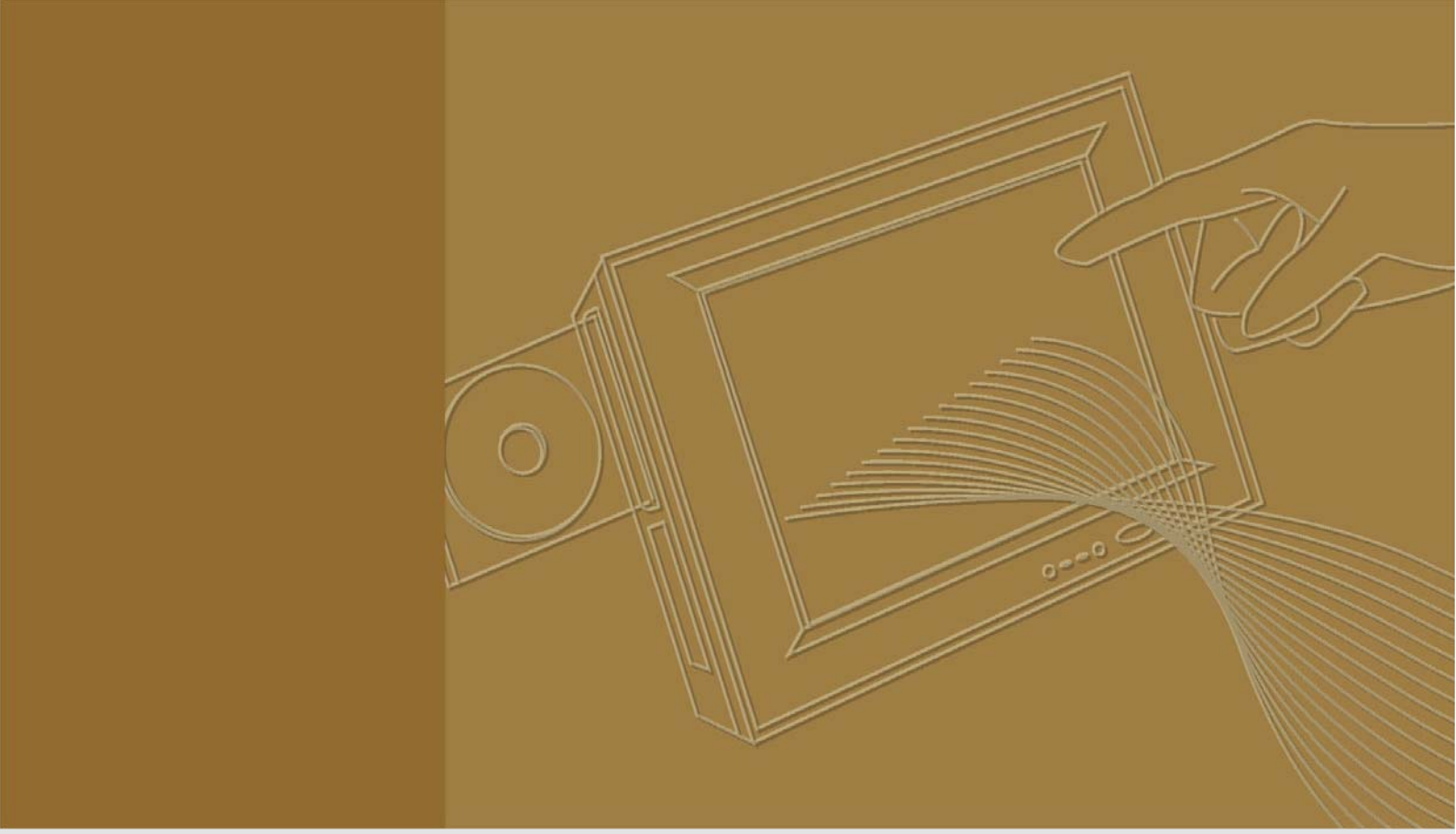

TREK-510

In-Vehicle Computing Box
Smart Display
User manual

Trusted ePlatform Services

ADVANTECH

Copyright

Acknowledgements

Intel and Atom are trademarks of Intel Corporation. Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp. All other product names or trademarks are properties of their respective owners.

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out- of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. 2010051001 Edition 1

Printed in Taiwan Jan 2011

Declaration of Conformity

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Technical Support and Assistance

1. Visit the Advantech web site at **www.advantech.com/support** for the latest information about the product.
2. Contact the distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Send all such in writing to: support@advantech.com

Packing List

Before setting up, check that the items listed below are included, in good condition. If any item does not accord with the table, please contact your dealer immediately.

- TREK-510 series In-Vehicle Computing Box
- USB/Audio Cable clip
- Warranty card
- Power cord: DC power inlet cable (180 cm - for TREK-510 only)
- "Drivers, Utilities and User Manual" CD-ROM
- End User License Agreement (WinCE model), please download driver and related document from www.advantech.com/support

Ordering information

P/N	Description
TREK-510-GCEA0E	ST2062 333Mhz , GPS, GPRS module built in, WinCE5.0
TREK-303R-LA0E	7" vehicle display system, 480x234 resolution, with 4 wire resistive touch screen, 2-watts speaker.
1700018342	2-meter cable(paired with TREK-510)

Packing list

Item			
Power cable	x1	Screw	x 4
GPS antenna	x1	Cable clip for MIC in, line out, USB host, USB client	x4
WWAN antenna	x1	Start up manual CD	x 1

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this user manual for later reference.
3. Disconnect this equipment from AC outlet before cleaning. Do not use liquid or spray detergents for cleaning.
4. For pluggable equipment, the power outlet shall be installed near the equipment and shall be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. Do not leave this equipment in an environment unconditioned where the storage temperature under -30°C (-22°F) or above 70°C (158°F), it may damage the equipment.
   Operating temperature: 50°C. Safety Certificate Temperature: 50°C
8. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. Place the power cord such a way that people can not step on it. Do not place anything over the power cord. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for long time, disconnect it from the power source to avoid being damaged by transient over-voltage.
13. Never pour any liquid into ventilation openings. This could cause fire or electrical shock.
14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
15. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well or you cannot get it to work according to user manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

16. **CAUTION:** The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.

17. THE COMPUTER IS PROVIDED WITH CD DRIVES COMPLY WITH APPROPRIATE SAFETY STANDARDS INCLUDING IEC 60825.

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT

18. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

19. **CAUTION:** Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges.

20. **CAUTION:** Always ground yourself to remove any static charge before touching the motherboard, backplane, or add-on cards. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

21. **CAUTION:** Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. screws) provided with the accessory box.

22. Caution text concerning lithium batteries:

ADVARSEL!
Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme

23 "Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

24. **CAUTION**:

1. This product is connected to a fuse box in the passenger compartment before it connected to the vehicle battery, and the fuse in a fuse box is UL listed and automotive fuse.

2. Use the appropriate flexible and SAE wiring to connect to a fuse box.

*This product is installed in the passenger compartment.

3. This product must be installed and maintained by qualified service personnel.

4. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhit- zung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag aus- lösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
15. Netzkabel oder Netzstecker sind beschädigt.
16. Flüssigkeit ist in das Gerät eingedrungen.
17. Das Gerät war Feuchtigkeit ausgesetzt.
18. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
19. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
20. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
21. VOSICHT: Explisionsgefahr bei unsachgemaben Austausch der Batterie.Ersatz nur durch densellben order einem vom Hersteller empfohlene-mahnlichen Typ. Entsorgung gebrauchter Batterien navh Angaben des Herstellers.
22. ACHTUNG: Es besteht die Explosionsgefahr, falls die Batterie auf nicht fach- männische Weise gewechselt wird. Verfangen Sie die Batterie nur gleicher oder entsprechender Type, wie vom Hersteller empfohlen. Entsorgen Sie Batterien nach Anweisung des

Herstellers.

23. Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

Haftungsausschluss: Die Bedienungsanleitungen wurden entsprechend der IEC-704-1 erstellt. Advantech lehnt jegliche Verantwortung für die Richtigkeit der in diesem Zusammenhang getätigten Aussagen ab.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Warning!

1. *Input voltage rated: 6-36 Vdc*.
2. *Transport: carry the unit with both hands and handle with care*.
3. *Maintenance: to properly maintain and clean the surfaces, use only approved products or clean with a dry applicator.*
4. *CompactFlash: Turn off the power before inserting or removing CompactFlash storage cards*.

European Contact information:

Advantech Europe GmbH Kolberger

Straße 7

D-40599 Düsseldorf, Germany

Tel: 49-211-97477350

Fax: 49-211-97477300

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Chapter 1

General Information

This chapter gives background information on the TREK-510 In-Vehicle Computing Box.

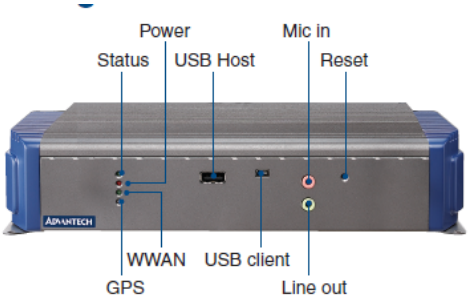
Sections include:

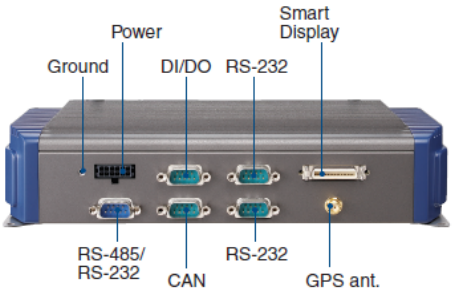
- Introduction
- General Specifications
- Dimensions

1.1 Introduction

The TREK-510The TREK-510 is a dedicated box computer for industrial vehicle fleets, transport trucks, buses and taxis. TREK-510 combined with a variety of I/O connectors can be connected to devices like OBD-II or TPMS (Tire Pressure Monitoring System). Built-in wireless communications-WWAN enables TREK-510 to send important driver/vehicle/location/car information back to the control center. TREK-510 can also operate in extreme environments with features like a wide working temperature range (-30 to 70 degrees) and anti-shock/vibration design. TREK-510 also uses a special design to handle the critical issue of in-vehicle power. Special power protection (ISO7637-2/SAE J1455 Class A/ SAE J1113) and car power management software (Ignition on/off, delay on/off, low battery monitor) prevent electrical noise and surges from impacting the system, guarding against damage from transient car power.

I/O Connectors





1.2 General Specifications

Key features

- ST ARM based STA2062 333 MHz CPU with Win CE 5.0
- Automotive grade working temperature range (-30° C to 70° C)
- Rich I/O including CAN, multi-COMs, isolation 4DI/4DO, Line out, Mic in, USB and SD.
- Built-in RF communication modules, including GSM/GPRS/HSDPA/CDMA
- GPS with AGPS
- Certifications: CE/FCC/e-mark, MIL-SD810F, ISO 7637-2, SAE J1455, SAE J1113 regulations
- Ignition on/off delay; SW controllable for car power management
- Built in G sensor for active security system

f

Specifications

- **Dimensions**: (W x H x D): 261 x 125 x 59.1 mm
- **Weight**: 1.5 kg.
- **Vehicle power feature:**
  - **Input voltage**: 6 ~ 36Vdc, support ignition cold crank
  - **Support Ignition on/off**
  - **Support low battery shut-down protection threshold (optional)**
  - **Support power off event delay**

- **Support power on delay**
- **Support power low delay**
- **Support power low hard delay**
- **Support hard off delay**

Note! *For more detail of function please refer to Chapter 7, Section 6.3 of this manual.*

- **Enclosure**: Ruggedized aluminum without ventilation holes.
- **CPU**: STA2062 333 MHz
- **System memory**: 2 GB on board flash for bootloader, image & Customer's AP
- **Storage**: **SD**: 1 x (external accessible)
- **Serial ports**:
  - COM 1&2: 2 x Full Function RS-232, 5 V/12 V @ 0.5 A, ping9, by jumper selected
  - COM3: 1 x 4-wire RS-232/485 (control by SW, 5 V/12 V @ 0.5 A, ping9, by jumper selected
- **USB Host port**: Supports up to two USB1.1 x by Type A. One from smart display port.
- **USB Client port:** 1 x by mini Type AB
- **Watchdog timer**: Supports 0-255 secs time intervals, SW programmable and SW enable/disabled.
- **RTC Battery**: 3.0 V @ 200 mAH lithium battery.
- **Power management**: Supports power saving modes including Normal mode.
- **Digital I/O**: 4 x Isolated dry contact digital inputs from DB9 connector (2500 Vrms protection), 4 x relay driver from DB9 connector
- **CAN bus**: Support CAN V2.0B up to 500 kb/s.
- **Audio:** 2 audio codecs, one is for smart display, one is for TREK-510 line out and mic in phone jack.
- **Optional modules**:
  - **GPS**
    - LEA-5S: 50 channels GPS
  - **RF**:
    - Quad-band GSM/GPRS, HSDPA, CDMA
- **Operating temperature**: -30 ~ 70° C
- **Relative humidity**: 10 ~ 95% @ 40° C (non-condensing)
- **Shock**: 30 G peak acceleration (11 msec duration)
- **Certifications**: CE, FCC, CCC, Emark
- **Vibration**: 5 ~ 500 Hz SAE J1455 4.9.4.2, MIL-STD-810F 514.5

1.3 Dimensions

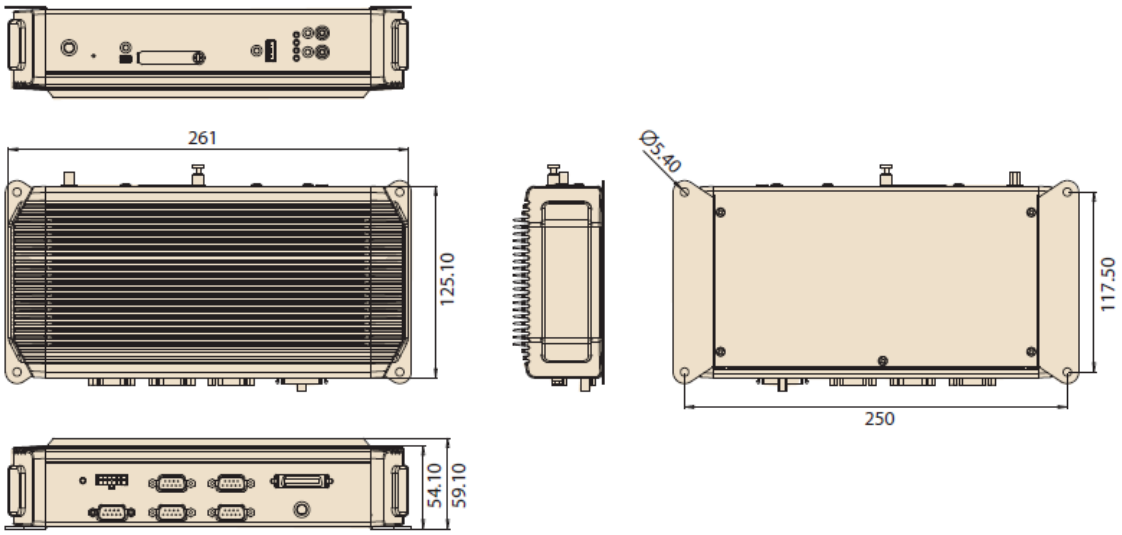


Figure 1.1 TREK-510 dimensions

Chapter 2

This chapter details system setup

Sections include:

- A Quick Tour of the computer box
- Installation Procedures
- Running the Setup Program

2.1 A Quick Tour of the TREK-510 Computing box.

Before starting to set up the In-Vehicle Computing Box, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below. When the Computer box is placed inside truck glove cabinet or under the passenger's seat next to the driver, its front appears as shown in Figure 2.1.

