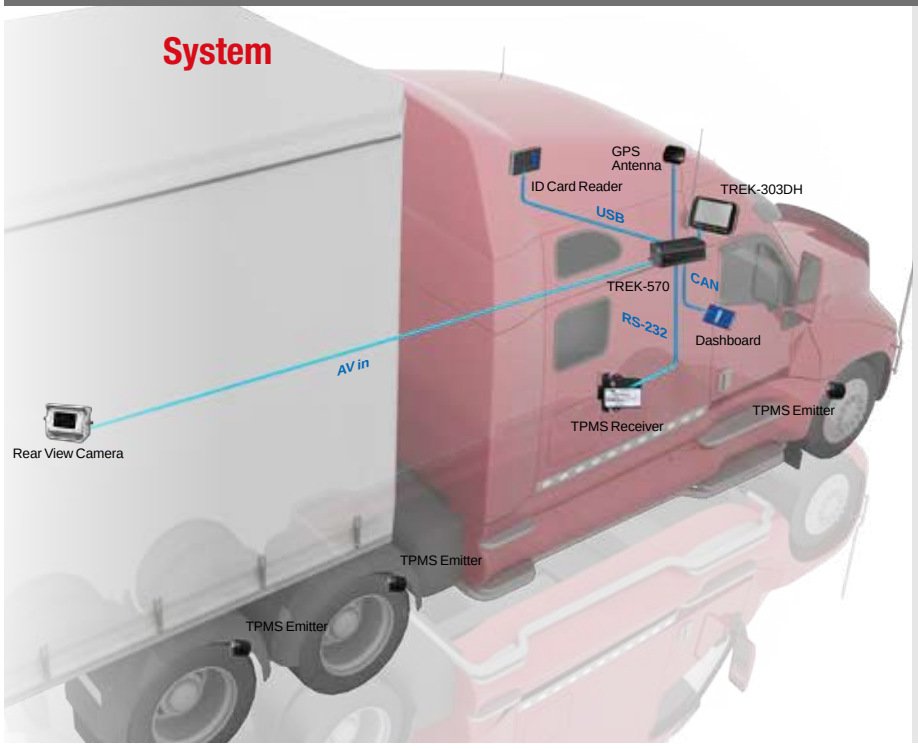
Application Story

TREK-570 Boosts Long-Haul Trucking Efficiency

Introduction

In the long-haul trucking industry, the management of vehicle fleets can be extremely challenging. This is because the vehicles are geographically spread, the back-end dispatch center must consolidate information for billing and invoicing, and customer service staff require real-time delivery information to communicate with customers. Additionally, there never seems to be enough time to complete all tasks in this highly competitive industry. A large US company attempted to address these issues to improve its operating efficiency and remain competitive. At this company, the billing and invoicing tasks were typically conducted at the end of the work day when the bills of lading were collected from the drivers. However, the company was looking for a way to perform these tasks during the work day.

System



TREK-303DH

7" In-Vehicle Smart Display

- Vehicle-grade 7" (16:10) WVGA resistive type touchscreen
- Five user-programmable function keys
- Two 2-watt speakers
- Built-in light sensor for automatic dimming
- Easily installed and paired with TREK computing box via a single-cable connection
- Extended I/O ports (USB 2.0 Type A, power button and reset button) for easy TREK computing box maintenance
- Wide working temperature range (-30° C ~ 70° C)

Solution

Advantech DLoG's TREK-570 in-vehicle computing box satisfied all the carrier's requirements and provided an additional benefit. Specifically, the new system enabled delivery confirmations and invoices to be sent within 10 minutes after delivery, improving invoice payments and customer service. TREK-570 can be paired with TREK-303 via single-cable connection, and supports with voice recognition. TREK-303 features a 7" TFT LCD screen with a backlight and adjustable brightness. With its rugged aluminum enclosure, the system is tolerant to vibration, dust, and water, and supports a wide operating temperature range, making it ideal for extreme in-vehicle environments. The DC power input is designed to handle transient voltage and ignition cold cranking, and the power on/off delay functions allow voltage stabilization when starting the engine. TREK-570 is equipped with many flexible communication technologies, such as IEEE 802.11 a/b/g/n, GPS, Glonass, HSDPA, CDMA , and LTE cellular technology, enabling real-time voice and data transmissions. The carrier company was extremely satisfied with the implementation of TREK-570 in its fleet vehicles.

Benefits

Advantech DLoG's TREK-570 in-vehicle computing box provides long-haul truckers with real-time wireless access, as well as the following benefits:

- Immediate delivery notifications provided to customers
- Increased efficiency through workflow load balancing
- Waterproof, dustproof, and IP54-certified I/O protective cover
- GPS tracking capability
- Operable in extreme temperatures and tolerant to transient voltage

TREK-570

Compact In-Vehicle Computing Box for Fleet Management

- Intel® Atom™ E3826
- Single-cable connection to pair with TREK In-Vehicle Smart Display(TREK-303/306)
- Real time Rear View monitoring
- Dual independent display/audio output for both driver and passenger for IVI and digital signage application
- Vehicle diagnostic interface with configurable protocols support: CAN(J1939, OBD-II/ISO 15765) and J1708 (J1587)
- Built-in GNSS, WLAN, Bluetooth and WWAN (with dual SIM cards)modules
- Intelligent Vehicle Power Management: Ignition on/off delay, wake up event controls and system health monitoring and diagnostic
- Wide working temperature (-30° C ~ 70° C), 12/24V Car power system compliant (ISO 7637-2) and Anti-shock/vibration (MIL-STD-810G & 5M3)

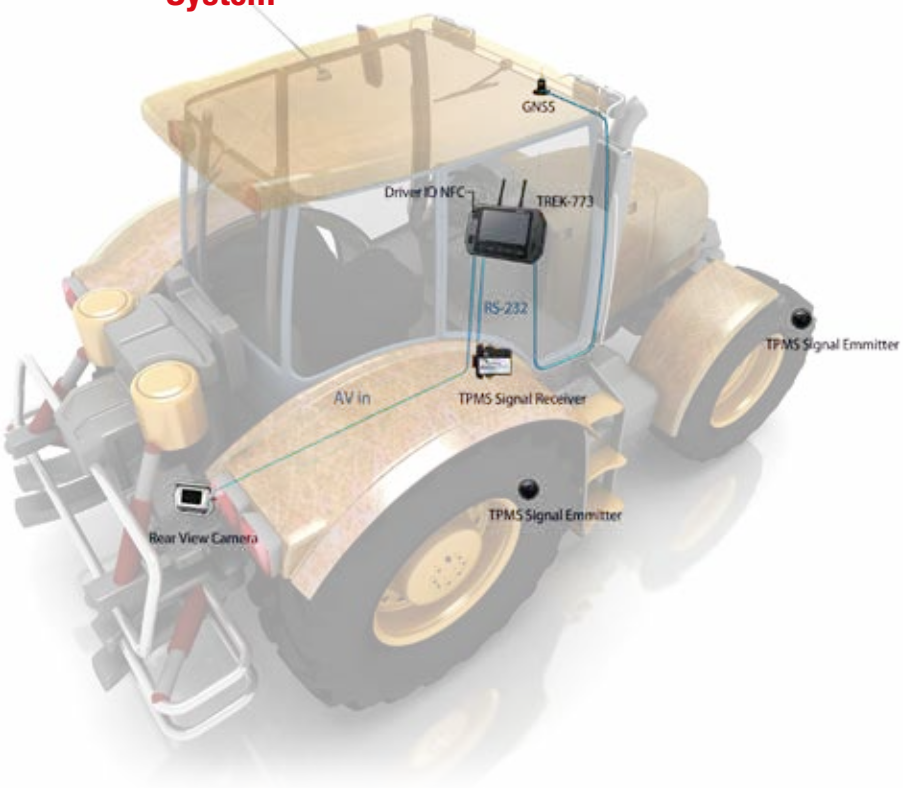
Application Story

Autonomous Harvesting Technology Realizes Intelligent Agriculture

Introduction

Intelligent agriculture can increase agricultural efficiency by integrating technology into traditional farming operations and facilitating the development of modern agriculture. Aimed at reducing the need for skilled machinery operators, autonomous farming solutions involve networked farming vehicles, such as combine harvesters, tractors, and grain carts, outfitted with cameras, sensors, ruggedized computers, and GNSS. The entire vehicle network can be controlled from a handheld tablet computer or mobile data terminal (MDT), eliminating the need for vehicle operators.

System



Advantech DLoG's autonomous harvesting system comprises the compact all-in-one vehicle terminal TREK-773, WWAN, GNSS, CAN bus, a tire pressure monitoring system (TPMS), inertial measurement sensors for hills, wheel encoders, and in-vehicle cameras.

Solution

Advantech DLoG's autonomous harvesting system supports the functions required for efficient and economical fleet management, such as vehicle positioning/tracking, real-time communications, and data collection and transmission. This all-in-one solution is based on Advantech's TREK-773 next-generation 7" MDT with Intel® Atom™ E3826 processor, gigabit Ethernet, and touchscreen display. The CAN bus protocol allows vehicle data to be transmitted the automated farming operations interface. Using TREK-773, operators can retrieve this data, send commands, and view the onboard camera video feed, thereby achieving remote control. The camera can also be used for rear view monitoring to reduce navigation blind spots and enhance safety.

TREK-773 features advanced power management capabilities that support, wake-on-call, on/off delay functions, and low standby power consumption for greater system efficiency. The input voltage range of 6 ~ 32 V ensures reliable operation even under transient voltage. Additionally, die casting and a ruggedized chassis provide a wide operating temperature range (-30 ~ 60 °C) and the ability to withstand shocks (100G, 6ms) and vibrations, making TREK-773 ideal for harsh environments.

Benefits

- Rugged system design with an aluminum chassis, wide operating temperature (-30 ~ 60 °C), and shock/vibration tolerance (MIL-STD-810G and 5M3) ensures reliable operation in challenging environments
- As the successor to TREK-753, operations can be easily and smoothly migrated to TREK-773
- Compact all-in-one MDT with Intel® Atom™ E3826 processor and strengthened touchscreen display delivers high performance and durability
- Built-in CAN bus, GNSS, WWAN, and voice recognition technology support real-time communication, vehicle diagnostics, and varied control for remote management
- Advanced power management capabilities (wake-on-call, on/off delay) ensures low standby power consumption
- Remote-controlled farming machines enable automated monitoring, harvesting, classifying, weighing, and packaging of crops
- Automated processes significantly reduce manpower costs and errors related to manual operation

TREK-773

7" All-in-One Mobile Data Terminal

- Intel® Atom™ E3826 SOC
- Supports WES8 and Fedora 18 Remix
- 7" WVGA wide-angle LCD resistive touchscreen
- Vehicle diagnostics interface with CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587) protocols
- Built-in GNSS, WLAN, Bluetooth, NFC, and LTE WWAN modules
- Intelligent vehicle power management system supports ignition on/off/ delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-30° C ~ 60° C), supports 12/24 V vehicle power (ISO 7637-2), and certified for shock and vibration tolerance (MIL-STD-810G and 5M3)

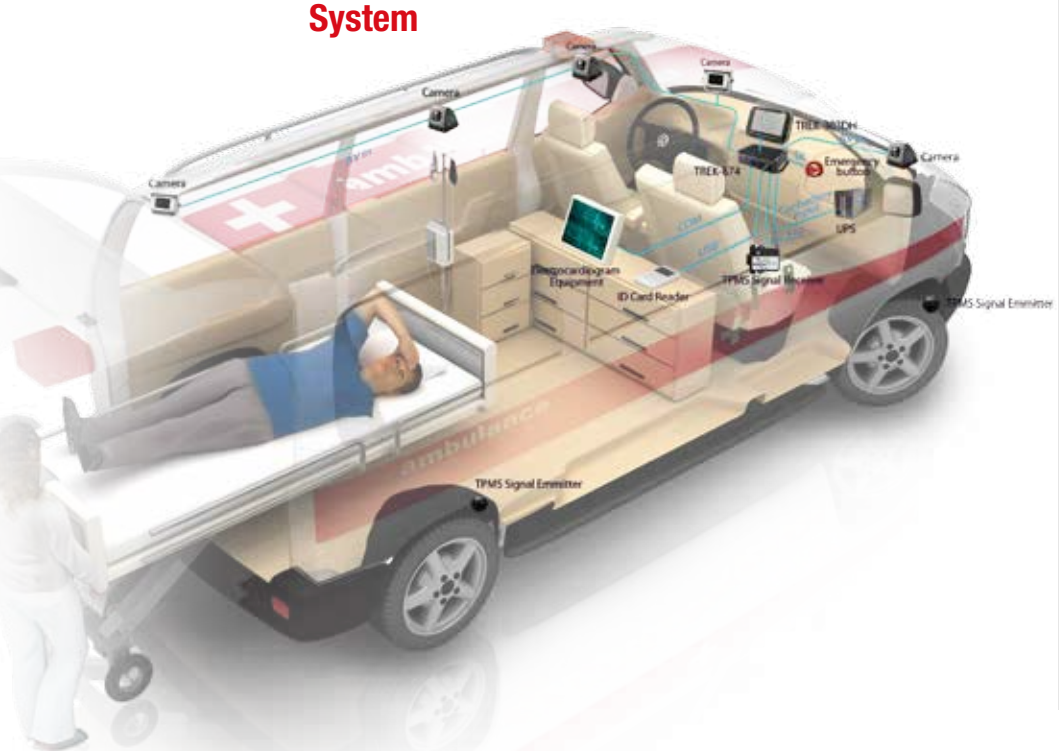
Application Story

In-Vehicle Emergency Response Management Solution for Ambulance Applications

Introduction

Ambulances and emergency response vehicles are primarily used to transport patients with acute illness or injury to hospitals for treatment. Because the effectiveness of their response can be measured in seconds, the ability to provide immediate treatment while on route to the hospital is extremely valuable. Thus, in-vehicle computers installed in ambulances must have data collection and analysis capabilities, as well as high computing power to support immediate processing. Advantech's TREK-674 in-vehicle computing terminal has the capabilities of both fleet management devices and mobile DVR/NVR systems and can be easily paired with a TREK-303 via a single-cable connection.

System



TREK-303DH

7" In-Vehicle Smart Display

- Vehicle-grade 7" (16:10) WVGA resistive type touchscreen
- Five user-programmable function keys
- Two 2-watt speakers
- Built-in light sensor for automatic dimming
- Easily installed and paired with TREK computing box via a single-cable connection
- Extended I/O ports (USB 2.0 Type A, power button and reset button) for easy TREK computing box maintenance
- Wide working temperature range (-30° C ~ 70° C)

Solution

Advantech DLoG's in-vehicle emergency response management solution is based on the TREK-674 computing terminal with 1.75 GHz Intel® Atom™ E3827 dual-core processor. Built-in RF technology, including GPS with AGPS, Bluetooth, Wi-Fi, and GPRS/CDMA/HSDPA/LTE, enable real-time communication and data transfers, allowing ambulance staff to access patient medical records, plan routes, and communicate with emergency room personnel and back-end fleet managers. Rich I/O interfaces (USB, RS232, CAN bus, LAN, and DI/O) can be used to collect data and control in-vehicle system peripherals, such as the siren and warning light. For video surveillance, the embedded Stretch S7 encoder chip supports multi-channel video recording and live streaming, facilitating the provision of real-time information to the back-end server. Thus, images of a patient's injuries can be transmitted from the ambulance to the emergency room for treatment advice and prioritization upon arrival.

MIL-STD-810G and 5M3 certified for shock and vibration, TREK-674 features a wide operating temperature (-30 ~ 70 °C) and advanced power management capabilities that support rapid boot up (<20 sec) and wake-on-call functions. The integrated tire pressure monitoring system (TPMS) and forward collision warning system (FCWS) further reduce delays by enhancing driving safety.

Benefits

- Embedded Stretch S7 video encoding chip supports in-vehicle surveillance, real-time video streaming, and multi-channel recording, allowing emergency room staff to understand the patient's condition in advance
- Built-in GNSS, WLAN, Bluetooth, and WWAN modules for real-time communication, driver behavior management, and vehicle diagnostics enhance management efficiency and vehicle maintenance
- Advanced power management capabilities, such as rapid boot up (<20 sec) and wake-on-call, facilitate the prompt dispatch of ambulances and accelerate the provision of medical care

TREK-674

Compact In-vehicle Computing Box for Surveillance & Fleet Management

- Intel® Atom™ E3827 SOC
- Easily paired with TREK in-vehicle smart displays (TREK-303/306) via a single-cable connection
- Embedded Stretch S7 video encoder supports up to 8 analog video inputs and 4 audio inputs
- Accessible external SSD tray with key-lock protection
- Vehicle diagnostics interface with configurable CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587) protocols
- Built-in GNSS, WLAN, Bluetooth, and WWAN (with dual SIM cards) modules
- Intelligent vehicle power management system supports ignition on/off/ delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-30° C ~ 70° C), supports 12/24V vehicle power (ISO 7637-2) and shock and vibration tolerant (MIL-STD-810G and 5M3)

Application Story

Quality Assurance with Cold Chain Management

Introduction

Cold chain management is a highly specialized field that involves maintaining a temperature-controlled supply chain from the time that products are manufactured until the time they are used. An effective cold chain extends the product shelf life and ensures that the product remains safe for consumption. Advantech DLoG is proud to develop fleet management solutions that enhance the safety, efficiency, and profitability of cold chain operations. Equipped with temperature sensors and built-in GNSS, WLAN or Bluetooth, CDMA, and HSPA+ modules, Advantech DLoG's mobile data terminals (MDTs) TREK-722/723 enable real-time communication, data transfers, and vehicle diagnostics and temperature monitoring, making them ideal in-vehicle solutions for cold chain transportation fleets.

System

Advantech DLoG's cold chain transportation management system comprises TREK-722/723 MDTs, driver identity card reader, temperature sensor, rear door sensor with camera, and offer the following seven functionalities: temperature monitoring for quality control, data collection and storage for protection from liability, location positioning for fleet tracking and real-time traffic updates, driving behavior monitoring, driver productivity, vehicle diagnostics, such as wear and tear, oil level, tire pressure, gear, pedal position, acceleration and brake condition, to facilitate maintenance.

