

Digital Logistics and Fleet Management

Quality In-Vehicle Computer and Tablet Solutions



ADVANTECH iAutomation

Premier Partner

- ✓ eBus System
- ✓ Long Haul Trucks
- ✓ Heavy-Duty Fleets
- ✓ Emergency Fleets
- ✓ Cold Chain Fleets
- ✓ Local Fleets
- ✓ Mobile Workers



Software Development Package

ADVANTECH

Enabling an Intelligent Planet

Vertrieb durch



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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 long-term 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

Embedded Design-In

<p><i>Networks & Communications</i></p> <ul style="list-style-type: none"> • Blade Computing & Systems • Network Appliances • Network Virtualization Platforms • Network & Embedded Switches • Broadcasting & Surveillance Platforms 	<p><i>Embedded Core Computing</i></p> <ul style="list-style-type: none"> • Embedded Box Computers • Modular Computing Boards • Wireless IoT Modules • Display Systems & Gaming Solutions • Industrial Motherboard & DTOS • Embedded Peripherals 	<p><i>Design & Manufacturing Services</i></p> <ul style="list-style-type: none"> • Applied Computing DMS • Embedded DMS • Advanix • Allied DMS • Allied Purchasing Services
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<p style="background-color: #558b2f; color: white; padding: 2px; display: inline-block;">Industrial-IoT</p> <p><i>Industrial Automation</i></p> <ul style="list-style-type: none"> • Industrial I/O & Controllers • Industrial HMI • Automation Computing • IoT Devices & Solutions • WebAccess+ Solutions • iFactory (Industry 4.0) Solutions • Machine Automation Solutions • Power & Energy Solutions <p><i>Intelligent Systems</i></p> <ul style="list-style-type: none"> • Industrial Computers • Industrial Servers & Storage • Intelligent Video Solutions • Intelligent IoT Modules • Transportation Solutions <p><i>iConnectivity</i></p> <ul style="list-style-type: none"> • Industrial Communications • Wireless Industrial Comm. • iNetworking(B+B) 	<p style="background-color: #f79646; color: white; padding: 2px; display: inline-block;">Smart City Solutions</p> <p><i>Service Automation Platforms</i></p> <ul style="list-style-type: none"> • Industrial Mobile Computing • iRetail Platforms • Medical Computing & Tablets • In-Vehicle Computing <p><i>Intelligent Service Solutions</i></p> <ul style="list-style-type: none"> • Intelligent Hospital • Digital Logistics & Fleet Management • Intelligent Retail & Hospitality
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About Digital Logistics & Fleet Management Sector



Advantech is a leading global manufacturer of industrial PCs and has garnered a great deal of experience and expertise in specialized industrial vehicle computing, such as that used in logistics and fleet management.

DLoG, 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 design capabilities and craftsmanship. 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 this acquisition, Advantech sought to expand its participation in the global industrial in-vehicle computing market and established a Digital Logistics and Fleet Management Sector. Combining the experiences, leading market positions and more than 20 years vertical domain know-how acquired by both companies, Advantech aims to become the leading supplier of industrial vehicle computing products and services for vertical markets worldwide, such as warehousing, fleet management, light and heavy duty applications.

The Digital Logistics and Fleet Management Sector delivers the best in German quality plus Taiwanese flexibility, leading the industry in innovation, a very high level of quality, and is backed by global extensive support, sales and marketing network of more than 7,300 employees in 23 countries and 95 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. This focus domain covers asset management, fleet management, and mobile workforces.

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 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 designs that 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 designs that 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.

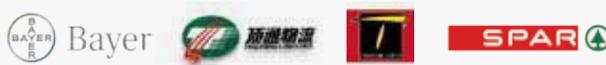
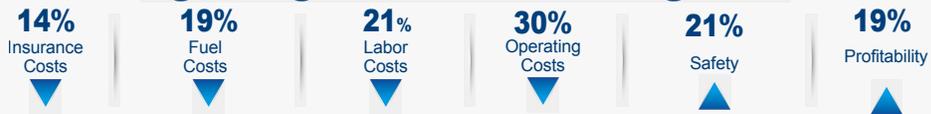


Ecosystem Benefits Everyone

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

Digital Logistics and Fleet Management

Worldwide Customers



Global PaaS Solution Provider

Long Haul	Cold Chain	Warehouse	Transportation	Utility Fleet	Port	Agriculture	Mining

In-Vehicle Computing Platforms

OS	Intelligent SW	Core Chip	Vehicle Communication Provider	GNSS	RF module

In-Vehicle Peripherals

Peripherals

Capabilities

World Class RF Solution

Fleet operators must manage large vehicle fleets in geographically challenging situations. Advantech 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 satellites and very effective accuracy.

Radio Communication and PTCRB Certification

Advantech products utilize industrial modules to transmit and receive data via GPRS, HSPA+ and LTE. With PTCRB certification, which is compliant with 3GPP network standards, our products accommodate the North American standards with their additional requirements from the FCC and IC. By obtaining PTCRB Certification, they also ensure compliance with cellular network standards within the PTCRB Operators' networks (ex. AT&T, Verizon). Moreover per Advantech expertise and cocollaboration with cellular module vendor, Advantech products can also ensure the compliance with local RF certificate, e.g. ANATEL in Brazil.



About Wi-Fi

Wi-Fi technology is widely used for different applications, e.g. warehouse, transportation or even for mining, and construction. But different applications have special rerequirements on Wi-Fi, and Advantech products can fulfill by flexible Wi-Fi module selection. e.g. high-power Wi-Fi module can extend the communication distance and coverage, selected Wi-Fi module for superb roaming performance, and 802.11 ac Wi-Fi module for applications that need high throughput.

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 traveled with an odometer and turn rate with a gyroscope, providing 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 could 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 vehicle power management mechanism is designed to handle various use scenarios for different applications.

e.g. startup delays to avoid voltage drop during engine start. shutdown delays to avoid operation system hang up during shutdown process. Remote wakeup by cellular module can enable shorter system ready time for emergency tasks and 24/7 asset tracking.

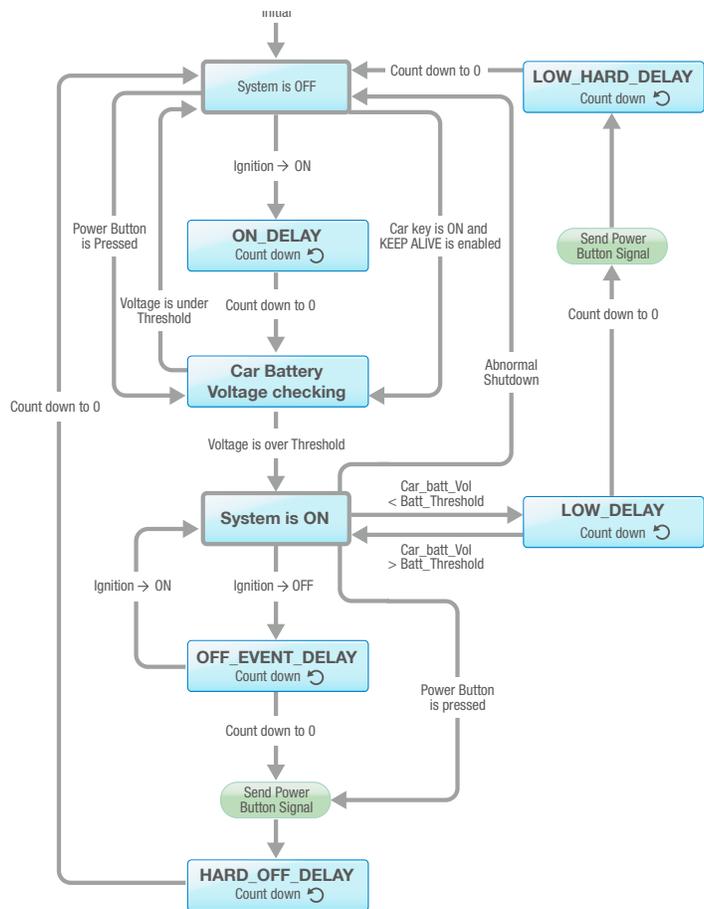
SAE J1113/ ISO 7637-2/ E-mark Certifications

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.

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.

Power Management Flow Diagram



Capabilities

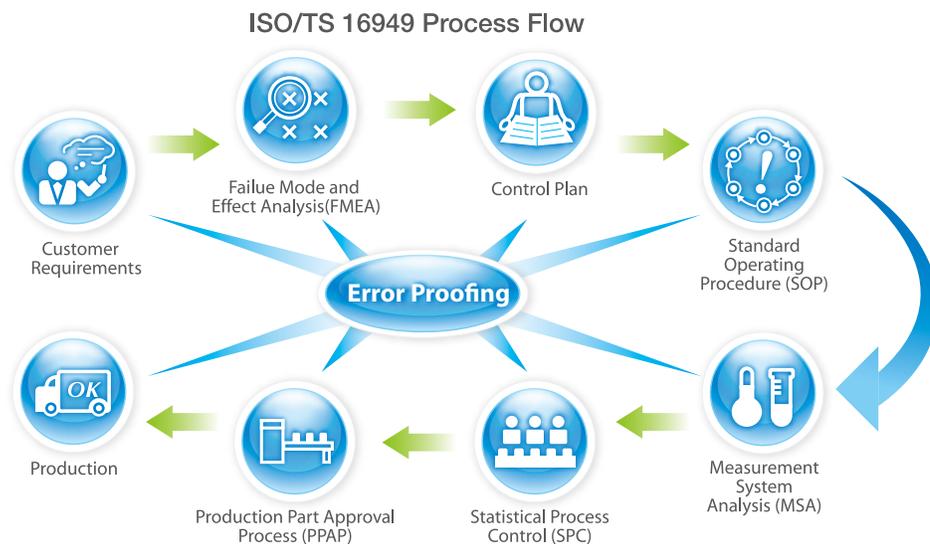
ISO/TS 16949 Drives Continuous Automotive Improvements

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 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.



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

Wide In-vehicle Operating Temperature Range

Keep Your Cool with Wide-Range Thermal Solutions

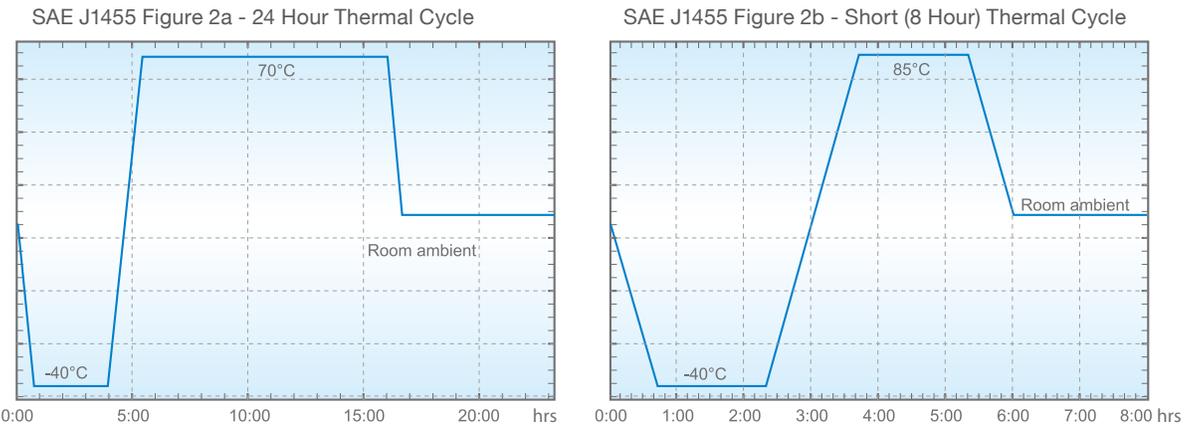
Industrial-grade computing systems are designed to work under extreme conditions. In a vehicle, it is possible for temperatures to reach 70° C. Hardware expected to perform in these conditions requires special design and materials, special cooling considerations, and extensive temperature testing. Software 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 demands of fluctuating changes in temperature, and operate across large geographic areas, helping fleet managers maintain a competitive edge.

1. About standards

Advantech 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:



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 operation

Capabilities

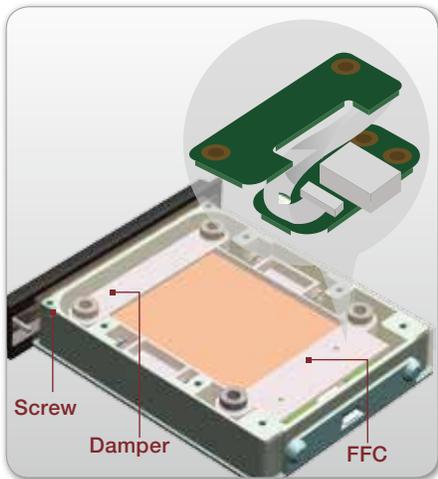
Vibration and Shock Resistance

Fleet Management systems can be installed in 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 technology reduce the impact of shock and vibration?

Advantech’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, even under the severe conditions that occur in mobile environments.

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

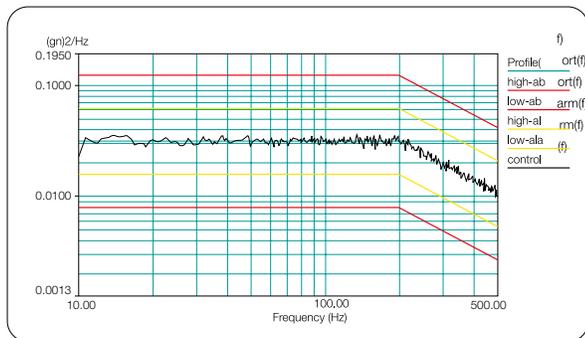


Advantech DLoG responds to the problems associated with electronic systems operating in harsh vehicle environments by thorough research and design. Quality Assurance personnel physically test products in the environments in which they will be used. The development and testing that is conducted follow 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.

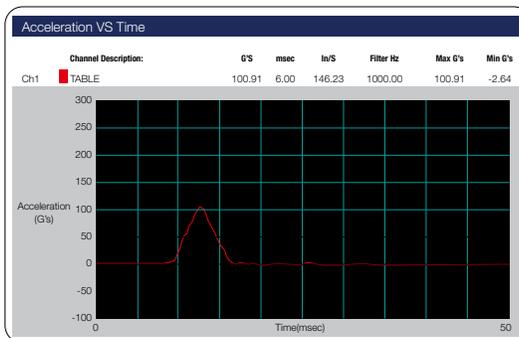
Note: EN60721-3-5 : Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 5: Ground vehicle installations.

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 m²/S³, 200~500Hz, 1 m²/S³

Test Shock Curve



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

MRM SDK Accelerates Product Development and Time-to-Market

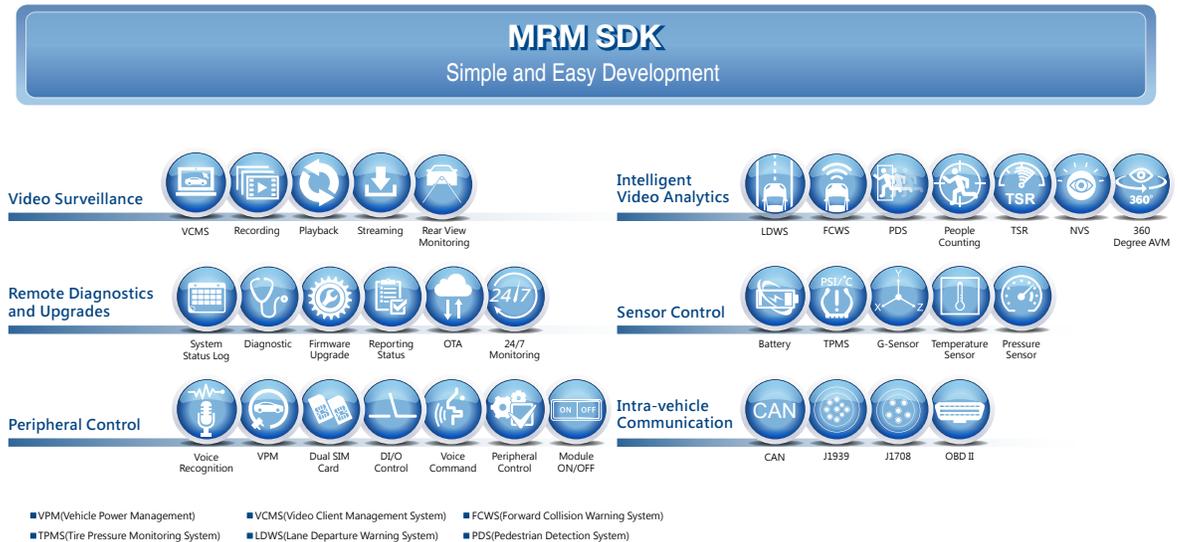
Introduction

Advantech'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.

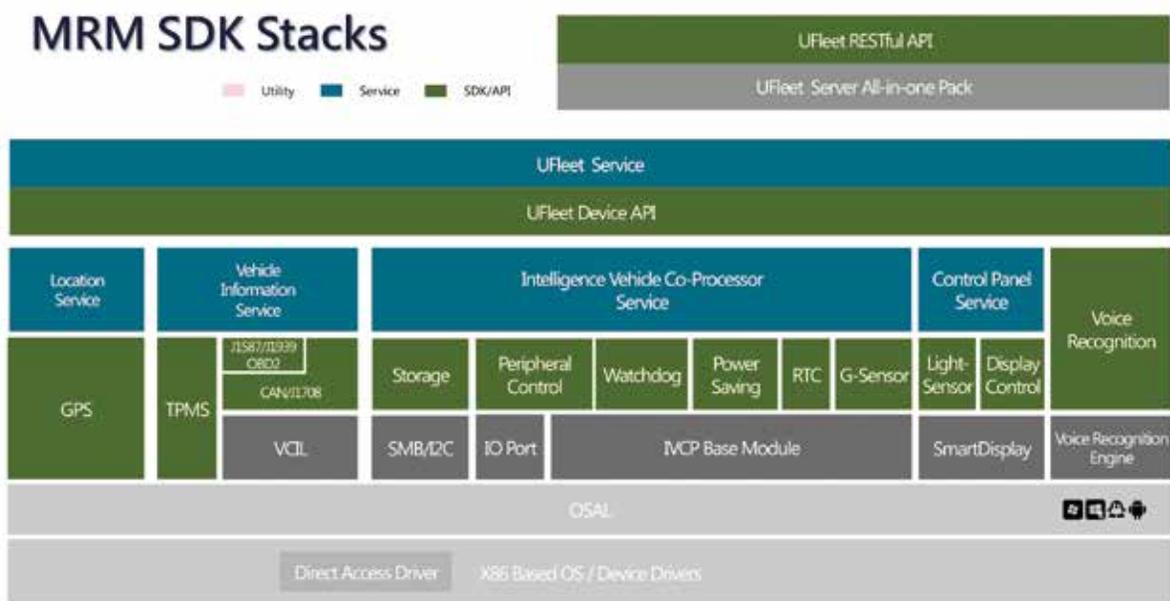


MRM SDK Utility Stacks

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.