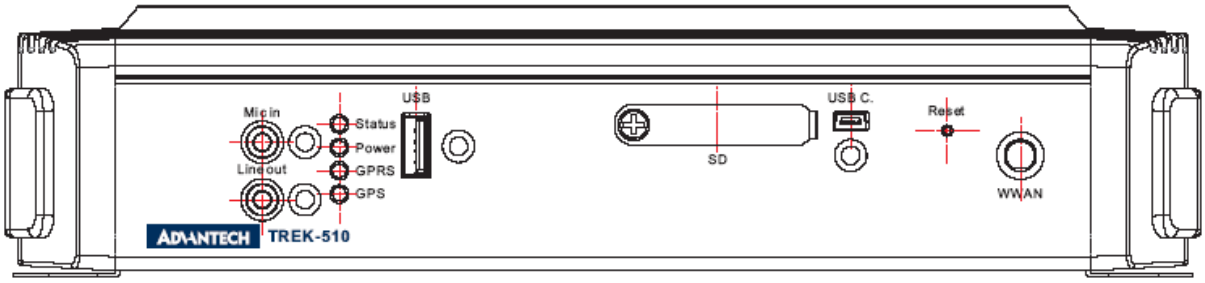


Figure 2.1. Front view of TREK-510

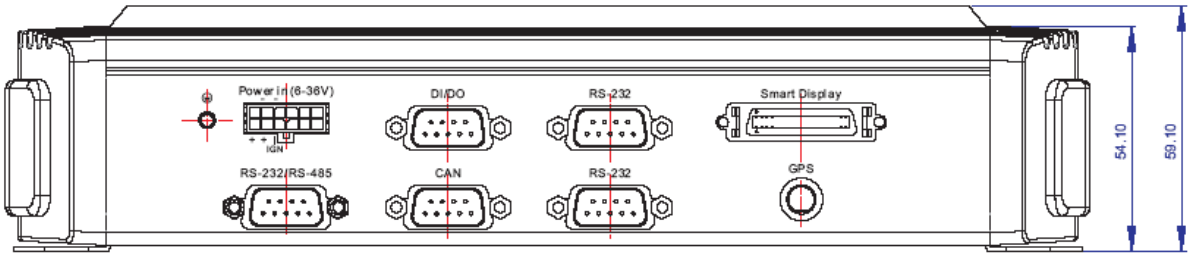


Figure 2.2. Rear view of TREK-510

Unit: mm

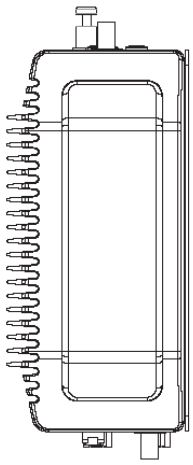
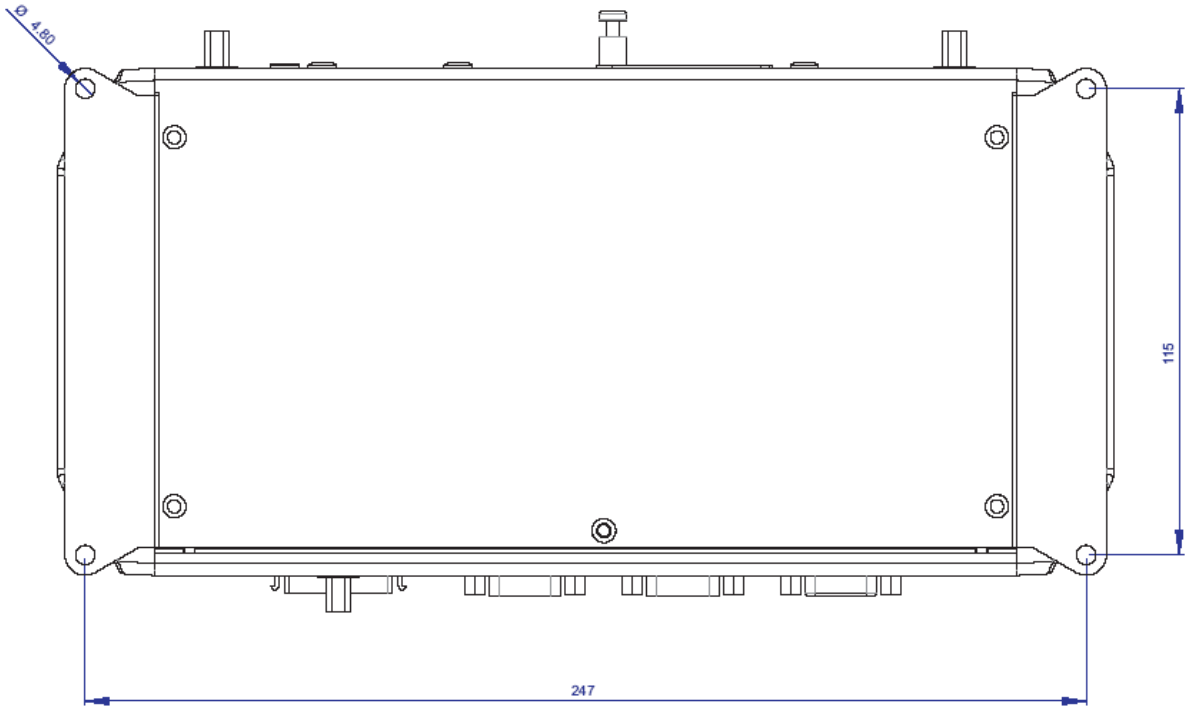


Figure 2.3. Side view of TREK-510



Unit: mm

Figure 2.4. Bottom view of TREK-510

Unit: mm

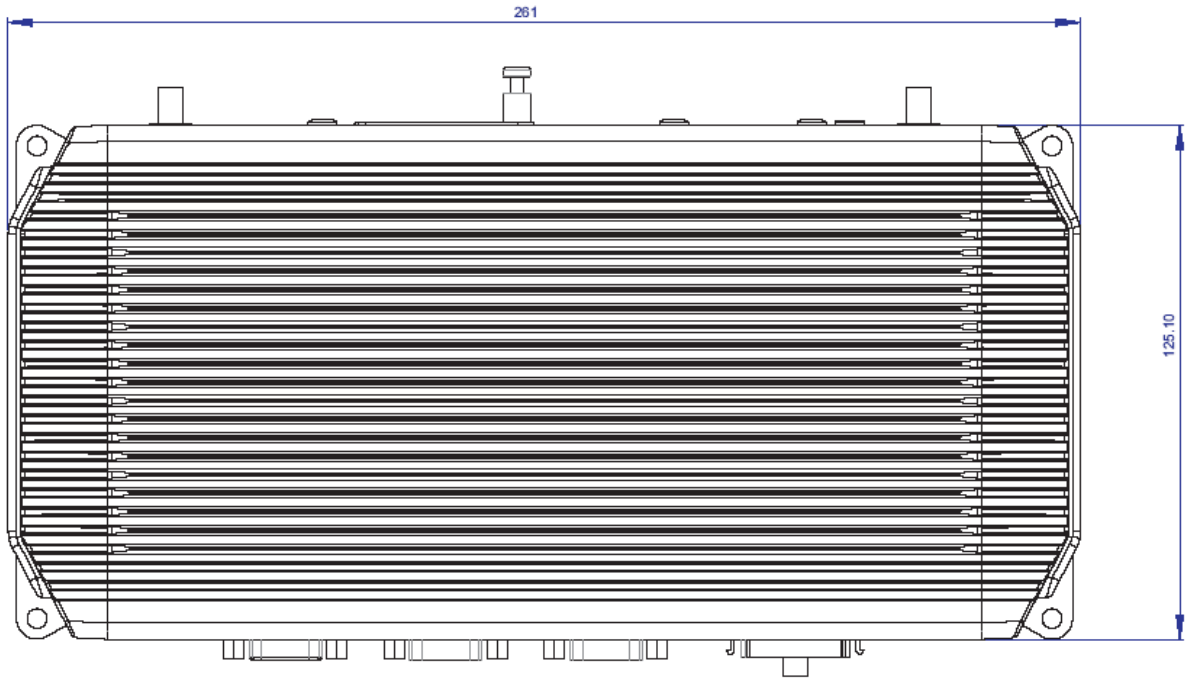


Figure 2.5. Top view of TREK-510

2.2 Installation Procedures

2.2.1 Connecting the Power Cord

Connect the three pin waterproof power cord to the DC inlet of the In-Vehicle Computing Box. On the open-wire end, one pin is reserved for positive voltage and is marked, "+"; one pin is reserved for ground and is marked, "-"; and, one pin is reserved for the ignition signal with an "ignition" mark.

Note! *Ignition on/off setting: The TREK-510 supports an ignition on/off function so that you can power on/off the TREK-510 via the ignition signal/voltage and connect the TREK-510 vehicle ignition switch.*

Table 2.2.1 Pin Definition of Power Cord

Pin	Definition	Color
1	+	Red
3	-	Black
4	Ignition	Orange

2.2.2 Power Connector

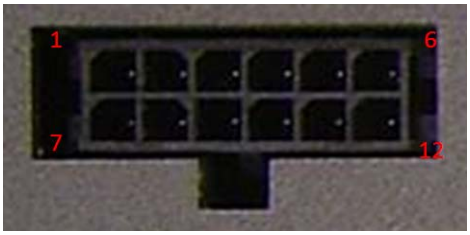


Figure 2.6. Power connector outlook

Table 2.2.2 Pin definition of Power Connector (Molex Manufacturer part no.0430451200)

Pin	Signal	Pin	Signal
1	Chassis Ground	2	Ground
3	Ground	4	(Reserved)
5	(Reserved)	6	(Reserved)
7	Power Input (6~36 VDC)	8	Power Input (6~36 VDC)
9	Acc Ignition Input	10	Ground
11	(Reserved)	12	Power button Input

Connector : Molex 430451200

Mating connector: Molex 0430251200

Figure 2.7. Power connector photo

Note! *Fuse holder: The fuse holder on the power cable is water/dust proof; you may change the fuse (5 Amp) easily by yourself.*

Chapter 3

Installation

This chapter details the installation of hardware for TREK-510.

Sections include:

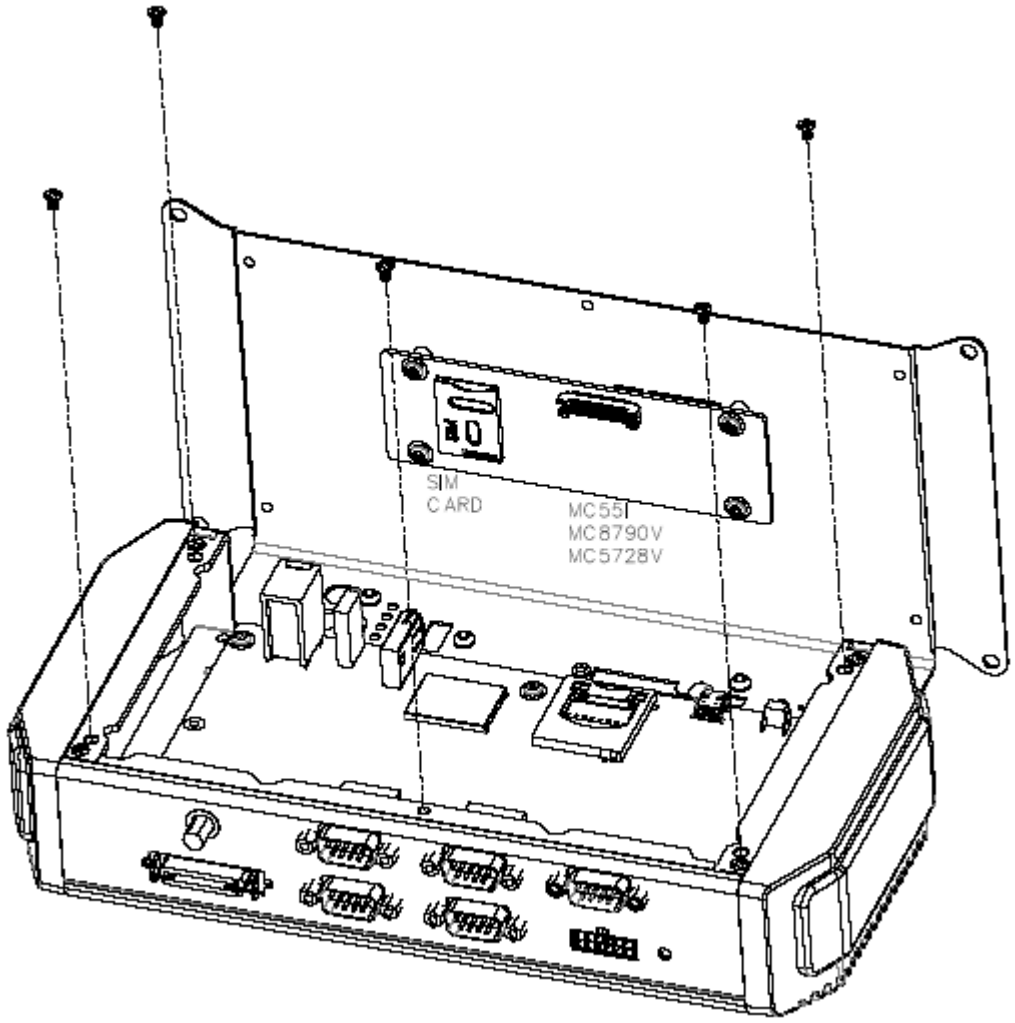
- Overview of Hardware Installation and Upgrading
- Installing the Storage Device and Memory
- Installing Optional Accessories
- Fuse

3.1 Overview of Hardware Installation & Upgrading

The In-Vehicle Computing Box consists of a PC-based computer that is housed in a ruggedized aluminum enclosure. Any maintenance or hardware upgrades can be completed after removing the bottom cover plate.

3.1.1 Installing TREK-510 peripheral modules

There are 6 screws on the bottom of TREK-510, if you want to install RF modules in TREK-510, please use M2 type screw to open the system.