Solution

Advantech DLoG TREK-722/723 MDTs are all-in-one RISC-based platforms equipped with a 5"/7" liquid crystal display with strengthened resistive touchscreen. Aimed at cold chain transportation applications, TREK-722/723 can be used to monitor vehicle mileage, route, speed, braking behavior, oil levels, tire pressure, and fuel consumption, as well as driver duty and rest hours to ensure compliance with relevant safety and hours-of-service regulations. The programmable function keys and built-in GNSS, WLAN or BT, CDMA, and HSPA+ modules make TREK-722/723 suitable for local fleet management, particularly small trucks and intercity delivery services. These MDTs can also be paired with software to automate laborious logging and tracking tasks, thereby enhancing the management of complex fleet operations.

Additionally, fleet managers can remotely activate TREK-722/723 via SMS to access the vehicle data. When drivers are outside the vehicle or the engine is turned off, fleet managers typically cannot access the vehicle status or system data. With the suspend/resume functions of TREK-722/723, 24/7 monitoring is supported via periodic, digital input, or WWAN wakeup. Furthermore, if the vehicle door is opened without authorization, the door sensor will trigger an event for the alarm system to inform the dispatch operator responsible for asset security.

Benefits

- Highly integrated terminals developed for fleet management applications
- Reduced need for software development, resulting in a faster time-to-market
- Improved efficiency for fleet managers and route planners
- Enhanced driver productivity and efficiency
- Well-rested drivers operating well-maintained equipment enhances road safety
- Enables real-time communication and data transmissions between drivers and the dispatch center
- Collected data can be marketed for additional income

TREK-722/723

RISC All-in-One Mobile Data Terminal

- TI Cortex-A8 AM37X Series SOC
- Supports WinCE 6.0 and Android 4.0 (by project-based)
- 5" and 7" WVGA LCD with strengthened resistive touchscreen
- Vehicle diagnostics interface with CAN (Raw CAN, J1939) protocol
- Built-in GNSS, WLAN, Bluetooth, and WWAN modules
- Intelligent vehicle power management system supports ignition on/off/delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-20 ~60° C), supports 12/24V vehicle power (ISO7637-2) and shock and vibration tolerant (MIL-STD-810G and 5M3)

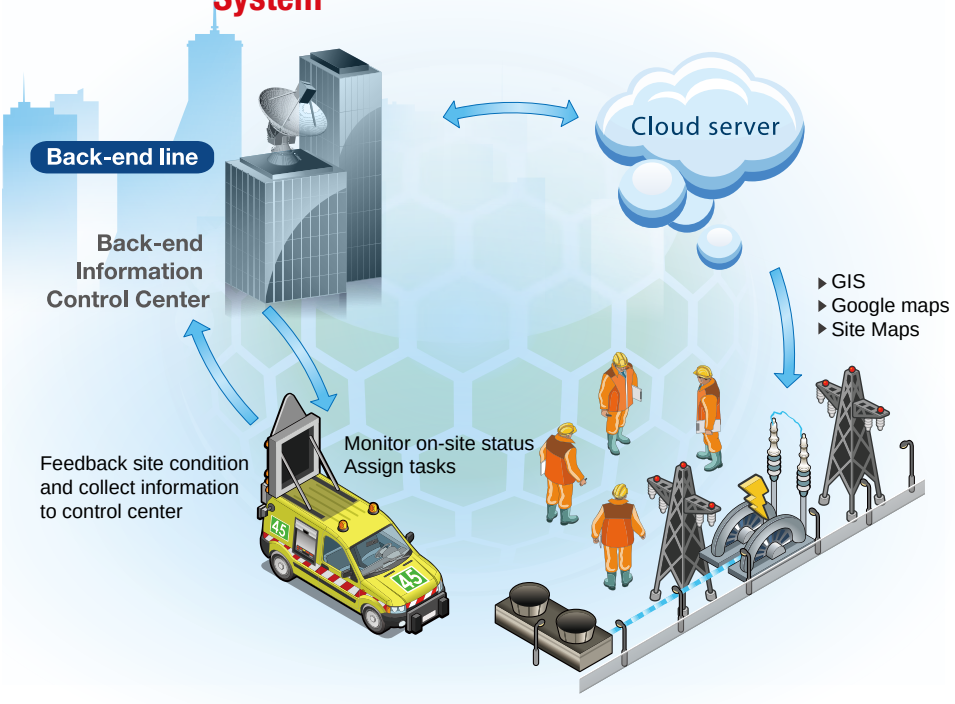
Application Story

PWS-870 Fully Rugged Tablet Ideal for Field Service Applications

Introduction

Many companies recognize the influence that automation has on performance and profitability, and have automated their dispatch, inventory management, and paperwork operations with mobile computing devices. For use in the field, such devices must be rugged, able to withstand impacts and drops from rough handling, and offer protection from dust, water, and extreme temperatures. Ideally, devices should also feature hands-free, flexible carry options for portability and enhanced productivity. Wireless communication technology not only connects field service technicians to the dispatch center, enabling them to make informed and effective decisions at the point of service, but also provides dispatchers with a complete overview of available resources.

System



PWS-870 Vehicle Docking Station

- CAN 2.0 A/B (J1939) and OBDII (ISO 15765) support for vehicle diagnosis
- Anti-theft locking mechanism
- External GPS SMA antenna
- Device docking and removal within 1 second
- Ignition control
- Accommodates port replication
- Compliant with MIL-STD-810G and SAE J1455 for vibration and shock tolerance
- E-Mark compliant and supports 12V/24 V vehicle power

Solution

The PWS-870 fully rugged tablet features an Intel® Core™ i3/i5/i7 processor with integrated graphics processor and turbo boost. The 10.1" HD capacitive multi-touch panel is sunlight-readable with options for high brightness (800 cd/m2) and digitizer pen operation for more user-friendly control. Besides standard peripherals that include USB ports, an audio jack, and HDMI connector, PWS-870 is equipped with front and rear-facing 2M/5M cameras, a 1D/2D barcode reader, and a RFID reader to provide multiple tools for in-field data collection.

Optional accessories include desk and vehicle docking stations and a universal cover that can function as a handle, stand, bag, and hand strap, providing users with four hands-free carry options. The extension module with MSR and UHF RFID can also be customized for USB, LAN, and HDMI support according to user requirements. A hot-swappable second battery ensure up to 11 hours continuous operation. Built-in WiFi, Bluetooth, WWAN, and GNSS modules support real-time communication and vehicle positioning (up to 2.5 meters), facilitating critical reporting and dispatching functions and enabling real-time communication between field staff and the back-end control center.

Benefits

- Intel® Core™ i3/i5/i7 processor with integrated graphics and turbo boost provide enhanced computing power
- Sunlight-readable, multi-touch 10.1" Gorilla® Glass display panel with optional high brightness (800 cd/m2) supports operation in outdoor environments
- Advanced communication technologies, 4G LTE and 802.11 a/b/g/n/ac, increase productivity and operational efficiency
- Front and rear-facing 2M/5M dual cameras, a 1D/2D barcode reader, and an NFC RFID reader provide multiple tools for in-field data collection
- Fully rugged design, MIL-STD-810G and IP65 certified, and can withstand drops of up to 4 ft. ensures system durability under rough handling
- Hot-swappable 2nd battery for up to 11 hours operation
- High customizability with flexible extension module and a wide variety of I/O options

PWS-870

10" Fully Rugged Tablet with 4th Generation Intel® Core™ i Processor

- MIL-STD-810G and IP65 certified, can withstand drops of up to 4ft.
- 10.1" HD high-brightness, multi-touch, Gorilla Glass panel with digitizer
- 4th generation Intel® Core™ i processor supports Windows 8
- Built-in 4G LTE, WLAN (802.11 a/b/g/n/ac), BT4.0, and GPS modules with Beidou/GLONASS support
- Hot-swappable battery provides up to 11 hours operation(*1)
- Built-in dual cameras, 1D/2D barcode scanner, and NFC RFID
- Rich peripherals with vehicle docking station, desk docking station, and extension module support

Product Information

All-in-one In-vehicle Computers

Model Name		TREK-722	TREK-723	TREK-773
Processor		TI Cortex-A8 AM3703 (Single Core, 800MHz); AM3715 (Single Core, 1GHz) by project-based		Intel® Atom E3826 (Dual Core, 1.46 GHz)
OS		WinCE6.0 & Android 4.0 by project-based		WE8S (32-bit) Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)
Memory	Size	On board 256MB Mobile LPDDR		1 x SO-DIMM socket Up to 4GB DDR3L-1066 Non-ECC memory module; (Default configuration: 2GB)
Storage		On board NAND type 2GB for boot loader, operating system & customer apps, 1 x push-push type SD slot		1 x CFast slot for OS 1 x push-push type SD slot
Display	Size/Type	5" (16:9) TFT LCD	7" (16:9) TFT LCD	7" TFT LCD
	Max. Resolution	800 x 480		800 x 480
	Max. Colors	262K		16.7M
	Brightness (cd/m²)	350 with TS (typical)	400 with TS (typical)	500 with TS (typical)
	Viewing Angle (degrees)	70° / 70° / 70° / 50°		85° / 85° / 85° / 85° Wide Viewing Angle
	Backlight MTBF	20,000 hrs		30,000 hrs
Touchscreen	Technology	4-wire resistive type, with 3H and IK06 (drop ball 510g@210mm) supported	4-wire resistive type, with 3H and IK05 (drop ball 510g@150mm) supported	4-wire resistive type, with 3H and IK06 (drop ball 510g@300mm) supported
Brightness Control		Built-in light sensor for auto backlight adjustment		
I/O Ports		2 x USB host, 2 x RS-232, 1 x CAN with J1939 protocol, 2 x DI/DO		1 x SIM card slot, 1 x RS232, 1 x USB3.0 host, 1 x RJ45
Audio		Built-in 2 watt speaker		
WWAN		GPRS : Cinterion TC63i qual-bands CDMA : Sierrawireless MC5728V HSPA+ : Cinterion PH8		4G (LTE, HSPA+, GSM/GPRS/ EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via Full Mini-PCIe Slot (Default: MC7354 for US/MC7304 for EU)
Network (LAN)		N/A		1 x Giga LAN
WLAN		N/A	IEEE 802.11 b/g/n (Alternative w/ BT)	IEEE 802.11 a/b/g/n
Bluetooth		Bluetooth V2.1 + EDR		Bluetooth V4.0 LE
Power		12V/24V car power design (6~36V wide DC input with ISO 7637-2, SAE J1113)		12V/24V car power design. (6~32V wide DC input with ISO 7637-2, SAE J1113) 48V input by project-based
Operating Temperature		-20° C ~ 60° C (TREK-722) -30° C ~ 70° C (TREK-723)		-30° C ~ 60° C
Vibration/Shock		MIL-STD-810G, EN-60721-3-5 (5M3)		
Certifications		CE, FCC, UL/cUL, CB, CCC, E-Mark, PTCRB		CE, FCC, UL/cUL, CB, CCC, E-Mark, SAE J1455 class C, ISO 7637-2, SAE J1113, EN50155
Dimensions (W x H x D)		165 x 115 x 43 mm (TREK-722) 213 x 145 x 43 mm (TREK-723)		225.7 x 161 x 56 mm
Weight		0.65 kg (TREK-722) 0.85 kg (TREK-723)		2.2 kg

Smart Display

Model Name		TREK-303RH	TREK-303DH	TREK-306DH
Processor		N/A		
Design Compatible Models		Paired with TREK-5xx/TREK-6xx		
Display	Size/Type	7" (16:9) TFT LCD		10.4" (4:3) TFT LCD
	Max. Resolution	800 x 480		1024 x 768
	Max. Colors	262K		
	Brightness (cd/m²)	400 with TS (typical)		325 with TS (typical)
	Viewing Angle (degrees)	70° / 70° / 60° / 60°		89°/ 89° / 89° / 89°
	Backlight MTBF	50,000 hrs		
Touchscreen	Technology	4-wire resistive type		5-wire resistive type
Brightness Control		Built-in light sensor for auto backlight adjustment		
I/O Ports		36-pin locking type connector (connect to TREK box), power/wake up button		
Audio		Built-in Two 2-watt speakers		
Power		12 V ± 5% (Powered by TREK-5xx/6xx)		
Operating Temperature		-30° C ~ 70° C		
Vibration/Shock		MIL-STD-810G		MIL-STD-810G, EN60721-3(5M3), SAE-J1455
Certifications		CE, FCC, CCC		CE, FCC
Dimensions (W x H x D)		244 x 160 x 41 mm (TREK-303RH) 212.75 x 141.85 x 35 mm (TREK-303DH)		303 x 226 x 35 mm
Weight		0.8 kg (TREK-303RH) 0.76 kg (TREK-303DH)		1.7 kg

In-vehicle Box Computers

Model Name		TREK-520	TREK-570	TREK-674	TREK-688
Processor		TI Cortex-A8 AM3703 (Single Core, 800MHz); AM3715 (Single Core, 1GHz) by project-based	Intel® Atom E3826 (Dual Core, 1.46 GHz)	Intel® Atom E3827 (Dual Core, 1.75 GHz)	Intel® Core™ i5-4300U (Dual Core, 2.9GHz)
OS		WinCE6.0 & Embedded Linux (by project-based)	WES7, WE8S (32-bit) Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)		
Memory	Size	On board 512MB mDDR (default) / 1GB (by project-based)	1 x SO-DIMM socket Up to 4GB DDR3L-1066 Non-ECC memory module; (Default configuration: 2GB)		1 x SO-DIMM socket Up to 8GB DDR3L-1600 Non-ECC memory module; (Default configuration: 4GB)
Video	Smart Display Port	1x			
	VGA	N/A	1x		
	HDMI	N/A	1x	N/A	1x
	Video in	N/A	1x (Preview only)	8x CCTV	16x CCTV
I/O Interface	Audio	1 x MIC-in via phone jack 1 x Line-out via phone jack			
	Ethernet	N/A	1 x Giga LAN, with locked type RJ45 connector	2 x Giga LAN, with locked type RJ45 connector	2 x Giga LAN via M12 connector
	USB	1 x USB host I/F via USB A-type connector (5V/1A)	1 x USB 3.0 Type A (Rear side, with cable clip) 1 x USB 2.0 Type A (Rear side, with cable clip)	1 x USB 3.0 Type A (Front side) 2 x USB 2.0 Type A (Rear side, with cable clip)	1 x USB 2.0 Type A (Front side) 2 x USB 3.0 Type A (Rear side, with cable clip)
	Serial Ports	1 x High Speed Full RS-232, DB-9 (5V @ 1A)	1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V/5V @ 0.5A is BOM optional by jumper setting) 1 x 4-wire RS-232; 1 x RS-485		
	DI/O	2 x Isolated DI (Dry Contact) 2 x Isolated DO (Open collector output, driving by relay)	4 x Isolated DI (Dry Contact) 4 x Isolated DO (Open collector output, driving by relay)	4 x Isolated DI (Dry Contact) 2 x Isolated DO (Open collector output, driving by relay)	4 x Isolated DI (Dry Contact) 4 x Isolated DO (Open collector output, driving by relay)
	CAN	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; FW configurable) 1 x J1708 (Support J1587)			
GPS		Built-in GlobalSat EB-5662RE with external SMA type antenna	Build-in u-blox MAX-7Q GPS/GLONASS module	Build-in u-blox LEA-6S GPS module	Build-in u-blox Max-M8Q GPS/GLONASS/Beidou module
WWAN		Mini-PCIe slot with external SMA type antenna - CDMA/EVDO - UMTS/HSPA+	4G (LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via Full Mini-PCIe Slot (Default: MC7354 for US/MC7304 for EU)	HSPA+, GSM/GPRS/EDGE: Sierra Wireless AirPrime MC8090 via Full Mini-PCIe Slot (Default: MC8090 for US/MC8092 for EU)	4G (LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via Full Mini-PCIe Slot (Default: MC7354 for US/MC7304 for EU)
WLAN		IEEE 802.11b/g/n	IEEE 802.11a/b/g/n		
Bluetooth		Bluetooth V2.1+EDR	Bluetooth V4.0		
Storage	Primary	1 x internal non-accessible SD slot as boot up device 1 x external accessible SD slot as additional storage	1 x mSATA slot	1 x CFast slot	1 x CFast slot; 1 x mSATA slot
	HDD/SSD Tray	N/A		1 x external accessible 2.5" SSD tray with key-lock protection	2 x external accessible 2.5" HDD/SSD tray with key-lock protection
Power Requirements	Input Voltage	Supports 12V/24V car power design (6~32V wide DC input with ISO 7637-2, SAE J1113)	Supports 12/24 V car power system. (6V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)	Supports 12/24 V car power system (9V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)	
Operating Temperature		-30° C ~ 70° C			-30° C ~ 55° C
Vibration/ Shock		SAE J1455, MIL-STD-810G, EN-60721-3-5 (5M3)			
Certifications		CE, FCC, CCC, UL/cUL,CB, PTCRB, E-Mark	CE, FCC, CCC, UL/cUL,CB, PTCRB, E-Mark	CE, FCC, CCC, UL/cUL,CB, E-Mark	CE, FCC, UL/cUL,CB, E-Mark, EN50155
Dimensions (W x H x D)		205 x 47 x 135 mm (default metal chassis) / 240 x 54 x 200 mm (optional IP65 plastic housing)	230 x 72 x 118 mm (Default); 230 x 72 x 198 mm (with IP54 I/O Cover)	294 x 73 x 184 mm	346 x 92.5 x 196.2 mm
Weight		900 g (metal chassis) / 1.2 kg (IP65 housing)	1.45 kg (Default); 1.95 kg (with IP54 I/O Cover)	3.5 kg (with SDD)	5.9 kg (with HDDs)