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 be applied across platforms.



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 Satisfies Varied Requirements



Long-Haul Logistics Fleet Management



Intelligent Bus Management



Public Safety Fleet Management



Local Fleet Management



Utility Fleet Management



Heavy-Duty Fleet Management

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.

Simplifies System Sourcing, Verification, and Integration Efforts

ARPs substantially reduce system sourcing, verification, and integration efforts by minimizing the testing time, 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 ARPs to facilitate the development of unique applications and programs.

In-Vehicle Computing Platform



All-In-One In-Vehicle Mobile Data Terminal



Application Ready Platform





PWS-870 10" Fully Rugged Tablet & Application Oriented Peripherals



Field Service



Emergency Fleet Management



Warehouse Management



Automotive Manufacturing

Extreme Outdoor Durability for Enhanced Mobile Worker Management

The PWS-870 tablet and application-oriented peripherals are also suitable for field service, public safety, warehouse management, automotive manufacturing inspection, and construction. Built for rough handling in extreme environments, the tablet has been drop-tested, certified to military standards, and completely integrated. Besides being highly customizable to satisfy specific needs, the system's high-brightness, multi-touch, sunlight-readable screen optimizes the user experience overall. Furthermore, the integration of advanced communication technology, including 4G LTE and 802.11 ac, ensures unrivalled performance across a variety of infrastructures.



PWS-870
10" Fully Rugged Tablet



MIT-W101
10" Industrial Tablet PC



PWS-470
5" Rugged Handheld Terminal
With 2D Barcode Scanner

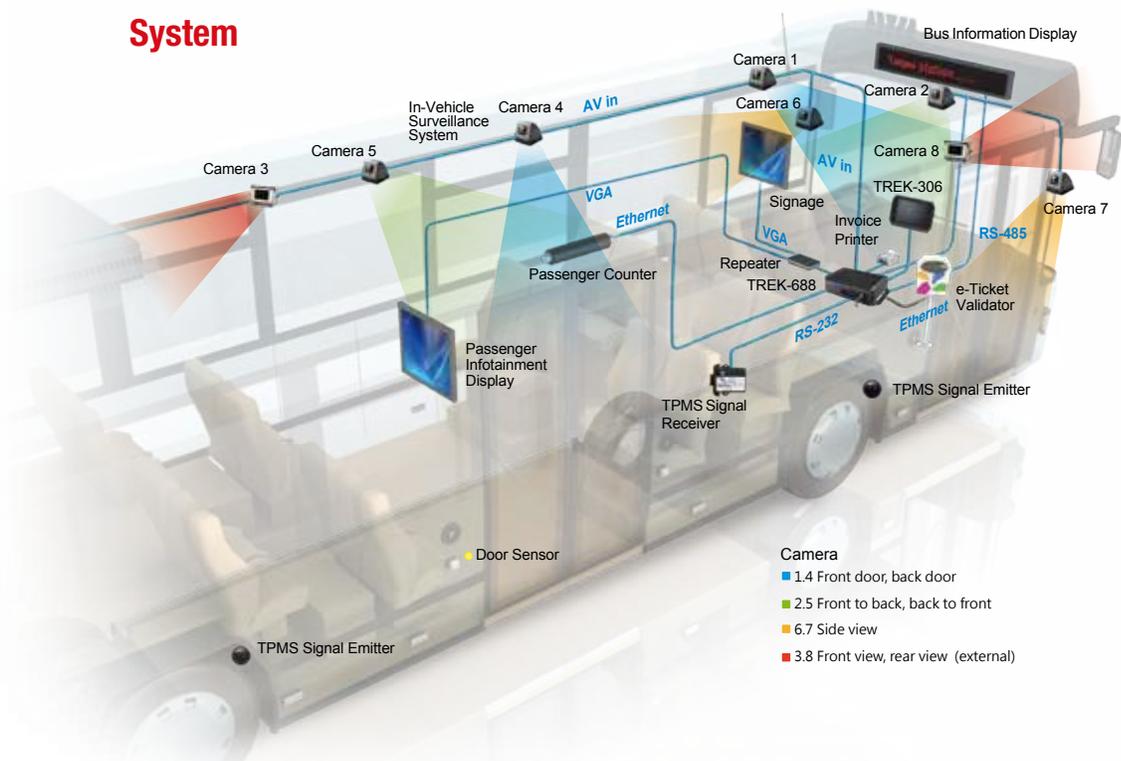
Intelligent In-Vehicle Surveillance Platform 2.0 Transforming eBus System



Introduction

Customers seeking smart vehicle solutions for sophisticated eBus systems typically have diverse needs. Advantech 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 developed an industrial-grade in-vehicle computing box with Intel® Atom™ processor that is ideal for municipal and inter-urban bus fleets.

System





Solution

Advantech's eBus 2.0 solution comprises TREK-688 in-vehicle computer and TREK-306 smart display to satisfy needs of metropolitan bus fleets for vehicle mobile resource management. Built-in sensors collect all intra-vehicle data, including engine speed, tire pressure, improper braking, throttle position, passenger and e-Ticket numbers, and video recordings, to provide a detailed record of vehicle driving operations. These data are transmitted to back-end cloud for facilitating subsequent analysis by fleet managers and coordinators to further increase operation efficiency and safety.

Besides intelligent voice recognition technology for hands-free operation, Advantech's eBus 2.0 solution is equipped with an in-vehicle surveillance (IVS) system to ensure that driver and passenger safety is prioritized at all times. Additional technologies "intelligent video analytics" include lane departure warning system (LDWS), forward collision warning system (FCWS), and pedestrian detection system (PDS) enabling TREK-688 to provide useful warnings to the driver.



TREK-306DH

10" In-Vehicle Smart Display



TREK-688

Premium In-Vehicle Surveillance Computing Box for Fleet Management

Benefits

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

- Real-time communication, data analysis for efficient bus dispatching and fleet management
- Enhanced driving safety by intelligent video analytics, voice recognition system and vehicle diagnostics
- Real-time information displaying, billing & invoicing to provide better service



Global Intelligent Long-Haul Trucks Solution Realize Driver Behavior Management



40%+ ↑ Delivery Efficiency

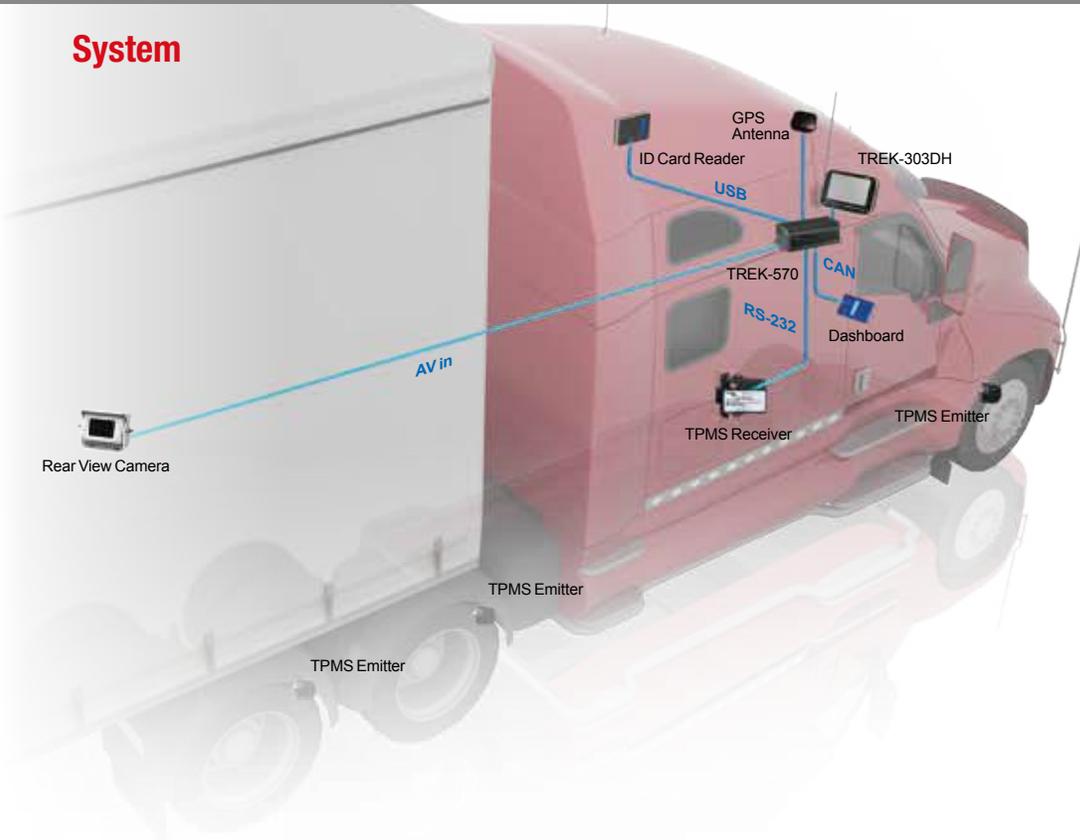
10%+ ↑ Fuel Saving

14%+ ↓ Insurance Costs

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





Solution

Advantech 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 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 of 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.



TREK-303DH

7" In-Vehicle Smart Display



TREK-570

Compact In-Vehicle Computing Box for Fleet Management

Benefits

Advantech fleet management solution provides long-haul trucks 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 design for harsh in-vehicle environment
- Real-time data transmission enhances delivery fleet management efficiency



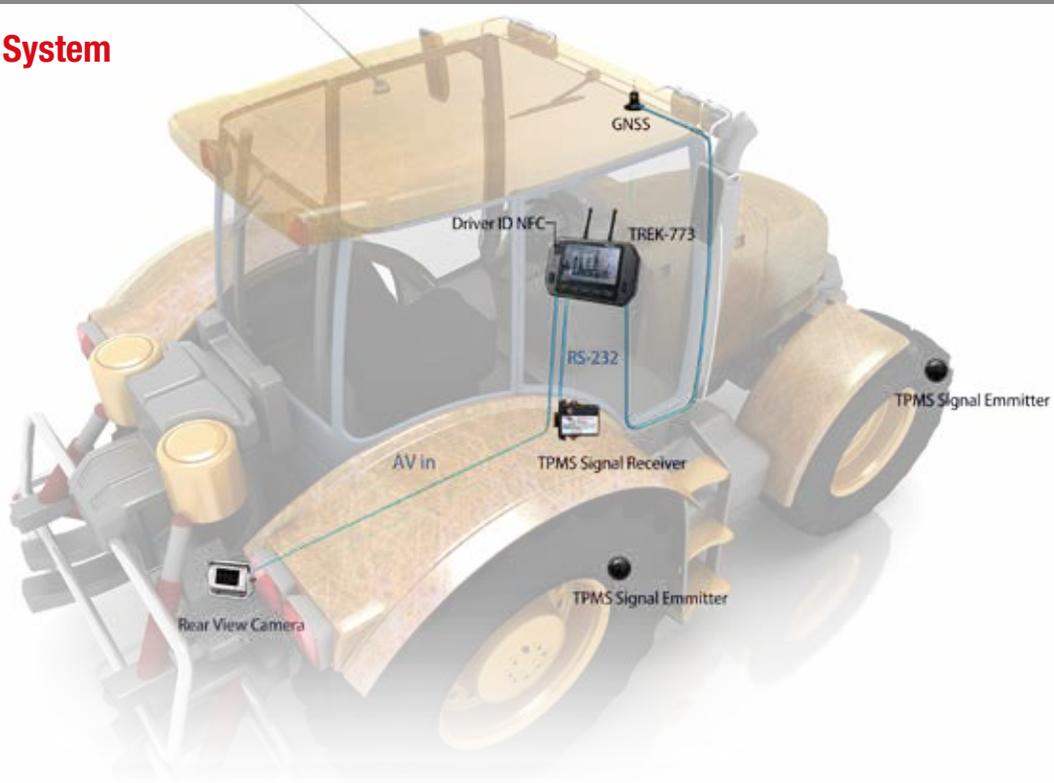
Autonomous Harvesting Technology Realized Intelligent Agriculture



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





Solution

Advantech'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 to 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 voltages. 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.



TREK-773
7" All-in-One Mobile Data Terminal

Benefits

- Real time remote-controlled farming machines enable automated monitoring, harvesting, classifying, weighing, and packaging of crops
- Automated processes significantly reduce manpower
- 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 harsh environments
- Advanced power management capabilities (wake on-call, on/off delay) ensures low standby power consumption



Emergency Response Management Solution for Ambulance Applications



 10 min. +
First-aid Time Saving

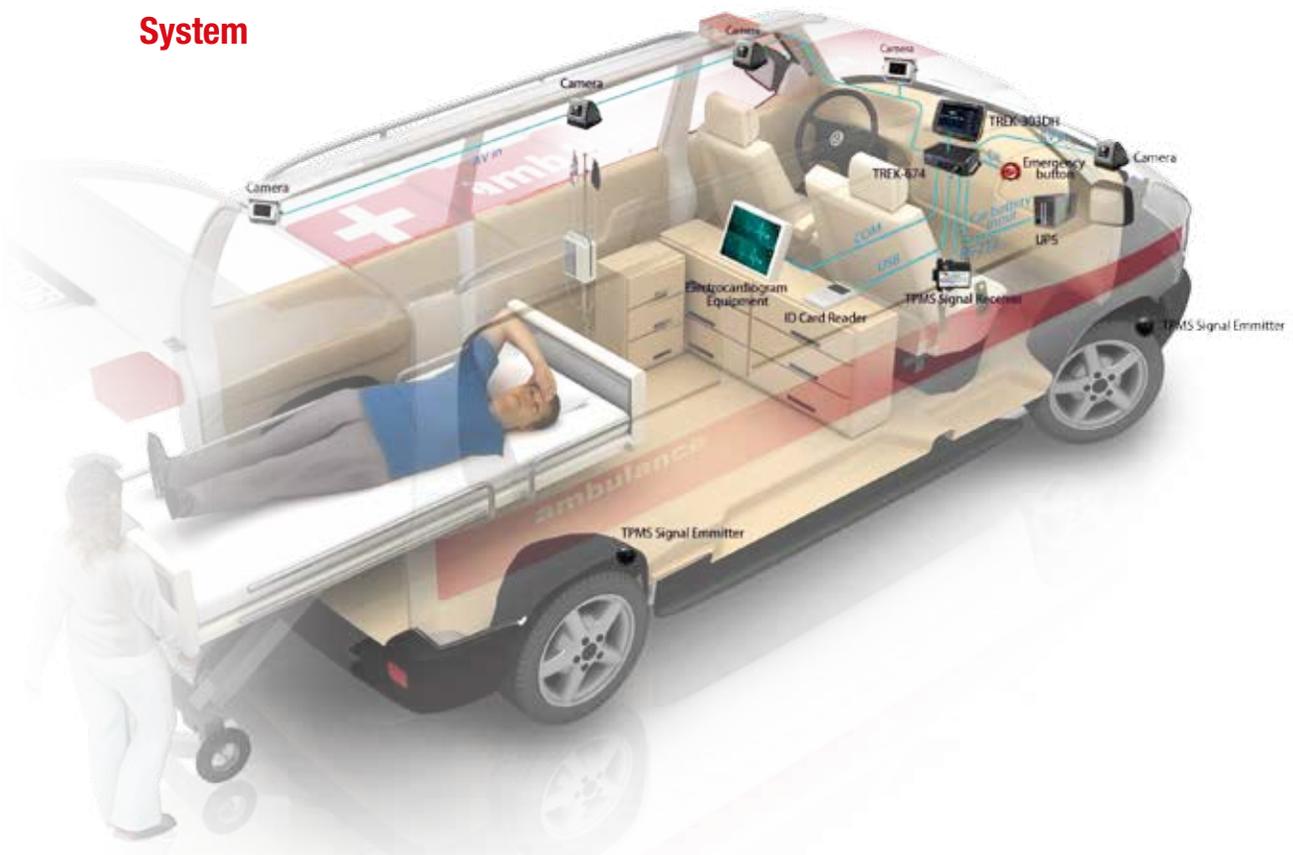
 21%+ ↑
Driving Safety

 14%+ ↓
Insurance Costs

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.

System





Solution

Advantech in-vehicle emergency response management solution, TREK-674 computing terminal with rich built-in RF technology, including GPS with AGPS, Bluetooth, Wi-Fi, and GPRS/CDMA/HSDPA/LTE, enables 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. Comprehensive I/O interfaces (USB, RS232, CAN bus, LAN, and DI/O) can be used to collect data and control in-vehicle 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.



TREK-303DH
7" In-Vehicle
Smart Display

TREK-674
Compact In-vehicle Computing
Box for Surveillance & Fleet
Management

Benefits

- In-vehicle surveillance, real-time video streaming, and multi-channel recording, allow emergency room staff to understand the patient's condition in advance
- Built-in wireless solution 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
- Integrated tire pressure monitoring system (TPMS) and intelligent video analytics further enhance driving safety.