3.1.2 Interfacing

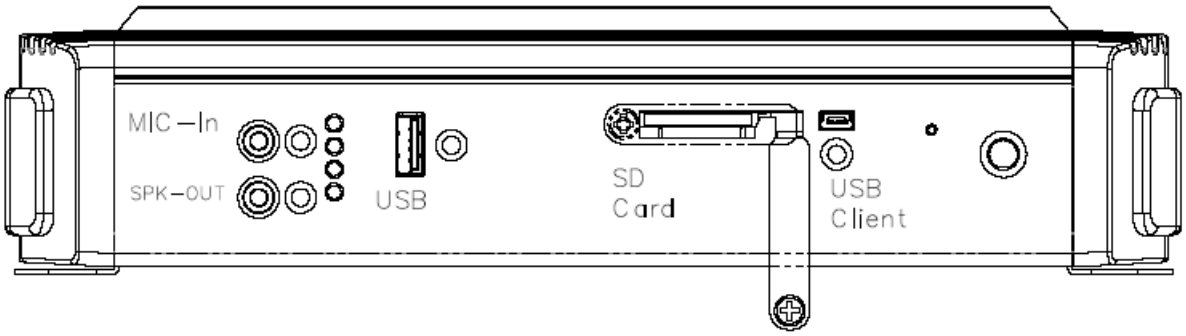


Figure 3.4 USB HOST and client

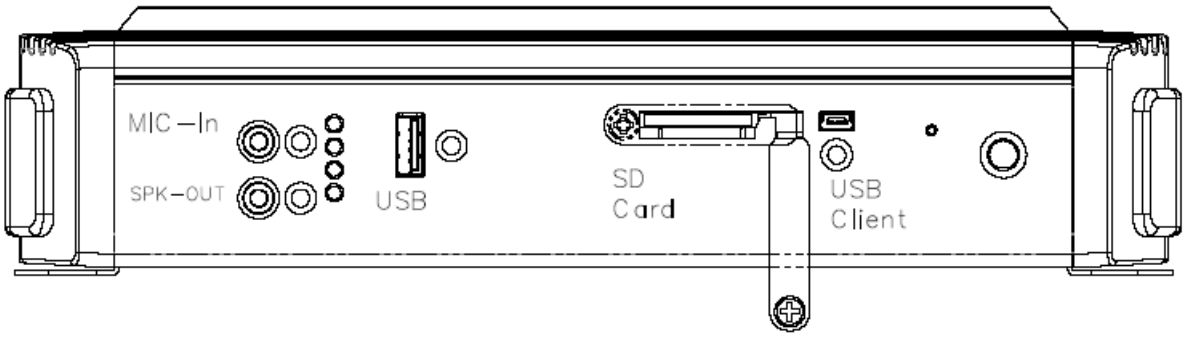


Figure 3.5 Install Mic and Speaker cable clip

Chapter 4

Jumper Settings and Connectors

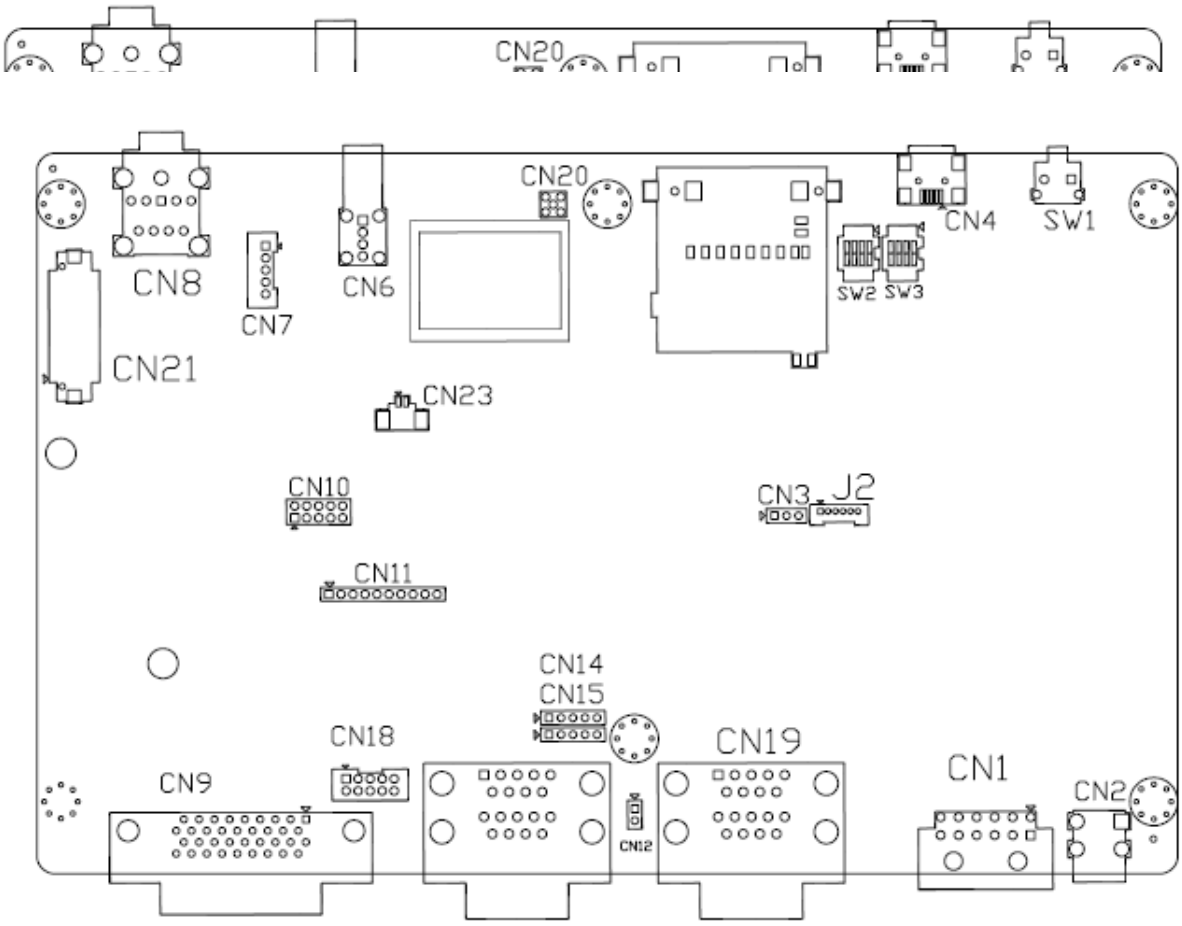
This chapter explains how to set up the In-Vehicle Computing Box hardware, including instructions on setting jumpers and connecting peripherals, and how to set switches and read indicators.
Be sure to read all the safety pre-cautions before beginning the installation procedure.

Sections include:

Jumpers Setting

4.1 Setting Jumpers and Switches

It is possible to configure the In-Vehicle Computing Box to match the needs of the application by resetting the jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip, often protected by a plastic cover that slides over the pins to connect them. To “close” a jumper, connect the pins with the clip. To “open” a jumper,



4.1.1 Locations of the Jumpers and Connector

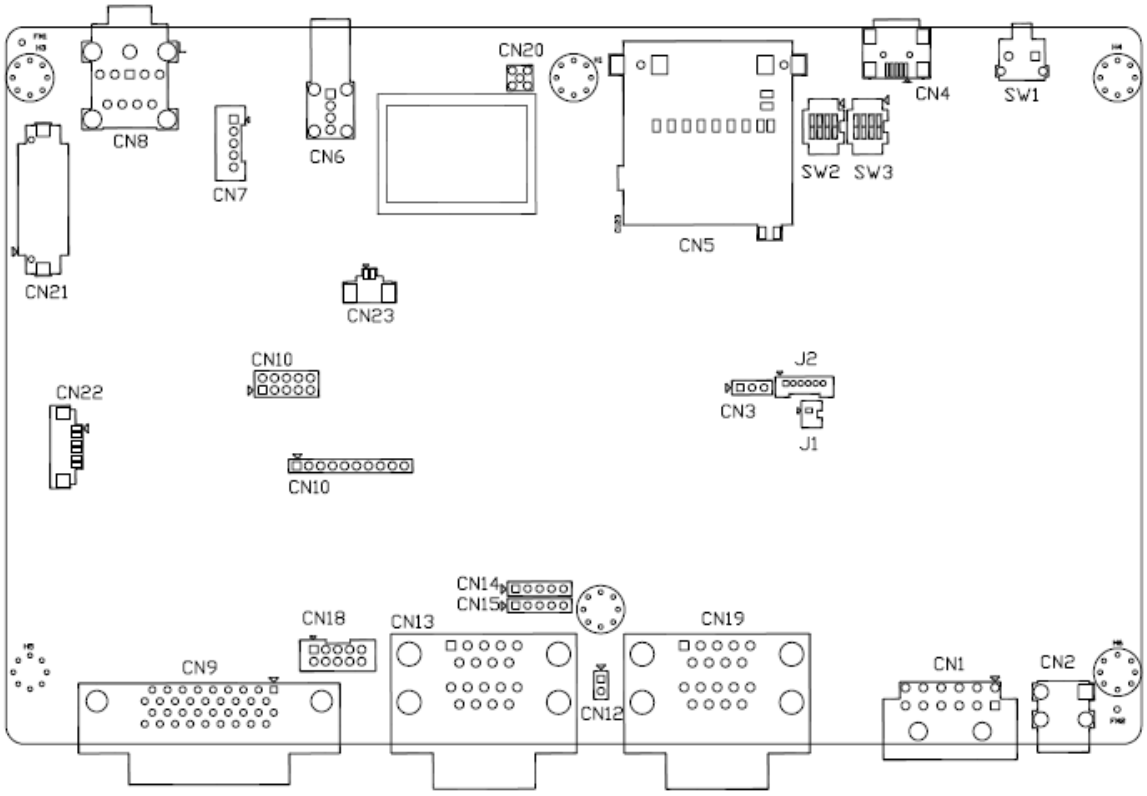


Figure 4.1 Locations of jumpers and connectors on top side the motherboard.

4.1.2 Jumpers

Table 4.1.2.1: Jumpers on motherboard	
Location	**Function**
CN3	Vehicle input voltage selection
CN14	Pin9 of COM6 RS232 RI or 5V or 12V select jumper connector
CN15	Pin9 of COM7 RS232 RI or 5V or 12V select jumper connector

4.1.3 Connectors

. The table below lists the function of each connector.

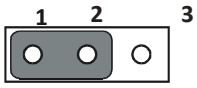
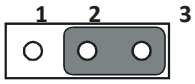
Table 4.1.3.1: Connectors on motherboard	
Location	**Function**
CN1	Power input connector
CN2	Vehicle Grounding connector
SW1	Reset connector
SW2,SW3	System setting switch
CN4	USB Client connector
CN5	SD Card connector
CN6	USB HOST TYPE-A connector
CN7	USB HOST TYPE-A cable connector (reserve)
CN8	Audio and Speaker Jack connector
CN9	VGA connector
CN10	RS232 connector (debug only and reserve)
CN11	JTAG connector (debug only and reserve)
CN12	CAN BUS termination connector
CN13	Full function 8-wire RS232 connector
CN19	Isolated DI/DO and CAN bus connector
CN20	on board GPS antenna connector
CN21	RF Module board cable connector
CN22	UBLOX GPS module board cable connector
CN23	RTC battery connector
J1	uP RS232 connector (debug only and reserve)
J2	up burning image connector

4.2 Jumper Settings

4.2.1 Power Input Voltage Setting (CN3)

TREK-510 must be configured properly according the vehicle power input range.

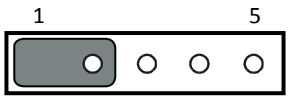
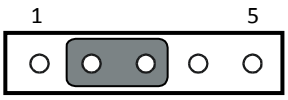
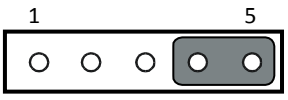
Table 4.2.1: Power Input Voltage Selection (CN3)

12V **Input (Default)**	**24V Input**
	

4.2.2 Pin 9 of COM6 Function Selection (CN14)

Pin 9 on COM3 port can be configured as RI, 5V or 12V output.

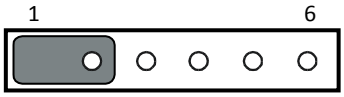
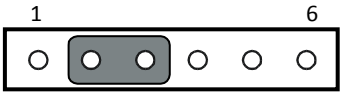
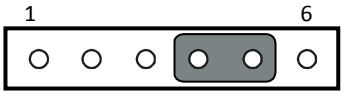
Table 4.2.2: Pin 9 of COM3 Function Selection (CN14)

RI	+5VDC (max. 500mA)	+12VDC (max. 250mA)
		

4.2.4 Pin 9 of COM7 Function Selection (CN15)

Pin 9 on COM8 port can be configured as RI, 5V or 12V output.

Table 4.2.4: Pin 9 of COM8 Function Selection (J3)

RI	+5VDC (max. 500mA)	+12VDC (max. 250mA)
		

4.3 COM Port Interface

The computer provides totally eight serial ports for difference uses. Six RS232 and 3 UART . Ports, respectively. Below table describe each COM port function.

Table 4.3.1: Serial Port Function

Port	Function
COM0	2-wire RS-232 (TXD/RXD) for TREK-303
COM1	4-wire RS-232 for System internal debug
COM2	4-wire UART for UBLOX GPS module
COM3	4-wire UART for system internal GPS
COM4	2-wire RS-232 (TXD/RXD) for internal uP
COM5	8-wire UART for RF module
COM6	8-wire Full functional RS-232
COM7	8-wire Full functional RS-232
COM8	4-wire RS-232 and 2-wire RS-485 with software select

Chapter 5

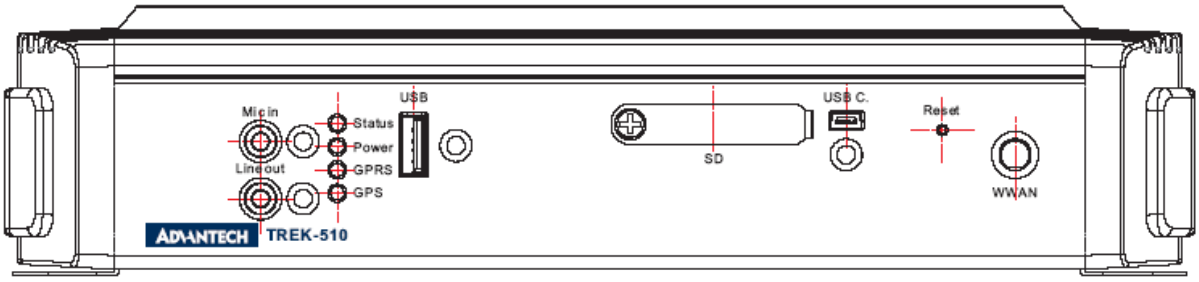
Pin Assignments

This chapter explains pin assignments on the TREK-510.

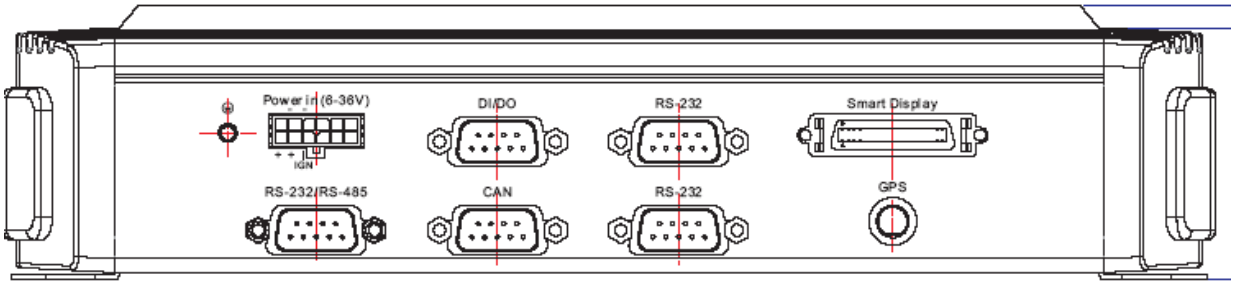
Sections include:

- Front/side Connector
- Power connector
- Smart display connector
- RS232 Connectors
- DI/DO connectors

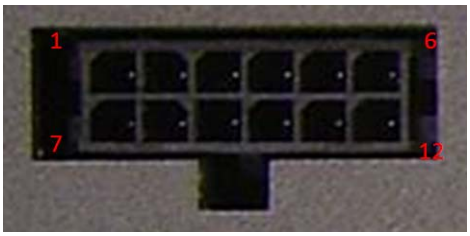
5.1 Front Side Connectors



5.2 Rear Side Connectors



5.3 Power Connector (12/ 24V; 6 ~ 36V)



Molex Manufacturer part no. 0430451200

Table 5.3: Power Connector

Pin	Signal	Pin	Signal
1	Chassis Ground	2	Ground
3	Ground	4	(Reserved)
5	(Reserved)	6	(Reserved)
7	Power Input (6~36 VDC)	8	Power Input (6~36 VDC)
9	Acc Ignition Input	10	Ground
11	(Reserved)	12	Power Button Input