Industrial Tablet

Model Name		PWS-770	PWS-870
Processor	CPU	Intel® Atom N2600/1.6 GHz	Intel® Core™ i3 (4010U/1.7GHz), i5 (4300U/1.9GHz), i7 (4650U/1.7GHz)
	Companion Chipset	Intel NM10	N/A
Memory		SODIMM DDRIII to 2 GB	SODIMM DDR3L 4GB/8GB
Storage		Supports mSATA SSD 32 GB ~ 128 GB	Supports mSATA SSD 32 GB ~ 256 GB
Display	Size/ Type	10.4" XGA (1024 x 768) (Transflective) LCD	10.1" HD (1366 x 768) Low reflection LCD
	Brightness (cd/m²)	300 nits LED back light	400 nits LED backlight
Touch Panel		4-wire resistive touch panel	10-point capacitive touch
Application Buttons		1 x Power button, 3 x Function keys (F1~F3), 1 x Tablet PC keyboard, 1 x Mode key, 1 x Enter key, 2 x Activate key (S1 & S2): Activate barcode reader, camera & dimming adjustment required to control the brightness	1 x Power button, 2 x Programmable function keys (default: 1 x Home, 1 x Barcode)
I/O Ports		2 x USB 2.0, 1 x Serial port RS-232, 1 x VGA port, 1 x Audio-in jack, x 1 Audio-out jack, 1 x Internal mono microphone, 1 x DC-in, Docking port (32-pin; USB/PCIE/DC) SIM slot (with WWAN option)	2 x USB 3.0, 1 x USB 2.0, 1 x HDMI, 1 x SD card slot, 1 x Audio combo jack, 1 x SIM card slot, 1 x DC-in, 1 x Docking port (32-pin, USB3.0/USB 2.0/PCIE/Display)
Wireless Communication		802.11b/g/n WLAN (default); 802.11 a/b/g/n WLAN (optional); Bluetooth 4.0 class2; GPS (Optional); WWAN (Optional)	802.11 a/g/b/n/ac WLAN; Bluetooth 4.0 class 2; GPS; LTE WWAN
Data Collection Modules		CMOS 2.0M pixel Camera module (default); 5.0M pixel Camera (optional) 1D/2D Barcode; MSR; HF RFID	2.0M pixel CMOS front camera; 5.0M pixel CMOS rear camera; 1D/2D barcode; NFC RFID
Security		Fingerprint scanner (optional) TPM1.2 (optional)	Fingerprint scanner; TPM1.2; Kensington cable lock slot
Dimensions & Weight		264 x 213 x 18 mm, 1.2 kg without rubber bumper & optional devices	305 x 207 x 25~27 mm, 1.4 kg
Power	Battery	Main battery: 3S1P 11.1V 1880 mAh Hot-Swap External battery: 3S2P 11.1V 3760mAh/5000mAh	Main Battery: 4S1P 14.4V 2730mAH Hot-Swap external battery: 4S2P 14.4V 4080mAh
	DC-input	19V ± 5%	19V ± 5%
Environment	Operating Temperature	-20° C ~ 50° C (Charge: 0° C ~ +40° C for the battery protection)	-10° C ~ 50° C (Charge: 0° C ~ +40° C for the battery protection)
	Storage Temperature	-30° C ~ 60° C	-20° C ~ 60° C
	Operating Humidity	5% ~ 95%	
	IP Rating	IP54	IP65
	Drop	4 foot drop onto plywood, MIL-STD-810G 516.5 Precedure VI	
	Vibration	EN50155 certified	MIL-STD-810
OS		Windows 7 Professional /Embedded	Windows Embedded 8.1 Industry Pro/8.0 Standard
Certifications		CE, FCC, CCC, BSMI, C-Tick, UL, CB, PTCRB	CE, FCC, CCC, UL, CB, PTCRB
Accessories		AC adaptor (19V, 65W) Stylus (default), Vehicle docking station, Desk docking station VESA mounting bracket Carrying bag, Hand strap 2nd battery	AC adaptor (19V, 65W), Capacitive pen, Vehicle docking station, Desk docking station, Universal cover, External battery, Multiple battery charger, Extension module

Datasheet

TREK-722/723

RISC All-in-One Mobile Data Terminal

- TI Cortex-A8 AM37X Series SOC
- Supports WinCE 6.0 and Android 4.0 (by project-based)
- 5" and 7" WVGA LCD with strengthened resistive touchscreen
- Vehicle diagnostics interface with CAN (Raw CAN, J1939) protocol
- Built-in GNSS, WLAN, Bluetooth, and WWAN modules
- Intelligent vehicle power management system supports ignition on/off/delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-20 ~60° C), supports 12/24V vehicle power (ISO7637-2) and shock and vibration tolerant (MIL-STD-810G and 5M3)

Introduction

TREK-722/723 is an all-in-one RISC platform with 5"/7" display Mobile Data Terminal (MDT). The radio frequency options and programmable function keys make TREK-722/723 suitable for local fleet management, especially small truck, local delivery, government fleet and taxi. It is designed with vehicle power compliant to ISO7637-2 & SAE J1113 ensuring stability in cars with fluctuating power. With suspend/wakeup features, TREK-722/723 supports a 24/7 monitoring mechanism with periodic, digital input & WWAN wakeup.

Specifications

		TREK-722	TREK-723
Core	Processor	TI Cortex-A8 AM3703 (Single Core, 800MHz); AM3715 (Single Core, 1GHz) by project-based*1	
	Memory	256MB LPDDR on board; 512MB by project-based*1	
	Graphic	POWERVR SGX™ Graphics Accelerator of OpenGLES 1.1/2.0, OpenVG1.0 by project-based*1	
	O.S	WinCE 6.0 & Android 4.0 by project-based	
Storage	eMMC	2GB on board, support system boot up	
	SD Card	1 x external accessible push-push type SD slot with cover	
Display	Type	5" industrial grade TFT LCD	7" industrial grade TFT LCD
	Resolution	WVGA (800 x 480)	
	Brightness (cd/m²)	350 cd/m² (typical)	400 cd/m² (typical)
	View Angle (H/V)	140/120	
	Contrast Ratio	500	
	Backlight Life (Hrs)	20K	
Touchscreen	Type	4-wire analog resistive	
	Transparency	80% ± 3%	
Sensor	Light-Sensor	Sensitive to visible and infrared light	
I/O	Function Key	5 x programmable function keys with green LED	
	Reset Button	1 x Reset button (Bottom side)	
	Standard I/O Port	1 x USB Client Mini-B (Right side) 1 x USB 2.0 Host Type A (Right side) 1 x SIM Card Slot (Bottom side)	
	Extended I/O Port	1 x MIC/Mono Line In 1 x Stereo Line Out 1 x CVBS Input 1 x Y/C Input 1 x USB 2.0 Host 2 x 4-wire RS-232 2 x Isolated DI (Dry contact) 2 x Isolated DO (Open collector output, driving by replay) 1 x CAN Bus 2.0A/B (Support Raw CAN, J1939)	
RF	WLAN	IEEE 802.11 b/g/n*2	
	Bluetooth	Bluetooth V2.1 + EDR	
	WWAN	GSM/GPRS: Cinterion TC63i via B2B connector HSPA+/UMTS, GSM/GPRS/EDGE: Cinterion PH8 via B2B connector CDMA, EV-DO: Sierra Wireless AirPrime MC5728V via mini PCIe slot	
	GNSS	Build-in u-Blox LEA-6S module, support AGPS	
	Antenna	Default all antennas are internal and support external*3	
Power	Voltage input	Supports 12/24 V car power system. (6V ~ 36V wide DC input, ISO 7637-2 & SAE J1113 compliant.)	
	Intelligent Vehicle Power	System power on/off/suspend management (e.g. Programmable Ignition On/Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up. - Wake up by Call/SMS. System power protection System healthy monitoring and diagnostic (e.g. Programmable Car_Battery _Low Protection)	

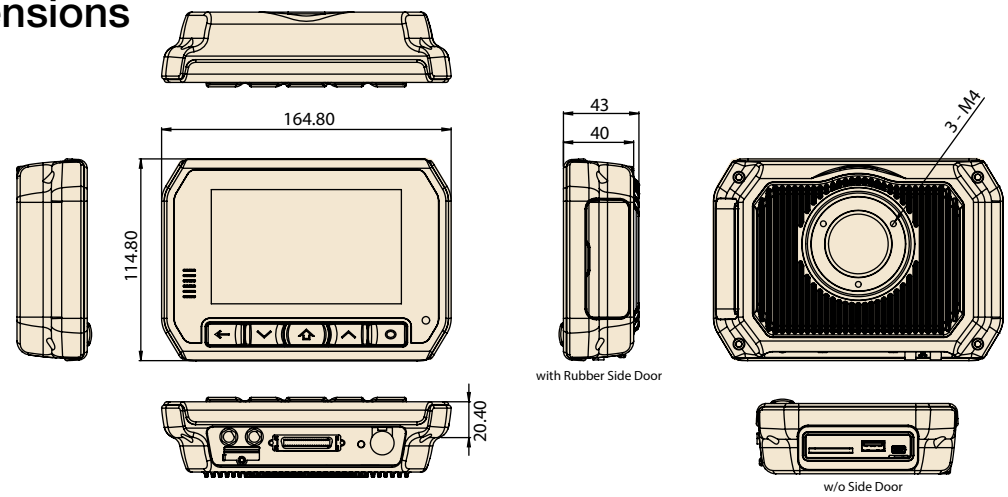
*1: TI AM3715 1GHz, DRAM 512MB with Graphic is for Android 4.0.
*2: TREK-722 support BT only. TREK-723 support BT or WLAN only.
*3: External antenna for better performance is limited by SMA numbers, pls check PN matrix.

Mechanical	Dimensions (W x H x D)	165 x 115 x 43 mm	213 x 145 x 45 mm
	Weight	650 grams	850 grams
Environment	IP Rating	IP54 (except I/O plate at the bottom)	
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)	
	EMC	CE, FCC, CCC	
	Safety	UL/cUL, CB	
Environment	Vehicle Regulation	E-Mark (E13) (12V/24V system), SAE J1455, ISO 7637-2, SAE J1113	
	RF Regulation	CE (R&TTE), FCC ID, PTCRB	
	Operating Temperature	-20° C ~ 60° C	-30° C ~ 70° C
	Storage Temperature	-30° C ~ 80° C	

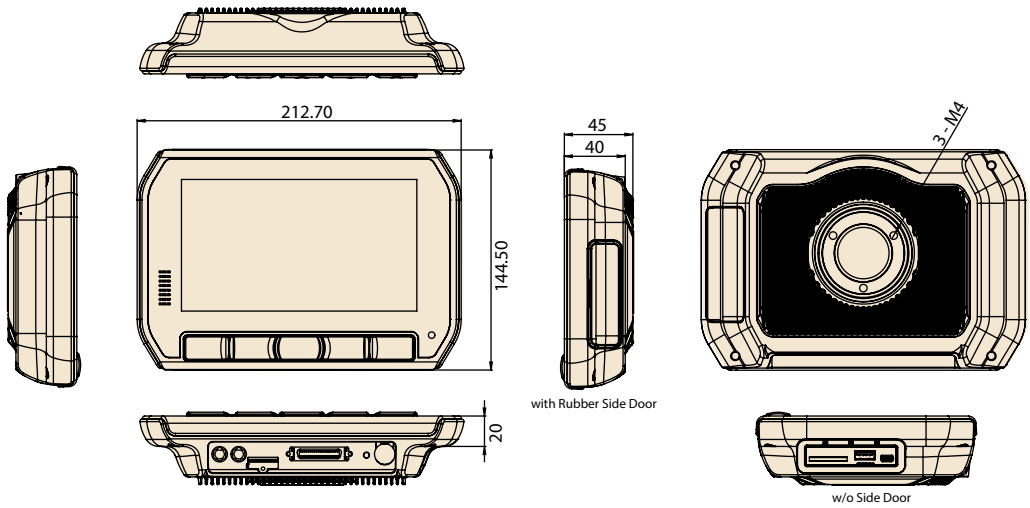
Dimensions

Unit: mm

TREK-722



TREK-723



Ordering Information

Part Number	Description
TREK-722R-A1E	TREK-722 barebone (GPRS/HSPA+ dedicated)
TREK-722R-CBCEB1E	TREK-722 A1 w/ 800MHz, 256MB, CE6, CDMA+GPS (int. ant), BT
TREK-722R-GBCEA1E	TREK-722 A1 w/ 800MHz, 256MB, CE6, GPRS+GPS (int. ant), BT
TREK-722R-HBCEA1E	TREK-722 A1 w/ 800MHz, 256MB, CE6, HSPA+GPS (int. ant), BT
TREK-722R-HBCEC1E	TREK-722 A1 w/ 800MHz, 256MB, CE6, HSPA+GPS (ext. ant), BT
TREK-723R-A1E	TREK-723 barebone (GPRS/HSPA+ dedicated)
TREK-723R-CBCEB1E	TREK-723 A1 w/ 800MHz, 256MB, CE6, CDMA+GPS (int. ant), BT
TREK-723R-GBCEA1E	TREK-723 A1 w/ 800MHz, 256MB, CE6, GPRS+GPS (int. ant), BT
TREK-723R-HBCEA1E	TREK-723 A1 w/ 800MHz, 256MB, CE6, HSPA+GPS (int. ant), BT
TREK-723R-HWCEC1E	TREK-723 A1 w/ 800MHz, 256MB, CE6, HSPA+GPS (ext. ant), WLAN

Optional Items

Part Number	Description
1700020042	A Cable MDR 40P/USB-A(M)+Audio Jack*2+DC Jack+BN
9666074302E	19V adapter for TREK-743 test purposes
RAM-MOUNT-02	VESA RAM mount w/2.5" DIA. base,1.5" ball
RAM-MOUNT-07E	75mm VESA base, RAM-202U, and socket ARM
RAM-MOUNT-09E	clamp base, RAM-202U, and socket ARM

Datasheet

TREK-773

7" All-in-One Mobile Data Terminal

- Intel® Atom™ E3826 SOC
- Supports WES8 and Fedora 18 Remix
- 7" WVGA wide-angle LCD resistive touchscreen
- Vehicle diagnostics interface with CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587) protocols
- Built-in GNSS, WLAN, Bluetooth, NFC, and LTE WWAN modules
- Intelligent vehicle power management system supports ignition on/off/delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-30° C ~ 60° C), supports 12/24 V vehicle power (ISO 7637-2), and certified for shock and vibration tolerance (MIL-STD-810G and 5M3)

Introduction

TREK-773 is a new generation all-in-one 7" mobile data terminal. With an Intel® Atom™ E3826 SOC processor, the system provides high performance with wired connections such as Gigabit Ethernet, CAN2.0B (J1939, OBD-II/ISO 15765) and J1708 (J1587). Users can also connect to network services via LTE (backward compatible to CDMA/HSDPA), GPS, WLAN and Bluetooth options. Focused on the automotive market, TREK-773 is designed for vehicle power which is compliant with ISO7637-2 & SAE J1113, ensuring the system is stable during engine starts. The ruggedized chassis provides more capabilities not only in a wide range of temperatures (-30 ~ 60 °C), but also in harsh environments subject to shock (100G, 6ms) and vibration.

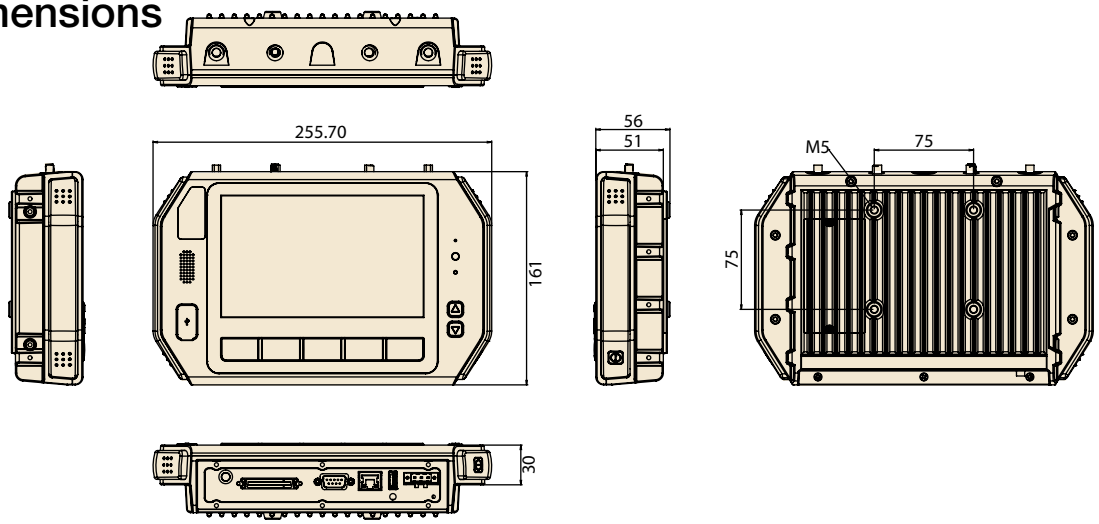
Specifications

Core	Processor	Intel Atom E3826 (Dual Core, 1.46 GHz)
	Memory	Support up to 4GB DDR3L-1066 memory module (Default configuration: 2GB)
	Graphic	Integrated 2D/3D Graphic Engine
	O.S	Windows Embedded 8 Standard (32-bit); Windows 7 by project-based Fedora 18 Remix (kernel 3.8.0) (32-bit)
Storage	CFast	1 x external accessible CFast slot with cover, support systm boot up Default configuration: 16GB
	SD Card	1 x external accessible push-push type SD card slot with cover for extra capacity expansion
Display	Type	7" industrial grade TFT LCD
	Resolution	WVGA (800 x 480)
	Brightness (cd/m^2)	500 cd/m^2 (typical)
	View Angle (H/V)	170/170 Full Viewing Angle
	Contrast Ratio	900
	Backlight Life (Hrs)	30K
Touchscreen	Type	4-wire analog resistive, with 3H and IK06 (drop ball 510g @300mm) supported
	Transparency	84% ±3%
Sensor	Sensor	Light sensor, G-sensor
I/O	Function Key	5 x programmable function keys with green LED
	Standard I/O Port	1 x SIM Card Slot (Left side) 1 x High Speed Full RS-232 (Bottom side) 1 x USB 3.0 Host Type A (Bottom side) 1 x Giga LAN, RJ45 connector (Bottom side)
	Extended I/O Port (High Density Connector)	1 x MIC In 1 x Stereo Line In 1 x Stereo Line Out 1 x CVBS Input 1 x USB 2.0 Host 1 x High Speed Full RS-232 1 x RS-485 with auto flow control 4 x Isolated DI (Dry contact) 4 x Isolated DO (Open collector output, driving by replay) 1 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765) 1 x J1708 (Support J1587) 1 x 12VDC/1.5A continuous current output (shared with standard I/O Full RS-232 DB9)
	Power Button	1 x Power Button
	LED	1 x LED (Yellow for Power)