Quality Assurance with Cold Chain Management



10%+ ↑
Delivery Accuracy



30%+ ↓
Maintenance Costs

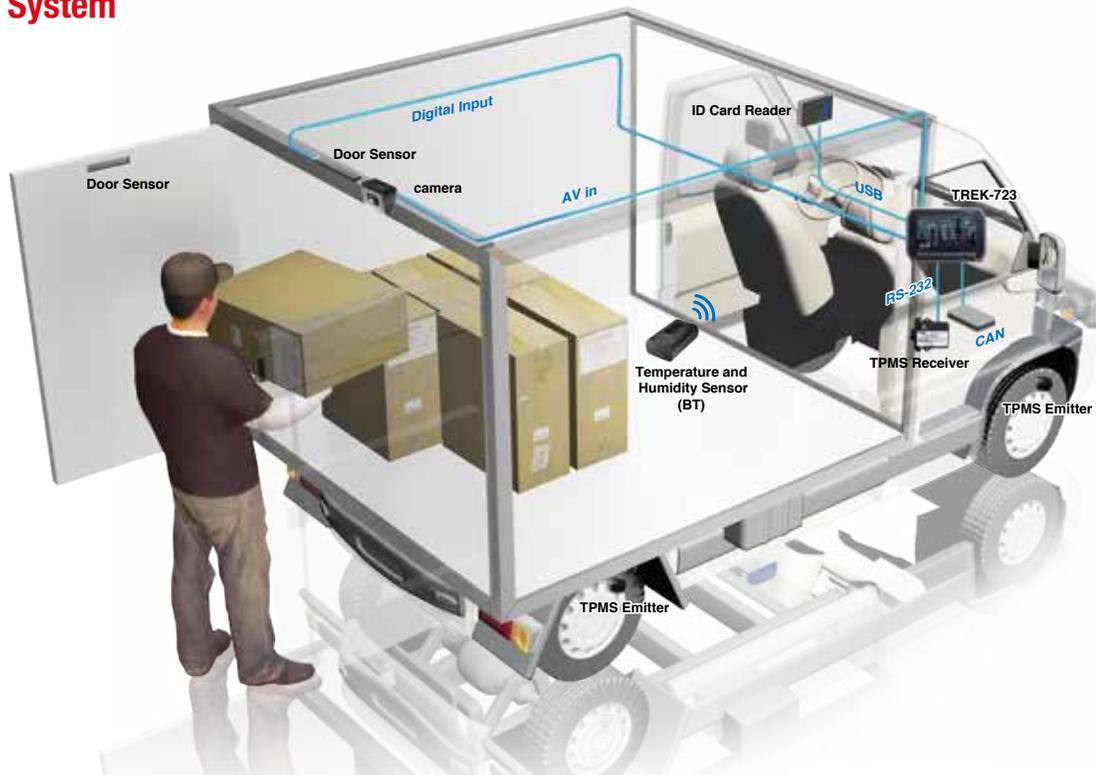


24hr ↑
Goods Traceability System

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 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





Solution

Advantech TREK-722/723 MDTs are all-in-one RISC-based platforms equipped with a 5"/7" display with strengthened resistive touchscreen. Aimed at cold chain transportation applications, TREK-722/723 can be used to monitor vehicle status, driver behavior and cold chain goods status, 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.

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 the alarm system to inform the dispatch for asset security.



TREK-723
RISC All-in-One Mobile Data Terminal

Benefits

- Improved efficiency for local fleet managers and route planners
- Real-time communication & management enhance driver productivity and efficiency
- Driver behavior management and vehicle diagnostics system enhance driving safety



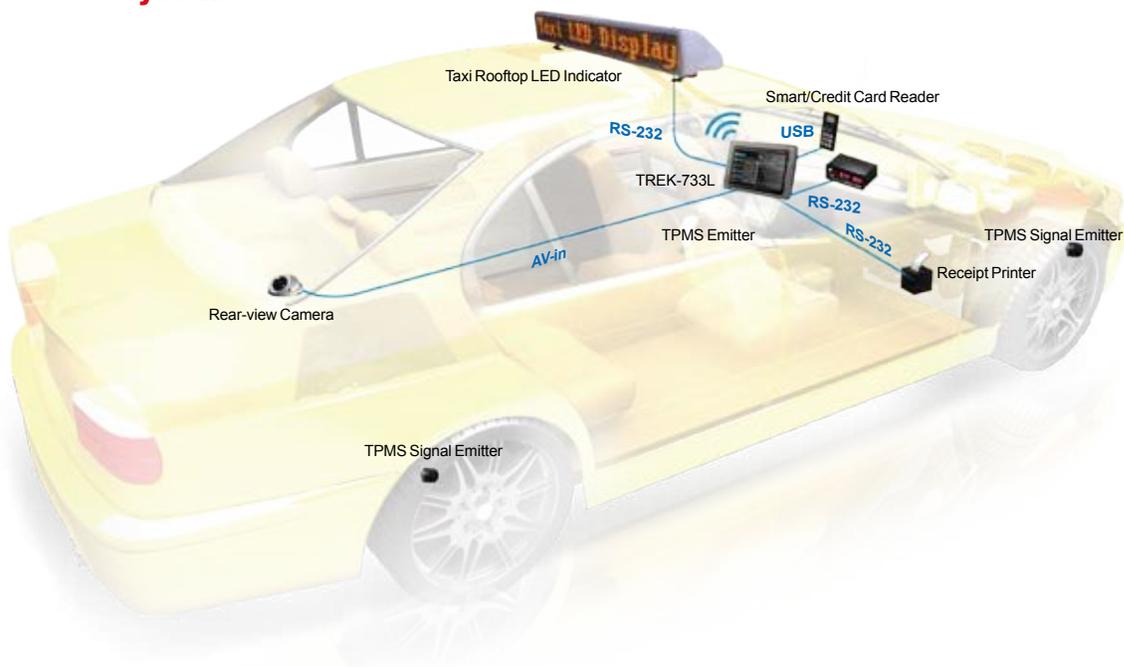
Real-Time Dispatch Optimizes Taxi Operation Management



Introduction

Managing a taxi fleet of numerous vehicles that are geographically dispersed throughout a city can be challenging. The back-end control center must consolidate dispatch, billing, and real-time location information to enable customer service staff to provide customers with accurate estimated arrival times. Quick dispatch process, driving safety, and service quality are key factors that affect the operational efficiency and viability of taxi services. To manage vehicle fleets better, specialized fleet management systems with accurate GPS technology for positioning and route optimization, as well as wireless communication capabilities for real-time communication, are now vital ingredients.

System





Solution

Advantech's TREK-733L mobile data terminal is specifically designed to provide an in-vehicle solution for taxi fleet management. In addition to the most precise GPS technology currently available, which drastically improves dispatch times and route optimization for potential fuel savings of up to 17%, TREK-733L features Wi-Fi, Bluetooth 4.0, 802.11 b/g/n, WLAN, and LTE/ HSPA+ capabilities that enable high-speed data transfers for real-time communication, cloud-based booking and dispatch, and driver behavior management. A built-in backup battery pack (3.6 V, 2400 mAh) protects against unexpected system shutdowns and data losses resulting from power fluctuations or low vehicle voltage, and allows the control center to remotely access the terminal to retrieve vehicle data in case of emergency or to fulfill legal obligation.

To enhance driving safety, the terminal's two video input ports can be connected to a panic alarm button and analog cameras for real-time vehicle rear view or in-vehicle driver and passenger monitoring. Finally, TREK-733L can also serve as an infotainment display and Wi-Fi hotspot and be integrated with diverse peripheral systems, such as a smart/credit card reader or tire pressure monitoring system, for advanced applications that automate and streamline taxi operations to improve the overall service and productivity.



TREK-733L

7" All-In-One In cab solution for Local Fleet Management

Benefits

- Enable real-time driver behavior management
- Enhance operational efficiency
 - Average dispatch time reduced from 46s to 20s
 - Work hours reduced by up to 20
 - Route optimization with GPS, reduces fuel costs by up to 17%
 - Revenue growth
 - Passenger numbers increased by up to 28%
- Increase digital advertisement revenue
- Embedded Battery for UPS



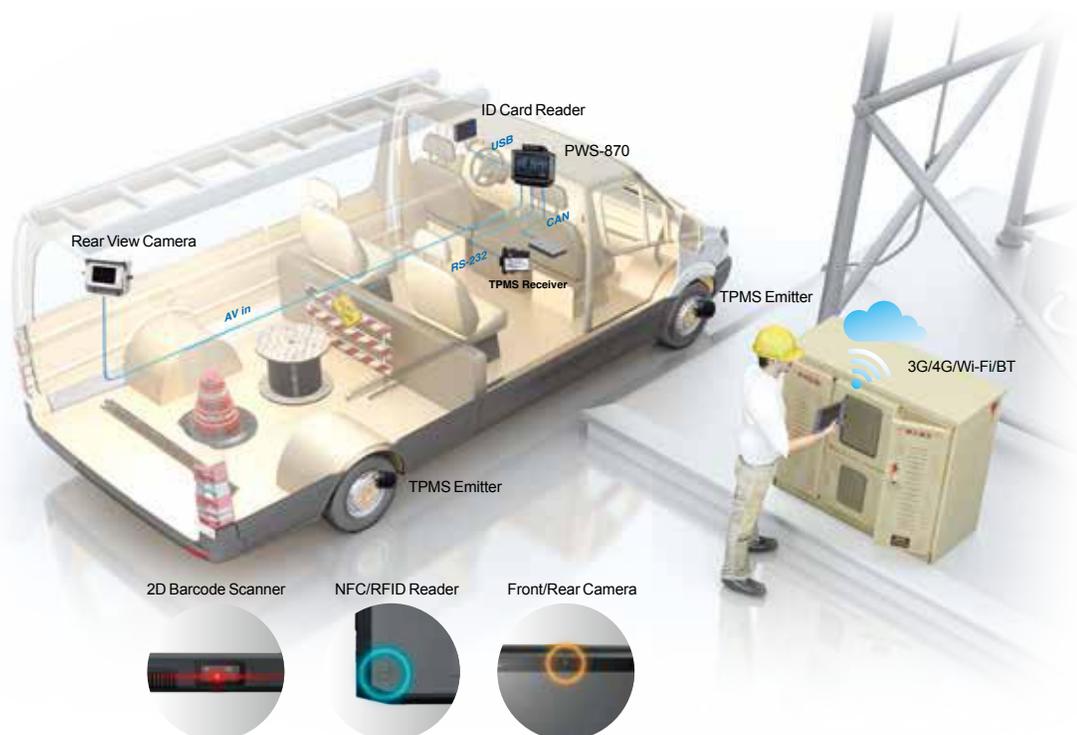
Fully Rugged Tablet Solution Ideal for Field Service Applications



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





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 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.

Application-oriented peripherals include desk and vehicle docking stations, universal cover and extension module with MSR and UHF RFID. A hot-swappable second battery ensures up to 11 hours continuous operation. Built-in Wi-Fi, Bluetooth, WWAN, and GNSS modules support real-time communication and vehicle positioning (within 2.5 meters), facilitating critical reporting and dispatching functions and enabling real-time communication between field staff and the back-end control center.



PWS-870
10" Fully Rugged Tablet with
4th Generation Intel® Core™ i Processor

Benefits

- Intel® Core™ i processor with integrated graphics and turbo-boost enhance computing power for complicated field service work
- Sunlight-readable, multi-touch 10.1" display and hot-swappable 2nd battery supports 11 hours of operation in outdoor environments
- Advanced communication technologies and flexible peripherals 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, withstands drops of up to 4 ft. System durability ensured, even with rough handling



Product Information

Smart Display



In-Vehicle Computing Boxes



Vertrieb durch **AMC**
AMC – Analytik & Messtechnik GmbH Chemnitz

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 09120 Chemnitz Fax: +49/371/38388-99
 E-Mail: info@amc-systeme.de Web: www.amc-systeme.de

Model Name	TREK-303DH	TREK-306DH	
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)	
Display	Size/Type	7" (16:10) TFT LCD	10.4" (4:3) TFT LCD
	Max. Resolution	800 x 480	1024 x 768
	Brightness (cd/m²)	500 nits (With TS: 400 nits)	400 nits (With TS: 325 nits)
	Viewing Angle (R/L/B/T)	70° / 70° / 60° / 60°	89° / 89° / 89° / 89°
	Backlight Life	50,000 hrs	50,000 hrs
	Type	4-wire resistive type	5-wire resistive type
CE, FCC	IK Shock-Protection Rate	N/A	IK-06
	Brightness Control	Light sensor for auto dimming - via MRM SDK	Light sensor for auto dimming - via MRM SDK
I/O Ports	Function Key	5x programmable with green light	5x programmable with green light
	Power Button	Yes	Yes
	Reset Button	Yes	Yes
	USB Port	1x USB 2.0 Type A (Rear side)	1x USB 2.0 Type A (Rear side)
Environment	Smart Display Port	36-pin locking type connector paired with TREK box	36-pin locking type connector paired with TREK box
	Audio	2x 2-watt speaker	2x 2-watt speaker
Physical	Power	Powered by TREK-5xx/6xx	Powered by TREK-5xx/6xx
	IP Rating	IP54 (with IO cover)	IP55 (with IO cover)
	Operating Temperature	-30° C ~ 70° C	-30° C ~ 70° C
Certifications	Shock / Vibration	MIL-STD-810G, SAE J1455 4.9.4.2, EN60721-3-5 (5M3)	MIL-STD-810G, SAE J1455 4.9.4.2, EN60721-3-5 (5M3)
	Dimensions (W x H x D)	212.75 x 141.85 x 35 mm	303 x 226 x 35 mm
	Weight	0.8 kg	1.7 kg
Mounting	Weight	0.8 kg	1.7 kg
	Mounting	RAM mount	VESA mount, RAM mount

Model Name	TREK-520	TREK-570	TREK-572	TREK-674	TREK-688		
System	Processor	TI AM3703 Cortex-A8 800MHz (AM3715 1GHz is optional)	Intel Atom E3826 (2C, 1.46GHz)	Intel Atom E3815 (1C, 1.46 GHz)	Intel Atom E3827 (2C, 1.75GHz)	Intel® Core™ i7-4650U Dual Core, 3.4GHz (3-4010U & i5-4300U by project support)	
	Memory	On board mDDR 512MB (1GB is optional)	DDR3L-1066/1333 Non-ECC, Default: 2GB (8GB Max), 1x SO-DIMM	DDR3L-1066/1333 Non-ECC, Default: 2GB (8GB Max), 1x SO-DIMM	DDR3L-1066/1333 Non-ECC, Default: 2GB (8GB Max), 1x SO-DIMM	DDR3L-1066/1333 Non-ECC, Default: 4GB (8GB Max), 1x SO-DIMM	
	Storage	1 x SD card slot for OS (internal) 1 x SD card slot (externally accessible)	1 x mSATA, Default: 16GB; 1 x micro-SD slot (internal, optional, up to 64GB)	1x mSATA, Default: 16GB;	1 x CFast (externally accessible), Default: 16GB; 1 x 2.5" SSD (externally accessible), Default: 64GB	1 x CFast (externally accessible), Default: 16GB; 2 x 2.5" HDD/SSD (externally accessible); 1 x mSATA (internal, Optional)	
	Watchdog	Yes	Yes	Yes	Yes	Yes	
	RTC	Yes	Yes	Yes	Yes	Yes	
	OS	Windows	WinCE 6.0	WEST, WEBS (32-bit)	WEST, WEBS (32-bit)	WEST/ WEBS (32-bit)	Windows 7 Pro 32-bit (WEST 7, WEB S is by Project-based)
		Linux	Embedded Linux	Linux Fedora 18 Remix (kernel 3.8.0) Ubuntu 14.04 (Kernel: 3.19.0) (32-bit)	Linux Ubuntu 14.04 Lite (32-bit); Intel IDP 3.x (Moonland) compliant, by project-based	Fedora 18 (Kernel 3.8.0), Ubuntu 14.04 (Kernel: 3.19.0) (32-bit)	Ubuntu 14.04 (Kernel: 3.19.0) (32-bit)
	RF	GNSS	GPS GlobalSat EB-5662RE	GPS uBlox MAX-M8Q (Max-M8W is by Project-based)	GPS uBlox MAX-M7Q (Max-M8W is by Project-based)	GPS uBlox LEA-6S (Max-M8W or LEA-6R (Dead-Reckoning) is by Project-based)	GPS uBlox MAX-M8W
		WLAN	WiFi 802.11 b/g/n, BT 4.0 LE class 1.5 combo module	IEEE 802.11a/b/g/n + Bluetooth 4.0 combo module via Full Mini-PCle Slot	IEEE 802.11a/b/g/n + Bluetooth 4.0 combo module via Full Mini-PCle Slot	IEEE 802.11a/b/g/n + Bluetooth 4.0 combo module via Full Mini-PCle Slot	IEEE 802.11a/b/g/n + Bluetooth 4.0 combo module via Full Mini-PCle Slot
		BT	Yes	Yes	Yes	Yes	Yes
WWAN		HSPA+/CDMA	LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT	LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT	HSPA+, GSM/GPRS/EDGE (LTE by project-based)	LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT	
Voice call		Yes (Optional)	Yes (optional)	N/A	Yes (optional)	Yes (optional)	
Wake up by WWAN		Yes	Yes (optional)	N/A	Yes (optional)	Yes (optional)	
SIM		1 x SIM	Dual Micro-SIM (internal slots)	Single Mini-SIM (internal slot),	Dual Mini-SIM (externally accessible),	Dual Mini-SIM (externally accessible),	
Antenna		SMA (x4): 1 x Cellular, 2 x WLAN/BT, 1 x GPS	SMA (x5): 2 x Cellular, 1 x GPS, 2 x WLAN+BT	SMA (x3): 1 x Cellular, 1 x GPS, 1 x WLAN+BT	SMA (x5): 2 x Cellular, 1 x GPS, 2 x WLAN+BT	SMA (x4): 2 x Cellular, 1 x GPS, 1 x WLAN+BT	
Video Output		Smart Display Port	Smart Display Port (18 bits LVDS)	18 bits LVDS interface with 36-pin locking type connector paired with TREK-3xx in-vehicle display	18 bits LVDS interface with 36-pin locking type connector paired with TREK-3xx in-vehicle display	18 bits LVDS interface with 36-pin locking type connector paired with TREK-3xx in-vehicle display	18 bits LVDS interface with 36-pin locking type connector paired with TREK-3xx in-vehicle display
		Analog	N/A	1 x VGA	N/A	1 x VGA	1 x VGA
	HDMI	N/A	1 x HDMI	N/A	N/A	1 x HDMI	
	Video Input	N/A	N/A	N/A	8-ch Video inputs (Up to D1/30fps per channel, 240fps in total)	16-ch Video inputs (Up to D1/30fps per channel, 480fps in total)	
	Audio Input	N/A	N/A	N/A	4-ch mono Audio Inputs	8-ch mono Audio Inputs	
Video Surveillance	Vehicle I/O Port	1 x J1708 (Support J1587 support) 2 x CAN Bus (Support Raw CAN, J1939, OBD-II/SO 15765; FW configurable)	1 x J1708 (with J1587 support) 2 x CAN Bus (Support Raw CAN, J1939, OBD-II/SO 15765; FW configurable)	1x J1708 (with J1587 support) 2 x CAN Bus (Support Raw CAN, J1939, OBD-II/SO 15765; FW configurable)	1 x J1708 (with J1587 support) 2 x CAN Bus (Support Raw CAN, J1939, OBD-II/SO 15765; FW configurable)	1 x J1708 (with J1587 support) 2 x CAN Bus (Support Raw CAN, J1939, OBD-II/SO 15765; FW configurable) 1 x 4-wire RS-232/422/485 (Default RS-485, by software setting)	
	Generic I/O Port	2x Isolated DI (Dry Contact) 2x Isolated DO (Open collector output, relay driver, up to 48V/150mA)	4x Isolated DI (Dry Contact) 4x Isolated DO (Open collector output, driving by relay)	N/A	4x Isolated DI (Dry Contact) 4x Isolated DO (Open collector output, driving by relay)	4x Isolated DI (Dry Contact) 4x Isolated DO (Open collector output, driving by relay)	
	Standard I/O Port	1 x Full RS-232	2 x 4-wire RS-232	N/A	1 x 4-wire RS-232 1 x RS485 with auto flow control	2 x 4-wire RS-232	
	Indicators	N/A	1 x CVBS in	N/A	N/A	N/A	
	Sensors	1 x Mic-In 1 x Line-Out	1 x Mic-In 1 x Line-Out	1 x Mic-In 1x Line-Out	1 x Mic-In 1 x Line-Out	1 x Mic-In 1 x Line-Out	
Car Power Design	Power Button	1 x Full RS-232 (Pin 9 = Ring, 12V@ 0.5A, is BOM optional by jumper)	1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V/5V @ 0.5A is BOM optional by jumper setting)	N/A	1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V/5V @ 0.5A, is BOM optional by jumper setting)	1 x High Speed Full RS-232, DB-9 (Pin 9 = Ring, 12V @ 0.5A is BOM optional by jumper setting)	
	Reset Button	N/A	N/A	N/A	N/A	N/A	
	Voltag input	N/A	N/A	N/A	N/A	N/A	
	Power Regulation	N/A	N/A	N/A	N/A	N/A	
	Power Regulation	N/A	N/A	N/A	N/A	N/A	
Environment	IP Rating	IP30 (Optional: IP54 protection box)	IP30; (Optional: IP54 with I/O cover, by project-based)	IP30	IP30; (IP31 by Project-based)	IP30	
	Operating Temperature	-30° C ~ 70° C	-30° C ~ 70° C	-30° C ~ 70° C	-30° C ~ 70° C	-30° C ~ 55° C	
	Shock / Vibration	MIL-STD-810G, EN60721-3-5 (5M3)	MIL-STD-810G, EN60721-3-5 (5M3)	MIL-STD-810G	MIL-STD-810G, EN60721-3-5 (5M3)	MIL-STD-810G, EN60721-3-5 (5M3)	
Certifications	EMC/Safety	CE, FCC, UL/cUL, CCC	CE, FCC, CCC, UL/cUL	CE, FCC, UL/cUL, CB	CE, FCC, UL/cUL, CB	CE, FCC, UL/cUL, CB	
	RF/Carrier	N/A	R&TTE, FCC ID, PTCRB	R&TTE, FCC ID, PTCRB	R&TTE, FCC ID;	R&TTE, FCC ID;	
	Dimensions (W x H x D)	205 x 47 x 135 mm 240 x 54 x 200 mm with IP protection box 900 g	230 x 72 x 118 mm; 230 x 72 x 198 mm (with I/O cover) 1.45 kg;	188.9 x 63.5 x 105.9 mm	294 x 73 x 184 mm	346 x 92.5 x 196.2 mm	
Weight	1.2 kg with IP protection box	1.95 kg (with I/O Cover)	1.15 kg	3.5 kg	5.9 kg		