5.4 Smart Display Connector

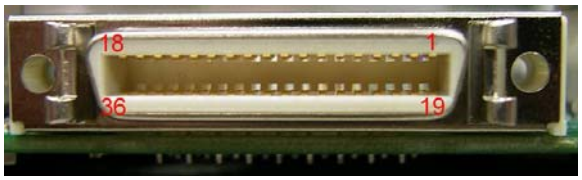


Table 5.4: Smart Display Connector

Pin	Signal	Pin	Signal
1	Backlight Enable output #	2	Panel Power Enable output #
3	LVDS Ground	4	Reset Button Input #
5	LVDS Clock +	6	LVDS Clock -
7	Ground	8	Ground
9	LVDS Data2 +	10	LVDS Data2 -
11	RS232 TXD1 #	12	RS232 RXD1 #
13	LVDS Data1 +	14	LVDS Data1 -
15	Ground	16	Ground
17	LVDS Data0 +	18	LVDS Data0 -
19	USB D-	20	USB D+
21	Ground	22	Ground
23	+12VDC output (+/- 5%, max 1A)	24	+12VDC output (+/- 5%, max 1A)
25	+12VDC output (+/- 5%, max 1A)	26	+12VDC output (+/- 5%, max 1A)
27	Power Ground	28	Power Ground
29	Power Ground	30	Power Ground
31	NC	32	NC
33	NC	34	Power Button Input #
35	Ground	36	Mono. Line-out

5.5 RS-232 (COM6, COM7) Connector

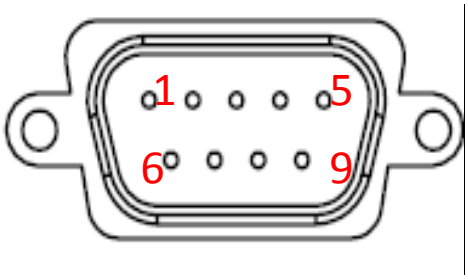


Table 5.5: RS-232 Connector

Pin	Signal	Pin	Signal
1	RS-232 DCD	2	RS-232 RXD
3	RS-232 TXD	4	RS-232 DTR
5	RS-232 Ground	6	RS-232 DSR
7	RS-232 RTS	8	RS-232 CTS
9	RS-232 RI / +5V(max. 500mA) / +V12 (max. 250mA)		

5.6 RS-232 (COM8) / RS-485 (COM8) Connector

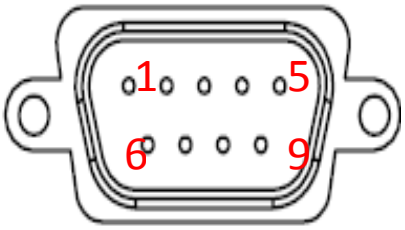
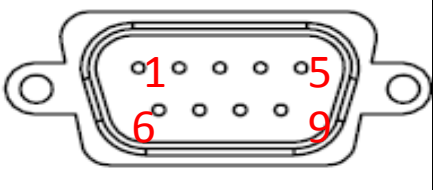


Table 5.6: RS-232 / RS-485 Connector

Pin	Signal	Pin	Signal
1	RS-485 D-	2	RS-232 RXD#
3	RS-232 TXD	4	RS-485 D+
5	Ground	6	Ground
7	RS-232 RTS	8	RS-232 CTS
9	NC		

5.7 DI / DO Connector



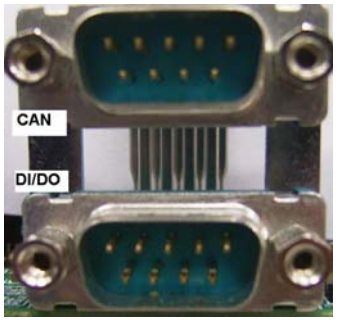
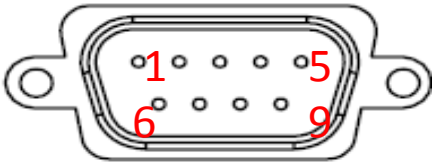


Table: 5.7: DI / DO Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Isolated Dry Contact Input 1	2	Isolated Dry Contact Input 2
3	Isolated Dry Contact Input 3 /Speed signal input for DR*	4	Isolated Dry Contact Input 4 /Forward signal input for DR*
5	Isolation Ground	6	Isolated Relay Driver Output 1
7	Isolated Relay Driver Output 2	8	Isolated Relay Driver Output 3
9	Isolated Relay Driver Output 4		

*Note. Regarding the setting of Pin3/4, please refer paragraph 4.2.5 (DI/GPS Function Selection).

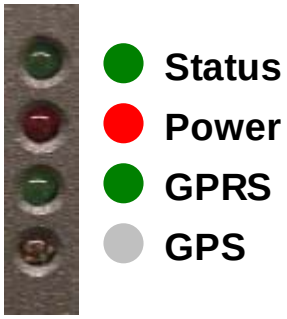


5.8 CAN BUS Connector

Table: 5.8: CAN BUS Connector			
Pin	**Signal**	**Pin**	**Signal**
1	CAN_H	2	CAN_L
3	Isolation Ground	4	Isolation Ground
5	Isolation Ground	6	NC
7	NC	8	NC
9	Isolation Ground		

5.9 LED indicator

Status indicator	This USER Defined indicator GREEN LED is used for customization This LED is controlled by software.
System Power indicator	This system power indicator is a RED LED, controlled by Hardware. When system is in normal mode, this LED will be lit on. In other modes, this LED will be lit off.
WWAN Activity indicator	This GPS Activity indicator is a BLUE LED, controlled by WWAN module When WWAN is activity, this LED will be lit on.
GPS Activity indicator	This GPS Activity indicator is a BLUE LED, controlled by GPS Chip When GPS is activity, this LED will be lit on.



Chapter 6

Software functionality

This chapter includes the Windows 5.0 operating system on TREK-510 platform.

Sections include:

- Introduction
- Windows CE startup Procedure
- Upgrade Procedure
- Utilities
- Network
- Application Program Development
- Windows CE5.0 Require components.

6.1 Introduction

The TREK510 platform is one embedded system with Windows® Embedded CE 5.0. The Windows® Embedded CE 5.0 is a compact OS that occupies less storage space or system resources compared with other operating systems such as Windows® XP. By its modular nature, it is possible to choose those functions that are useful for specific application. Not only reducing the system resources required, but also reduces start-up time. In the field of embedded applications, this is an appealing feature because the impact of downtime would be minimized.

Furthermore, the small storage space it needs makes OS on solid-state disk possible, which implies higher robustness to harsh environments.

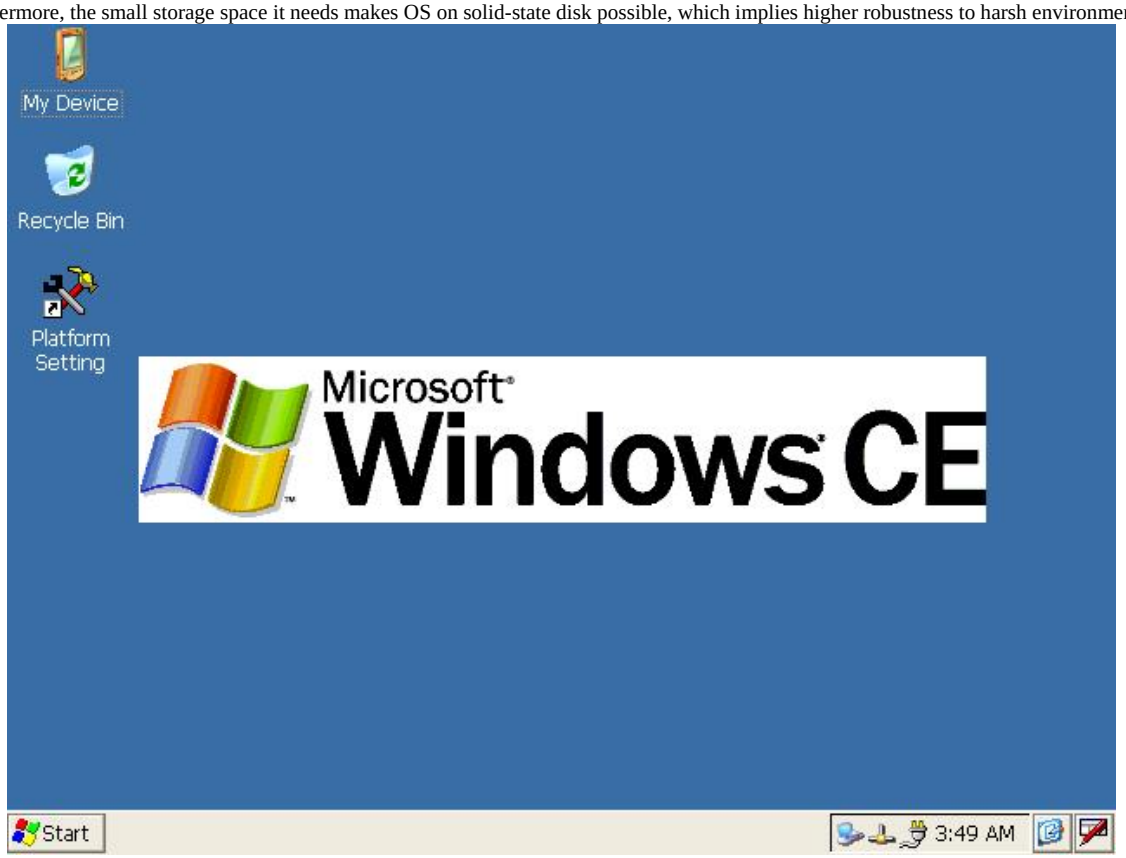


Figure 6.1 Windows® Embedded CE 5.0 on the TREK510 platform

6.2 Windows CE Startup Procedure

Windows CE image can be loaded by two methods, first way is by SD / MMC storage card, and second way is by system on-board chip. Storage card is higher boot priority than on-board system flash chip. In BOOTLOADER criteria, it will first read the Windows CE image from external storage card. After download image done, booloader will burn image to on-board flash chip automatically. If external storage card is unavailable or no Windows CE image inside, BOOTLOADER will load the Windows CE image from on-board system flash chip. BOOTLOADER copy Windows CE image to DRAM and launch WinCE from DRAM, whenever loaded by external storage card or system on-board flash chip.

6.3 Upgrade Procedure

Advantech release two images for TREK510 platform. EBOOT.NB0 is bootloader and NK.BIN is WinCE5.0 image.
You can upgrade image by following two ways :
a) Upgrade image via bootloader.

6.3.1 Upgrade image via bootloader

Bootloader image will be able to support image download then burn it to on-board flash chip automatically. You just copy EBOOT.NB0 or NK.BIN image to storage card separately then reboot platform. Platform will automatically load image from storage card next boot time.

1) Bootloader image download
Step 1, Copy EBOOT.NB0 file to SD / MMC storage card.
Step 2, Power on platform.
Step 3, It will automatically read EBOOT.NB0 from storage card and then burn it to on-board boot ROM.

2) NK image download
Step 1, Copy NK.BIN file to CF / SD / MMC storage card. You needs to make sure EBOOT.NB0 doesn't exist in storage card in advance.
Step 2, Power on platform.
Step 3, It will automatically read NK.BIN from storage card and then burn it to on-board flash chip.

6.4 Utilities

There are several useful utilities added in the standard Windows® Embedded CE 5.0 :

6.4.1 Test Utility

The utility "AdvDiag.exe" is one integrated test tool, which includes the function validation for peripheral. You can use this tool to verify whether the peripheral function work or not. You just copy this utility to storage card and then launch from WinCE by double click it.

Main Function :

Item	Function Description
COMx (LOOPBACK)	Lookback test for COM1 ~ COM3
COMx <=> COMy	Two COM ports RS232 transmission
TOUCH SCREEN	Touch Screen function validation
Audio Play	Audio play function validation
Audio Record	Audio record function validation
USB Keyboard	USB Keyboard function validation
USB Mouse	USB Mouse function validation
WATCHDOG Timer	Watchdog timer validation
Backlight Test	Backlight function validation

DIO Control	DIO function validation
PAUSE	Pause test process
REPEAT TEST	Repeat test process
Etc ……	

6.4.2 Test Procedure

You should see a lot of test items in left zone after launch this utility. You can insert enough test items you want to right zone by pressing “Add” button. The test items in right zone will be executed. Also, you can remove test items from right zone by pressing “Remove” button.

After you add test items done, you can go function test by pressing “EXE ALL” button. To press “View Rpt” button, you will see the test result.

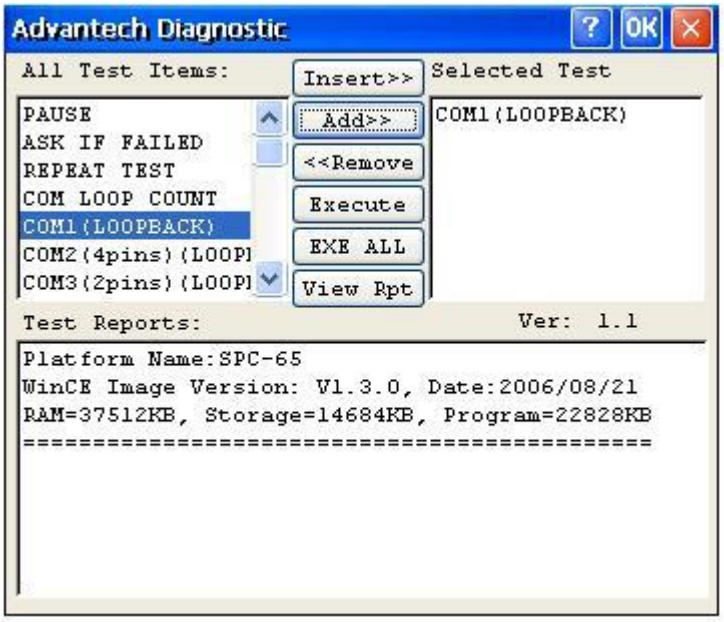


Figure 6.4 Test Utility

6.4.3 Startup execution

The TREK510 platform has a useful function call "Startup execution". After the system boot up, the startup execution function would automatically perform. This function is useful for control system to do the initialization processes or some other procedures. In TREK510 platform, there are two ways to perform "Starup" function.

Method 1:

Step1: Create "startup" directory in SD/MMC storage card, USB disk.

Step2: Copy executable files to "startup" directory that is created by Step 1.

Example:

We copy two executable files "softreset.exe" and "Notepad.exe" in "Startup", and then reboot the system. After the system boot up, the two executable file would automatically execute.

Method 2:

Step1: Create "startup" directory in SD/MMC storage card, USB disk(Hard Disk).

Step2: Create a file called "startup.ini" in "startup" directory. Type in the commands you want to execute after boot up in that file.

Example:

Create "Startup.ini" in "\DiskOnChip\Startup" directory and reboot the system. The content of startup.ini was listed below:

\windows\tty.exe

\windows\registry.exe

After the system reboot, "\windows\ tty.exe" and "\windows\ registry.exe" would automatically execute. Be sure that the two methods are independent. It means they can be used simultaneously.

6.4.4 Platform Setting

Platform Setting utility is an outstanding utility designed by Advantech Windows® CE software team. It is an integrated environment where user can get useful system information as well as configure favorite system settings and apply system control function on demand. Double click the icon of Platform Setting on the desktop. Platform Setting is also put on Control Panel. Following sections illustrate the functions of Platform Setting.

6.4.4.1 General

It shows the memory information including DRAM and on board MMC. Platform name and version control are also put here.

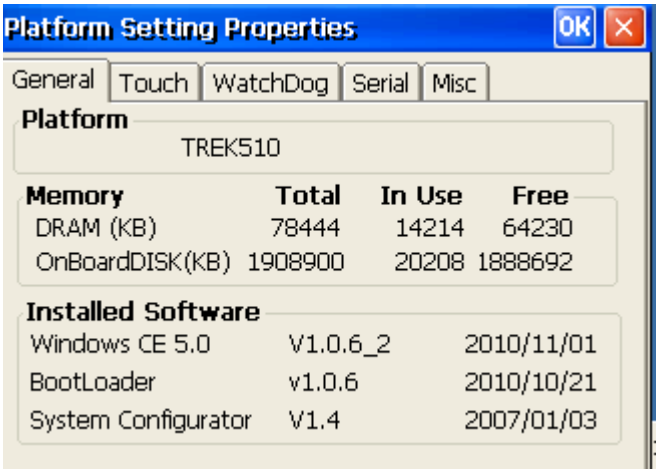


Figure 6.5 General information

6.4.4.2 Touch-screen

The Touch-screen page provides the calibration function. Click the "calibration" button, the "Stylus Properties" windows would appear. Then click "calibrate" button in the Stylus Properties window to enter calibration process. In the calibration process, user taps on the center of the target on the screen then the target will move to the next position. After calibration, press "OK" to leave Stylus Properties window, and then it will save calibration setting to registry persistently.