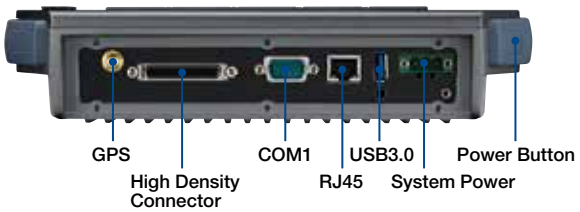
RF	WLAN + Bluetooth	IEEE 802.11a/b/g/n + Bluetooth (V4.0 LE, V3.0+HS, V2.1+EDR) combo module via Full Size Mini-PCIe Slot (Optional: High power WLAN for Roaming by project-based)
	WWAN	4G (LTE / HSPA+ / CDMA EV-DO Rev.A): Sierra Wireless MC73xx
	GNSS	Built-in u-blox MAX-M8Q module, supports AGPS, Glonass, and BeiDou
	Antenna	1 x GPS, 2 x WWAN (LTE), 2 x WLAN/Bluetooth
	NFC	ISO/IEC 14443A, 14443B, 15693; MIFARE 1K/4K, Ultralight; NFC-IP2 protocol
Power	Voltage Input	Supports 12/24V car power system. (6 ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.) 48V option: 18~58V input by project-based
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (e.g. Programmable Ignition On/Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up - Wake up by Call/SMS System power protection (e.g.Car Battery Low Voltage Protection) System monitoring and diagnostic
Mechanical	Dimensions (W x H x D)	255.7 x 161 x 56 mm
	Weight	2.2 kg
Environment	IP Rating	IP54 (except I/O plate). Option to support entire system IP54 with additional I/O cover
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC, CCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13) for 12/24V System, SAE J1455 class C, ISO 7637-2, SAE J1113
	Railway	EN50155
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30 to 60° C
	Storage Temperature	-40° C ~ 80° C

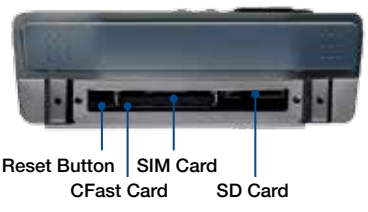
Dimensions

Unit: mm



I/O Connectors





Ordering Information

Part Number	Description
TREK-773R-00A0E	TREK-773R Intel BYT E3826 (2C, 1.46GHz) Barebone w/NFC
TREK-773R-LWB8A0E	TREK-773R w/LTE (EU)/GPS/WLAN/BT/NFC/CFast/WES8
TREK-773R-LWB8B0E	TREK-773R w/LTE (US)/GPS/WLAN/BT/NFC/CFast/WES8

Datasheet

TREK-303DH/306DH

7" & 10" In-Vehicle Smart Display

- Vehicle-grade 7" (16:10) WVGA / 10" (4:3) XGA TFT LCD with rugged resistive type touchscreen
- Five user-programmable function keys
- Two 2-watt speakers
- Built-in light sensor for automatic dimming
- Easily installed and paired with TREK computing box via a single-cable connection
- Extended I/O ports (USB 2.0 Type A, power button and reset button) for easy TREK computing box maintenance
- Wide working temperature range (-30° C ~ 70° C)

Introduction

The TREK-303DH/306DH is a vehicle display system for Mobile Resource Management (MRM) applications in trucks and buses. The TREK-303DH/306DH touch panel is ideal for fleet management and dispatch applications. It also meets requirements for automotive grade working temperatures (-30° C ~ 70° C). TREK-303DH/306DH provides excellent display capabilities, featuring lightweight housing, it's compatible with RAM mounting solutions that customers can easily install. TREK-303DH/306DH supports resolutions of 800 x 480 / 1024 x 768; it is compatible with TREK box solutions connecting via a single cable. TREK-303DH/306DH is designed with drivers in mind: when the system requires powering up or waking up, it can be easily controlled from the button located on the side; and for night driving, the panel has an auto detecting light sensor to automatically adjust brightness.

Specifications

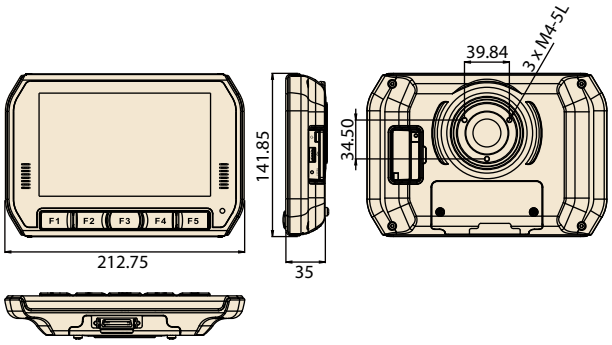
		TREK-303DH	TREK-306DH
LCD	Design Compatible Models	Paired with TREK computing box (i.e. TREK-5xx/6xx)	Paired with TREK computing box (i.e. TREK-5xx/6xx, TREK-520 by project-based)
	Resolution (pixel)	WVGA (800 x 480)	XGA (1024 x 768)
	Video Interface	Single channel, 18 bit LVDS	Single channel, 18 bit LVDS
	Pixel Pitch	0.2168 (H) x 0.2168 (V)	0.2055 (H) x 0.2055 (V)
	Brightness (cd/m²)	500 (typical)	400 (typical)
	View Angle ((H/V))	140° /120°	178°/178°
	Contrast Ratio	500	1400
	Backlight Type	LED	LED
	Backlight Life (Hrs)	50K	50K
Touchscreen	Size	7.11" format	10.4" (4:3) format
	Type	4-wire Resistive	5-wire Resistive
	Transparency	81% ± 3%	80% ± 3%
	Hardness	3H	3H
	Durability	Knock test > 200,000 times (Stylus= R0.8,<=250g)	Knock test > 35,000,000 times (Stylus= R0.8,<=50g)
	IK Shock-Protection Rate	IK-07 (by project-based)	IK-06 (Resistance against impacts with an energy up to 1,00 J)
Front Panel	Speaker	2 x 2-watt speaker	
	Hotkeys	5 x User-programmable Function key with green LED	
	Brightness Control	1 x Built-in light sensor for auto-dimming implementation	
Rear I/O	Smart Display Port	1 x 36-pin locking type high density connector to be paired with TREK-5xx/6xx	
Right Side I/O	USB Port	1 x USB 2.0 Host Type A (Data access from/to TREK computing box)	
	Power button	1 x Power button (To power on/off TREK computing box)	
	Reset button	1 x Reset button (To Reset TREK computing box)	
Power	DC Input	12 V ± 5% (Powered by TREK computing box directly)	
	Power Consumption	7W (Nominal), 12W (Max.)	8W (Nominal), 14W (Max.)
Mechanical	Mounting	RAM mount	VESA (75 x 75 mm), RAM Mount
	Material	PC	PC
	Weight	0.67 kg	1.7 kg
	Dimensions (W x H x D)	212.75 x 141.85 x 35 mm	303 x 226 x 35 mm
Environment	Operating Temperature	-30° C ~ 70° C	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 80° C	-40° C ~ 80° C
	Vibration	MIL-STD-810G, SAE J1455 4.9.4.2	MIL-STD-810G, SAE J1455 4.9.4.2
	Certifications	CE, FCC, CCC	CE, FCC
	IP Rating	IP31 (entire system), IP 54 (with I/O Cover)	IP54 (with I/O Cover)

Remark: TREK-306DH can ship to China without CCC report.

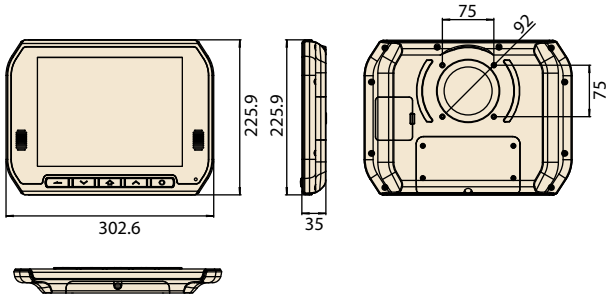
Dimensions

Unit: mm

TREK-303DH



TREK-306DH



I/O Connectors

TREK-303DH

A. B. Speaker
C. User-defined hotkeys
D. Light sensor
E. Reset, power, USB host (side)

TREK-306DH

A. B. Speaker
C. User-defined hotkeys
D. Light sensor
E. Reset, power, USB host (side)

Ordering Information

Part Number	Description
TREK-303D-HA0E	7" WVGA in-vehicle Smart Display, with 4-wire Resistive Touchscreen without Bezel
TREK-306D-HA0E	10.4" XVGA in-vehicle Smart Display, with 5-wire Resistive Touchscreen

Optional Items

Part Number	Description
RAM-MOUNT-06E	VESA RAM mount w/VESA base(3.625") & 5.625" double socket arm for 1.5" ball base
RAM-MOUNT-07E	5.625" double socket arm for 1.5" ball base
1700020007	2-meter smart display cable (Paired with TREK-5xx/6xx)
1700020008	5-meter smart display cable (Paired with TREK-5xx/6xx)

Datasheet

TREK-520

RISC Compact In-vehicle Computing Box for Fleet Management

- TI Cortex-A8 AM37X Series SOC
- Support WinCE 6.0 & Embedded Linux (by project-based)
- Vehicle diagnostic interface with configurable protocols support: CAN (J1939, OBD-II/ISO-15765) and J1708 (J1587)
- Built-in GNSS, WLAN, Bluetooth and WWAN
- Built-in backup battery for roadside assistance and emergency (by project-based)
- Intelligent Vehicle Power Management: Ignition on/off delay, wake up event controls and system health monitoring and diagnostic (*3)
- Wide working temperature, 12/24V Car power system compliant (ISO 7637-2) and Anti-shock/vibration (MIL-STD-810G & 5M3)
- IP54 available with IP protection box

Introduction

TREK-520 is a RISC box Mobile Data Terminal (MDT). The radio frequency options and low power consumption make TREK-520 suitable for local fleet management, especially small trucks, local deliveries, government fleets and taxis. TREK-520 can operate in harsh environments and functions in extreme temperatures (-30° C ~ 70° C) using fluctuating car power and resists shock and vibration. With a suspend/wakeup feature, TREK-520 supports a 24/7 monitoring mechanism with periodical, digital input & WWAN wakeup (*3).

Specifications

Core	Processor	TI Cortex-A8 AM3703 (Single Core, 800MHz); AM3715 (Single Core, 1GHz) by project-based
	Memory	512MB LPDDR on board; 1GB LPDDR by project-based
	Graphic	POWERVR SGX™ Graphics Accelerator of OpenGLES 1.1/2.0, OpenVG1.0 by project-based
	O.S	WinCE 6.0 R3 core version; Linux V2.6.37 by project-based
Storage	SD Card	1 x internal non-accessible 4GB SD, support system boot up 1 x external accessible push-push type SD slot
Display	Smart Display Port (*2)	12V/1A power output for TREK-303 1 x 18-bits LVDS (Resolution: 800 x 480) 1 x Line-Out (*1) (For Speakers on TREK-30X) 2 x UART (TX/RX) (For T/S, Hot keys, brightness, light sensor control) 1 x USB 2.0 Type A 1 x PWR Button Signal 1 x Reset Button Signal
Sensor	G-Sensor	3-Axis ±2/±4/±8/±16 g
I/O	Reset Button	1 x Reset button
	Vehicle I/O Port	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; F/W configurable) 1 x J1708 (Support J1587) 2 x Isolated DI (Dry contact) 2 x Isolated DO (Open collector output, driving by replay)
	Standard I/O Port	1 x USB Client Mini-B 1 x USB 2.0 Host Type A 1 x SIM Card Slot 1 x High Speed Full RS-232, (Optional DB-9 Pin 9 with 12V/1A)
	Audio Jack	1 x MIC/Mono Line In 1 x Stereo Line Out
	LED	4 x LEDs (Power (Red), WLAN/BT (Green), WWAN (Green), GPS (Blue))
RF	WLAN + Bluetooth	IEEE 802.11 b/g/n + Bluetooth V2.1+EDR on board
	WWAN	HSPA+/UMTS, GSM/GPRS/EDGE: Telit HE-910D via mini PCIe slot CDMA, EV-DO: Telit DE-910 via mini PCIe slot
	GNSS	Build-in GlobalSat EB-5662RE module on board
	Antenna	3 x SMA type antenna hole for GPS/ WWAN/ WLAN+BT
Power	Voltage input	Supports 12/24 V car power system. (ISO 7637-2 & SAE J1113 compliant.) 6V ~ 32V DC input without backup battery; 12V ~ 32V DC input with backup battery by project-based
	Intelligent Vehicle Power Management (iVPM 1.0)	System power on/off/suspend management (e.g. Programmable Ignition On/Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up. - Wake up by Call/SMS. System power protection System healthy monitoring and diagnostic (e.g. Programmable Car_Battery _Low Protection)
	Backup battery	7.4V 2000mAH Li-ion battery by project-based

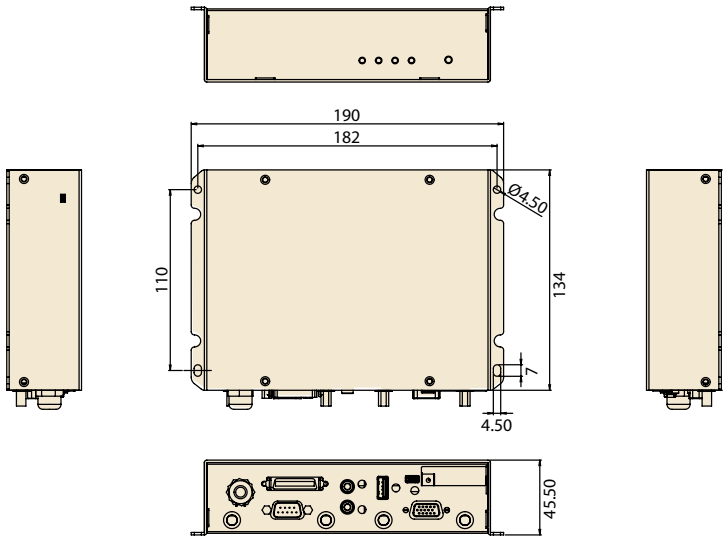
*1: Support single audio stream only. (i.e. The Line-Out interface in "Smart Display Port" and "Audio Jack" share the same audio path).
*2: Default is ok for TREK-303; TREK-306 (1024x768) by project-based.

Mechanical	Dimensions (W x H x D)	Metal chassis: 190 x 45.5 x 134 mm IP protection box: 265.20 x 61 x 232 mm
	Weight	Metal chassis: 900 grams IP protection box: 1.2 kg
Environment	IP Rating	IP54 (with IP protection box)
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC, CCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13) (12V/24V system), SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 85° C

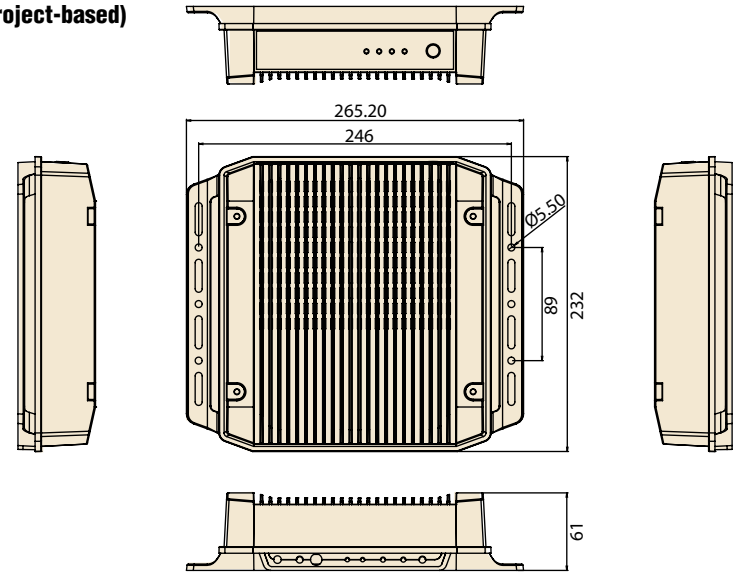
Dimensions

Unit: mm

TREK-520



IP protection box (by project-based)



Ordering Information

Part Number	Description
TREK-520-CWBCEB0E	TREK-520 w/CDMA/GPS/WLAN/BT/4G SD/CE6
TREK-520-HWBCEA0E	TREK-520 w/HSPA+/GPS/WLAN/BT/4G SD/CE6

Optional Items

Part Number	Description
1700021847-01	M Cable D-SUB 15P(M)/D-SUB 9P(M)*3+D-SUB 15P 2M
9666074302E	19V adapter for TREK-743 test purposes

Datasheet

TREK-570/572

Compact In-vehicle Computing Box for Fleet Management

- Intel® Atom™ E3826/E3815
- Single-cable connection to pair with TREK In-Vehicle Smart Display (TREK-303/306)
- Real time Rear View monitoring
- Dual independent display/audio output for both driver and passenger for IVI and digital signage application
- Vehicle diagnostic interface with configurable protocols support: CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587)
- Built-in GNSS, WLAN, Bluetooth and WWAN (with dual SIM cards) modules
- Intelligent Vehicle Power Management: Ignition on/off delay, wake up event controls and system health monitoring and diagnostic
- Wide working temperature (-30° C ~ 70° C), 12/24V Car power system compliant (ISO 7637-2) and Anti-shock/vibration (MIL-STD-810G & 5M3)

Introduction

TREK-570/572 is a compact and economical vehicle-grade, Intel® Atom™ E3826/E3815 SOC powered computing box mainly designed for the fleet management market. It can work in extreme environments with wide working temperature range (-30° C ~ 70° C) and anti-shock/vibration that passes the MIL-STD-810G and 5M3 standard. Its special power protection (ISO 7637-2/SAE J1455 Class A/ SAE J1113) and intelligent vehicle power management (e.g. Ignition delay on/off, low battery monitor), prevents abnormal electrical noise and surges from impacting the system, guarding against damage from transient car power.

TREK-570/572 combined with variety of I/O connectors can be connected to devices like TPMS (Tire Pressure Monitoring Systems), Rear view camera (for parking monitoring) and CAN Bus devices. It has dual CAN Bus ports and supports several kinds of vehicle protocols (e.g. J1939, OBD-II/ISO 15765) for vehicle diagnostics and driver behavior management. Built-in wireless communications (WWAN, WLAN, BT) enable TREK-570/572 to send important driver/vehicle/location/cargo information back to the control center. Furthermore, TREK-570/572 also reserves dual display/dual audio interfaces supporting different resolutions that can deliver different applications to different displays; for example: one application to a fleet driver and another to passenger for IVI and digital signage applications.