All-in-one In-Vehicle Computers



Model Name		TREK-723	TREK-733L	TREK-773	
System	Processor	TI AM3703 Cortex-A8 800MHz (AM3715 1GHz is optional)	Freescale i.MX6D Dual Lite CPU 1.0 GHz processor	Intel® Atom E3826 (Dual Core, 1.46 GHz)	
	Memory	On board 256MB mDDR (512MB is optional)	1GB DDR3	1 x SO-DIMM socket Up to 4GB DDR3L-1066.(Default configuration: 2GB)	
	Storage	On board 2GB eMMC 1x SD slot (externally accessible)	On board 4GB eMMC 1x Micro SD slot (externally accessible)	1 x CFast slot for OS 1 x push-push type SD slot	
	Watchdog	Yes	Yes	Yes	
OS	RTC	Yes	Yes	Yes	
	Windows	WinCE 6.0	N/A	WEBS (32-bit)	
	Linux	N/A	N/A	Linux Fedora 18 Remix (kernel 3.8.0) (32-bit)	
	Android	Android 4.0	Android 4.4.2	N/A	
RF	GNSS	GPS uBlox LEA-6S	GPS Ublox MAX-7Q	GPS uBlox M8Q	
	WLAN	TREK-722: N/A TREK-723: 802.11 b/g/n (shared interface with BT) with internal antenna	IEEE 802.111 b/g/n	802.11 a/b/g/n	
	BT	Module, Class 2.0 (shared interface with WLAN) with internal antenna	Bluetooth V4.0, V2.0	Bluetooth V4.0 LE,	
	WWAN	GPRS/CDMA/HSPA+	LTE, HSPA+, GSM/GPRS/EDGE, WCDMA	LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1 x RTT	
	Voice call	N/A	N/A	N/A	
	Wakeup by WWAN	Yes	N/A	Yes	
	SIM	Single SIM	Single SIM	Single SIM	
	Antenna	SMA (x2): 1 x Cellular, 1 x GPS	N/A	SMA (x5): 2 x Cellular, 1x GPS, 2 x WLAN	
	Display	Size/Type	TREK-722: 5" (16:9) TFT LCD TREK-723: 7" (16:9) TFT LCD	7" (16:9) TFT LCD	7" (16:9) TFT LCD
		Max. Resolution	800 x 480	1024 x 600	800 x 480
Brightness (cd/m ²)		400 nits With TS 325 nits	500 nits	500 nits	
Viewing Angle (R/L/B/T)		70° / 70° / 70° / 50°	75° / 75° / 70° / 75°	85° / 85° / 85° / 85°	
Backlight Life		20,000 hrs	15,000 Hrs	30,000 hrs	
Touchscreen	4-wire resistive type	Capacitive (Multiple Touch)	4-wire resistive type		
Brightness Control	Light sensor for auto dimming	Light sensor for auto dimming	Light sensor for auto dimming 2 x hotkeys for brightness control		
Function Key	5 x programmable with green light 1 x J1708	N/A	5 x programmable with green light 1 x J1708		
I/O	Vehicle I/O Port	1 x CAN 2.0 (with J1939 support)	N/A	1 x CAN 2.0 (Support Raw CAN, J1939, OBD-II/ISO 15765)	
	Generic I/O Port	Isolated 2 x DI / 2 x DO 2 x 4-wire RS-232 1 x CVBS in 1 x Mic-in 1 x Line-Out	Isolated 6 x DI / 2 x DO 2 x 2-wire RS-232 1 x CVBS in N/A	Isolated 4 x DI / 4 x DO 1 x Full RS232 1 x RS485 with auto flow control 1 x CVBS in 1x Mic-in	
	Standard I/O Port	2 x USB2.0 Host 1 x USB2.0 Client	1 x USB2.0	1 x USB 2.0 Host 1 x USB 3.0 Host	
	Indicators	N/A	N/A	1 x Giga LAN 1 x LED (PWR)	
	Power Button	N/A	N/A	Yes	
Car Power Design	Reset Button	Yes	Yes	Yes	
	Voltage Input	6-36 V _{DC}	9-32 V _{DC}	6-32 V _{DC} (18-58VDC is optional)	
	Power Regulation	E-mark, ISO 7637-2, SAE J1455, SAE J1113	E-mark	E-mark, ISO 7637-2, SAE J1455, SAE J1113	
Environment	IP Rating	IP54 (without I/O)	N/A	IP54 with IO cover	
	Operating Temperature	TREK-722: -20° C ~ 60° C TREK-723: -30° C ~ 70° C	-10° C ~ 70° C	-30° C ~ 60° C	
	Shock / Vibration	MIL-STD-810G, EN60721-3-5 (5M3)	MIL-STD-810G	MIL-STD-810G, EN60721-3-5 (5M3)	
Certifications	EMC/Safety	CE, FCC, UL/cUL, CCC	CE, FCC, UL/cUL, CCC	CE, FCC, UL/cUL, CCC, CB	
	RF/Carrier	PTCRB	N/A	N/A	
Physical	Dimensions (W x H x D)	TREK-722: 165 x 115 x 43 mm TREK-723: 213 x 145 x 45 mm	200 x 140 x 33 mm	255.7 x 161 x 56 mm	
	Weight	TREK-722: 650g TREK-723: 850g	820 g (incl. Battery)	2.2KG	

Industrial Tablets



Model Name		PWS-470	MIT-W101	PWS-870
Processor	CPU	Cortex-A7, quad-core processor, 1.2 GHz	Intel® Celeron® Processor N2930/ 1.83GHz	Intel® Core™ i3 (4010U/1.7GHz), i5 (4300U/1.9GHz), i7 (4650U/1.7GHz)
	Companion Chipset	-	N/A	N/A
Memory		1 GB	DDR3L 1600MHz SODIMM (Default 4GB / Up to 8GB)	SODIMM DDR3L 4GB/8GB
Storage		8 GB	Supports mSATA SSD (Default 64GB / Up to 128GB)	Supports mSATA SSD 32 GB ~ 256 GB
Display	Size/ Type	5" color touch screen, IPS panel	10.1" WXGA (1280 x 800) Enhanced Glass	10.1" HD (1366 x 768) Low reflection LCD
	Brightness (cd/m ²)	450 cd/m ² LED back light	300 nits LED backlight	400 nits LED backlight 950 nits LED backlight (by project)
Touch Panel		Capacitive multi touch screen	10-point capacitive touch	10-point capacitive touch
Application Buttons		Power button x 1 Scanner trigger buttons x 2 Function keys x 4	1 x Power button 2 x Programmable function keys (default: 1 x Home, 1 x Wi-Fi on/off)	1 x Power button, 2 x Programmable function keys (default: 1 x Home, 1 x Barcode)
I/O Ports		1 x MicroSD (up to 32GB) 1 x MicroUSB 2.0 client (via Charging cable)	Combo Audio x 1, USB 3.0 x 1, USB 2.0 x 1, Micro HDMI x 1, DC Jack x 1, Expansion Port x 1, Docking Port x 1	1 x SD card slot, 1 x Audio combo jack, 1 x SIM card slot, 1 x DC-in
Wireless Communication		WLAN Internal 802.11b/g/n WLAN module Bluetooth 3.0HS+4.0LE GNSS High performance GPS/BeiDou chipset WWAN WCDMA, 3.75G, support HSPA	Wi-Fi IEEE 802.11a/b/g/n Bluetooth v4.0 CLASS II	WiFi802.11 a/g/b/n/ac/WLAN, BT 4.0 class 2 (Combo module) (Optional) GPS (Optional) LTE/HSPA+/CDMA (Optional)
Data Collection Modules		1D/2D barcode scanner and 8M pixel auto-focus camera NFC, 13.56MHz RFID Reader (optional)	2.0M Fixed Focus Camera At Front, 5.0M Auto Focus Camera With LED Flash At Rear, 2D Barcode Scanner (Optional), NFC Read/Write Device (Optional)	2.0M pixel CMOS front camera; 5.0M pixel CMOS rear camera; 1D/2D barcode; NFC RFID
Security		N/A	N/A	Fingerprint scanner; TPM1.2; Kensington cable lock slot
Dimensions & Weight		16 x 8.2 x 1.8 cm, 295 g (with battery)	292 x 196 x 20 mm/ 11.5 x 7.7 x 0.79 in 1.1 kg/ 2.4 lb (Base Configuration)	305 x 207 x 25~27 mm, 1.4 kg
Power	Battery	Li-Polymer battery, 3.7V@3200 mAh	Main Battery: 31.7 Whrs (11.1V 2860mAh) Extended Battery: 49 Whrs (11.1V 4540mAh) (Optional)	Main Battery: 4S1P 14.4V 2730mAh Hot-Swap external battery; 4S2P 14.8V 4080mAh
	DC-input	5V± 5%	19V ± 5%	19V ± 5%
Environment	Operating Temperature	-20 ~ +60° C	-10°C ~ +50°C, 14°F to 122°F	-20° C ~ 50° C
	Storage Temperature	-30 ~ +70° C	-30°C ~ +70°C, -22°F to 158°F	-20° C ~ 60° C
	Operating Humidity	5% ~ 95%, non-condensing	5% ~ 95% @ 40°C/104°F non-condensing,	-
	IP Rating	IP65	IP65	IP65
OS	Drop	-	4ft drop	-
	Vibration	-	Operation: (5-500Hz) 1G, Non-operating: (5-500Hz) 0.04PSD	-
Certifications		BSMI , CCC	CE, FCC, UL, CB	CE, FCC, CCC, UL, CB, PTCRB
Accessories		Li-Polymer battery Battery cover Power Adapter (5.35V, 2A) MicroUSB data power cable Screw holes rubber mat Battery cover screws	AC adaptor (19V, 65W), Capacitive pen, Desk docking station, Multi-function cover, Extended battery, Extension module (MSR+Smart Card Reader), Shoulder strap, X-type Hand strap, Rugged bumper	AC adaptor (19V, 65W), Capacitive pen, Vehicle docking station, Desk docking station, Universal cover, External battery, Multiple battery charger, Extension module, Wall Mount

TREK-303DH

7" In-Vehicle Smart Display



Features

- Vehicle-grade 7" (16:10) WVGA TFT LCD with Stylish 4-wire Resistive 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

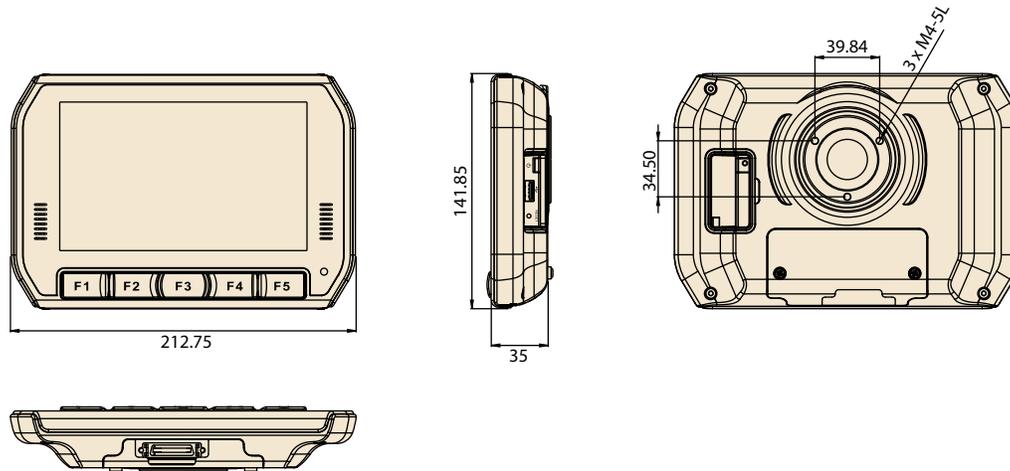
The TREK-303DH is a vehicle display system for Mobile Resource Management (MRM) applications in trucks and buses. The TREK-303DH touch panel is ideal for fleet management and dispatch applications. It also meets requirements for automotive grade working temperatures (-30° C ~ 70° C). TREK-303DH provides excellent display capabilities, featuring lightweight housing, it's compatible with RAM mounting solutions that customers can easily install. TREK-303DH supports resolutions of 800 x 480; it is compatible with TREK box solutions connecting via a single cable. TREK-303DH 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

LCD	Design Compatible Models	Paired with TREK computing box (i.e. TREK-5xx/6xx)
	Resolution (pixel)	WVGA (800 x 480)
	Video Interface	Single channel, 18 bit LVDS
	Pixel Pitch	0.2168 (H) x 0.2168 (V)
	Brightness (cd/m ²)	500 (typical)
	View Angle ((H/V))	140° /120°
	Contrast Ratio	500
	Backlight Type	LED
Backlight Life (Hrs)	50K	
Touchscreen	Size	7" format
	Type	4-wire Resistive
	Transparency	81% ± 3%
	Hardness	3H
	Durability	Knock test > 200,000 times (Stylus= R0.8,<=250g)
Front Panel	IK Shock-Protection Rate	N/A.
	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.)
Mechanical	Mounting	RAM mount
	Material	PC
	Weight	0.8 kg
	Dimensions (W x H x D)	212.75 mm x 141.85 mm x 35 mm
Environment	Operating Temperature	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 80° C
	Vibration	MIL-STD-810G, SAE J1455 4.9.4.2
	Certifications	CE, FCC, CCC
	IP Rating	IP 54 (with I/O Cover)

Dimensions

Unit: mm

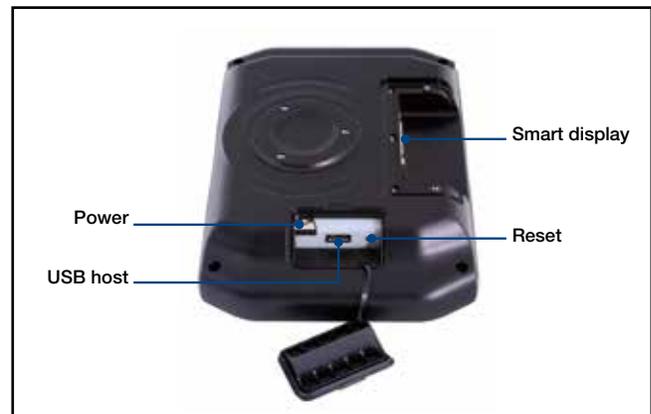


I/O Connectors



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

Optional Items

Part Number	Description
RAM-Mount-07E	75mm VESA base, RAM-202U, and socket ARM
RAM-Mount-09E	Clamp base, RAM-202U, and socket ARM
TREK-MNT-301E	AMPS mount, TRIAXIS arm, AMPS base (ONYX)
TREK-MNT-302E	AMPS mount, TRIAXIS arm, VASA base (ONYX)
1700020007	2-meter smart display cable (Paired with TREK-5xx/6xx)
1700020008	5-meter smart display cable (Paired with TREK-5xx/6xx)

TREK-306DH

10" In-Vehicle Smart Display



Features

- 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)

Introduction

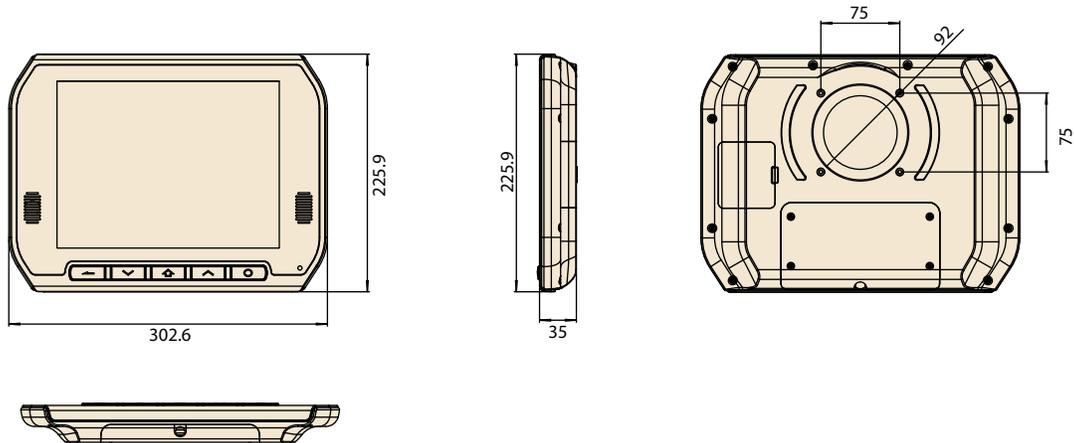
The TREK-306DH is a vehicle display system for Mobile Resource Management (MRM) applications in trucks and buses. The TREK-306DH touch panel is ideal for fleet management and dispatch applications. It also meets requirements for automotive grade working temperatures (-30° C ~ 70° C). TREK-306DH provides excellent display capabilities, featuring lightweight housing, it's compatible with RAM mounting solutions that customers can easily install. TREK-306DH supports resolutions of 1024 x 768; it is compatible with TREK box solutions connecting via a single cable. TREK-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