Figure 6.6 Touch Calibration

6.4.4.3 WatchDog timer

It is important in industrial applications that the control systems are rarely crashed, or are capable of self-reset if they are halted somehow. Watchdog function of automatic resetting system is therefore provided in TREK510. There is a timer inside the watchdog function. User's AP could invoke the associated APIs in Watchdog function to start the timer, then Watchdog function would repeat the countdown of the specified period of time to reboot the system if the user's AP does not clear the timer in time periodically. The Watchdog function in the TREK510 provides eight different time intervals: 2 seconds, 5 seconds, 10 seconds, 30 seconds, 60 seconds, 2 minutes, 5 minutes and 10 minutes. The "Enable" button is used to start the Watchdog function. Press the "SoftReset" button will cause system warm boot, reloads all drivers and refresh the newest registry settings. Press the "REBOOT" button will cause the system cold boot. Press RTC TIME start button, it will get real RTC value from RTC chip.

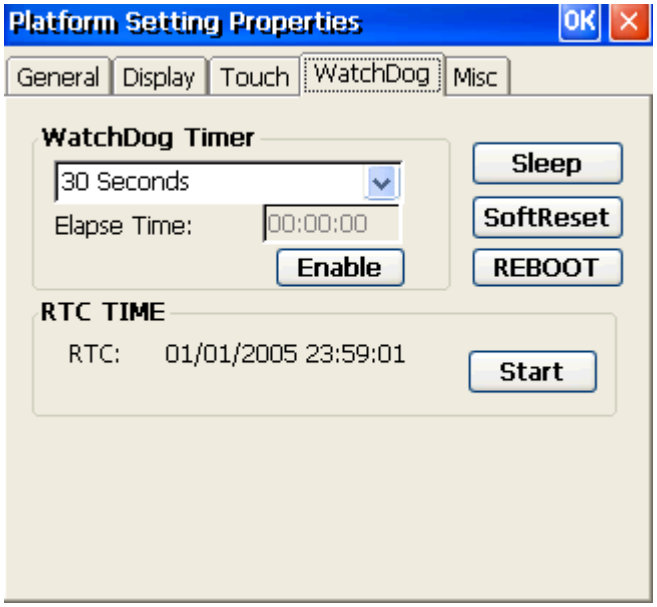


Figure 6.7Watchdog timer

6.4.4.4 Miscellaneous

The Misc page provides several functions as described below. The "Registry" block provides registry save and registry clean function. Pressing "Save" button, the registry settings will be saved to persistent storage as DISKONCHIP. Pressing "Clean" button, the registry setting will return to default settings. The "A.Sync" button invokes ActiveSync to the host computer.The Memory Management block will check if memory size needs to be allocated automatically during boot. Once this is checked, program memory will be allocated half size of memory, and storage memory will occupy the rest.

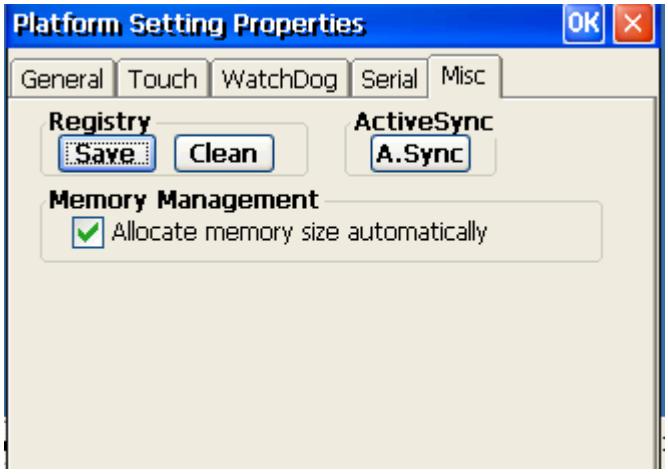


Figure 6.8 Miscellaneous settings

6.5 Network

TREK510 build in one 3G controller. It appears at “Control Panel/Network and Dial-up Connections” via “DM9CE1”. User can configure its 3G support as follows:

1. Click "Start/Settings/Control Panel"

2. Double click "Network and Dial-up Connections"

3. If the TREK510 is a node of the LAN with 3G servers, it is now available.

4. Support Module have MC55i/MC5728V/MV8790V

Figure 6.10 3G via Ethernet

6.6 Application Program Development

The TREK510 is bundled with built-in Windows® Embedded CE 5.0 operating system. In real applications users need to execute various application programs on it. However, unlike its other family, the Windows® Embedded CE 5.0 is a hardware-dependent operating system. That is to say, Windows® Embedded CE 5.0 application programs are only portable in the source code level. Users must rebuild the runtime file for a different Windows® Embedded CE 5.0 platform even though the source code may not be changed at all.

6.6.1 PC System requirements

- Intel® Pentium-90 CPU or more advanced
- Microsoft® Windows® 2000 Professional or Windows® XP
- Microsoft® eMbedded Visual C++ 4.0 or Virtual Studio 2005
- Platform SDK for TREK510
- 64MB DRAM
- CD-ROM drive
- Monitor with VGA resolution at least
- Mouse
- 200MB free hard disk space at least
- TREK510 platform
- Let the host PC and TREK510 connect on the same USB1.1 to do kernel debugging if necessary
- USB cable (bundled in the standard TREK510)

6.6.2 Building Windows CE program

By the platform SDK bundled with the standard TREK510, users can build the Windows CE runtime application program by the eMbedded Visual Tools.

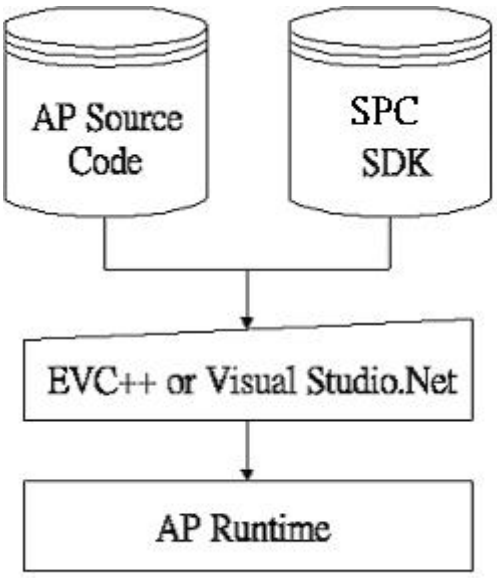


Figure 6.11 Flow-chart of Building Windows® Embedded CE 5.0 runtime

6.6.3 How to install SDK

For example copy Platform SDK file "**.msi" to your PC, and launch it. You can install SDK by steps.

Step 1, Launch Platform SDK file, and then tap Next button.

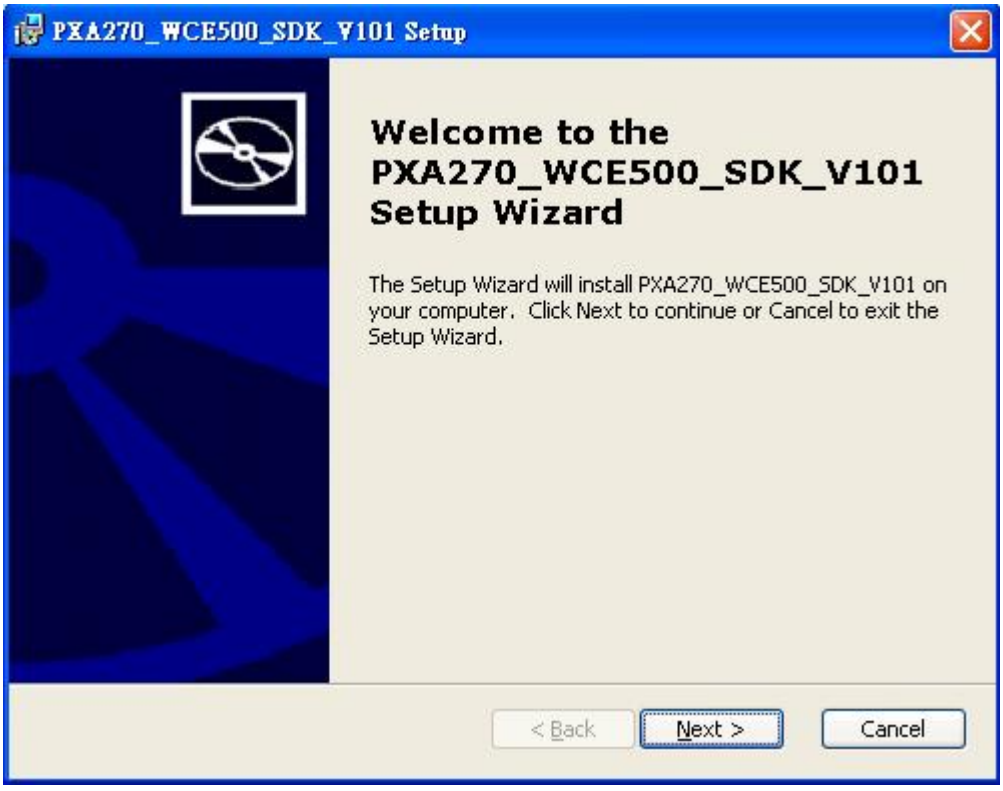


Figure 6.12

Step 2, Accept License Agreement and go next.

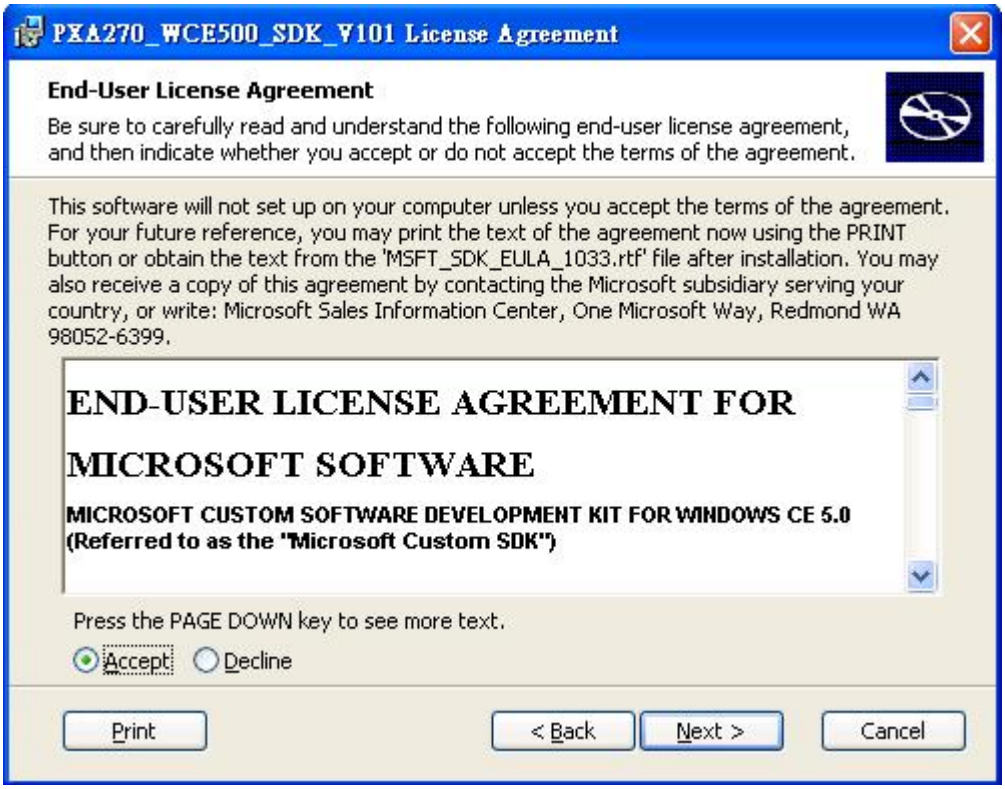


Figure 6.13

Step 3, Key in your information and go next.

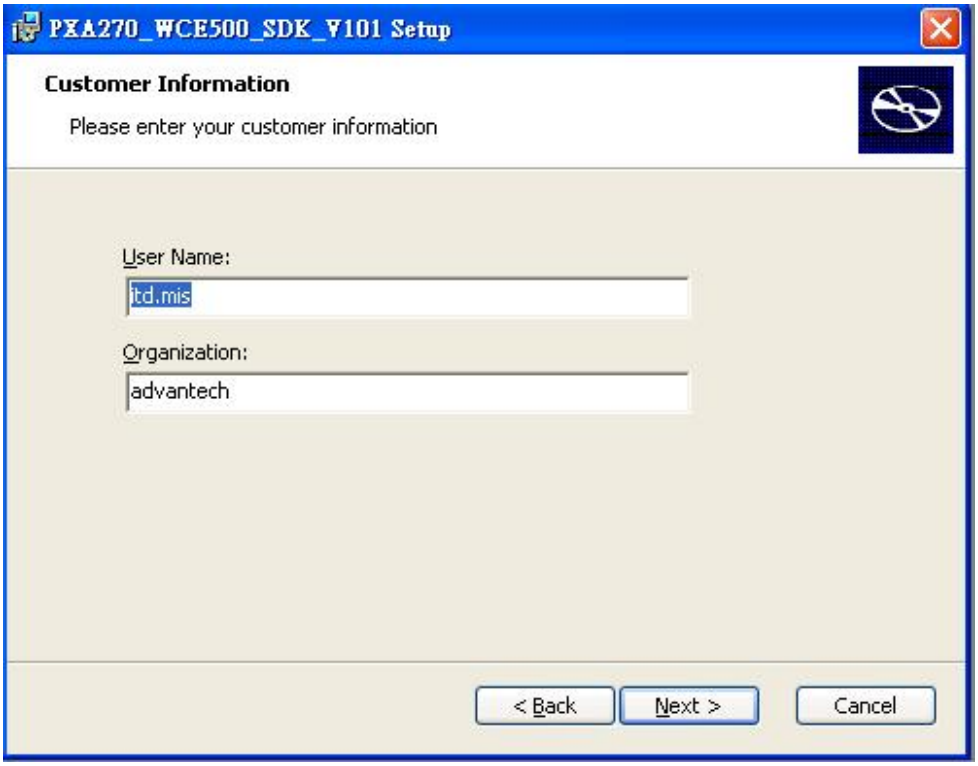


Figure 6.14

Step 4, Choose setup type.