Specifications

		TREK-570	TREK-572
Core	Processor	Intel Atom E3826 (Dual Core, 1.46 GHz)	Intel Atom E3815 (Single Core, 1.46 GHz)
	Memory	1 x SO-DIMM socket Up to 4GB DDR3L-1066 Non-ECC memory module; (Default configuration: 2GB)	
	Graphic	Integrated 2D/3D Graphic Engine	
	O.S	WES7, WE8S (32-bit) Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)	Linux Ubuntu 14.04 Lite (32-bit)
Storage	mSATA	1 x mSATA slot, support system boot up Default configuration: 8GB, UMLC, SQFLASH mSATA	1 x mSATA slot, support system boot up Default configuration: 4GB, MLC, SQFLASH mSATA
Display	Smart Display Port (*1)	12V/2A power output for TREK-30x 1 x 18-bits LVDS (Resolution: 800 x 480 or 1024 x 768, auto-detection) 1 x Line-Out (*2) (For Speakers on TREK-30x) 2 x UART (TX/RX, TX/RX/RTS) (For T/S, Hot keys, brightness, light sensor control) 1 x USB 2.0 Type A 1 x PWR Button 1 x Reset Button	
	VGA	1 x DB15 (Resolution up to 2560 x 1600)	N/A
	HDMI (*3)	1 x HDMI Port (Resolution up to 2560 x 1600)	N/A
I/O	Vehicle I/O Port	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; FW configurable) 1 x J1708 (Support J1587) 1 x RS-485 with auto flow control	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; FW configurable) 1 x J1708 (Support J1587) 1 x 4-wire RS-232
	Generic I/O Port	2 x 4-wire RS-232 4 x Isolated DI (Dry Contact) 4 x Isolated DO (Open collector output, driving by relay) 1 x CVBS in (For Real time Rear View) 1 x Line-Out (*2) 1 x Mic-In	N/A
	Standard I/O Port	1 x USB 3.0 Type A (Rear side, with cable clip) 1 x USB 2.0 Type A (Rear side, with cable clip) 1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V / 5V @0.5A is BOM optional by jumper setting) 1 x Giga LAN, with locked type RJ45 connector	1 x USB 2.0 Type A (Rear side) 1 x Giga LAN, With standard RJ45 connector 1 x Line-Out (*2) 1 x Mic-In
	LED	5 x LEDs. (Power (Red), Storage (Yellow), WLAN(Green), WWAN(Green), GPS (Yellow)	1 x LED (Power (Red))
	Power Button	Via TREK-30x (In-Vehicle Smart Display); System is powered on by Ignition in default	
	Reset Button	1 x Reset button (Rear side)	
RF	WLAN + Bluetooth	IEEE 802.11a/b/g/n + Bluetooth V4.0 combo module via Full Mini-PCIe Slot (Option: High power WLAN / WLAN for Roaming, by project-based)	
	WWAN	4G (LTE,HSPA+,GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via Full Mini-PCIe Slot (Default: MC7354 for US/ MC7304 for EU)	4G (LTE,HSPA+,GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC7354 via miniPCIe card 1 x Internal Mini-SIM card socket
	GNSS	Build-in u-blox MAX-7Q GPS/GLONASS module, support AGPS (Optional: GPS/Glonass/Beidou 3-in-1 module, by project-based)	
	Antenna	5 x SMA type antenna hole for GPS, WiFi+ BT MIMO, WWAN/LTE MIMO. (*4)	

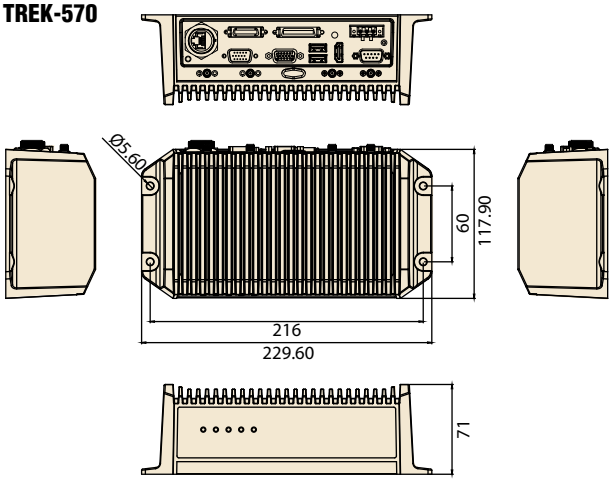
Power	Voltage input	Supports 12/24 V car power system. (6V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)	Supports 12/24 V car power system. (9V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (e.g. Programmable Ignition On/ Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up - Wake up by Call/SMS. - Wake up by G-sensor - Wake up by DI (DI0 & DI1) System power protection (e.g. Car Battery Low Voltage Protection) System monitoring and diagnostic	System power on/off/hibernate management (e.g. Programmable Ignition On/ Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up - Wake up by Call/SMS. - Wake up by G-sensor System power protection (e.g. Car Battery Low Voltage Protection) System monitoring and diagnostic
Mechanical	Dimensions (W x H x D)	230 x 72 x 118 mm (Default); 230 x 72 x 198 mm (with IP54 I/O Cover)	188.9 x 63.5 x 105.9 mm
	Weight	1.45 kg (Default); 1.95 kg (with IP54 I/O Cover)	1.15 kg
Environment	IP Rating	IP30 (Optional: IP54 with I/O Cover, by project-based)	IP30
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)	MIL-STD-810G
	EMC	CE, FCC, CCC	FCC Class B
	Safety	UL/cUL, CB	UL/cUL
	Vehicle Regulation	E-Mark (E13), SAE J1455 class C, ISO 7637-2, SAE J1113	SAE J1455 class C, ISO 7637-2, SAE J1113
	RF Regulation	CE(R&TTE), FCC ID, PTCRB	FCC ID, PTCRB
	Operating Temperature	-30° C ~ 70° C	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 80° C	-40° C ~ 80° C

*1: To be paired with TREK-303/306 directly. (Single-cable connection)
*2: Support dual independent audio streams. (i.e. The Line-Out interface in "Smart Display Port" and "Generic I/O Port" are driven by different Audio codecs.)
*3: BYT-I can support "dual" independent display only. That is, "Smart Display+VGA", "Smart Display+HDMI" or "VGA+HDMI".
*4: The connector type on box side is Female RP-SMA connector. (i.e. Female connector body (outside threads) with a male inner pin contact.)

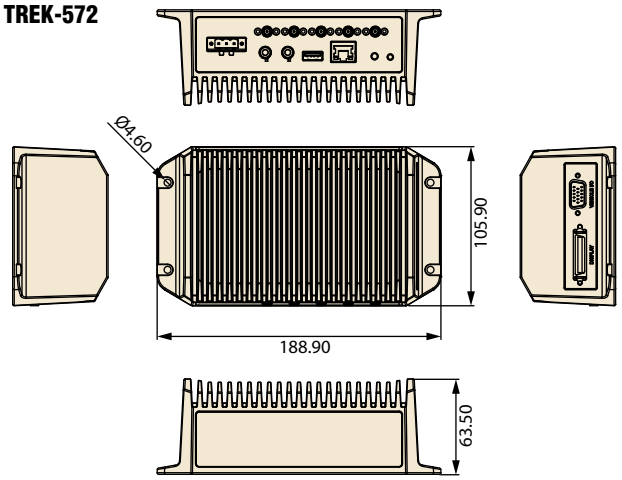
Dimensions

Unit: mm

TREK-570

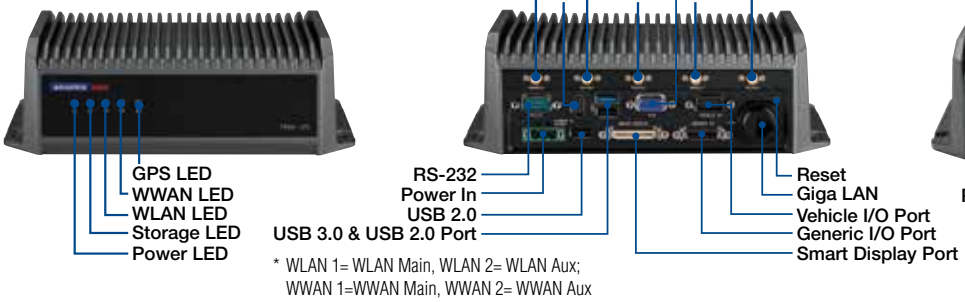


TREK-572



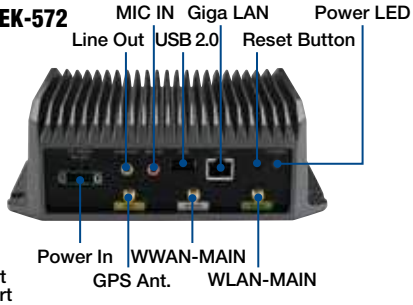
I/O Connectors

TREK-570



* WLAN 1= WLAN Main, WLAN 2= WLAN Aux;
WWAN 1=WWAN Main, WWAN 2= WWAN Aux

TREK-572

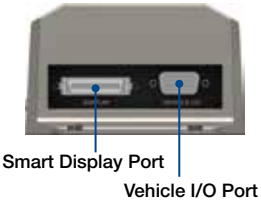


Ordering Information

Part Number	Description
TREK-570-00A0E	TREK-570 Intel BYT E3826 (2C,1.46GHz) Barebone
TREK-570-LWB7A0E	TREK-570 w/LTE (EU)/GPS/WLAN/BT/WES7
TREK-570-LWB7B0E	TREK-570 w/LTE (US)/GPS/WLAN/BT/WES7

Remark: WE8S and Linux O.S. image are by project-based.

Part Number	Description
TREK-572-00A0E	TREK-572 Intel BYT E3815 (1C, 1.46GHz) Barebone
TREK-572-VNOM-00E	TREK-572 w/LTE (US)/GPS/ WLAN/BT/Linux



Datasheet

TREK-674

Compact In-vehicle Computing Box for Surveillance & Fleet Management

- Intel® Atom™ E3827 SOC
- Easily paired with TREK in-vehicle smart displays (TREK-303/306) via a single-cable connection
- Embedded Stretch S7 video encoder supports up to 8 analog video inputs and 4 audio inputs
- Accessible external SSD tray with key-lock protection
- Vehicle diagnostics interface with configurable CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587) protocols
- Built-in GNSS, WLAN, Bluetooth, and WWAN (with dual SIM cards) modules
- Intelligent vehicle power management system supports ignition on/off/ delay functions, wake-up event control, and system health monitoring and diagnostics
- Wide working temperature range (-30° C ~ 70° C), supports 12/24V vehicle power (ISO 7637-2) and shock and vibration tolerant (MIL-STD-810G and 5M3)

Introduction

TREK-674 is a compact vehicle-grade, dual-core computing box designed to provide high-quality video surveillance and fleet management for police car, ambulance, fire engine and buses. TREK-674 delivers tracking and positioning which allows a truck to be traced even if the driver is in a tunnel. It supports several vehicle protocols (e.g. J1939, OBD-II/ ISO 15765) for vehicle diagnostics and driver behavior management, and it supports up to 8 channel camera inputs for high-quality H.264 D1/30fps/ch recording to improve driver/ passenger safety and security. Front side USB 3.0 port, dual SIM cards and Cfast slots are designed for ease of maintanence. A single SSD tray is swappable and designed for video data backup. The TREK-674 provides reliable on-road recording and can transmit images or alarms for remote monitoring over wireless, GPRS, 3G, or HSDPA network connections.

Specifications

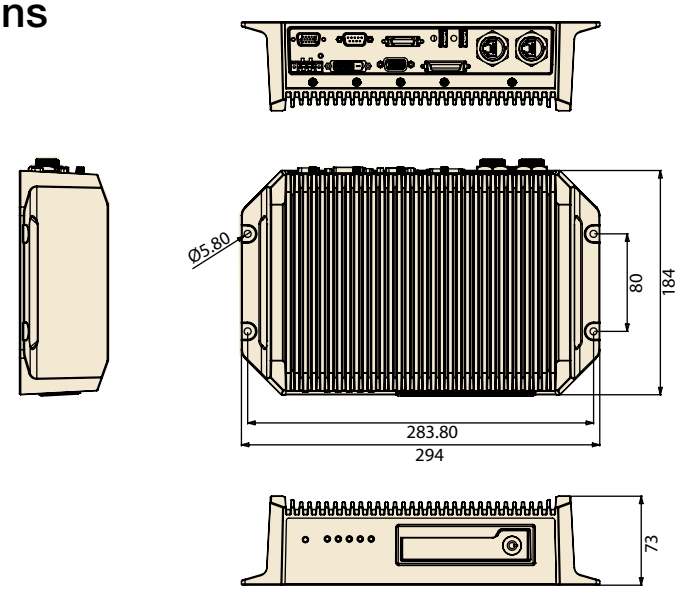
Core	Processor	Intel Atom E3827 (Dual Core, 1.75 GHz)
	Memory	1 x SO-DIMM socket Up to 4GB DDR3L-1066/1333 Non-ECC memory module; (Default configuration: 2GB)
	Graphic	Integrated 2D/3D Graphic Engine
	Video HW Encoder	Stretch S7, support H.264, MJPEG format; Resolution up to D1, 30fps per channel
	O.S	WES7, WE8S (32-bit) Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)
Storage	CFast	1 x external accessible CFast slot with cover, support system boot up Default configuration: 16GB, SLC SQFlash Cfast card
	SSD	1 x external accessible 2.5" SSD tray with key-lock protection, support system boot up Default configuration: 64GB, UMLC SQFlash SSD
Display	Smart Display Port (*1)	12V/2A power output for TREK-30x 1 x 18-bits LVDS (Resolution: 800 x 480 or 1024 x 768, auto-detection) 1 x Line-Out (*2) (For Speakers on TREK-30x) 2 x UART (TX/RX, TX/RX/RTS) (For T/S, Hot keys, brightness, light sensor control) 1 x USB 2.0 Type A 1 x PWR Button Signal 1 x Reset Button Signal
	VGA	1 x DB15 (Resolution up to 2560 x 1600)
I/O	Vehicle I/O Port	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; FW configurable) 1 x J1708 (Support J1587)
	Generic I/O Port	1 x RS-485 with auto flow control 1 x 4-wire RS-232 4 x Isolated DI (Dry Contact) 2 x Isolated DO (Open collector output, driving by relay) 1 x Line-Out (*2) 1 x Mic-In
	Standard I/O Port	1 x USB 3.0 Type A (Front side) 2 x USB 2.0 Type A (Rear side, with cable clip) 1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V / 5V @0.5A is BOM optional by jumper setting) 2 x Giga LAN, with locked type RJ45 connector
	Video / Audio input (AV In, via DVI-I Connector)	8-ch Video inputs, Video Compression: support H.264, MJPEG format; Resolution up to D1, 30fps per channel 4-ch mono Audio inputs, Audio Compression: G.711
	LED	5 x LEDs. (Power (Red), Storage (Yellow), WLAN (Green), WWAN (Green) ,GPS (Yellow))
	Power Button	Via TREK-30x (In-Vehicle Smart Display); System is powered on by Ignition in default
	Reset Button	1 x Reset button (Front side)
RF	WLAN + Bluetooth	IEEE 802.11a/b/g/n + Bluetooth V4.0 combo module via Full Mini-PCIe Slot (Optionl: High power WLAN / WLAN for Roaming, by project-based)
	WWAN	HSPA+, GSM/GPRS/EDGE: Sierra Wireless AirPrime MC809x via Full Mini-PCIe Slot (Default: MC8090 for US / MC8092 for EU) (Optional: CDMA 1xRTT/EV-DO Rev.A: Sierra Wireless AirPrime MC9090, by project-based) (Optional: 4G (LTE,HSPA+,GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx, by project-based) 2 x external accessible Mini-SIM card socket (User selectable) with cover
	GNSS	Build-in u-blox LEA-6S GPS module, support AGPS (Optional: GPS/Glonass/Beidou 3-in-1 module, by project-based)
	Antenna	5 x SMA type antenna hole for GPS, WiFI+ BT MIMO, WWAN/LTE MIMO. (*3)

Power	Voltage input	Supports 12/24 V car power system. (9V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (e.g. Programmable Ignition On/Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up. - Wake up by Call/SMS. - Wake up by G-sensor. System power protection (e.g.Car Battery Low Voltage Protection) System monitoring and diagnostic
Mechanical	Dimensions (W x H x D)	294 x 73 x 184 mm
	Weight	3.5 kg
Environment	IP Rating	IP30
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC, CCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13), SAE J1455 class C, ISO 7637-2, SAE J1113
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 80° C

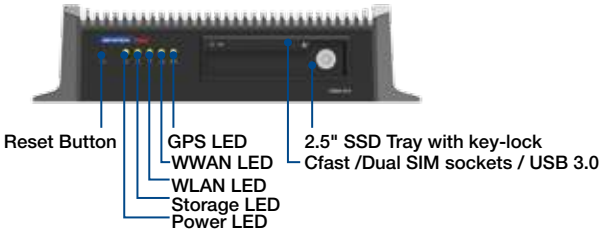
*1: To be paired with TREK-303/306 directly. (Single-cable connection)
*2: Support dual independent audio streams. (i.e. The Line-Out interface in "Smart Display Port" and "Generic I/O Port" are driven by different Audio codecs.)
*3: The connector type on box side is Female RP-SMA connector. (i.e. Female connector body (outside threads) with a male inner pin contact.)

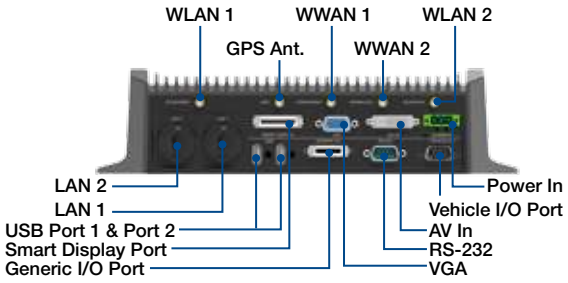
Dimensions

Unit: mm



I/O Connectors





* WLAN 1= WLAN Main, WLAN 2= WLAN Aux;
WWAN 1=WWAN Main, WWAN 2= WWAN Aux

Ordering Information

Part Number	Description
TREK-674-HWB7A0E	TREK-674 w/HSPA+(EU)/GPS/WLAN/BT/SSD/WES7
TREK-674-HWB7B0E	TREK-674 w/HSPA+(US)/GPS/WLAN/BT/SSD/WES7
TREK-674-HWB8A0E	TREK-674 w/HSPA+(EU)/GPS/WLAN/BT/SSD/WE8S
TREK-674-HWB8B0E	TREK-674 w/HSPA+(US)/GPS/WLAN/BT/SSD/WE8S

Remark: Linux O.S. image is by project-based.