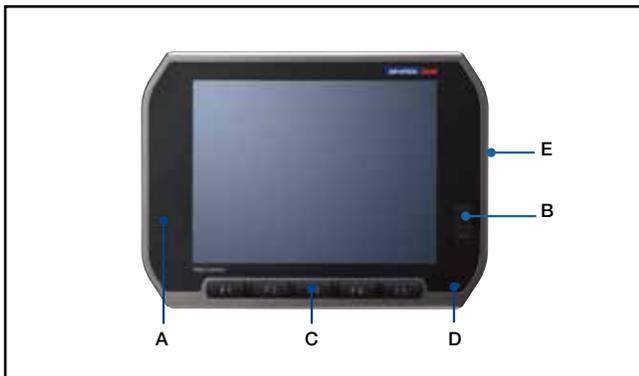
LCD	Design Compatible Models	Paired with TREK computing box (i.e. TREK-5xx/6xx, TREK-520 by project-based)
	Resolution (pixel)	XGA (1024 x 768)
	Video Interface	Single channel, 18 bit LVDS
	Pixel Pitch	0.2055 (H) x 0.2055 (V)
	Brightness (cd/m ²)	400 (typical)
	View Angle ((H/V))	178°/178°
	Contrast Ratio	1400
	Backlight Type	LED
	Backlight Life (Hrs)	50K
Touchscreen	Size	10.4" (4:3) format
	Type	5-wire Resistive
	Transparency	80% ± 3%
	Hardness	3H
	Durability	Knock test > 35,000,000 times (Stylus= R0.8, <=50g)
	IK Shock-Protection Rate	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	8W (Nominal), 14W (Max.)
Mechanical	Mounting	VESA (75 x 75 mm), RAM Mount
	Material	PC
	Weight	1.7 kg
	Dimensions (W x H x D)	303 mm x 226 mm x 35 mm
Environment	Operating Temperature	-30° C ~ 70° C
	Storage Temperature	-40° C ~ 80° C
	Vibration	MIL-STD-810G, SAE J1455 4.9.4.2, EN60721-3-5 (5M3)
	Certifications	CE, FCC
	IP Rating	IP55 (with I/O Cover)

Dimensions

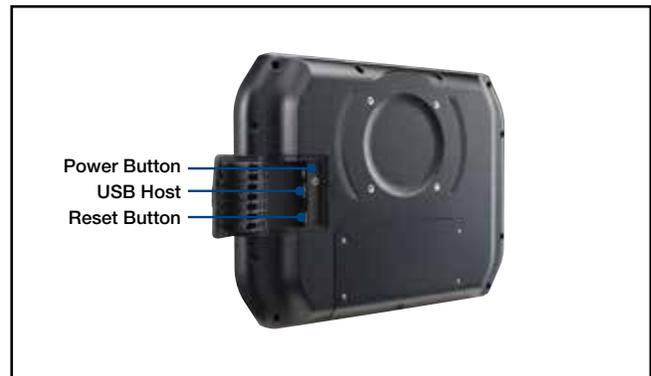
Unit: mm



I/O Connectors



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



Ordering Information

Part Number	Description
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)

TREK-520

RISC Compact In-vehicle Computing Box for Fleet Management



Features

- 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 ^(*)
- 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 ^(*).

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 OpenGL ES 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 ^(*)	12V/1A power output for TREK-303 1 x 18-bits LVDS (Resolution: 800 x 480) 1 x Line-Out ^(*) (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
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

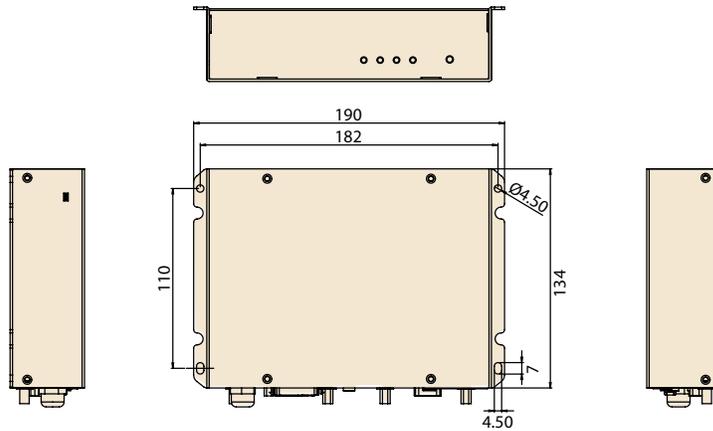
*1: Support single audio stream only. (i.e. The Line-Out interface in "Smart Display Port" and "Audio Jack" share the same audio path).

*2: Default is ok for TREK-303; TREK-306 (1024x768) by project-based.

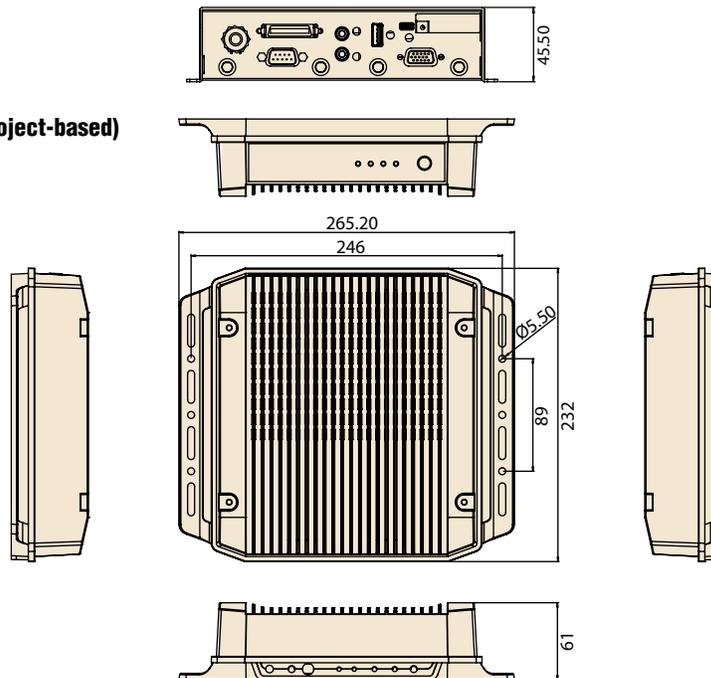
Dimensions

Unit: mm

TREK-520



IP protection box (by project-based)



Specifications Cont.

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	

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

TREK-570



Features

- 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 is a compact and economical vehicle-grade, Intel® Atom™ E3826 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.

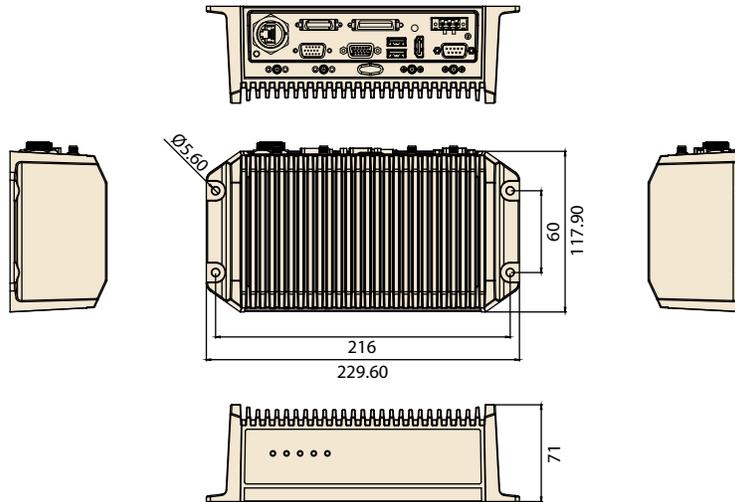
TREK-570 combined with variety of I/O connectors can be connected to devices like TPMS (Tire Pressure Monitoring Systems), Rear view camera (for parking monitoring) and CAN Bus devices. It has dual CAN Bus ports and supports several kinds of vehicle protocols (e.g. J1939, OBD-II/ISO 15765) for vehicle diagnostics and driver behavior management. Built-in wireless communications (WWAN, WLAN, BT) enable TREK-570 to send important driver/vehicle/location/cargo information back to the control center. Furthermore, TREK-570 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

Core	Processor	Intel Atom E3826 (Dual Core, 1.46 GHz)	
	Memory	1 x SO-DIMM socket Up to 8GB DDR3L-1066 Non-ECC memory module; (Default configuration: 2GB)	
	Graphic	Integrated 2D/3D Graphic Engine	
	O.S	WES7, WE8S (32-bit) Ubuntu 14.04 (Kernel: 3.19.0) (32-bit)	
Storage	mSATA	1 x mSATA slot, support system boot up Default configuration: 16GB, UMLC, SQFLASH mSATA	
	SD Card	1x micro-SD slot (internal, optional, support SD/SDHC/SDXC , up to 512GB)	
Display	Smart Display Port ^(*)	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 ^(**) (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)	
	HDMI ^(***)	1 x HDMI Port (Resolution up to 2560 x 1600)	
	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	
I/O	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 ^(**) 1 x Mic-In
	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	
	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 (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)	
GNSS		MAC-M8Q/W GPS / GLONASS/BEIDOU 3 in 1 module	
Antenna		5 x SMA type antenna hole for GPS, WIFI+ BT MIMO, WWAN/LTE MIMO. ^(***)	
Power	Voltage input	Supports 12/24 V car power system. (6V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.) System power on/off/hibernate management (e.g. Programmable Ignition On/Off Time delay)	
	Intelligent Vehicle Power Management (iVPM 2.0)	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	

Dimensions

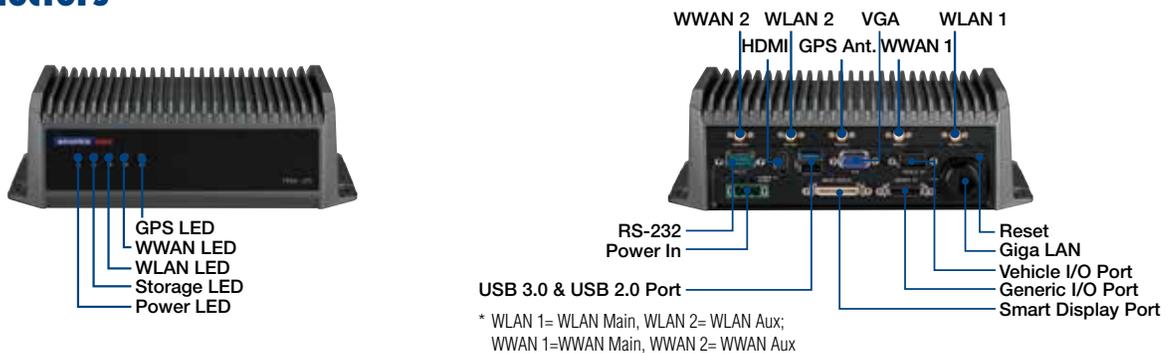
Unit: mm



Specifications Cont.

Mechanical	Dimensions (W x H x D)	230 mm x 72 mm x 118 mm (Default); 230 mm x 72 mm x 198 mm (with I/O Prevent Cover)
	Weight	1.45 kg (Default); 1.95 kg (with IP54 I/O Cover)
Environment	IP Rating	IP30 (Optional: IP54 with I/O Cover, by project-based)
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC, CCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13), SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE(R&TTE), FCC ID, PTCRB
	Operating Temperature	-30° C ~ 70° C
Storage Temperature	-40° C ~ 80° C	

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-570-00A0E	TREK-570 Intel BYT E3826 (2C, 1.46GHz) Barebone
TREK-570-HWB7A0E	TREK-570 w/LTE (EU)/GPS/WLAN/BT/WES7
TREK-570-LWB7B0E	TREK-570 w/LTE (US)/GPS/WLAN/BT/WES7

Optional Accessories

Function	P/N	Description
Smart Display	TREK-303R-HA0E	TREK-303, 7" WVGA Smart display
	TREK-306D-HA0E	TREK-306DH, 10.4" XVGA in-vehicle Smart Display
Smart Display cable 2M	1700020007	M Cable SCSI-36P(M)/SCSI-36P(M) 2M for TREK-303
Smart Display cable 5M	1700020008	M Cable SCSI-36P(M)/SCSI-36P(M) 5M TREK-303
Power cable (for in-house Test)	1700019464	A cable 1*3P-5.08/DC Jack
Adaptor (for in-house Test)	1757003995	ADAPTER AC100-240V 60W 12V 5A W/O PFC FSP060-DBA

Packing List

Part Number	Description
1700019031	2 meter length Power Cable x 1 pcs
1700023050-01	Generic I/O Cable x 1 pcs
1700023051-01	Vehicle I/O Cable x 1 pcs
1654011716-01	Waterproof RJ45 Locking kits x 1 pcs

TREK-572

Compact In-vehicle Computing Box for Fleet Management



Features

- Single-cable connection to pair with TREK In-Vehicle Smart Display (TREK-303/306)
- Intel IDP 3.x (MoonIsland) compliant
- Vehicle diagnostic interface with configurable protocols support: CAN (J1939, OBD-II/ISO 15765) and J1708 (J1587)
- Built-in GNSS, WLAN, Bluetooth and WWAN (with Single SIM card) 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-572 is a compact and economical vehicle-grade, Intel® Atom™ 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/ 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-572 combined with variety of I/O connectors can be connected to devices like TPMS (Tire Pressure Monitoring Systems), 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-572 to send important driver/vehicle/location/cargo information back to the control center.

Specifications

Core	Processor	Intel Atom E3815 (Single Core, 1.46 GHz)
	Memory	1 x SO-DIMM socket Up to 8GB DDR3L-1066 Non-ECC memory module; (Default configuration: 2GB)
	Graphic	Integrated 2D/3D Graphic Engine
	O.S	WES7, Linux Ubuntu 14.04 Lite (32-bit) Intel IDP 3.x (MoonIsland) compliant, by project-based
Storage	mSATA	1 x mSATA slot, support system boot up Default configuration: 16GB, UMLC, SQFLASH mSATA
Display	Smart Display Port ^(*)	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 ^(**) (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	N/A
	HDMI	N/A
	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 (RX/TS/CTS/RTS)
I/O	Generic I/O Port	N/A
	Standard I/O Port	1 x USB 2.0 Type A (Rear side) 1 x Giga LAN, With standard RJ45 connector 1 x Line-Out ^(**) 1 x Mic-In
	LED	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
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) 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	3 x SMA type antenna hole for GPS, WiFi+ BT MIMO, WWAN/LTE MIMO. ^(***)	

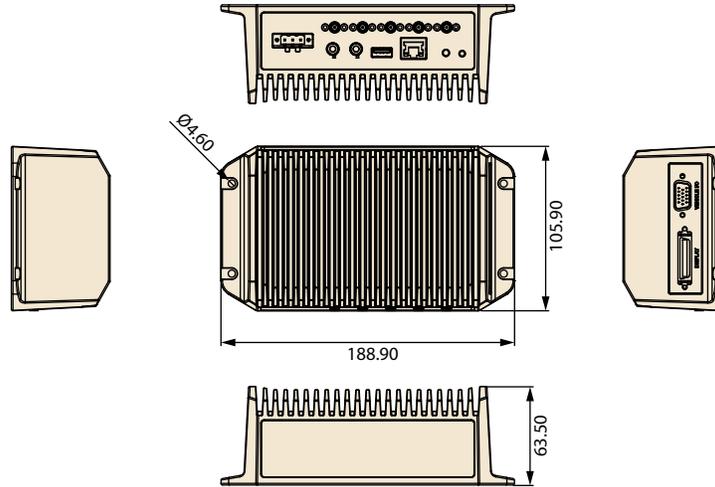
*1: To be paired with TREK-303/306 directly. (Single-cable connection)

*2: Both Line out interface are sharing the same audio stream. (i.e. single audio codec inside)

*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

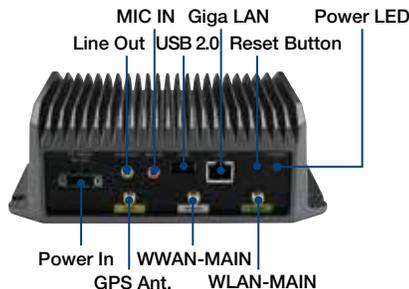
Unit: mm



Specifications Cont.

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 G-sensor System power protection (e.g. Car Battery Low Voltage Protection) System monitoring and diagnostic
Mechanical	Dimensions (W x H x D)	188.9 mm x 63.5 mm x 105.9 mm
	Weight	1.15 kg
Environment	IP Rating	IP30
	Vibration/Shock	MIL-STD-810G
	EMC	CE, FCC Class B
	Safety	UL/cUL, CB
	Vehicle Regulation	SAE J1455, ISO 7637-2, SAE J1113
	RF Regulation	CE (R&TTE), FCC ID, PTCRB
	Operating Temperature	-30° C – 70° C
Storage Temperature	-40° C – 80° C	

I/O Connectors



Ordering Information

Part Number	Description
TREK-572-LWB7B0E	TREK-572 w/LTE(US)/GPS/WLAN/BT/WES7
TREK-572-LWB7A0E	TREK-572 w/LTE(EU)/GPS/WLAN/BT/WES7

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

*Europe SKU will be coming soon.

*Note: TREK-572 only supports Smart display output, so please order TREK-30x and its cable too if you need a display unit as driver console.