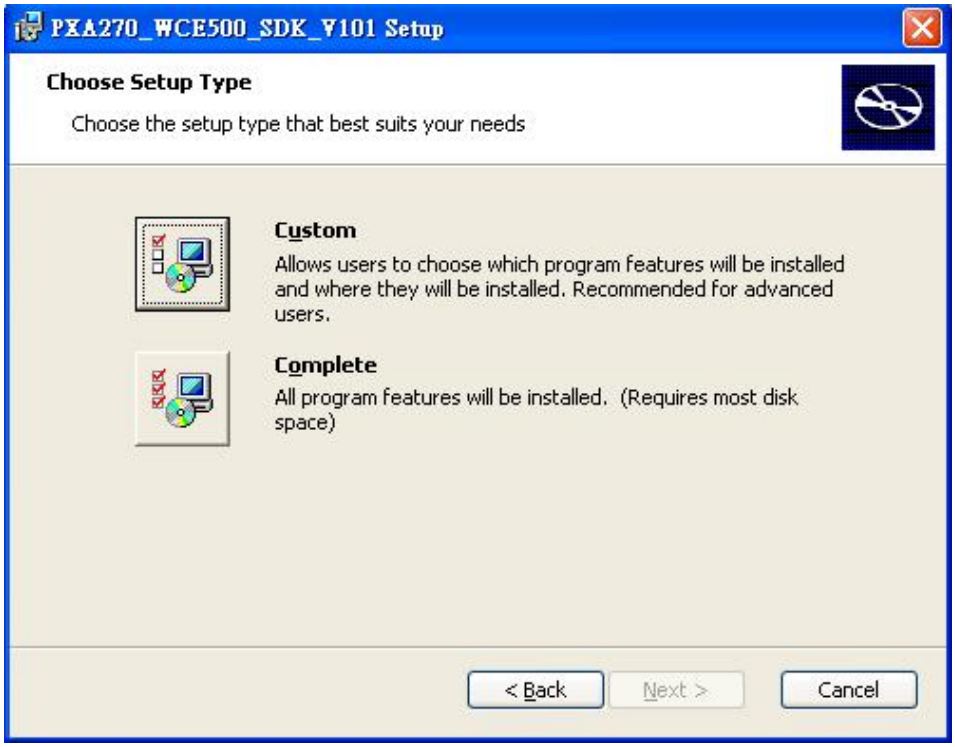


Figure 6.15

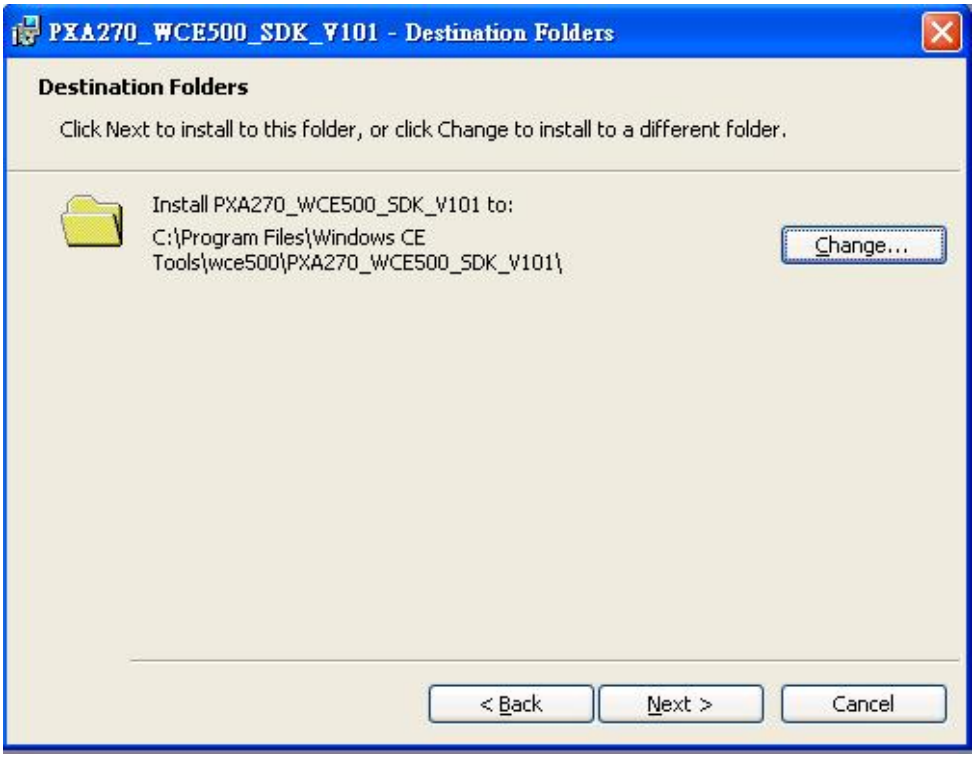


Figure 6.16

Step 5, Tap “Install” button to install SDK.

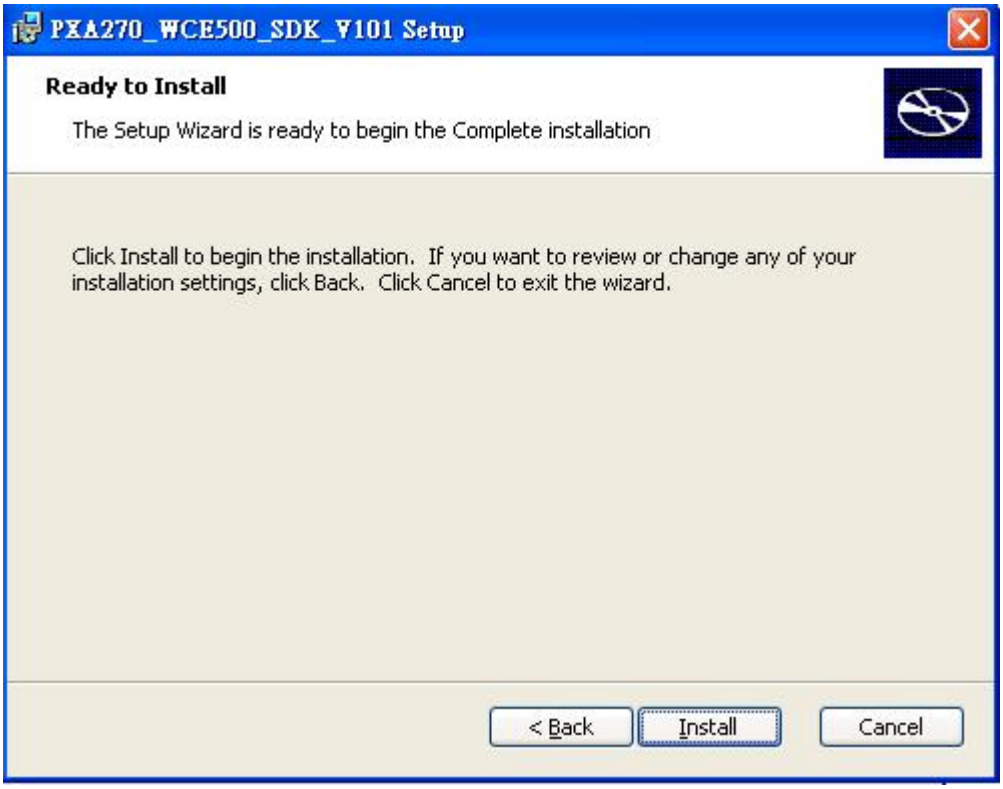


Figure 6.17

Install SDK…….

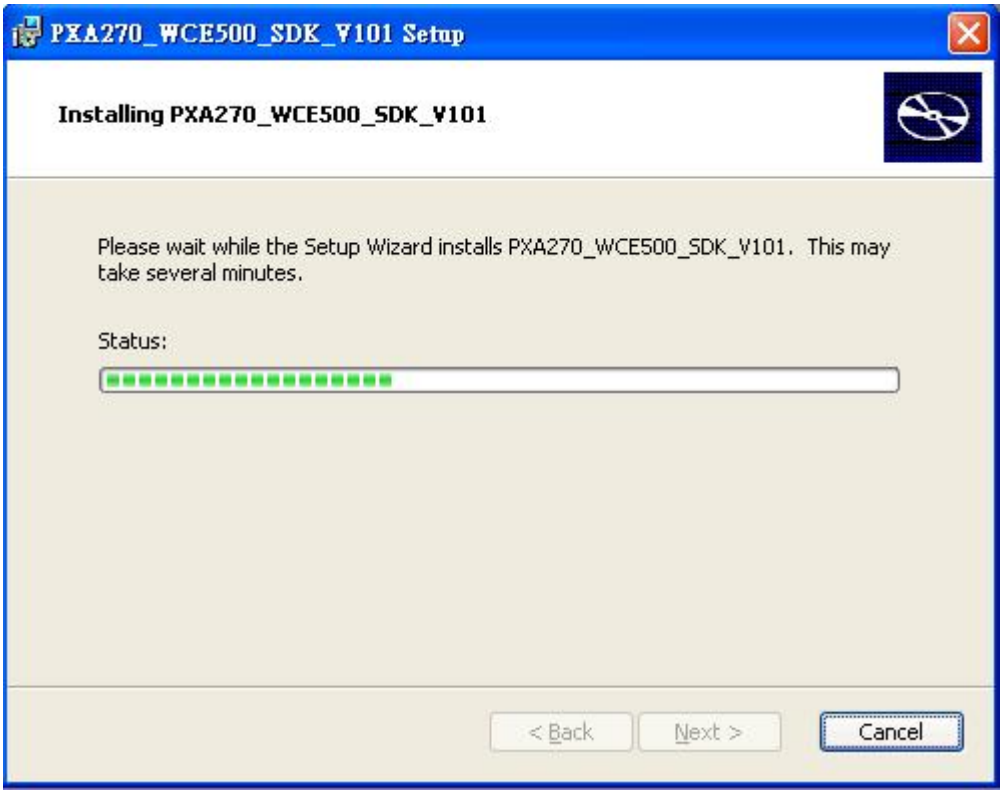


Figure 6.18

Step6, Finish installing.

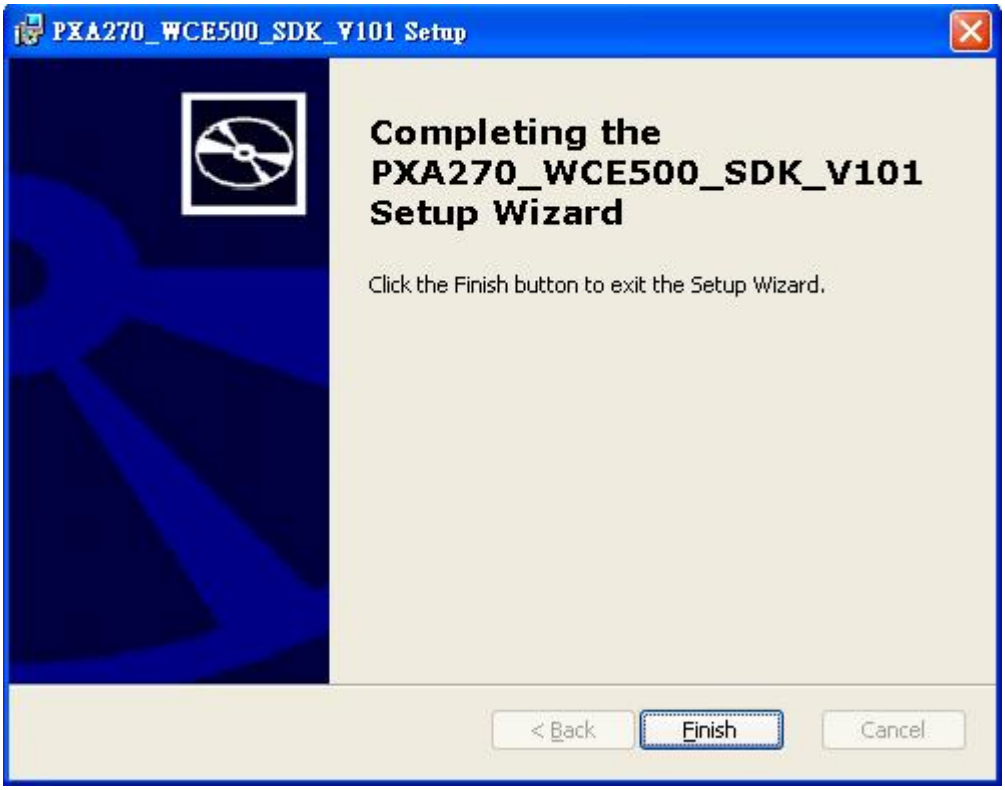


Figure 6.19

6.6.4 Running your application programs

After you implement application code, you should choose Advantech SDK to compile.

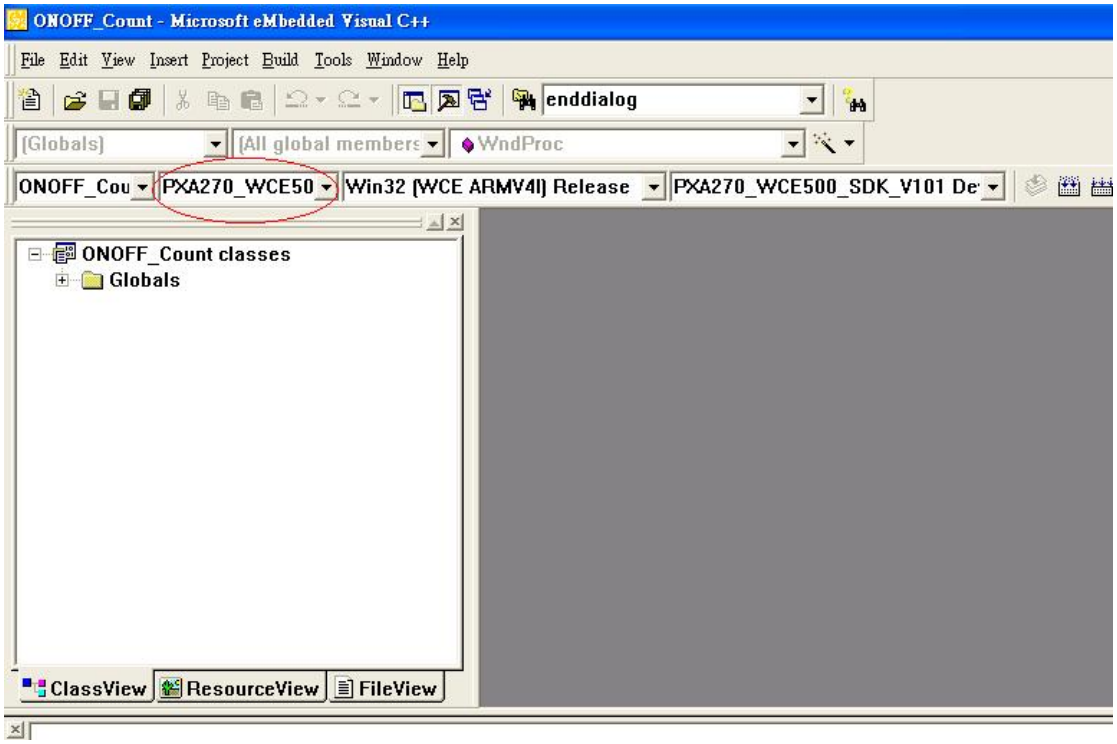


Figure 6.20

6.6.5 SUSI library for application program

TREK510 is targeted to be the embedded device for system integrator. System integrator usually access platform relative IO, like backlight control, brightness control, etc. Advantech especially provide one SUSI static library to system integrator. SUSI library includes some useful APIs. System integrator just adds it to their application project, and then they can use SUSI library functions.

Note: about SUSI library detail was showed in [SUSIV3.0RISCUser Manual(Hotkey2GPIO).doc]

SUSI library package include following content :

1, SUSI.lib

2, SUSI.h

3, SUSI user guide

The functions in SUSI include :

1, Screen on / off

2, Brightness set / get

3, Watchdog timer set / get / refresh

4, Software / Hardware reset

5, Get bootloader version

6, Digital I/O access

Chapter 7

This appendix explains the software demo utility for TREK-510.

Sections include:

- Introduction
- How to set up demo utility

7.1 Introduction

To make the hardware easier to access for programmers, Advantech has developed a demo utility in order to let customer test the functions on TREK-510. This document describes detailed information for each Advantech demo utility so that application developers can become more familiar with using them.