Datasheet

TREK-688

Premium In-vehicle Computing Box for Surveillance & Fleet Management

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

Introduction

TREK-688 is an industrial-grade, dual-core computing box designed to provide high-quality video surveillance and fleet management for BRT (Bus Rapid Transit) , MRT (Mass Rapid Transit) and trains. TREK-688 delivers tracking and positioning and also supports dead-reckoning, which allows a truck to be traced even if the driver is in a tunnel. It supports the J1939 protocol for vehicle diagnostics and driver behavior management, and it supports high-quality, MJPEG, H.264 recording, and transmission for up to 16 camera inputs. It has dual Gigabit Ethernet w/M12 connectors and dual display/dual audio interfaces which support different resolutions. Each camera input provides motion detection capabilities; there are 8 audio inputs. The TREK-688 provides reliable on-board recording and can transmit images or alarms for remote monitoring over WLAN, or LTE/WWAN network connection.

Specifications

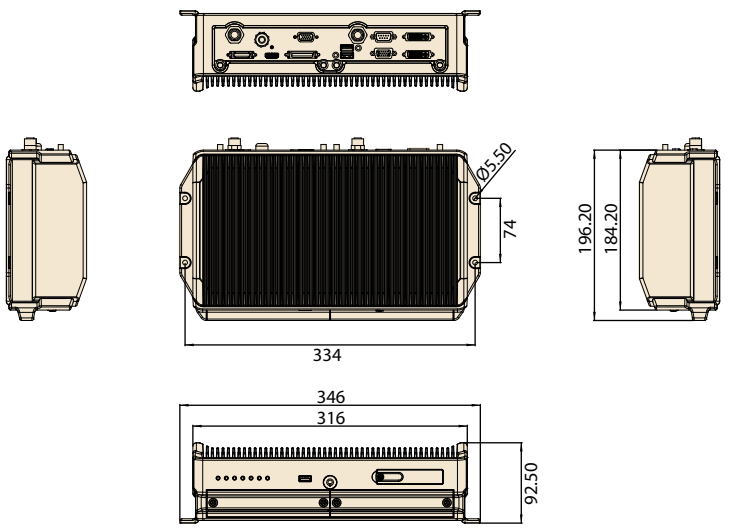
Core	Processor	Intel® Core™ i5-4300U Dual Core, 2.9GHz (i3-4010U & i7-4650U by project support)
	Memory	1 x SO-DIMM socket Up to 8GB DDR3L-1600 Non-ECC memory module; (Default configuration: 4GB)
	Graphic	Intel HD graphics 4400 1.1GHz
	Video HW Encoder	Stretch S7, support H.264, MJPEG format; Resolution up to D1, 30fps per channel
	O.S	WES7, WE8S (32 Bit) Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)
Storage	CFast	1 x external accessible CFast slot with cover, support system boot up Default configuration: 16GB, SLC SQFlash Cfast card
	mSATA	1 x mSATA slot, support system boot up Default configuration: N/A; BOM optional, by project-based
	HDD/SSD	2 x external accessible 2.5" Mobile HDD/SSD tray with key-lock protection, support system boot up Support SATA Gen2 (3Gb/s), support software RAID 0,1 only
Display	Smart Display Port (*1)	12V/2A power output for TREK-30x 1 x 18-bits LVDS (Resolution : 800x480 (TREK-303), 1024 x768 (TREK-306); default TREK-306) 1 x Line-Out (*2) (For Speakers on TREK-30x) 2 x UART (TX/RX, TX/RX/RTS) (For T/S, Hot keys, brightness, light sensor control) 1 x USB 2.0 Type A 1 x PWR Button Signal 1 x Reset Button Signal
	HDMI	1 x HDMI 1.3b (Resolution up to 1920 x 1080)
	VGA	1 x DB15 (Resolution up to 2560 x 1600)
I/O	Vehicle I/O Port	2 x CAN Bus (Support Raw CAN, J1939, OBD-II/ISO 15765; FW configurable) 1 x J1708 (Support J1587) 1 x 4-wire RS-232/422/485 (Default RS-485, by software setting)
	Generic I/O Port	2 x 4-wire RS-232 4 x Isolated DI (Dry Contact) 4 x Isolated DO (Open collector output, driving by relay) 1 x Line-Out (*2) 1 x Mic-In
	Standard I/O Port	1 x USB 2.0 Type A (Front side) 2 x USB 3.0 Type A (Rear side, with cable clip) 1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V/5V @ 0.5A is BOM optional by jumper setting) 2 x Giga LAN, with 8-pin M12 connector
	Video / Audio input (AV1 & AV2, via dual DVI-I connector)	16-ch Video inputs, Video Compression: support H.264, MJPEG format; Resolution up to D1, 30fps per channel 8-ch mono Audio inputs, Audio Compression: G.711
	LED	6 x LEDs (Power (Red), CFast (Yellow), WLAN (Green) ,WWAN (Green), GPS (Yellow), HDD/SSD (Yellow))
	Power Button	Via TREK-30x (In-Vehicle Smart Display); System is powered on by Ignition in default
	Reset Button	1 x Reset button (Front side)
RF	WLAN + Bluetooth	IEEE 802.11a/b/g/n + Bluetooth 4.0 combo module via Full Mini-PCIe Slot
	WWAN	4G (LTE,HSPA+,GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx via Full Mini-PCIe Slot (Default: MC7354 for US/ MC7304 for EU)
	GNSS	Build-in u-blox MAX-M8Q GPS/Glonass/Beidou module, support AGPS
	Antenna	4 x SMA type antenna hole for GPS, WiFI+ BT, WWAN/LTE MIMO. (*3)

Power	Voltage input	Supports 12/24 V car power system. (9V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.)
	Intelligent Vehicle Power Management (iVPM 2.0)	System power on/off/hibernate management (e.g. Programmable Ignition On/Off Time delay) Support Wake up Events: - Alarm (RTC) Wake up. - Wake up by Call/SMS. - Wake up by G-sensor. System power protection (e.g.Car Battery Low Voltage Protection) System monitoring and diagnostic
Mechanical	Dimensions (W x H x D)	346 x 92.5 x 196.2 mm
	Weight	5.9 kg (with two HDDs)
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 class C, ISO 7637-2, SAE J1113, EN50155, IEC 60571
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30° C ~ 55° C
	Storage Temperature	-40° C ~ 80° C

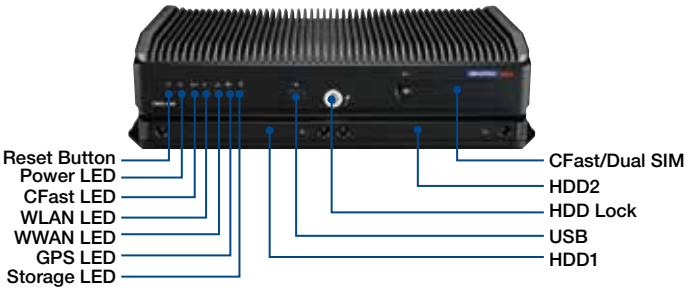
*1: To be paired with TREK-303/306 directly. (Single-cable connection)
*2: Support dual independent audio streams. (i.e. The Line-Out interface in "Smart Display Port" and "Generic I/O Port" are driven by different Audio codecs.)
*3: The connector type on box side is Female RP-SMA connector. (i.e. Female connector body (outside threads) with a male inner pin contact.)

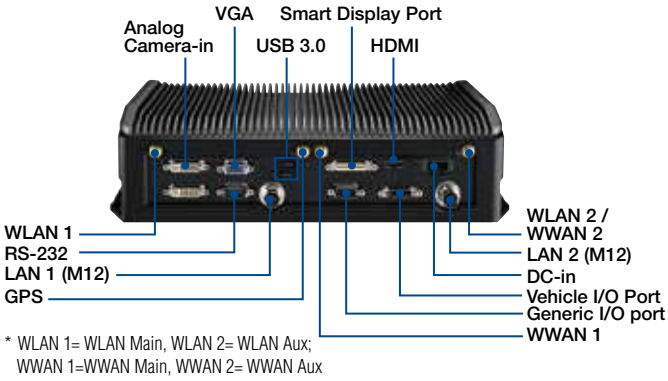
Dimensions

Unit: mm



I/O Connectors





* WLAN 1= WLAN Main, WLAN 2= WLAN Aux;
WWAN 1=WWAN Main, WWAN 2= WWAN Aux

Ordering Information

Part Number	Description
TREK-688-LWB7A0E	TREK-688 w/LTE/HSPA+(EU)/GPS/WLAN/BT/SSD/WES7
TREK-688-LWB7B0E	TREK-688 w/LTE/HSPA+(US)/GPS/WLAN/BT/SSD/WES7

Remark: WE8S and Linux O.S. image are by project-based.

Datasheet

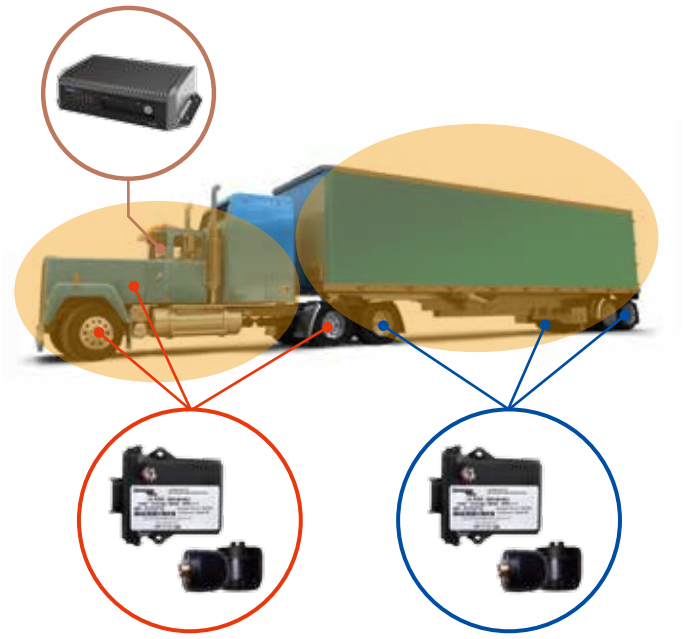
Application Ready Platform

Application Ready Platform (ARP) for In-vehicle Applications

- Designed for harsh automotive environment for IP rating/ wide operating temperature/shock/vibration resistant
- Easy for installation and maintenance
- Proven system integration with TREK/PWS series products
- Provide SDK, utility, sample code for easy SW development

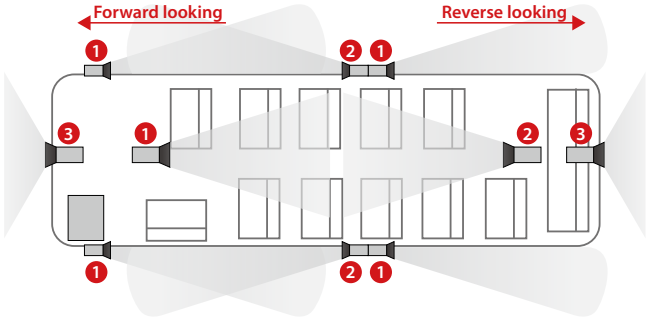
Introduction

Advantech Application Ready Platforms (ARP) provide a total solution for in-vehicle applications to improve safety, performance and flexibility. With our ARP solutions, effort on system integration, verification, and qualification is drastically reduced. Moreover ARP products are designed to withstand severe environments, e.g. shock/vibration, water, dust, high or low temp and more.



TREK-TPM-GWK0E **TREK-TPM-URK0E**

- Monitors up to 16 tires each on tractor/trailer
- Data communication over RS-232
- Communicates with Universal Repeater over J2497/ABS/PLC
- Communicates with up to 9 Universal Repeaters simultaneously - (160 tires total)
- All settings, alerts, reference pressures, configurable network.
- Handles data from all connected Universal Repeaters



1 **TREK-CAM-262-1N2E (NTSC/Reverse)**
TREK-CAM-262-1P2E (PAL/Reverse)

2 **TREK-CAM-262-1N1E (NTSC/Forward)**
TREK-CAM-262-1P1E (PAL/Forward)

- 1/3" interline transfer SONY CCD / 600 TV lines
- Total Pixels: NTSC: 811(H) x 508(V); PAL: 795(H) x 592 (V)
- IP68
- With infrared LED for nighttime condition
- Operating Temperature: -10° C ~ 70° C
- Anti-corrosion protection and Vibration-proof

3 **TREK-CAM-240-X1N3E (NTSC)**
TREK-CAM-240-X1P3E (PAL)

- 1/3" interline transfer SONY CCD / 600 TV lines
- Total Pixels: NTSC: 811(H) x 508(V); PAL: 795(H) x 596 (V)
- IP68
- With infrared LED for nighttime condition
- Operating Temperature: -20° C ~ 70° C
- Wide viewing angle (H: 122° / V: 91°) with Fisheye correction
- Aluminum die-cast chassis for compact, solid-state body

RAM-MOUNT-01E

Features

- 4.75" VESA base
- 5.625" double socket arm for 1.5" ball base
- 2.5" width square rail clamp base
- Suitable products: TREK-306/753/773, PWS-770/870 vehicle docking station

RAM-MOUNT-06E

Features

- 3.625" VESA base at both sockets
- 5.625" double socket arm for 1.5" ball base
- Suitable products: TREK-306/753/773, PWS-770/870 vehicle docking station

RAM-MOUNT-07E

Features

- Flat 2.5” diameter base with AMPS hole pattern
- 5.625" double socket arm for 1.5" ball base
- 3.625" VESA base at both sockets
- Suitable products: TREK-306/722/723

RAM-MOUNT-09E

Features

- Flat 2.5” diameter base with AMPS hole pattern
- 5.625" double socket arm for 1.5" ball base
- 2.5" width square rail clamp base
- Suitable products: TREK-303/722/723

TREK-MNT-301E

Features

- Flat base with AMPS hole pattern
- 140 mm double socket arm for 26 mm ball base
- Cost effective/ rotate 360°
- Suitable products: TREK-303/722/723

TREK-MNT-302E

Features

- Flat base with AMPS hole pattern
- 140 mm double socket arm for 26 mm ball base
- 156 mm VESA base
- Cost effective/ rotate 360°
- Suitable products: TREK-303/722/723

TREK-ANT-501-GWH5E

Features

- Screw-mount 3-in-1 combo antenna
  - GPS
  - HSPA/GSM/CDMA/UMTS
  - Dual-band Wi-Fi (2.4GHz / 5GHz)
- IP67
- 5-meter cable
- Φ145.6 x 35.1 mm (D x H)

TREK-ANT-201-GWL3E

Features

- Adhesive-mount 3-in-1 combo antenna
  - GPS/Glonass
  - LTE/HSPA/GSM/CDMA/UMTS
  - Dual-band Wi-Fi (2.4GHz / 5GHz)
- IP67
- 3-meter cable
- 200.5 x 66.5 x 9 mm (L x W x H)

TREK-ANT-502-GH5E

Features

- Screw-mount 2-in-1 combo antenna
  - GPS/Glonass
  - HSPA/GSM/CDMA/UMTS
- IP67
- 5-meter cable
- Φ55 x 19.6 mm (D x H)

Datasheet

PWS-770

10.4" Rugged Tablet with Intel® Atom™ N2600

- 10.4" XGA LED panel, WAV transflective-LCD, high brightness 300 cd/m²
- Hot swap, high capacity Li-ion battery provides 8 hours of operation(*1)
- Rich array of I/O ports supports a variety of applications
- IP54-certified, 4ft drop proof
- Complete communication: Wi-Fi/Bluetooth/GPS/WWAN (3.75G)
- Optional data capture modules: 1D/ 2D barcode scanner / MSR / RFID
- Lightweight, 1.2 kg

Introduction

The PWS-770 is a rugged mobile tablet featuring a 10.4" XGA resolution TFT LCD panel and an Intel® Atom™ N2600 1.6 GHz processor. It comes with 802.11 b/g/n WiFi, Bluetooth 4.0, a 2M pixel camera. It also has built-in optional GPS and WWAN 3.75G antenna. PWS-770 optional devices include an RFID module with antenna, a 1D/2D barcode scanner and an MSR card reader. PWS-770 is a fully functional communication device suitable for any outdoor application. It carries an IP54 rating for protection against dirt, dust and water. PWS-770 can also survive a 4-foot drop. Advantech's PWS-770 is a strong tablet PC for industrial and commercial use in any environment.