Optional Accessories

Function	P/N	Description
Smart Display	TREK-303R-HA0E	TREK-303, 7" WVGA Smart display
	TREK-306D-HA0E	TREK-306DH, 10.4" XVGA in-vehicle Smart Display
Smart Display cable 2M	1700020007	M Cable SCSI-36P(M)/SCSI-36P(M) 2M for TREK-303
Smart Display cable 5M	1700020008	M Cable SCSI-36P(M)/SCSI-36P(M) 5M TREK-303
Power cable (for in-house Test)	1700019464	A Cable 1*3P-5.08/DC Jack
Adaptor (for in-house Test)	1757003995	ADAPTER AC100-240V 60W 12V 5A W/O PFC FSP060-DBA

TREK-674

Compact In-vehicle Computing Box for Surveillance & Fleet Management



Features

- 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 maintenance. 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 8GB 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) Ubuntu 14.04 (Kernel: 3.19.0) (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 ^(*)	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 ^(**) (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 ^(**) 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 Reset Button		Via TREK-30x (In-Vehicle Smart Display); System is powered on by Ignition in default 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 (Option1: 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: 4G (LTE.HSPA+, GSM/GPRS/EDGE, EV-DO Rev a1, 1xRTT): Sierra Wireless MC73xx, by project-based)	
	GNSS	Build-in u-blox LEA-6S GPS module, support AGPS (Optional: LEA-6R (Dead-Reckoning) or Max-M8W (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. ^(***)	

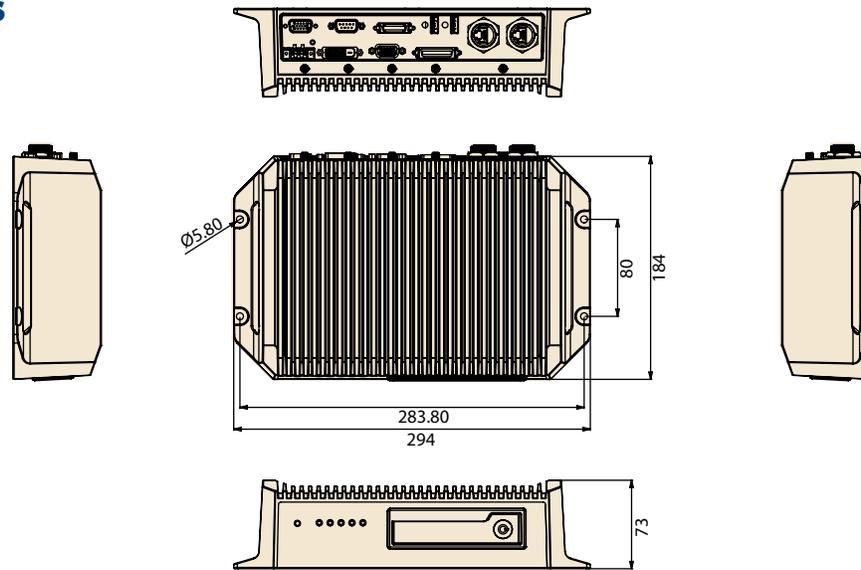
*1: To be paired with TREK-303/306 directly. (Single-cable connection)

*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

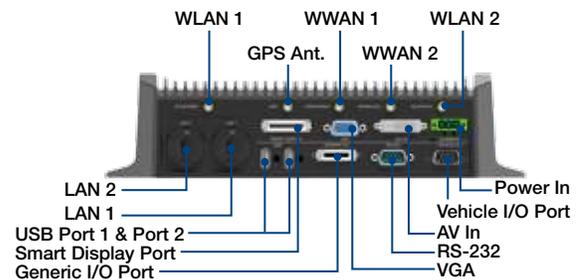
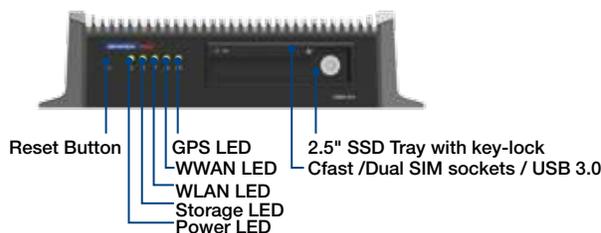
Unit: mm



Specifications Cont.

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 mm x 73 mm 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, ISO 7637-2, SAE J1113
	RF Regulation	CE (R&TTE), FCC ID
	Operating Temperature	-30° C – 70° C
Storage Temperature	-40° C – 80° C	

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-LWBA7E	TREK-674 w/LTE(EU)/GPS/WLAN/BT/SSD/WES7
TREK-674-LWBB7E	TREK-674 w/LTE(US)/GPS/WLAN/BT/SSD/WES7

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

Optional Accessories

Function	P/N	Description
Smart Display	TREK-303R-HA0E	TREK-303, 7" WVGA Smart display
	TREK-306D-HA0E	TREK-306DH, 10.4" XVGA in-vehicle Smart Display
Smart Display cable 2M	1700020007	M Cable SCSI-36P(M)/SCSI-36P(M) 2M for TREK-303
Smart Display cable 5M	1700020008	M Cable SCSI-36P(M)/SCSI-36P(M) 5M TREK-303
Power cable (for in-house Test)	1700019464	A Cable 1*3P-5.08/DC Jack
Adaptor (for in-house Test)	1757003995	ADAPTER AC100-240V 60W 12V 5A W/O PFC FSP060-DBA

TREK-688

Premium In-vehicle Computing Box for Surveillance & Fleet Management



Features

- 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

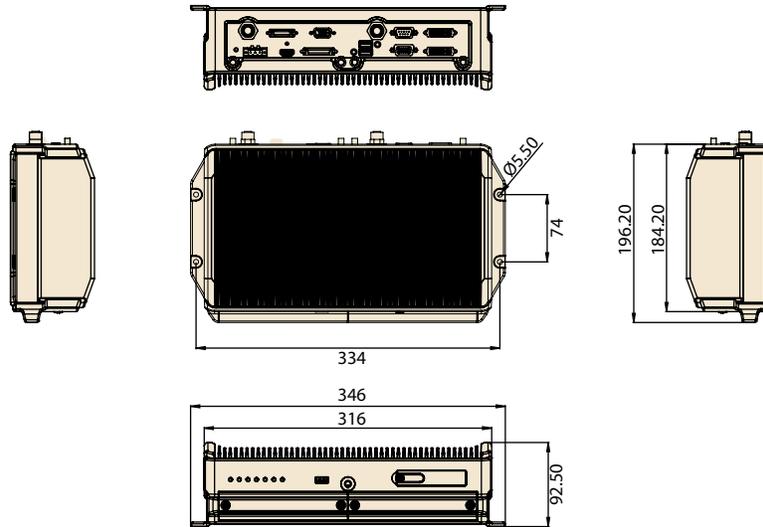
TREK-688 is an industrial-grade, 4th generation Intel Core-i series computing box designed to provide high-quality video surveillance and fleet management for eBus and BRT (Bus Rapid Transit). TREK-688 delivers tracking and positioning and also supports dead-reckoning, which allows a truck to be traced 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™ i7-4650U Dual Core, 2.9GHz (i3-4010U & i5-4300U 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	Windows 7 pro 32bit as default. WES7, WE8S 32bit by project-based Linux Ubuntu 14.04 (Kernel: 3.19.0) (32-bit) by project-based
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 (Optional) Support SATA Gen2 (3Gb/s)
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 1.4a (Resolution up to 3200 x 2000 @ 60Hz)
	VGA	1 x DB15 (Resolution up to 2560 x 1600)
	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)
I/O	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 @ 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, total 480fps. 8-ch mono Audio inputs, Audio Compression: G.711
	LED	6 x LEDs (Power (Red), CFast (Yellow), WLAN (Green), WWAN (Green), GPS (Yellow), Network connection (Yellow))
	Power Button	Via TREK-30x (In-Vehicle Smart Display); System is powered on by Ignition in default
RF	Reset Button	1 x Reset button (Front side)
	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-M8W GPS/Glonass/Beidou module, support AGPS 2 x external accessible Mini-SIM card socket (User selectable) with cover
Power	Antenna	4 x SMA type antenna hole for GPS, WiFi+ BT, WWAN/LTE MIMO. ⁽³⁾
	Voltage input	Supports 12/24 V car power system. (9V ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.) 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

Dimensions

Unit: mm



Specifications Cont.

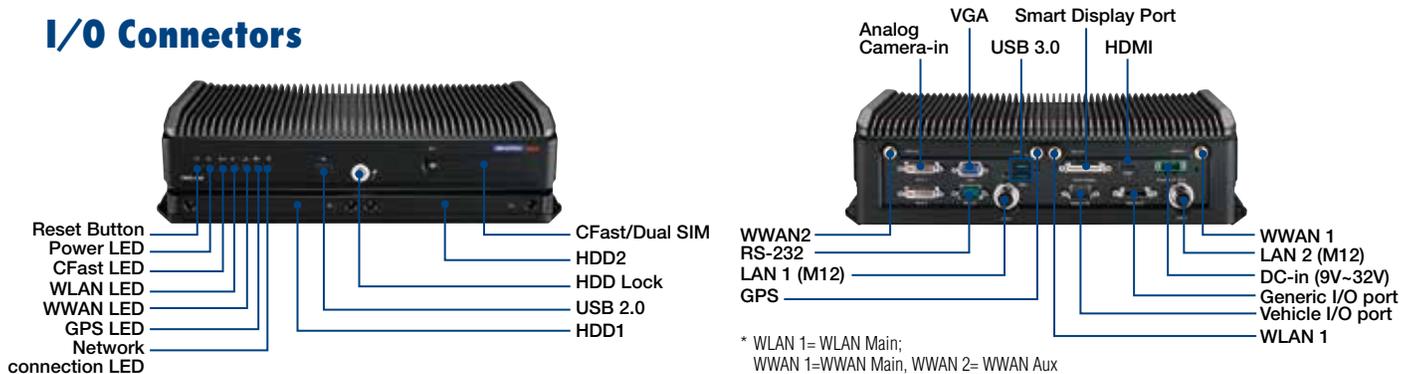
Mechanical	Dimensions (W x H x D)	346 mm x 92.5 mm x 196.2 mm
	Weight	5.9 kg (with two HDDs)
Environment	IP Rating	IP30
	Vibration/Shock	MIL-STD-810G, EN60721-3(5M3)
	EMC	CE, FCC
	Safety	UL/cUL, CB
	Vehicle Regulation	E-Mark (E13), SAE J1455, ISO 7637-2, SAE J1113, EN50155, IEC 60571
	RF Regulation	CE (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.)

I/O Connectors



Ordering Information

Part Number	Description
TREK-688-7LWB7PA0E	i7-4650U/LTE/HSPA+(EU)/GPS/WLAN/BT/Win7Pro 32bit
TREK-688-7LWB7PB0E	i7-4650U/LTE/HSPA+(US)/GPS/WLAN/BT/Win7Pro 32bit

Remark: WES7, WE8S and Linux O.S. image are by project-based.

Optional Accessories

Function	P/N	Description
Smart Display	TREK-303R-HA0E	TREK-303, 7" WVGA Smart display
	TREK-306D-HA0E	TREK-306, 10.4" XVGA Smart display
Smart Display cable 2M	1700020007	M Cable SCSI-36P(M)/SCSI-36P(M) 2M for TREK-303
Smart Display cable 5M	1700020008	M Cable SCSI-36P(M)/SCSI-36P(M) 5M TREK-303
M12 to RJ45 LAN cable (for in house Test)	1700020170-01	M Cable Waterproof 8P/RJ45-8P8C 5CM
Power cable (for in house Test)	1700019464	A Cable 1*3P-5.08/DC Jack+S/W 155mm
Adapter (for in house Test)	96PSA-A60W12V1-1	ADAPTER AC 100-240V 60W 12V

TREK-723

RISC All-in-One Mobile Data Terminal



Features

- TI Cortex-A8 AM37XX Series SOC; Supports WinCE6.0
- 7" WVGA LCD with strengthened resistive touchscreen
- Vehicle diagnostics interface with CAN (Raw CAN, J1939) protocol
- Built-in GNSS, 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)

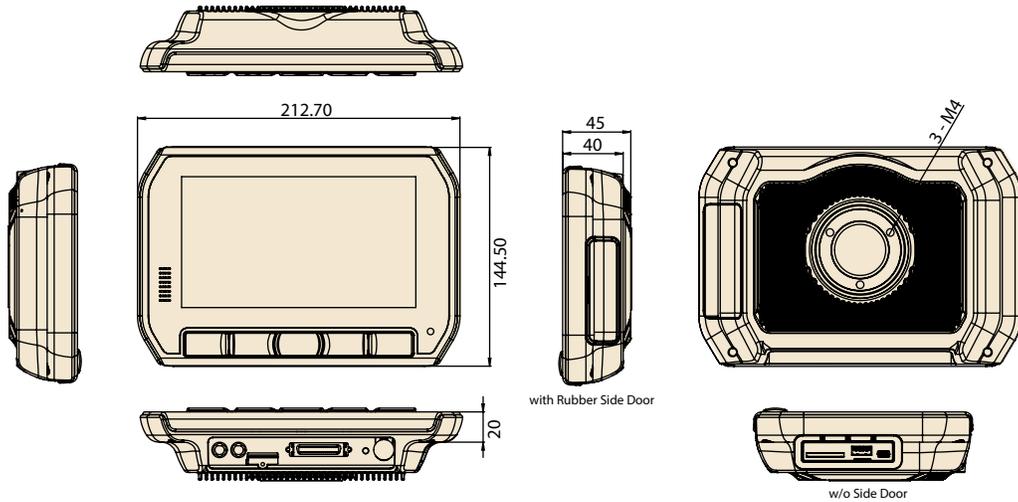
Introduction

TREK-723 is an all-in-one RISC platform with 7" display Mobile Data Terminal (MDT). The radio frequency options and programmable function keys make TREK-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-723 supports a 24/7 monitoring mechanism with periodic, digital input & WWAN wakeup.

Specifications

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 OpenGL ES 1.1/2.0, OpenVG1.0 by project-based ¹	
	O.S	WinCE6.0 & 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	7" industrial grade TFT LCD	
	Resolution	WVGA (800 x 480)	
	Brightness (cd/m ²)	400 cd/m ² (typical)	
	View Angle (H/V)	140/120	
	Contrast Ratio	500	
Touchscreen	Backlight Life (Hrs)	20K	
	Type	4-wire analog resistive	
Sensor	Transparency	80% ± 3%	
	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 (P/N: 1700020042)		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	Bluetooth	Bluetooth V2.1 + EDR	
	WWAN	HSPA+/UMTS, GSM/GPRS/EDGE: Cinterion PH8 via B2B connector	
	GNSS	Built-in u-Blox LEA-6S module, support AGPS	
	Antenna	Default all antennas are internal and support external ³	

Dimensions



Specifications Cont.

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)
Mechanical	Dimensions (W x H x D)	213 x 145 x 45 mm
	Weight	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	-30° C ~ 70° C
	Storage Temperature	-30° C ~ 80° C

Ordering Information

Part Number	Description
TREK-723R-A1E	TREK-723 barebone
TREK-723R-HBCEA1E	TREK-723 A1 w/ 800MHz, 256MB, CE6, HSPA+GPS (int. ant), BT

Optional Items

Part Number	Description
1700020042	A Cable MDR 40P/USB-A(M)+Audio Jack*2+DC Jack+BN
9666074302E	19V adapter for TREK-723 test purpose
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

TREK-733L

RISC All-in-One Light duty Mobile Data Terminal



Features

- Freescale i.MX6 1GHz SOC, 1GB Memory; Support Android 4.4.2
- Wifi/Blue tooth combo module,GPS & HSDPA/ LTE full bands support
- Build-in battery pack(3.6v, 2400mA) for UPS application
- WWAN, WLAN, GPS external antenna available
- support 12/24V vehicle power and shock/vibration tolerant (MIL STD-810G)
- AV-In for real time application
- Support speed pulse input

Introduction

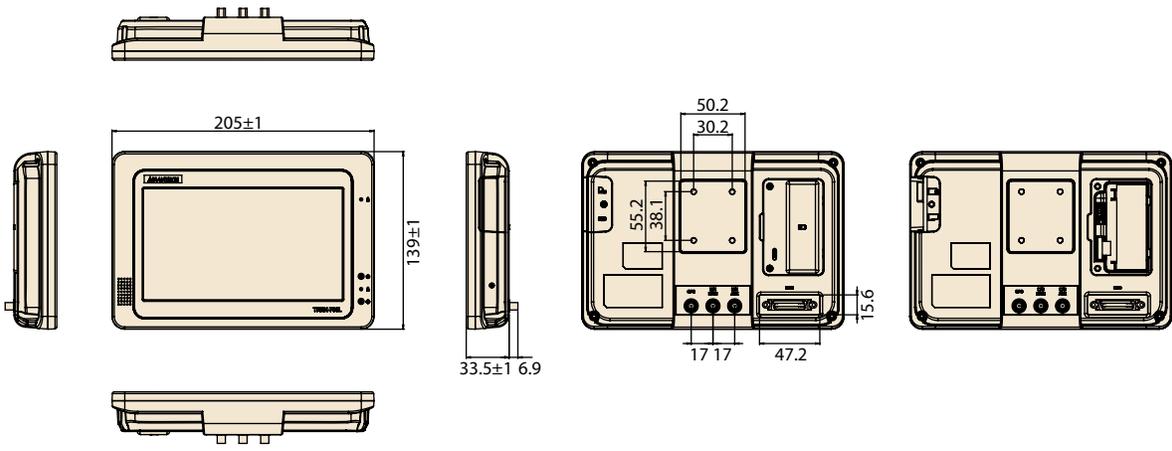
TREK-733L is designed as an open platform (RISC) in Android 4.4.2 with 7" display all-in-one light duty MDT. 1GHz process , 1GB memory and LTE provide high speed data with performance required by fleet management company. It offers a build-in battery to backup any emergency condition(UPS). MIL-STD 810G rated can be satisfied by most light duty vehicle vibration condition. Providing wifi, BT and GPS in the same time for multi extra devices needed, the LTE can turn the vehicle into a wireless hub while its built-in GPS can used for location and route optimization. With optimized antenna, there are three external antenna ports reserved for critical outdoor application.