For technical support, contact Advantech application engineers worldwide. For news updates, visit our website: **www.advantech.com**

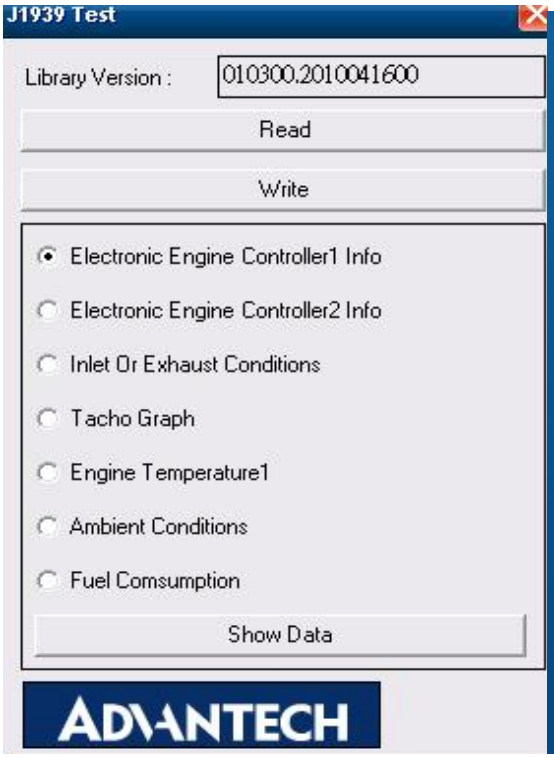
7.1.1 Execute J1939 demo utility

This section explains how to install the Advantech demo utility in Windows XP Pro / Embedded.

1. Execute the test program called “IMC_Demo”

Figure 7. 1 IMC demo utility

2. Click J1939: customer may connect directly to the truck; we use a car simulator board below to explain how J1939 protocol can be executed. First, connect to the simulator board to TREK-510 CAN port and console PC, once the simulator is powered on (connect to the truck), you can start getting the data, just click [Read], you may get the data you need from the car simulator, click [Read], you may transfer the data to Console



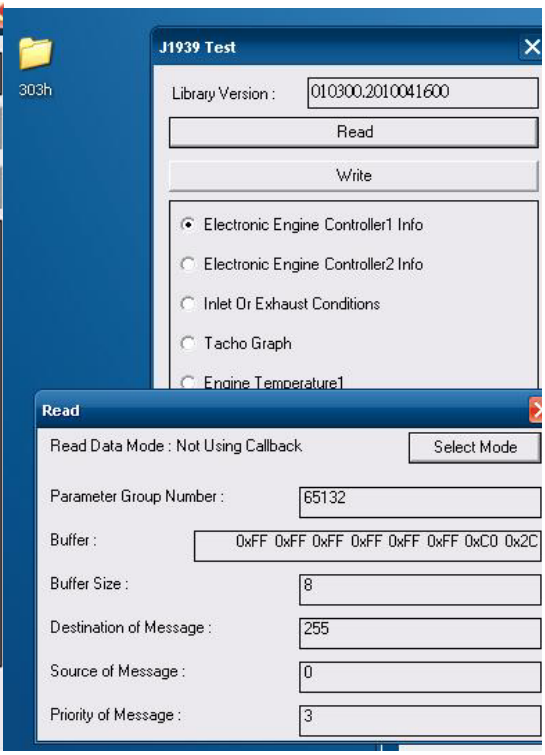


Figure 7.3 J1939 test -1 **Figure 7.4 J1939 test -2**

7.1.2 Execute CAN demo utility

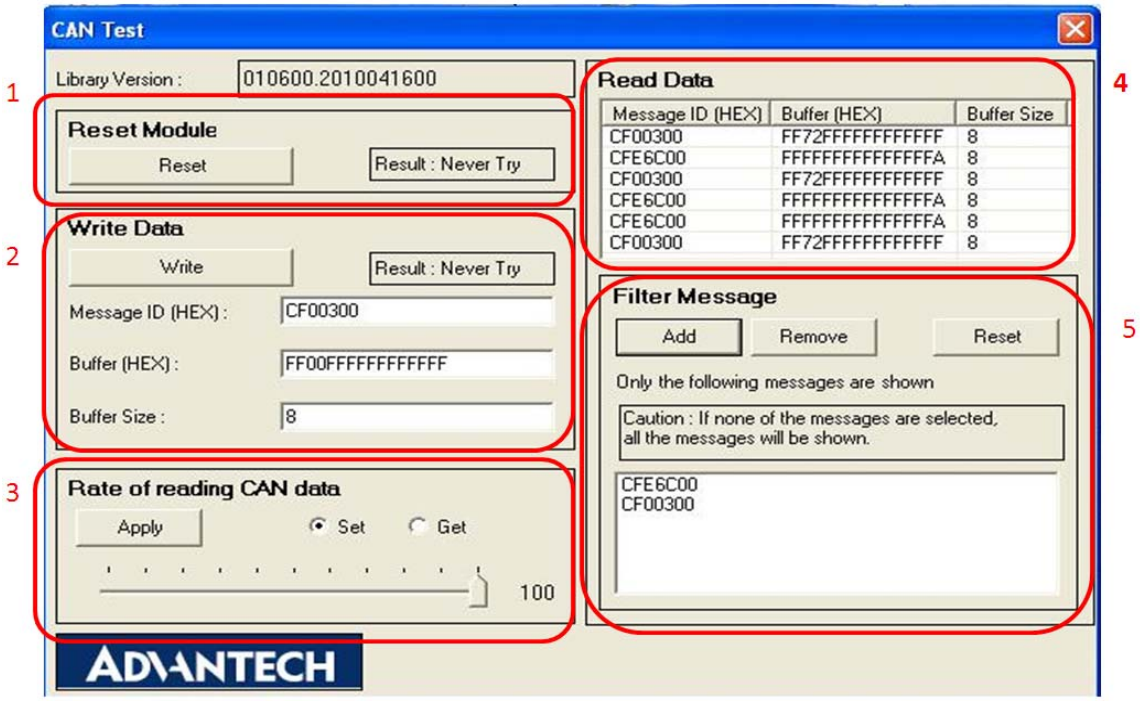


Figure 7. 9 CAN test

1. Reset the module
2. Transmit CAN message
3. Set the polling rate of CAN message reception
4. Received CAN message.
5. Set up the filter of CAN message (only show the message ID)

7.2 RTC test

Execute “RTC test”

1. **For RTC Time setting**: You may set year, month, date, and time show as below.

Figure 7.10 RTC test -1

Figure 7.11 RTC test -2

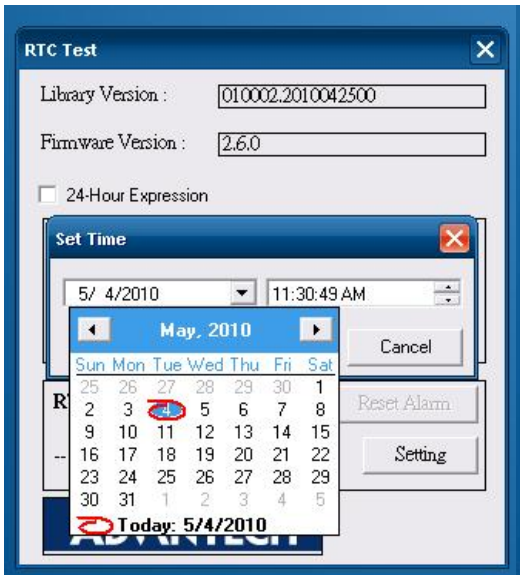


Figure 7. 12 RTC test -3

Figure 7. 13 RTC test -4

2. **RTC Alarm Setting**: You may also set Alarm time; you may wake up the system by the time you have set. Please refer to below figure 6.

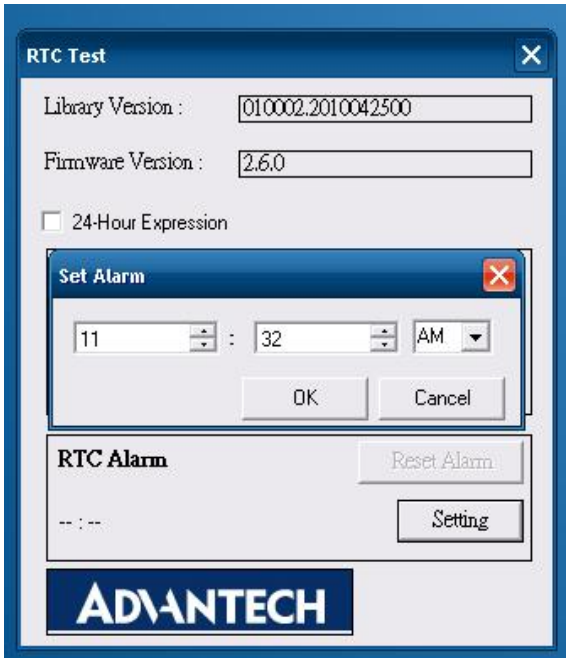


Figure 7.14 RTC test -5

7.3 Vehicle Power Management

7.3.1 Power management Mechanism

The feature of Vehicle Power Management (VPM) is provided for users to fulfill the special requirements on in-vehicle applications.

- **Ignition on/off**
  - **Turn on the system by ignition**

    For the cases of in-vehicle applications, ignition signal is often used to turn on or shutdown system. When the system is in OFF state and ignition is turn ON, the VPM controller will countdown ON_DELAY; once it counts to zero, the system will be turn on.
  - **Shutdown the system by ignition**

    When the system is powered on and ignition is turn off, the OFF_EVENT_DELAY will start to count down. During this stage, if the ignition is back to ON, VPM controller will stop countdown and reset the OFF_EVENT_DELAY value. If OFF_EVENT_DELAY is keeping counting to zero, VPM controller will send a event (power button press) to the system and start to count HARD_OFF_DELAY. The application programs could watch this event to do pre-defined tasks, like storing the data and preparing to turn off system.

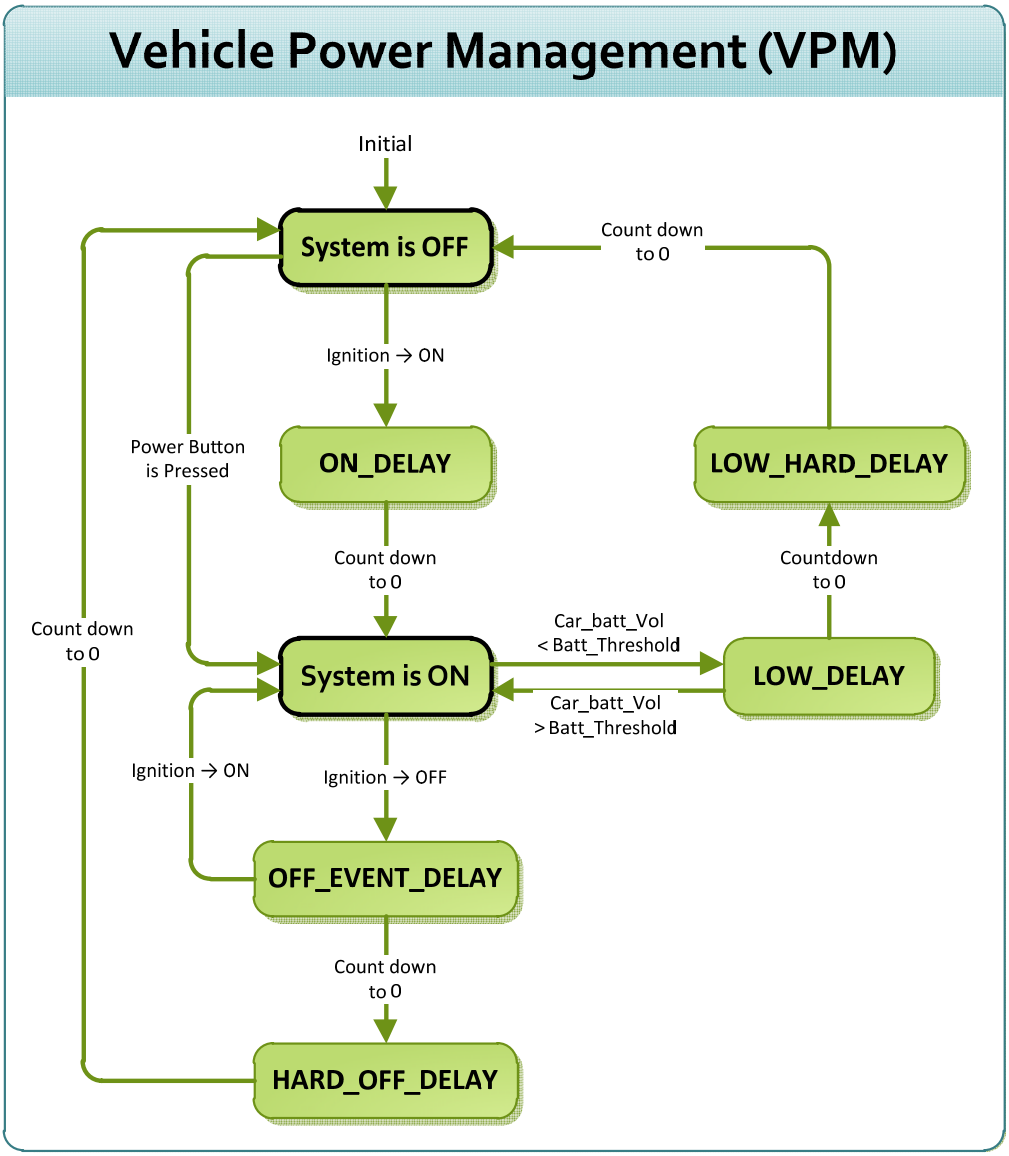
    Once going into HARD_OFF_DELAY stage, this process will be irreversible. And if HARD_OFF_DELAY counts to zero, the system power will be cut off abruptly.
- **Low battery protection**

  To avoid draining out the car battery, low-battery protection is involved to ensure the car battery is capable to start the vehicle. When the system is ON, VPM controller will monitor the car battery voltage. If the battery voltage is lower than a programmable threshold (LOW_THRESHOLD), VPM controller will go into LOW_DELAY stage and start to count down. During the stage of LOW_DELAY countdown, if battery voltage is back

above LOW_THRESHOLD, VPM controller will stop count down and leave this stage. If LOW_DELAY counts to zero, VPM controller will send an event (power button press) to notify the system, go into LOW_ HARD_DELAY stage and start to count down. Once LOW_ HARD_DELAY counts to zero, VPM controller will cut off the system power abruptly to avoid draining out the cat battery.

The table below lists the user programmable parameters for VPM features:

	Default value	Acceptable range
ON_DELAY	2 second	1 ~ 18000 second
OFF_EVENT_DELAY	5 second	1 ~ 18000 second
HARD_OFF_DELAY	60 second	1 ~ 18000 second
LOW_THRESHOLD (12V mode)	11.42 V	10.09 ~ 12.25 V
LOW_THRESHOLD (24V mode)	22.44 V	21.11 ~ 23.28 V
LOW_DELAY	30 second	1 ~ 3600 second
LOW_ HARD_DELAY	60 second	1 ~ 3600 second



7.3.2 Power Management utility program

Execute IMCDemo.exe file, see the icon below.

7.3.3 Power Management Parameter settings

The parameters for power management on TREK-510 could be read or modified by Demo utility (see the image below) or SDK/API.