Specifications

Motherboard	CPU	Intel Atom N2600/1.6 GHz	
	Chipsets	Intel NM10	
	Memory	SODIMM DDRIII to 2 GB	
	Storage	Supports mSATA SSD 32 GB ~ 128 GB	
Display & Touchscreen	Display	10.4" XGA (1024 x 768) (Transflective) LCD 300 cd/m² LED back light	
	Touch Panel	4-wire resistive touch panel	
System	Wireless Communication	802.11b/g/n WLAN (default); 802.11 a/b/g/n (optional) Bluetooth 4.0 class2 GPS (u-blox 6; 50-channel; supports GALILEO); WWAN (Cinterion PH8)	
	Camera	CMOS 2.0M pixel Camera module	
	Security	1. Password security 2. TPM 1.2 (Optional)	
	Application Buttons	Power button x 1 Function keys x 3 (F1~F3) Tablet PC keyboard x 1 Mode key x 1	Enter key x 1 Activate key x 2 (S1 & S2): Activate barcode reader, camera & dimming adjustment required to control the brightness
	LED Status Indicator	Power LED (Green/Yellow) x1 Storage LED (Green) x1	WLAN LED (Green) x1
	I/O Interfaces	USB 2.0 x 2 Serial port RS-232 x 1 VGA port x 1 Audio in jack x 1 Audio out jack x 1	Internal mono microphone x 1 DC-in x 1 Docking port (32-pin; USB/PCIE/DC) SIM slot (with WWAN option)
	Audio Output	1 Watt speaker x 2	
	Expansion Port	SD memory card x 1 (SD 2.0/SDHC)	
	Battery	Internal battery: 3S1P 11.1V 1880mAh Hot-Swap External Battery: 11.1V 3760/5000mAh (Optional)	
	DC Input	19V 1± 5%	
	OS Support	Windows 7 Professional /Embedded	
Optional Devices	Data Collection	CMOS 2.0M pixel Camera module (default); 5.0M pixel Camera (optional) 1D/2D Barcode MSR; HF RFID	
Environmental Specifications	Temperature & Humidity	Operating Temperature: -20° C (*2) ~ 50° C (Charge: 0° C ~ 40° C for the battery protection) Storage Temperature -30° C ~ 60° C Operating Humidity 5% ~ 95% @ 40° C	
	IP Rating	IP54	
	Drop	4-foot drop onto Plywood, MIL-STD-810G 516.5 Procedure VI	
	Vibration	MIL-STD-810G, EN50155 certified	

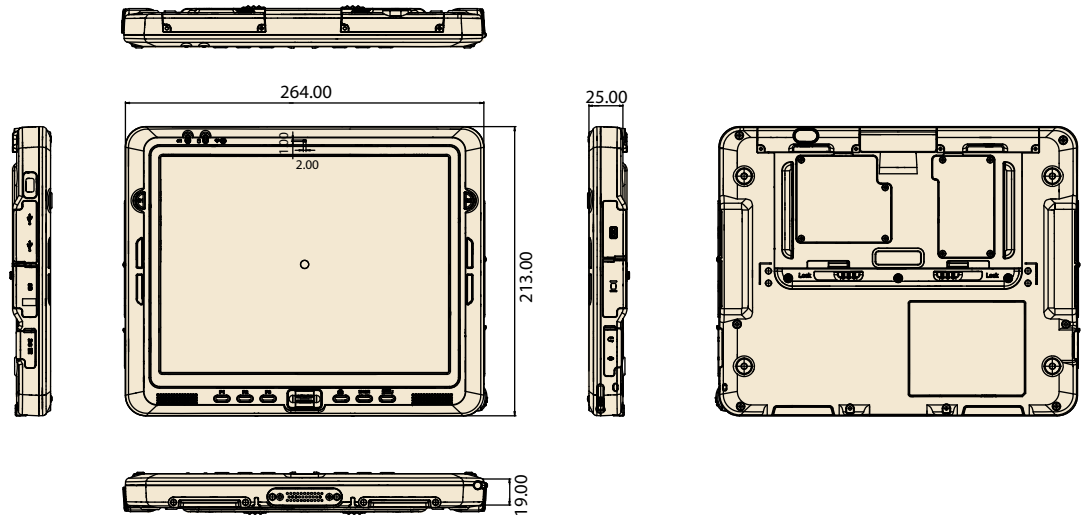
(1) - Internal battery + external 2nd battery 5000mAh in Battery Mark with maximum peripherals connected (Wi-Fi & BT enabled) the battery life up to 7.5hrs
- Internal battery + external 2nd battery 5000mAh idle with minimum peripherals connected in OS (Wi-Fi & BT disabled) the battery life up to 8.5 hrs

(2) Battery life and charge cycles vary by use and settings.

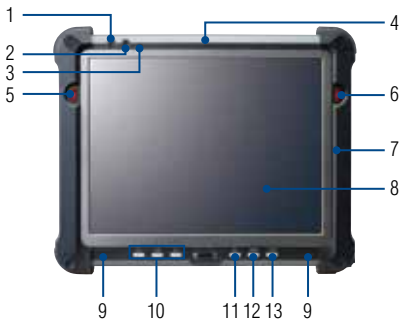
Certifications	EMC	CE/FCC/CCC/BSMI/C-Tick/PTCRB
	Safety	UL/CE/CB/CCC
Dimensions & Weight	Dimensions	264 (L) x 213 (W) x 18 (H) mm
	Weight	Under 1.2 kg without rubber bumper & optional devices

Dimensions

Unit: mm



I/O Connectors



1. Power LED
2. Storage LED
3. WLAN LED
4. Microphone
5. Brightness button (Decrease brightness)
6. Brightness button (Increase brightness)
7. Rubber bumper
8. Touch-sensitive display
9. Speakers
10. Function keys
11. Keyboard button
12. Mode button
13. Enter button

1. Power button
2. USB ports (2)
3. SD card slot
4. DC-in jack
5. Serial port
6. VGA port
7. Headphone jack
8. Microphone jack

Ordering Information

Standard Configuration

Part Number	Description
PWS-770-N3A0EC001E	10.4 Normal N2600 RAM2G SSD32 WL BT Win7 EM
PWS-770-N3AWEC001E	10.4 Normal N2600 RAM2G SSD32 WL BT GPS 3G Win7 EM
PWS-770-S3A0PC001E	10.4 Sunlight N2600 RAM2G SSD32 WL BT Win7 PRO
PWS-770-S3AWPC001E	10.4 Sunlight N2600 RAM2G SSD32 WL BT GPS 3G Win7 PRO

Note: The package are included PWS-770 table and Power adapter (not include power cord)

Barebones (CTOS only)

Part Number	Description
PWS-770-N0A00C001E	PWS-770 Barebone, Normal 10.4"/WL/BT
PWS-770-N0AW0C001E	PWS-770 Barebone,Normal/WL/BT/GPS/3G
PWS-770-S0A00C001E	PWS-770 Barebone, Sunlight/WL/BT
PWS-770-S0AW0C001E	PWS-770 Barebone,Sunlight/WL/BT/GPS/3G

Accessories

Part Number	Description
S10A-93-S10A6-011	VESA mount (M6)
S10A-93-S10A6-021	VESA mount (M4)
S10A-93-S10A1-001	Carrying bag
S10A-93-S10AA-002	Handstrap
S10A-93-S10A6-001	Stand
1757002943	Adapter 100-240V 65W 19V 3.42A
PWS-770-CADAP00E	PWS-770 Car adapter ADP90DCA-M12 to Cigar Lighter (1200mm)
PWS-770-BAT100E	PWS-770 2nd Battery (3760mAh)
PWS-770-BAT200E	PWS-770 2nd Battery (5000mAh)
PWS-770-CRADLE00E	PWS-770 Desk Cradle
PWS-770-VCRADLE00E	PWS-770 Vehicle Docking Station; with LAN Cable M12(M) cable 8P/RJ45(F) (50mm)

Accessories

PWS-770 Vehicle Docking Station

- Integrated GPS module
- Anti-theft locking mechanism
- One second to remove; one second to install
- Ignition control
- Complement port replication
- Vibration can meet military standard, MIL-STD-810G & SAE J1455
- E-Mark Compliance

Introduction

The PWS-770 high strength composite vehicle docking station is designed to hold PWS-770 tablet with safety, security, and efficiency in mind. The docking station comes with an anti-theft locking mechanism. It offers complete port replication for users accessing audio jacks, USB, RS-232/RS-485, and LAN ports. One of the most important and unique design features is it implements a GPS module to enhance GPS positioning, locating, and tracking ability.

Product Specifications

Function	Item	Description
RF	GPS	U-blox 6 GPS module
IO connectors	HDC	1 x HDC connector
	HDC cable IO ports enhancement (optional)	1 RS-232, 1x RS-485, 1 x Line-in & 1 x Line-out, 2 x DI & 2 x DO
	USB	2 x USB 2.0 (locking type)
	Ethernet	1 x 100/1000 LAN port (M12)
	SMA for GPS	1 for external GPS Antenna
	DC in	1 x Power Jack (M12) 18.5V ± 5%
Environment	IP Rating	IP43 (with tablet docked)
	Operating Temperature	-10° C ~ 50° C (Charge: 0° C ~ 40° C) with tablet
	Storage Temperature	-40° C ~ 85° C
	Vibration/Shock	MIL-STD-810G, Method 514.5; SAE J1455
	EMC	CE, FCC
	Safety	UL, CB
	Vehicle-related	E-Mark
Mounting		VESA (75 x 75 mm)
Weight		804g
Dimension		204.98 x 276.99 x 85.8 mm

Ordering Information

Part Number	Description
PWS-770-VCRADLE00E	PWS-770 Vehicle docking station, with LAN Cable M12(M) cable 8P/RJ45(F) (50mm)
PWS-770-CADAP00E	PWS-770 Car Adapter DC to DC 10~32V 90W W/O PFC (1200mm) to Cigar Lighter; M12 Plug
PWS-770-CAD1200E	PWS-770 Car Adapter DC to DC 10~32V 90W with 12V Relay (1200mm); M12 Plug
PWS-770-CAD2400E	PWS-770 Car Adapter DC to DC 10~32V 90W with 24V Relay (1200mm); M12 Plug
1700021797-01	M cable M12 5P/DC jack (10cm) to PWS-770
PWS-770-CHDC00E	PWS-770 Vehicle docking HDC Cable 36P/D-sub*2+ Line in x1 & Line Out x2 + DI x2 & DO x2 (2000mm)
PWS-770-GPSAN00E	GPS antenna N12G0002 5.5V 22mA (5m)
RAM-MOUNT-06E	5.625" double socket arm for 1.5" ball base, 3.625" VESA base at both sockets
RAM-MOUNT-07E	5.625" double socket arm for 1.5" ball base, One side is 3.625" VESA base, on the other side, the socket with flat 2.5" diameter base AMPS hole pattern

Note: PWS-770 Vehicle docking station package include LAN Cable for (M12) RJ45 connector. The car adapter is optional. Do not attempt to connect Car adapter M12 plug to PWS-770 tablet DC-in

PWS-770 Desk Docking Station

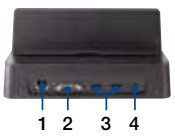
- Offers complete port replication for PWS-770
- Second battery charger
- Operating temperature -20° C to 60° C

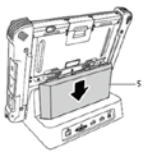
Introduction

The desk docking station is designed to dock PWS-770 tablet when you are at your home or on your office desk. When docked, you can charge both the internal and external batteries or transfer data from your tablet PC to another PC.

Product Specifications

Feature	Description
Product Name	PWS-770 Desk Docking Station
External I/O Interfaces	One LAN port One RS-232 Two USB 2.0 host connectors Battery Charger for 2nd battery 11.1V 5000mAh & 3760mAh One DC-in (19 V +- 5%)
Environment	Operating Temperature -20° C ~ 60° C Storage Temperature -40° C ~ 70° C Operating Humidity 10% ~ 95%
Certifications	CE, FCC
Physical Size	205 x 150 x 98 mm
Weight	812g





No.	Component	Function
1	LAN port	Connect an RJ-45 cable to access LAN connection
2	Serial port	Connect a serial cable to connect to another PC
3	USB ports	Connect USB connectors to transfer data
4	DC-IN	Connect the AC adapter to charge the battery
5	Charger	Battery Charger for 2nd battery

Note: In order to prevent the damage to both PWS-770 and the desk docking station, please do not attempt to use with other tablets (For example: the previous model, S10A).

Ordering Information

Part Number	Description
PWS-770-CRADLE00E	PWS-770 Desk Docking Station
1757002943	ADAPTER 100-240V 65W 19V 3.42A

Accessories

Accessories for PWS-770 Series

- Carry Bag
- Hand Strap
- External Battery
- Stand
- VESA Mount

Carry Bag

Features

- P/N: S10A-93-S10A1-001
- Material: PVC
- Color: Black
- Dimensions: 265 x 230 x 30 mm
- Weight: 440g

Hand Strap

Features

- P/N: S10A-93-S10AA-002
- Material: PVC
- Color: Black
- Dimensions: 245 x 175 x 10 mm
- Weight: 85g

External Battery (Small & Big)

Features

Small

- P/N: PWS-770-BAT100E (11.1V 3760mAh)
- IP rating: IP54 With Device
- Dimensions: 181.8 x 87.6 x 18.8 mm
- Weight: 325g

Big

- P/N: PWS-770-BAT200E (11.1V 5000mAh)
- IP rating: IP54 With Device
- Dimensions: 181.8 x 87.6 x 26.8 mm
- Weight: 382g

Multiple Battery Charger

Features

- P/N: PWS-770-MBC00E
- Store and charge up to 4 PWS-770 external batteries
- LEDs indicate charge status
- Easy to fix on the table by screws
- Power input: 19.5V/7.7A
- Operating temperature: 0° C ~ 40° C
- Dimension: 214.4 x 229.4 x 60 mm
- Weight: 1.4kg

Stand

Features

- P/N: S10A-93-S10A6-001
- Material: SECC + Rubber
- Angle: 0~75 degree angle
- Dimensions: 207 x 117 x 12 mm
- Weight: 100g

VESA Mount

Features

- P/N: S10A-93-S10A6-011 (M6)
- P/N: S10A-93-S10A6-021 (M4)
- Material: SPCC
- Color: Black
- Dimensions: 176 x 237 x 19 mm
- Weight: 306g

Datasheet

PWS-870

TAIWAN EXCELLENCE 2015

10" Fully Rugged Tablet with 4th Generation Intel® Core™ i Processor

- MIL-STD-810G and IP65 certified, can withstand drops of up to 4ft.
- 10.1" HD high-brightness, multi-touch, Gorilla Glass panel with digitizer
- 4th generation Intel® Core™ i processor supports Windows 8
- Built-in 4G LTE, WLAN (802.11 a/b/g/n/ac), BT4.0, and GPS modules with Beidou/GLONASS support
- Hot-swappable battery provides up to 11 hours operation(*1)
- Built-in dual cameras, 1D/2D barcode scanner, and NFC RFID
- Rich peripherals with vehicle docking station, desk docking station, and extension module support

IP65 4ft

Introduction

The PWS-870 is a fully rugged mobile tablet featuring a 10.1" HD resolution capacitive Multi Touch panel, an Intel Core i processor, mSATA SATA3 SSD storage, USB 3.0 and HDMI IO ports. For communcation it comes with 802.11 a/b/g/n/ac WiFi, Bluetooth, GPS, and 4G LTE. One of the most important unique design features is it's built-in data collection features: 2M/5M dual cameras, 1D/2D barcode reader, and NFC RFID reader. To mobile field workers, hot-swappable external battery for long-lasting support allows the system to operate for up to 11 hours at a time. The fully-rugged design (MIL-STD-810G, IP65 dust & water resistant and 4-foot drop) allows PWS-870 to perform in harsh environments. With sunlight readable display, PWS-870 is a perfect device for outdoor work.

Specifications

Motherboard	CPU & Chipset	Intel® Core™ i3 Processor 1.7 GHz 4010U Intel® Core™ i5 Processor 1.9 GHz 4300U with Turbo Boost to 2.9GHz Intel® Core™ i7 vPro™ Processor 1.7 GHz 4650U with Turbo Boost to 3.3 GHz	
	Memory	SO-DIMM DDR3L 1600 MHz up to 8 GB	
	Storage	Support mSATA SATAIII SSD 32 GB ~ 256 GB(*2)	
Display & Touchscreen	Display	10.1" HD (1366x768) Low reflection LED Backlight LCD (400 nits default; 800 nits by project)	
	Touch Panel	Capacitive multi touch Sunlight readable feature Display with Corning® Gorilla® Glass Gen2 Digitizer (By project)	
	Sensor	Ambient light, Accelerometer (G-Sensor), E-compass , Gyroscope Sensor - Screen Rotation: 0°, 90°, 270°	
System	Wireless Commnunication	Default WIFI 802.11 a/b/g/n/ac Default Bluetooth V4.0 (Class2) + EDR; (BT4.0 Class1 by project)	Optional integrated 4G LTE mobile broadband Optional dedicated GPS, Beidou, and Glonass
	Camera	Front Camera: 2M pixel CMOS sensor; supports video streaming Rear Camera: 5M pixel CMOS sensor; with LED flash light and auto focus control	
	Data Collection	Optional built-in 1D barcode scanner (Honeywell N4313) Optional built-in 2D barcode scanner (Honeywell N5600) Optional built-in NFC RFID reader (13.56MHz, supports ISO14443A/B, ISO15693, MIFARE, Felica)	
	Security	1. Optional fingerprint scanner 2. TPM 1.2 3. Kensington cable lock slot	
	Audio	Integrated speakers (2W) Integrated microphone	
	Input	Capacitive multi touch Optional Digitizer screen and Digitizer pen Programable button x2	Capacitive pen On-screen QWERTY keyboard
	LED	Power LED Battery LED RFID LED	
	I/O	USB 3.0 x2; USB 2.0 x1 HDMI 1.4 x1 SD card slot x1 (SDXC/UHS1/UHS2) Audio combo jack (Line-in/Line-out) x1	DC-in x1 Docking port x1 (32PIN) (USB3.0, USB2.0, PCIE Gen2, Display port) SIM slot x1
	Battery	Main battery: 4S1P 14.4V 2730mAh Hot-Swappable external battery: 4S2P 14.4V 4080mAh With Hot-Swappable external battery up to 11hrs	
	Power Input	19V ± 5%	
	OS	Windows Embedded 8.1 Industry Pro (Default), Windows Embedded 8 Standard (Default), Windows 7 Pro 64bit (By project), Linux Ubuntu (By project)	

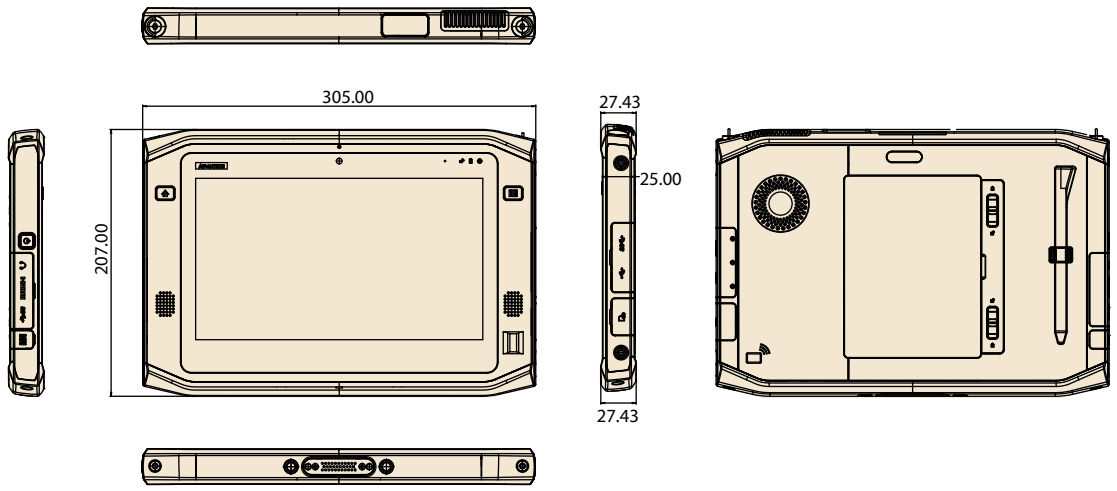
(1) The battery life estimates based on MobileMark 2007 performance. Battery performance will vary by system setting and configuration.
(2) Total usable storage will be less depending upon actual system configuration. For example: PWS-870 default with Intel Rapid Start feature and it would use SSD 4GB capacity.