Specifications

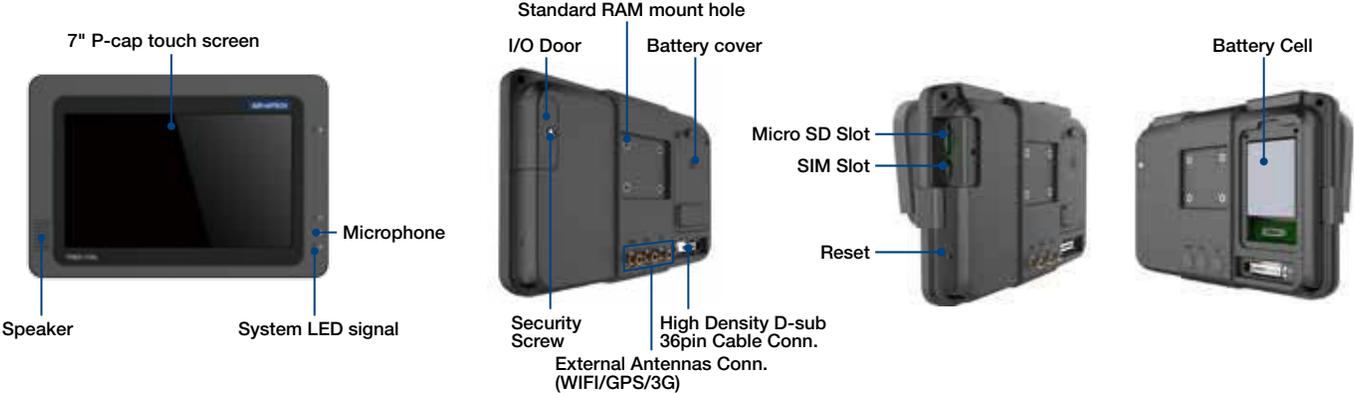
CPU	Processor	Freescale i.MX6D Dual Lite CPU 1.0 GHz processor	
	RAM	1GB DDR3	
OS		Android 4.4.2	
Storage	eMMC	4GB on board	
	SD Card	1 x push-push type MicroSD slot with cover	
Display	Size	7" TFT LCD Panel	
	Resolution	1024 x 600	
	Luminance	500 nits	
Touch screen	Type	Capacitive (Multiple Touch)	
	Construction	G/F/F	
	Thickness	1.2 mm	
I/O	Standard I/O Port	1 x SIM Card slot, 1 x uSD Card	
	Extend I/O Port	Power Input	2 x 2-wire RS-232/1 x USB 2.0/6 x DI (Dry contact) /2 x DO (Open collector output, driving by relay)
			1 x CVBS In for rear view camera
RF	Wifi/Bluetooth	IEEE 802.11 b/g/n, BT2.0, BT4.0	
	GPS	GPS_MAX-7Q	
	WWAN	4G LTE (Sirra Wireless MC73XX)	
Mechaniocl	Dimension (W x D x H)	205 x 139 x 33.5 (mm)	
	Weight	820g (incl. battery)	
LED indicators		Yes	
Power	Voltage input	Support 12/24V car power system (9-32V wide DC input, ISO-7637-2 compliant)	
	Battery pack	3.6V, 2400mAh (30mins full loading ;with low power condition can reach up to 2 hrs)	
	Battery charging time	3hrs	
	Battery Pack charging Temperature	0 to +40° C	
Sensor	Sensor	Light Sensor, G-Sensor	
MIC		x 1	
Speaker		2W x 1	
Environment	Thermal	MIL STD-810G, Method 503.5, Procedure-I-C; -20° C--70° C	
		SAE 1455 * IEC 60068-2-27 Testing procedures Ea: Shock Test	
	Vibration/Shock	MIL STD-810G	
	EMC	CE, FCC, CCC	
	Safety	UL/cUL, CB	
	Vehicle Regulation	E-Mark(E13) for 12/24V System, ISO-7637-2	
	RF Regulation	CE, FCC, CCC	
	Operation	-10 to +70° C	
Storage	-20 to +70° C		

Dimensions

Unit: mm



I/O Connectors



Ordering Information

Part Number	Description
TREK-733L-LWBADA0E	TREK-733L w/ 1GHz,1GB, Android, LTE-EU (MC7304 ext. antenna), GPS (ext. antenna), BT/WiFi (int. antenna), HDC
TREK-733L-LWBADB0E	TREK-733L w/ 1GHz,1GB, Android, LTE-US (MC7354 ext. antenna), GPS (ext. antenna), BT/WiFi (int. antenna), HDC

Optional Items

Part Number	Description
9680016761	Suction cup base w/ AMPS hole (mounting kit)

TREK-773

7" All-in-One Mobile Data Terminal



Features

- Intel® Atom™ E3827 SOC; supports WES8, Win7, Win10 & ubuntu
- 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 (-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)
- Supports "Voice Recognition" & "Intelligent Video Analytics"



Introduction

TREK-773 is a new generation all-in-one 7" mobile data terminal. With an Intel® Atom™ E3827 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

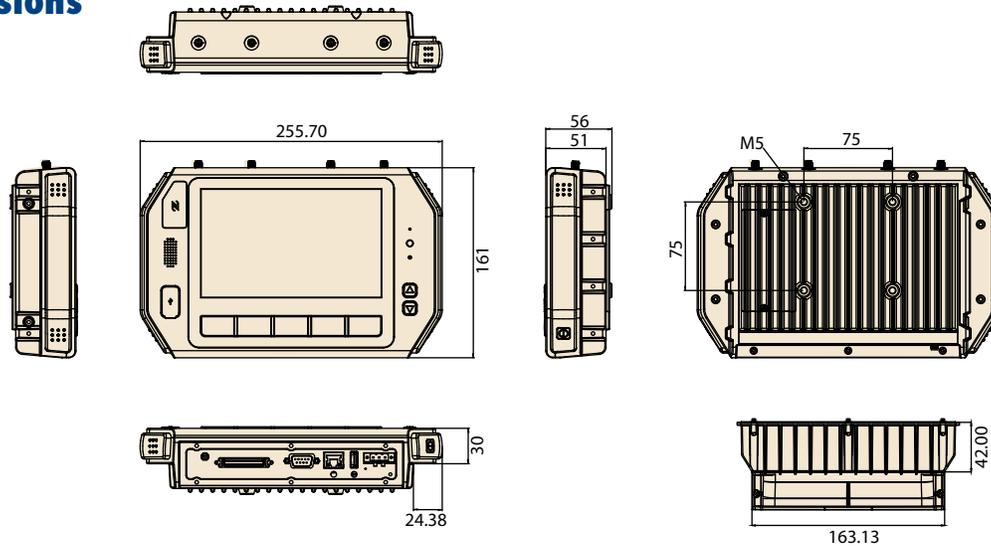
Core	Processor	Intel Atom E3827 (Dual Core, 1.75GHz)
	Memory	Support up to 4GB DDR3L-1066 memory module (Default configuration: 2GB)
	Graphic	Integrated 2D/3D Graphic Engine
	O.S	Windows Embedded 8 Standard (32-bit); Windows 7 by project-based; Ubuntu 14.04 (32-bit)
Storage	CFast	1 x external accessible CFast slot with cover, support system boot up, Default configuration is 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
Touchscreen	Type	4-wire analog resistive, with 3H and IK06 (drop ball 510g @300mm) supported; optional support for sunlight readable touchscreen
	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) (RS232 RI pin is able to config. into 12VDC output.)
		1 x USB 3.0 Host Type A (Bottom side)
Extended I/O Port ^(*) (P/N:1700019307)	1 x Giga LAN, RJ45 connector (Bottom side)	
	1 x MIC in/ line in/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	
I/O	Power Button/ LED	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)
RF	WLAN + Bluetooth	1 x J1708 (Support J1587)
	WWAN	1 x 12V _{DC} /1.5A continuous current output (shared with standard I/O Full RS-232 DB9) ^(*)
	GNSS	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)
	Antenna	4G (LTE / HSPA+ / CDMA EV-DO Rev.A): Sierra Wireless MC73xx
	NFC	Built-in u-blox MAX-M8 module, supports AGPS, Glonass, and BeiDou
Power	Voltage Input	1 x GPS, 2 x WWAN (LTE), 2 x WLAN/Bluetooth
	Intelligent Vehicle Power Management (iVPM 2.0)	ISO/IEC 14443A, 14443B, 15693; MIFARE 1K/4K, Ultralight; NFC-IP2 protocol
		Supports 12/24V car power system. (9 ~ 32V wide DC input, ISO 7637-2 & SAE J1113 compliant.) 48V option: 18-58V input by project-based
		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

*1 The total power output is 12 V_{DC}/1.5A, shared with Std. RS232 DB9.

*2 High density cable is an optional item for ordering.

Dimensions

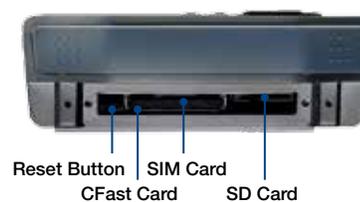
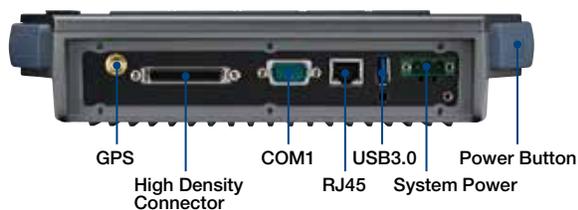
Unit: mm



Specifications Cont.

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/Safety	CE, FCC, CCC; 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/Operating Temperature	CE (R&TTE), FCC ID; -30 to 60° C
	Storage Temperature	-40° C ~ 80° C

I/O Connectors



Ordering Information

Part Number	Description
TREK-773R-00A0E	TREK-773R Intel BYT E3827 (2C, 1.75GHz) 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

Option items

Part Number	Description
1700020128	A Cable 1*3P-5.08+G-TEM/32V FUSE 500cm
1700019908	A Cable 1*3P-5.08+G-TEM/58V FUSE 500cm
1700019307	A Cable MDR 50P/BNC+Audio Jack*3+USB-A+D-SUB 9P
RAM-MOUNT-01	VESA RAM mount w/clamp base, 1.5" ball
RAM-MOUNT-06E	VESA RAM mount w/VESA base, 1.5" ball
9668TREK35E	TREK-773 RevA0 AC/DC power kit
9668TREK37E	IP54 I/O housing cover for TREK-773

TREK-773 CTOS KIT

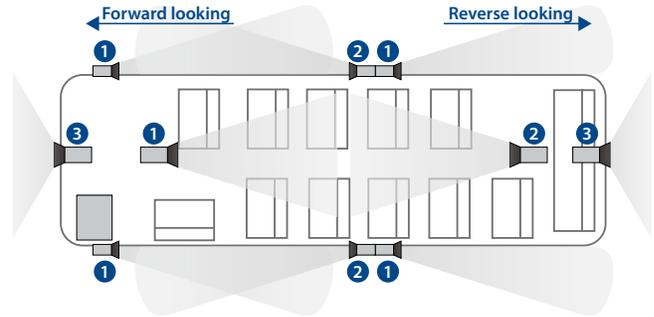
Part Number	Description
9668T77300E	TREK-773 WLAN kit (802.11a/b/g/n BT combo)
9668T77301E	TREK-773 LTE module kit for USA market (MC7354)
9668T77302E	TREK-773 LTE module kit (MC7304)
9668T77303E	TREK-773 GPS KIT

Application Ready Platform

Application Ready Platform (ARP) for In-vehicle Applications

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-CAM

In-Vehicle Analog Camera



- 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



TREK-TPM

Tire Pressure Management System

- 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)
- All settings, alerts, reference pressures, configurable network.
- Handles data from all connected Universal Repeaters



TREK-SEN

In-Vehicle Temperature & Humidity Wireless (BT) Sensor

- Multiple Sensors support – Temperature, Humidity and Acceleration
- Ultra Low power consumption
- Wide working temperature(-20° C ~ 70° C) with IP54 rating
- Supports off-line & on-line data logging
- Compliant with vehicle vibration test (EN 61373 / EN 50155 Operating)
- Optional Ethylene or other gas sensors



TREK-CAM

In-Vehicle IP Camera TREK-CAM-401-W2C3E

- HDTV Quality (Full HD 720p, 30fps Streaming)
- Intelligent Multi-Profile Sensor Management® for Different Environments
- Weather-proof (IP67) and Vandal-proof(IK10) with Stylish Design
- Wide Angle of View and Easy to Adjust Focus
- EN50155 Certify with Anti Vibration and Shock
- PoE (802.3af) / M12 Connector / DC12V Supported

RAM-MOUNT-01



Features

- 3.625" VESA base at both sockets
- 5.625" double socket arm for 1.5" ball base
- Flat 2.5" diameter base with AMPS hole pattern
- Suitable products: TREK-303/306//723/773, 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

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-MNT



Features

- Rubber – Absorption In-Vehicle Mounting Kit on windshield
- 360 degree arm & joint swiveled design for spin move and length adjustment
- Made of aluminum cast alloy and super durable rubber for harsh in-vehicle environment

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
- $\Phi 145.6 \times 35.1$ 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
- $\Phi 55 \times 19.6$ mm (D x H)

PWS-870

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



Features

- 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



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 communication IO ports. For communication 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 its 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

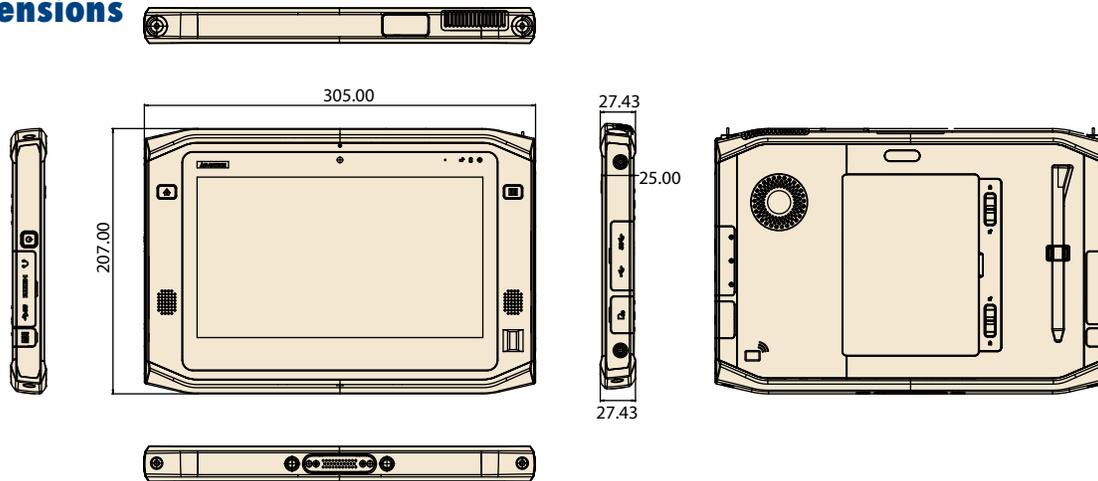
Motherboard	CPU & Chipset	Intel® Core™ i3 Processor 1.7 GHz 4010U Intel® Core™ i5 Processor 1.9 GHz 4300U with Turbo Boost to 2.9GHz Intel® Core™ i7 Processor 1.7 GHz 4650U with Turbo Boost to 3.3 GHz	
	Memory	SO-DIMM DDR3L 1600 MHz up to 8 GB	
	Storage	Support mSATA SATAIII SSD 32 GB – 256 GB ⁽²⁾ ⁽³⁾	
Display & Touchscreen	Display	10.1" HD (1366x768) Low reflection LED Backlight LCD (400 nits default; 950 nits by project)	
	Touch Panel	Capacitive multi touch Sunlight readable feature Display with Corning® Gorilla® Glass Gen2	
	Sensor	Ambient light, Accelerometer (G-Sensor), E-compass, Gyroscope Sensor - Screen Rotation: 0°, 90°, 270°	
System	Wireless Communication	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 Programmable 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 ⁽¹⁾	
	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) Windows 10 IoT 64 bit (By project)		

(1) The battery life estimates based on MobileMark 2007 performance. Battery performance will vary by system setting and configuration.

(2) Only Advantech is able to change SSD and Memory.

Dimensions

Unit: mm

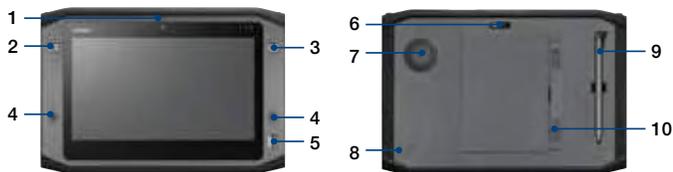


Specifications Cont.

Environment	Temperatur & Humidity	Operating Temperature -20° C ~ 50° C (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
Certifications	EMC/RF	CE/FCC/CCC/PTCRB/SAR
	Safety	UL/CE/CB/CCC
Peripheral	Peripheral ⁽³⁾	<ul style="list-style-type: none"> ▪ Universal Cover (Handle, stand, hand strap, and shoulder belt) ▪ Extension modules for MSR, UHF RFID, extra IO ports solution (By project)
		<ul style="list-style-type: none"> ▪ Desk docking station ▪ External battery ▪ Car adapter ▪ Vehicle docking station
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.

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

Part Number	Description
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 equipped with 4GB RAM & 64GB SSD by default. Full function include: WIFI, BT, WWAN, GPS,NFC,Finger Printer, 2D barcode, rear and front camera.

Accessories



PWS-870 Vehicle Docking Station

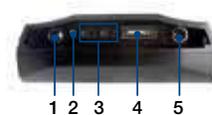
- CAN 2.0 A/B (J1939) and OBDII (ISO 15765) support for vehicle diagnosis
- Anti-theft locking mechanism
- External GPS SMA antenna
- Device docking and removal within 1 second
- Ignition control
- Accommodates port replication
- Compliant with MIL-STD-810G and SAE J1455 for vibration and shock tolerance
- 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) (pair with PWS-770-CAD1200E, PWS-770-CAD2400E)
Mounting	Mounting Way	VESA (75 x 75 mm)
Weight		950g
Dimension		240.5 x 280.9 x 95.4 mm



1. 1 x LAN 100/1000 (M12)
2. 1 x GPS SMA
3. 2 x USB 3.0 (locking type)
4. 1 x HDC: RS232 x1; CAN2.0 x1; DIx2; DOx2; Line-in x1; Line-out x1
5. 1 x DC-in (M12)

Ordering Information

Part Number	Description
PWS-870-VCRADLE00E	PWS-870 Vehicle docking station, with LAN Cable M12(M) cable 8P/RJ45(F)
PWS-770-CADAP00E*	Car Adapter DC to DC 10~32V 90W (120cm) to Cigar Lighter; M12 Plug
PWS-770-CAD1200E*	Car Adapter DC to DC 10~32V 90W with 12V Relay (120cm); M12 Plug
PWS-770-CAD2400E*	Car Adapter DC to DC 10~32V 90W with 24V Relay (120cm); M12 Plug
1700021797-01	M12 plug to DC-in cable (10cm)
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 AMPSS hole pattern
PWS-870-VDOCK-CBE	Vehicle docking starter cable kit (power cable, HDC cable & GPS antenna)

Note:
 1. 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

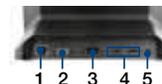
- Offers complete port replication for PWS-870
- Operating temperature -10° C ~ 50° C

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
- 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
- Charging time: 4 hr
- 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

MIT-W101

10" Industrial Tablet PC with Intel® Celeron® Processor



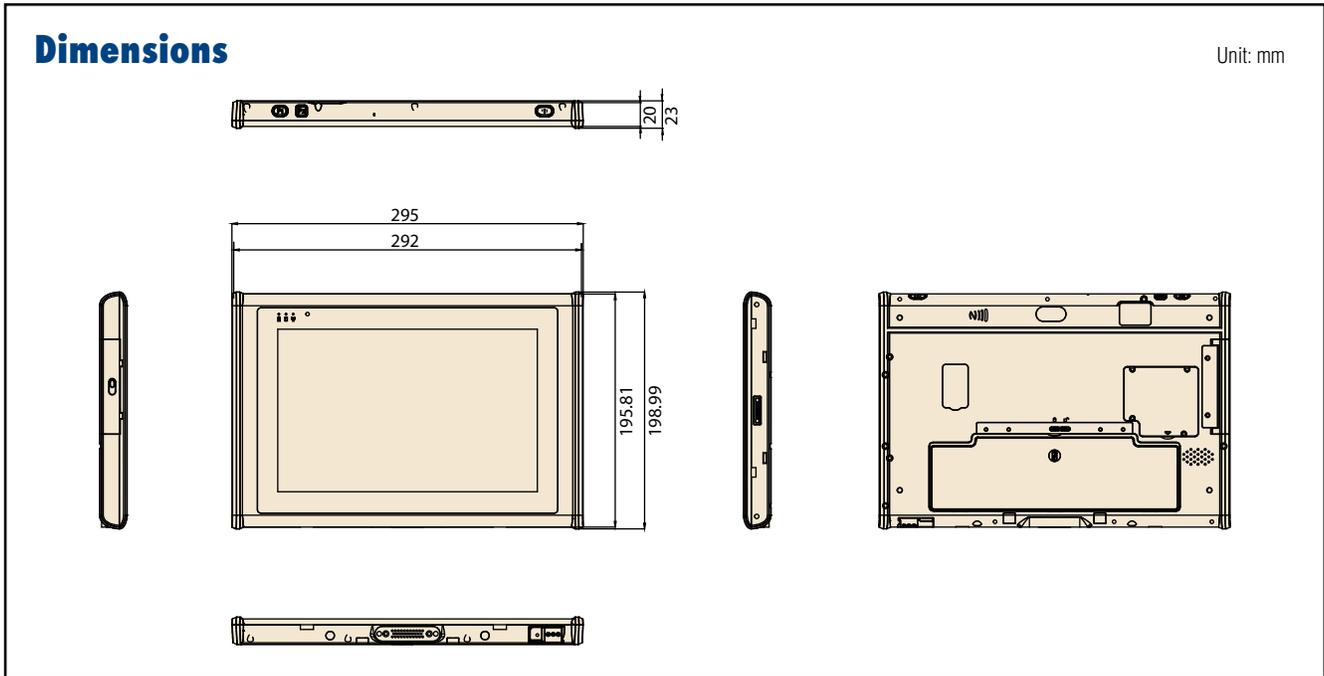
Features

- Intel® Celeron® N2930 Quad Core processor
- Supports Windows 8 Operating System
- 10.1" WXGA, Projective Capacitive Multi Touch Display
- -10°C to 50°C (14°F to 122°F), IP65, MIL-STD 810G / 4ft drop compliant
- Compact/Slim design: 20mm/0.79inch height
- Seamless communications, including Wi-Fi, BT, NFC (optional)
- Warm swappable battery
- Optional integrated 1D/2D barcode scanner and expansion module (MSR+SMC)
- Optional Class I Division 2, groups ABCD certified model
- Optional accessories include: 6ft drop rugged bumper, docking station, hand strap, and multi-function cover

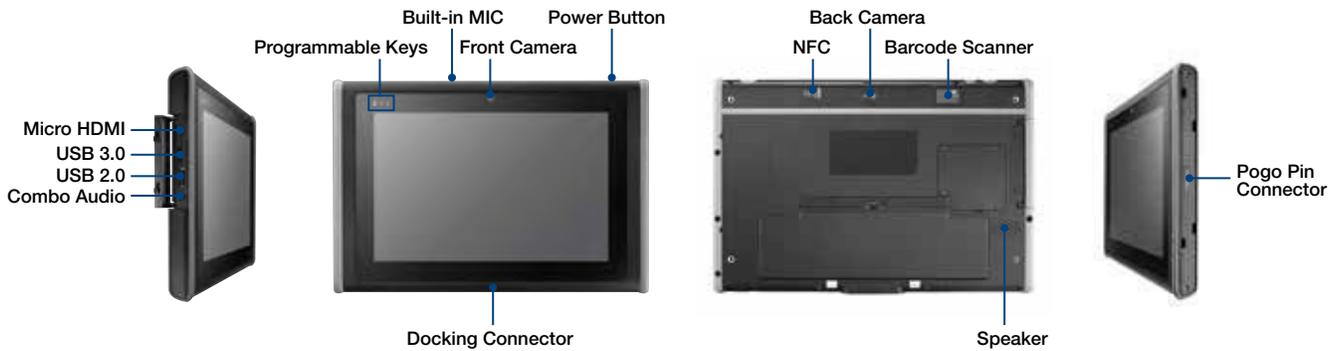


Specifications

Computing System	CPU	Intel® Celeron® Processor N2930
	Max. Speed	Quad Core 1.83GHz
	Memory	DDR3L 1600MHz SODIMM (Default 4GB / Up to 8GB)
	Operating System	Microsoft Windows Embedded 8 (Default), Microsoft Windows Embedded 7 (Optional)
Storage	SSD	1 x mSATA SSD (Default 64GB / supports up to 128GB)
Display	Display Type	10.1" TFT LCD Panel
	Max. Resolution	1280 x 800
	Touch Type	Projected Capacitive Multi-Touch
	Glass Type	Enhanced Glass
Communication	WiFi	Wireless IEEE 802.11a/b/g/n
	Bluetooth	Bluetooth v4.0 CLASS II
	NFC	Read/Write Device Compatible With ISO15693, ISO14443A, ISO14443B, Felica (Optional)
Audio		Internal speaker x 1, Internal Mono Microphone x 1
Connectivity	I/O Port Interfaces	Combo Audio x1, USB 3.0 x1, USB 2.0 x1, Micro HDMI x1, DC Jack x1, Expansion Port x1, Docking Port x1
	Embedded I/O Devices	2.0M Fixed Focus Camera At Front 5.0M Auto Focus Camera With LED Flash At Rear 2D Barcode Scanner (Optional)
Expansion Module		MSR + Smart Card Reader (Optional)
Control Buttons		Power Button Programmable Button x2
System Indicators		Power / Battery Status x1, HDD x1, Wireless / BT x1
Ingress Protection	Water / Dust Resistance	IP-65 compliant (IEC 60529)
Power Supply	AC Adapter In	100 – 240 V ~ 1.5A 50/60 Hz
	AC Adapter Out	19 V, 3.4 A Max, 65 W
	Battery Capacity	Main Battery: 31.7 Whrs (11.1V 2860mAh) Extended Battery: 49 Whrs (11.1V 4540mAh) (Optional) (UN 38.3, UL 2054, IEC / EN 62133 edition 2 certified)
Environment	Temperature	Operating: -10°C ~ +50°C, 14°F to 122°F Storage: -30°C ~ +70°C, -22°F to 158°F (refer to IEC 60068-2-1 / IEC 60068-2-2 / IEC 60068-2-78)
	Humidity	Operating: 5% ~ 95% @ 40°C/104°F non-condensing, Storage: 5% ~ 95% @40°C/104°F non-condensing (refer to IEC 60068-2-1 / IEC 60068-2-2 / IEC 60068-2-78)
	Vibration	Operation: (5-500GHz) 1G (refer to IEC 60068-2-64) Non-operating: (5-500GHz) 4.4mm – 2G (refer to : IEC60068-2-6)
	Shock Resistance	Operating: 20 G, 11 ms (refer to : IEC 60068-2-27) Shipping Package : 1 ~ 200 Hz, 1.15G (refer to ISTA 2A)
	Handling Drop	4ft drop onto steel plate, 4ft drop onto 2inch plywood over concrete (MIL-STD 810G compliant) 6ft drop with add-on bumper
Physical Characteristics	Dimensions (W x H x D)	292 x 196 x 20 mm/ 11.5 x 7.7 x 0.79 in
	Weight	1.1 kg/ 2.4 lb (Base Configuration)
	Color	Black
Regulatory Approvals		Emissions & Immunity : EN 55011:2009+A1:2010, Group 1 Class B, EN 55022:2010/AC:2011, Class B, EN 61000-6-3:2007+A1:2011/AC:2012, EN 61000-3-2:2014, Class D, EN 61000-3-3:2013, EN 55024:2010, EN 61000-6-1:2007, FCC CFR47 PART15 SUBPART B, ICES-003 Issue 5 : 2012 ANSI C63.4-2009, ETSI EN 301489-1 V1.92 2011-09, ETSI EN 301489-17 V2.2.1 2012-09, ETSI EN 300328 V1.8.1:2012, ETSI EN 301893 V1.7.1:2012, FCC PART 15 SUBPART C ANSI C63.10:2013, FCC PART 15 SUBPART E ANSI C63.10:2013 Safety : CB Scheme, IEC / EN 60950-1, UL 60950-1, 2nd Edition, ANSI / ISA 12.12.01-2015– Optional Class I Division 2, groups ABCD certified model



Front/Rear/Side View



Ordering Information

Part Number	Description
MIT-W101-Q04DNB00E	N2930/ 4GDDR/ 64GSSD/ WiFi/ BT/ NFC/ Black/ WES8
MIT-W101-Q04DNBF2E	N2930/ 4GDDR/ 64GSSD/ WiFi/ BT/ NFC/ Barcode/ Black/ WES8

Peripheral Ordering Information

Part Number	Description
170203180A	Power Cord 3P UK 2.5A/ 3A 250V 1.83M
170203183C	Power Cord 3P Europe (WS-010+WS-083) 1.83M
1700001524	Power Cord 3P UL 10A 125V 1.8M

MIT-W101

MIT-W101 Series Accessories (Industrial)

Docking Station



Expansion Module



Extended Battery Pack



Rugged Bumper



Order P/N	MIT-W101-ACCDS000E	MIT-W101-ACCEM000E	1760002237-01	MIT-W101-ACCBH000E
Color	Black	Black	Black	Black
Dimensions	260.8 x 185 x 103.8 mm	193 x 17 x 5.3 mm	210 x 64 x 15 mm	220 x 47 x 30 mm (1 pc)
Weight	1 Kg (2.2 lb)	85 g (0.19 lb)	320 g (0.7 lb)	172 g (0.38 lb)
Remark	Power input: 19V/ 3.4A	MSR & Smart Card Reader	11.1V/ 4540 mAh	Rugged bumper set with hand strap

Multi-function Cover



X-Type Hand Strap



Shoulder Strap



Stylus Pen w/Tether Cord



Order P/N	MIT-W101-ACCVB000E	9680015881	9680015882	9680015747
Color	Silver + Black	Black	Black	Black
Dimensions	276.6 x 175.5 x 9 mm	280 x 165 mm	147 cm ± 5 cm	120 x 7 mm ± 5mm
Weight	210 g (0.46 lb)	70 g (0.15 lb)	110 g (0.24 lb)	25 g (0.05 lb)
Remark	VESA mount (75 x 75 mm)	M4 x 8 mm screws included	M4 x 8 mm screws included	Tether with rugged bumper

I/O Ports

Docking Station

Front



- 1. Battery Bay Status LED
- 2. Detection LED
- 3. Earphone Jack
- 4. Microphone Jack
- 5. USB 2.0 Port
- 6. Lock Mechanism

Rear



- 7. Battery Charging Bay
- 8. COM Port
- 9. VGA Port
- 10. USB 2.0 Port
- 11. LAN Port
- 12. Power Jack

For sales inquiries or further information, please contact us: Mobile@advantech.com.tw

PWS-470

5" Rugged Handheld



Features

- Cortex-A7, Quad-Core processor, 1.2 GHz; support Android 4.2.2
- 5" HD (1280 x 720) capacitive multi touch screen
- Complete communication: Wi-Fi / Bluetooth/ GPS/BeiDou/ WWAN (3.75G)
- Data collection: 1D/ 2D barcode scanner / 8M pixel auto-focus Camera/ NFC RFID reader
- Lightweight, 295g
- IP65-certified, -20 ~ +60° C



Introduction

PWS-470 is a rugged handheld computer featuring a 5" HD (1280 x 720) resolution panel and a Cortex-A7, quad-core 1.2 GHz processor. It comes with 802.11 b/g/n WIFI, Bluetooth, GPS, and WWAN features and also provide complete data collection features like 1D/2D barcode scanner, 8M pixel auto-focus camera, and NFC RFID reader. It carries an IP65 rating for protection against dirt, dust, and water and can survive in wide temperature environment from -20 to 60° C. The PWS-470 is a perfect device for application in such as retail, warehousing, manufacture, utility, land surveying, and SFA (sales forces automation).

Specifications

Processor	CPU	Cortex-A7, quad-core processor, 1.2 GHz
OS		Support Android 4.2.2
Memory		1 GB
Storage		8 GB
Audio System		Speaker, Microphone, 3.5mm headset jack
Display	Size / Type	5" color touch screen, IPS panel
	Max. Resolution	HD (1280 X 720)
	Brightness (cd/m ²)	450 cd/m ² LED back light
Touch Panel		Capacitive multi touch screen
Application Buttons		Power button x 1 Scanner trigger buttons x 2 Function keys x 4
I/O Port		1 x MicroSD (up to 32GB) 1 x MicroUSB 2.0 client (via Charging cable)
Communication	WLAN	Internal 802.11b/g/n WLAN module
	Bluetooth	3.0HS+4.0LE
	GNSS	High performance GPS/BeiDou chipset
	WWAN	WCDMA, 3.75G, support HSPA
Data Collection		1D/2D barcode scanner and 8M pixel auto-focus camera NFC, 13.56MHz RFID Reader (optional)
Dimensions & Weight		16 x 8.2 x 1.8 cm, 295 g (with battery)
Power	Battery	Li-Polymer battery, 4.2V@3200 mAh
Environment	Operating Temperature	-20 ~ +60° C
	Storage Temperature	-30 ~ +70° C
	Operating Humidity	5% ~ 95%, non-condensing
IP Certification		IP65
Package Bundle		PWS-470 Li-Polymer battery Battery cover Power Adapter (5V, 1A) MicroUSB data power cable Screw holes rubber mat Battery cover screws
Certifications		CCC

PWS-440

3.7" Ultra Rugged Handheld Terminal



Features

- Marvell PXA310 806MHz; Supports Windows CE6.0
- 3.7" VGA TFT LCD transfective 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

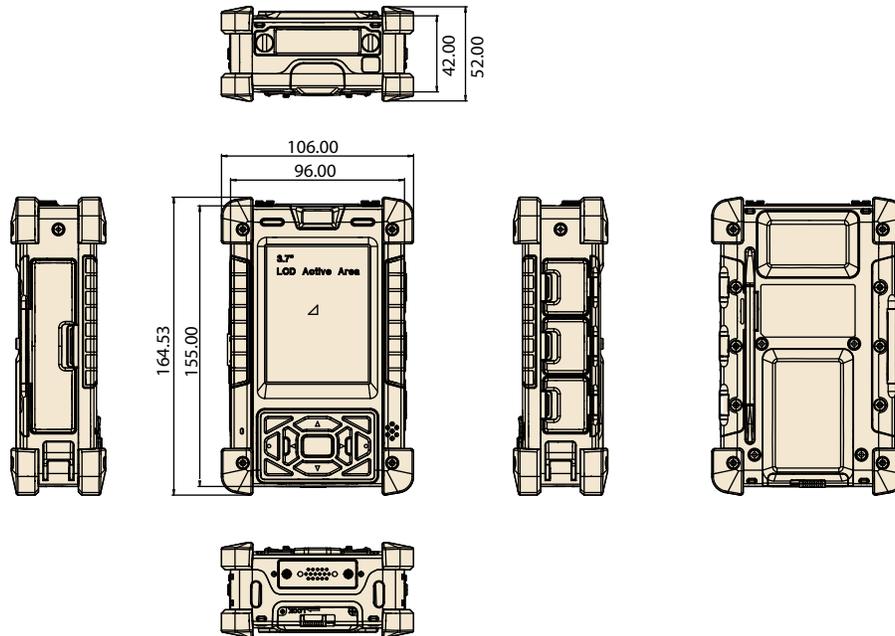
The PWS-440 is an ultra rugged portable computer featuring a 3.7" transfective VGA TFT LCD display and Marvell PXA310 806MHz processor. With GPS, HSDPA (3.5G), Wi-Fi and built-in Bluetooth, PWS-440 provides a fully-functional communication device for any outdoor application. Certified to meet standard 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
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" transfective TFT LCD
	Max. Resolution	VGA 480 x 640
	Brightness (cd/m ²)	320 cd/m ² LED back light
Touch Panel		4-wire resistive touch panel
Application Buttons		1 x power on/suspend button
		Navigation key and four function keys
I/O Port		1 x HW reset key located right side door
		1 x button for backlight on/off (using power on/ suspend button)
		2 x USB type A connectors, USB1.1 host
		1 x RJ-45 for 10/100M Ethernet
Communication		1 x USB mini type B connector, USB1.1 Client
		1 x stereo headphone jack
		1 x RS-232
		1 x microphone jack
Power		1 x RS-232 (default) 422/485 (By project-based)
		1 x DC-In connector
	WLAN	802.11b/g WLAN module build in
	Bluetooth	Bluetooth class 2, v2.1 built-in with integral antenna
Environment	GPS	SiRF Star IV high performance GPS chipset
	WWAN	Cinterion PH8 HSPA+ WWAN module with high performance external antenna (optional)
	Battery	Rechargeable Li-ion smart battery, 7.4 V, 1880 mAh, 2S1P
Rugged Certification	DC input	12V ± 5%
	Operating Temperature	-20° C ~ 60° C
	Storage Temperature	-40° C ~ 70° C
Certifications	Operating Humidity	5% ~ 95%
		IP67
Dimensions & Weight		5 feet drop to concrete
		MIL-STD-461F
		MIL-STD-810G
		CE, FCC, CCC
		155 x 96 x 42 mm, 650 g

Dimensions

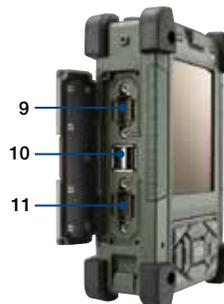
Unit: mm



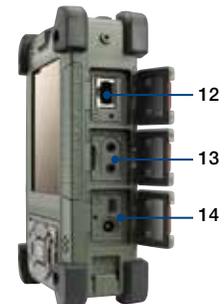
I/O Connectors



- 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

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