Environment	Temperatue & Humidity	Operating Temperature -10° C ~ 50° C; -20° C ~ 50° C (by project-based) (Charge: 0° C ~ +40° C for the battery protection) Storage Temperature -20 ~ 60° C Operating Humidity 5% ~ 95% @ 40° C	
	IP Rating	IP65	
	Vibration	MIL-STD-810G	
	Drop	4 feet drop onto Plywood, MIL-STD-810G 516.5 Precedure VI certified	
Certifications	EMC/RF	CE/FCC/CCC/PTCRB/SAR	
	Safety	UL/CE/CB/CCC	
Peripheral	Peripheral(*3)	▪ Digitizer pen (For digitizer solution) ▪ Universal Cover (Handle, stand, hand strap, and shoulder belt) ▪ Extension modules for MSR, UHF RFID, extra IO ports solution (By project)	▪ Desk docking station ▪ External battery ▪ Car adapter ▪ Vehicle docking staion
Dimension & Weight	Dimensions	305 (L) x 207 (W) x 25~27 (H) mm	
	Weight	1.4 kg	

(3) For the peripherals' availability, please check with Advantech's sales directly.

Dimensions

Unit: mm

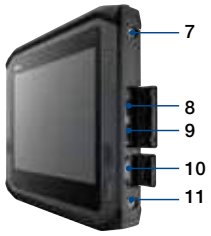


I/O Connectors

1. 2M Camera
2. Home Key (Programmable)
3. Function Key (Programmable)
4. Speakers
5. Fingerprint (Optional)

6. 5M AF Camera with Flash Light
7. FAN
8. NFC RFID Reader (Optional)
9. Capacitive Pen
10. Latch (For External Battery)

1. Kensington Lock
2. Power Button
3. Audio Combo Jack
4. HDMI Connector (1.4)
5. USB Connector (USB3.0)
6. DC-in



7. Screw Hole for Extension Module
8. USB Connector (USB3.0)
9. USB Connector (USB2.0)
10. SD Card Slot (SDXC)
11. Screw Hole for Extension Module

Ordering Information

Part Number	Description
PWS-870-3S6W0E000E	Core i3 WiFi/BT only , with WE8S
PWS-870-3S6G6E5F0E	Core i3 full function, EU LTE, WE8S
PWS-870-5S6G6P5F0E	Core i5 full function, EU LTE, Win 8.1 Pro
PWS-870-7S6G6P5F0E	Core i7 full function, EU LTE, Win 8.1 Pro
PWS-870-3S6G4E5F0E	Core i3 full function, US LTE, WE8S
PWS-870-5S6G4P5F0E	Core i5 full function, US LTE, Win 8.1 Pro
PWS-870-7S6G4P5F0E	Core i7 full function, US LTE, Win 8.1 Pro

Note:
- LTE band varies by different carrier. To select suitable LTE SKU, please contact with your Advantech sales.
- Standard package includes PWS-870 tablet PC, power adapter, capacitive pen and tether
- PWS-870 is equiped with 4GB RAM & 64GB SSD by default. Full function includes Wifi, BT, LTE, 2D barcode, NFC and fingerprint.

Datasheet

Accessories

PWS-870 Vehicle Docking Station

- CAN 2.0 A/B (J1939) and OBDII (ISO 15765) support for vehicle diagnosis
- Anti-theft locking mechanism
- External GPS SMA antenna
- Device docking and removal within 1 second
- Ignition control
- Accommodates port replication
- Compliant with MIL-STD-810G and SAE J1455 for vibration and shock tolerance
- E-Mark compliant and supports 12V/24 V vehicle power

Introduction

The PWS-870 high strength composite vehicle docking station is designed to hold the PWS-870 tablet safely and securely. The vehicle docking station comes with a locking mechanism for theft deterrence. It offers complete port replication for users accessing audio jacks, USB, RS-232, DI, DO, LAN, and GPS SMA connector. One of the most important and unique design features is it has CAN bus support for vehicle communication. It's a perfect solution for police car, fire bridge, ambulance, forklift, and different kinds of transportation applications.

Product Specifications

Function	Item	Description
IO connectors	HDC	1 x HDC connector
	HDC IO ports	1 RS-232, 1x CAN 2.0 A/B (support J1939); OBDII (support ISO 15765) protocol, 1 x Line-in & 1 x Line-out, 2 x DI & 2 x DO
	USB	2 x USB 3.0 (locking type)
	Ethernet	1 x 100/1000 LAN port (M12)
	SMA for GPS	1 for external GPS Antenna
	DC in	1 x Power Jack (M12) 19V ± 5%
Environment	IP Rating	IP54 (with tablet docked and all cables connected)
	Operating Temperature	-20° C ~ 50° C (Charge: 0° C ~ 40° C) with tablet
	Storage Temperature	-40° C ~ 85° C
	Vibration/Shock	MIL-STD-810G, Method 514.5; SAE J1455
	EMC	CE, FCC
	Safety	UL, CB
	Vehicle-related	E-Mark (E13)
Mounting	Mounting Way	VESA (75 x 75 mm)
Weight		950g
Dimension		240.5 x 280.9 x 95.4 mm

Ordering Information

Part Number	Description
PWS-870-VCRADLE00E	PWS-870 Vehicle docking station, with LAN Cable M12(M) cable 8P/RJ45(F) (5cm)
PWS-770-CADAP00E*	PWS-770/PWS-870 Car Adapter DC to DC 10~32V 90W (120cm) to Cigar Lighter; M12 Plug
PWS-770-CAD1200E*	PWS-770/PWS-870 Car Adapter DC to DC 10~32V 90W with 12V Relay (120cm); M12 Plug
PWS-770-CAD2400E*	PWS-770/PWS-870 Car Adapter DC to DC 10~32V 90W with 24V Relay (120cm); M12 Plug
1700021797-01	M12 plug to DC-in cable (10cm) Note: Connect from PWS-770/PWS-870 Vehicle docking DC-in (M12) to Power adapter Jack (1757002943)
PWS-870-CHDC00E	PWS-870 Vehicle docking HDC Cable RS232 x1; CAN2.0 x1; DIx2; DOx2; Line-in x1; Line-out x1 (200cm)
PWS-770-GPSAN00E	GPS antenna 5.5V 22mA (500cm)
RAM-MOUNT-06E	5.625" double socket arm for 1.5" ball base, 3.625" VESA base at both sockets
RAM-MOUNT-07E	5.625" double socket arm for 1.5" ball base, One side is 3.625" VESA base, on the other side, the socket with flat 2.5" diameter base AMPS hole pattern
VDOCK-CBL00E	Vehicle docking starter cable kit (power cable, HDC cable & GPS antenna)

Note:

1. PWS-870 Vehicle Docking packages include LAN Cable for M12 to RJ45 connector. The car adapter is optional. Do not attempt to connect Car adapter M12 plug to PWS-870 tablet DC-in
2. For first time purchase, we strongly recommend to purchase starter cable kit & power adapter (select suitable power adapter from the there adapters marked with*) for evaluation

PWS-870 Desk Docking Station

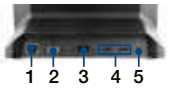
- Offers complete port replication for PWS-870
- Operating temperature -10° C ~ 50° C

Introduction

The desk docking station is designed to dock PWS-870 tablet when you are at your home or on your office desk. When docked, you can charge both the internal and external batteries or transfer data from your tablet PC to another PC.

Product Specifications

Feature	Description
Product Name	PWS-870 Desk Docking Station
External I/O Interfaces	One LAN port (10/100/1000) One VGA port One RS-232 Two USB 3.0 host connectors One DC-in (19 V +- 5%)
Environment	Operating Temperature -10° C ~ 50° C Storage Temperature -20° C ~ 60° C Operating Humidity 5% ~ 95%
Certifications	CE, FCC, UL, CB
Physical Size	223.8 x 146.7 x 128.5 mm
Weight	820g



No.	Component	Function
1	LAN port	Connect an RJ-45 cable to access LAN connection
2	VGA port	Connect a VGA port to connect to another monitor
3	Serial port	Connect a serial cable to connect to another PC
4	USB ports	Connect USB connectors to transfer data
5	DC-IN	Connect the AC adapter to charge the battery

Note: In order to prevent the damage to both PWS-870 and the desk docking station, please do not attempt to use with other tablets.

Ordering information

Part Number	Description
PWS-870-CRADLE00E	PWS-870 Desk Docking Station

Note: The package does not include power adapter. Please use PWS-870 tablet's power adapter directly.

Accessories

Accessories for PWS-870 Series

Universal Cover Package

Features

- P/N: PWS-870-UCOVER00E
- Material: Plastic, PVC
- Color: Black
- Dimension: 305 x 254.2 x 88.4 mm
- Weight: 500g (universal cover, hand strap and shoulder belt)
- Package content: universal cover, hand strap, shoulder belt

MSR & Smart Card Reader Extension

Features

- P/N: PWS-870-EXT300E
- Smart Card Reader
  - ISO 7816 PC/SC
  - EMV 4.0 Level 1
  - Supports I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, SLE4436,SLE5536, SLE6636, AT88SC1608, AT45D041 card
- MSR (Magnetic Card Reader)
  - MagneSafe IntelliHead
  - Supports US 7810 & ISO 7811/AAMVA
  - Card speed: 6 to 60 ips (15.4 to 12.4 cm/s)
  - Triple DES encryption
  - DUKPT key management
- Operating temperature: -10° C ~ 50° C
- Storage temperature: -20° C ~ 60° C
- Dimension: 192.2 x 40.2 x 25 mm
- Weight: 120g

I/O Extension

Features

- P/N: PWS-870-EXT100E
- Interfaces: USB 3.0 (type A, 5V/0.9A) x 1, RS-232 (D-Sub 9) x 2, 10/100/1000 Ethernet (RJ45) x 1
- Dimension: 192.2 x 45.2 x 25 mm
- Weight: 140g

UHF RFID Extension

Features

- P/N: PWS-870-EXT200E (EU) / PWS-870-EXT210E (US)
- RFID output power: 0.063 watt EIRP
- RFID antenna type: Linear Polarization
- Frequency: EU: 865 ~ 868MHz / US: 902 ~ 928MHz
- Tag standard supported: EPC Class 1 Gen 2 / ISO 18000-6C
- Maximum output power: +18dBm (Conductive)
- Dimension: 192.2 x 40.2 x 25 mm
- Weight: 110g

External Battery

Features

- P/N: PWS-870-BAT100E
- Capacity: 14.8V 4080mAh
- IP rating: IP65 with PWS-870
- Operating temperature: -10° C ~ 50° C (charge: 0° C ~ 40° C)
- Storage temperature: -20° C ~ 60° C
- Dimension: 141.2 x 106.2 x 17 mm
- Weight: 385g

Multiple Battery Charger

Features

- P/N: PWS-870-MBC00E
- Store and charge up to 4 PWS-870 external batteries
- LEDs indicate charge status
- Easy to fix on the table by screws
- Power input: 19.5V/7.7A
- Operating temperature: 0° C ~ 40° C
- Dimension: 214.4 x 229.4 x 60 mm
- Weight: 1.4kg

Datasheet

PWS-440

3.7" Ultra Rugged PDA

- Marvell PXA310 806MHz; Supports Windows CE6.0 and Windows Embedded Handheld 6.5
- 3.7" VGA TFT LCD transflective technology
- IP67 rating guarantees total protection against dirt, dust and water
- Certified by MIL-STD-810G and MIL-STD-461F
- Standard 5-way controller and 4 function keys for one-hand operation
- High capacity Li-ion battery provides 6 hours of continuous operation
- Field navigation application with HSDPA (3.5 G), 802.11b/g, Bluetooth and GPS

Introduction

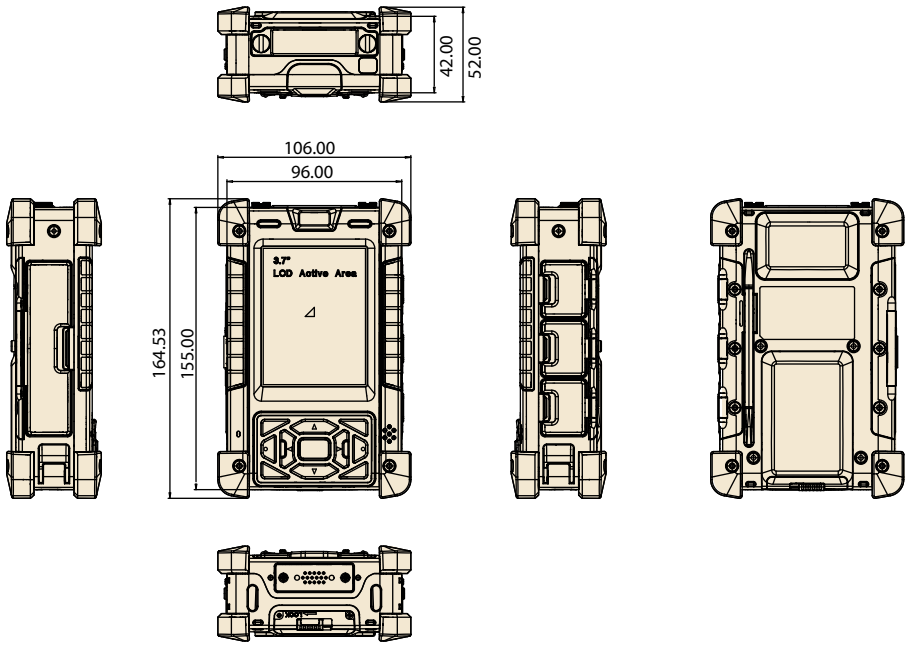
The PWS-440 is an ultra rugged portable computer featuring a 3.7" transflective VGA TFT LCD display and Marvell PXA310 806MHz processor. With GPS, HSDPA (3.5G), Wi-Fi and built-in Bluetooth, PWS-440 provides a fully-functional communication device for any outdoor application. Certified to meet standard military grade MIL-STD-810G and MIL-STD-461F, PWS-440 is constructed with an IP67 rating guaranteeing total protection against dirt, dust and water. Driven by a high capacity battery, PWS-440 handles a 5-foot drop, and operates in an extreme range of temperatures, providing mobility in any harsh environment. Advantech's PWS-440 is a strong device for reliable mobile communications in any environment.

Specifications

Processor	CPU	Marvell PXA310 806 MHz	
OS		Windows CE 6.0 and Windows Embedded Handheld 6.5	
Memory		256 MB DDR Mobile RAM on board (default); Up to 512MB DDR (by project-based)	
Storage		1 GB NAND Flash on board	
Audio System		Build-in Internal microphone and one speaker 0.5W	
Display	Size/ Type	3.7" transflective TFT LCD	
	Max. Resolution	VGA 480 x 640	
	Brightness (cd/m²)	320 cd/m² LED back light	
Touch Panel		4-wire resistive touch panel	
Application Buttons		1 x power on/suspend button Navigation key and four function keys	1 x HW reset key located right side door 1 x button for backlight on/off (using power on/ suspend button)
I/O Port		2 x USB type A connectors, USB1.1 host 1 x USB mini type B connector, USB1.1 Client 1 x RS-232 1x RS-232 (default) 422/485 (By project-based)	1 x RJ-45 for 10/100M Ethernet 1 x stereo headphone jack 1 x microphone jack 1 x DC-In connector
Communication	WLAN	802.11b/g WLAN module build in	
	Bluetooth	Bluetooth class 2, v2.1 built-in with integral antenna	
	GPS	SiRF Star IV high performance GPS chipset	
	WWAN	Cinterion PH8 HSPA+ WWAN module with high performance external antenna (optional)	
Power	Battery	Rechargeable Li-ion smart battery, 7.4 V, 1880 mAh, 2S1P	
	DC input	12V ± 5%	
Environment	Operating Temperature	-20° C ~ 60° C	
	Storage Temperature	-40° C ~ 70° C	
	Operating Humidity	5% ~ 95%	
Rugged Certification		IP67 5 feet drop to concrete	MIL-STD-461F MIL-STD-810G
Certifications		CE, FCC, CCC	
Dimensions & Weight		155 x 96 x 42 mm, 650 g	

Dimensions

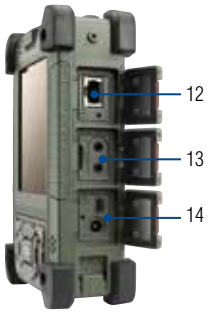
Unit: mm



I/O Connectors

1. Function buttons
2. Suspend button
3. Navigation keys
4. FN button
5. Enter keys
6. Docking/cradle connector
7. Battery pack latch

9. RS 232
10. USB type A (USB 1.1 Host)
11. RS 232 (RS422/RS485)



12. RJ-45 Port
13. Handphone, microphone & micro SD slot
14. DC in & min USB type (USB 1.1 slave)

Ordering Information

Part Number	Description
PWS-440-6E000E	PWS-440 with WLAN/BT/GPS/WIN CE6.0
PWS-440-6E003E	PWS-440 with WLAN/BT/GPS/3.5G/WIN CE6.0
PWS-440-6M000E	PWS-440 with WLAN/BT/GPS/WIN Embedded Handheld 6.5
PWS-440-6M003E	PWS-440 with WLAN/BT/GPS/3.5G/WIN Embedded Handheld 6.5

Note: The package are include PWS-440 device, power adapter, and hanstrap

Accessories

Part Number	Description
P37B-91-P37BB-C01	Accessory P37B 4IN1 battery charger
P37B-91-P37BC-R02	Accessory P37B cradle
P37B-93-P37B4-001	Accessory P37B battery pack 2S1P 1880MAH
1757003914	Adaptor AC-DC 12V/4A 100-240V

Regional Service & Customization Centers

China	Kunshan 86-512-5777-5666	**Taiwan**	Taipei 886-2-2792-7818	**Netherlands**	Eindhoven 31-40-267-7000	**Poland**	Warsaw 48-22-33-23-730	**USA**	Milpitas, CA 1-408-519-3800

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Singapore

Singapore	65-6442-1000

Malaysia

Toll Free	1800-88-1809
Kuala Lumpur	60-3-7724-3555
Penang	60-4-397-3788
	60-4-397-4188

Thailand

Bangkok	66-2-248-3140

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Toll Free	1800-425-5071
Bangalore	91-80-2545-0206

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Jakarta	62-21-7511930

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Sydney	61-2-9477-2521

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Germany

Munich	49-89-12599-0
Hilden	49-2103-97-885 -0

France

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Milano	39-02-9544-961

Benelux & Nordics

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Roosendaal	31-165-550-505

UK

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Poland

Warsaw	48-22-33-23-740 / 741

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