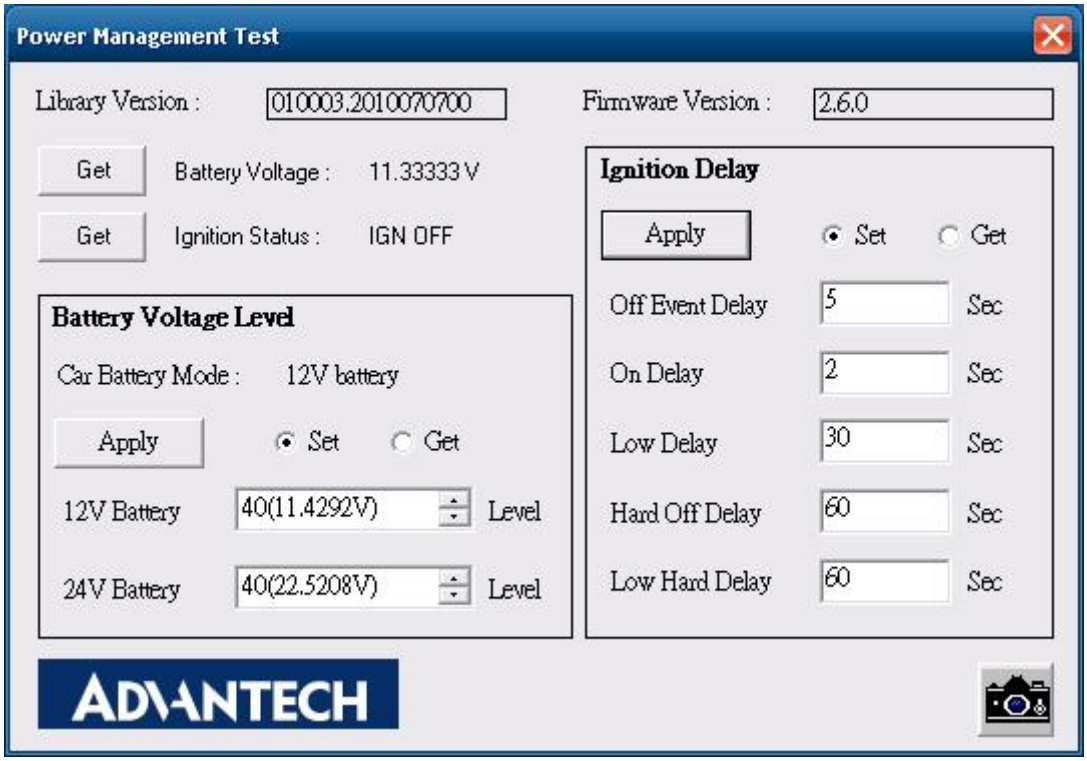


Figure 7.15 Power management test utility

7.3.4 TREK-510 power consumption

OS: Windows Embedded Standard

Burn-in test V6.0

	Idle Mode	100% Burn-in Test Mode	Off mode (S5)
w/o TREK-303H	12V / 1.04A	12V / 1.20A	12V / 1.75mA
w/ TREK-303H	12V / 1.51A	12V / 1.94A	

*Doesn't support S1, S3, S4

7.4 GPIO Test

1. Execute I/O Test, connect GPIO loopback, click Pin0→Set, the end which Read the signal, the bulb will be light up, like wise to Pin1~Pin3. Next pick Digital output to execute the same procedure. See **figure 6.**

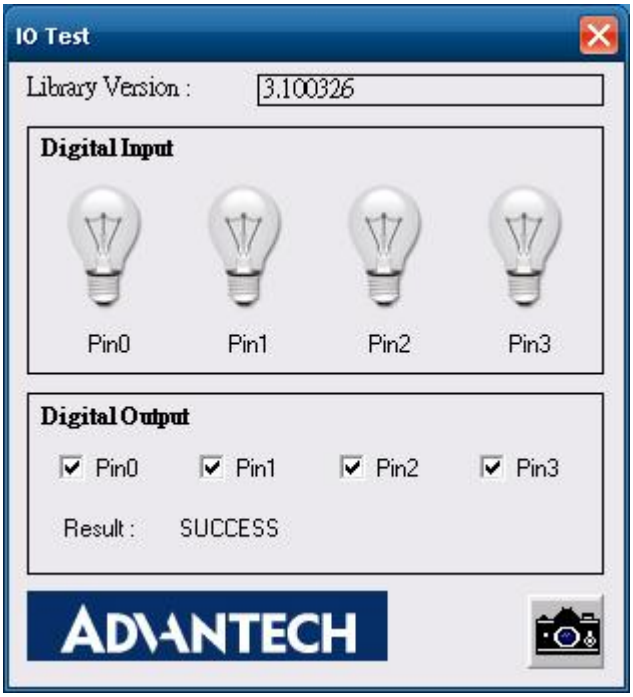


Figure 7.16 DI/O test

a. Digital Output ➔ isolated relay driver output

b. Digital Input ➔ isolated dry contact input

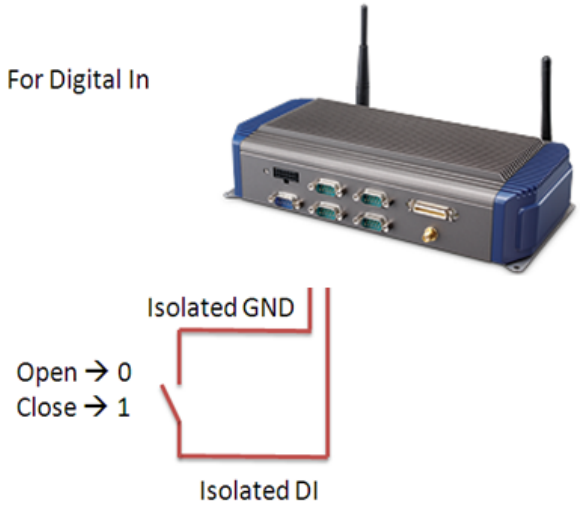


Figure 7.17 Digital in

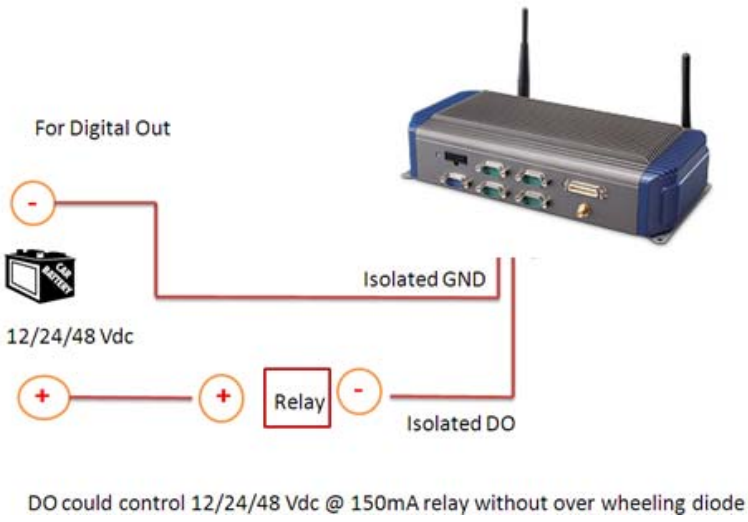


Figure 7.18 Digital out

7.7 G-sensor (3-axis accelerometer)

A 3-axis accelerometer is integrated in TREK-510. This could be used to characterize driver behavior such as hard accelerations, braking, and cornering. This also can tell users other significant information that can be used in accident reconstruction and etc. A code example is provided for customer reference regarding how to access and configure G-sensor. G-sensor is located on the motherboard inside the TREK-510. Please refer the link (http://www.analog.com/static/imported-files/data_sheets/ADXL345.pdf) for the G-sensor datasheet.

Appendix A

TREK-303

This appendix explains the TREK-303 detailed information

Appendix A Paired with TREK-303 Specifications

.

TREK-303 Specification

Display	Models	TREK-303R-LA0E	TREK-303R-HA0E
	Design Compatible Models	paired with TREK-510	paired with TREK-550
	Resolution(pixel)	480 x 234	800 x 480
	Number of Colors	262 K (supports 18-bit)	262K (supports 24-bit)
	Pixel Pitch	0.107 (W) x 0.37 (H)	0.2168 (H) x 0.2168 (V)
	Brightness (cd/m²)	500 (typical) without touchscreen	500 (typical) without touchscreen
	View Angle (R/L/B/T)	70° / 70° / 60° / 60°	70° / 70° / 60° / 60°
	Contrast Ratio	300	500
	Lamp Life (hrs)	10,000 (min)	50,000 (min)
	Lamp Type	CCFL	LED
Touchscreen	Touchscreen	4-wire resistive (GFG 4-wire design reserve)	
Front plane	Speaker	2 watts	
	Hotkey	Supports 5 hotkeys (user defined)	
	Brightness Control	Light sensing (default), manually controlled by button (optional)	
	USB Host	x 1	
Back plane	Power /Wake Up Button	Yes	
	Reset Button	Yes	
Power	DC Input	12V +- 5%	
	Power Consumption	~8W (Max.)	~7W (Max.)
Mechanical	Mounting	Design compatible with RAM mount	
	Material	PC	
	Weight	1 kg	
	Dimensions	244 x 160 x 41 mm	
	IP rating	IP54 (without I/O connector)	
Environment	Operating Temperature	-30 to + 70° C	
	Storage Temperature	-40 to + 80° C	
	Vibration	MIL-STD-810F, SAE J1455 4.9.4.2	

Note!

1. *The Brightness control is adjusted by the auto light sensor in the front panel as default; it is also defined by button on the front panel* by manual.
2. *The color LCD display*

A. USB Host
B. 5 programmable hotkeys
C. D. Brightness control
E. Power LED
F. Light sensor
G. Speaker

Note: Backlight off: Press C button to the lowest level

Pin out for TREK-303 LVDS connector

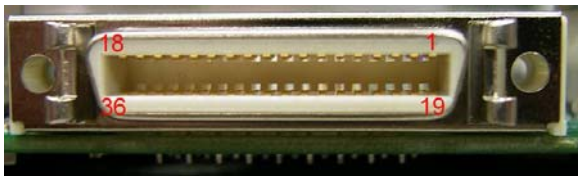
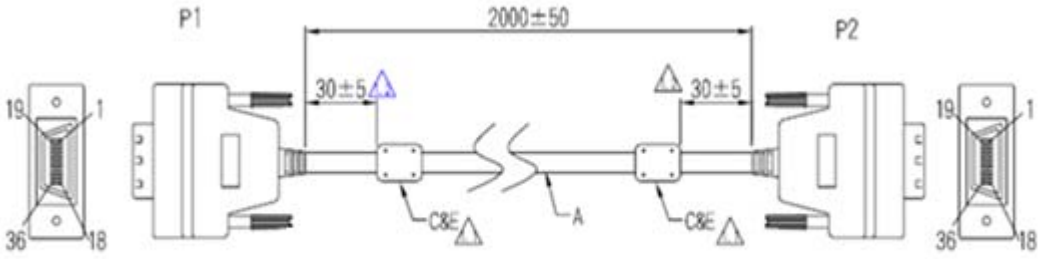


Table A.2: Smart Display Connector

Pin	Signal	Pin	Signal
1	Backlight Enable input #	2	Panel Power Enable input #
3	LVDS Ground	4	Reset Button Input #
5	LVDS Clock +	6	LVDS Clock -
7	LVDS Ground	8	LVDS Ground
9	LVDS Data2 +	10	LVDS Data2 -
11	RS232 RXD1 #	12	RS232 TXD1 #
13	LVDS Data1 +	14	LVDS Data1 -
15	LVDS Ground	16	LVDS Ground
17	LVDS Data0 +	18	LVDS Data0 -
19	USB D-	20	USB D+
21	USB Ground	22	USB Ground
23	+12VDC input (+/- 5%, max 1A)	24	+12VDC input (+/- 5%, max 1A)
25	+12VDC input (+/- 5%, max 1A)	26	+12VDC input (+/- 5%, max 1A)
27	Power Ground	28	Power Ground
29	Power Ground	30	Power Ground
31	RS232 RXD2 #	32	RS232 TXD2 #
33	RS232 RTS2	34	Power Button Input # (connect with system box)
35	Audio Ground	36	Mono. Line-in



Pin assignment

P1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
P2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Color	Brown	White	Ground	Brown	red	white	Ground	Ground	Orange	white	red	Orange	yellow	white	Ground	Ground	Green	white

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Blue	white	Ground	yellow	Green	Blue	Purple	Grey	white	Black	Black Brown	black red	Orange	Black Yellow	Black green	Black blue	Black purple	Black grey

TREK-303 Hotkey Utility

Execute IMC demo utility

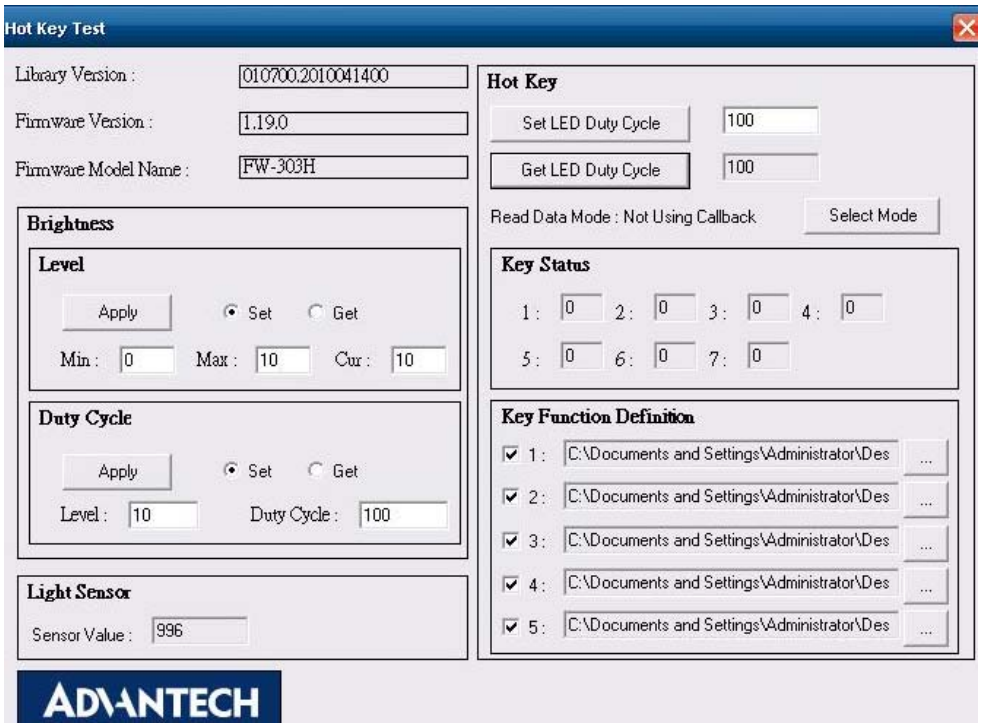


Figure A. 1 Hotkey utility

1. Execute "**Hot Key test"** program ➔
2. **Brightness level:** You may set panel's brightness from level 0 ~10, total 10 levels, when you finish setting the brightness level you want, please click "Apply". If you want to check the current brightness level of TREK-303, please click "Get".
3. **Duty cycle:** You may set every level's brightness strength, total 10 levels, when you finish setting the brightness strength for each level, please click "Apply". If you want to check the current brightness strength on certain level of TREK-303, please click "Get".
4. **Light sensor:** When the sensor has detected the change of the brightness in the environment, the value will change. The lowest level of brightness, the lowest value it is presented. On the contrary, the highest level of brightness, the highest value it is presented.
5. **Hotkey:** the backlight brightness of hotkeys could be adjusted by setting the value from 0 ~100.
6. **Key Status:** When you press Hot key, the status will change from 0 to 1.
7. **Key function Definition:** You may set the parameter to connect the application program of the hot key.

Appendix B

Windows Embedded CE 5.0 Component List

Appendix B

Windows® Embedded CE 5.0 Component List

APPLICATIONS AND SERVICES DEVELOPMENT	Core	Advantech Core	Pro.	Advantech Pro.	Pro. Plus	Advantech Pro. Plus
Active Template Library (ATL)	x	x	x	x	x	x
C Libraries and Runtimes	x	x	x	x	x	x
C++ Runtime Support for Exception Handling and Runtime Type Information	x	x	x	x	x	x
Full C Runtime	x	x	x	x	x	x
Standard I/O (STDIO)	x	x	x	x	x	x
Standard I/O ASCII (STDIOA)	x	x	x	x	x	x
String Safe Utility Functions	x	x	x	x	x	x
Standard String Functions - ASCII (corestra)	x	x	x	x	x	x
Component Services (COM and DCOM)	x	x	x	x	x	x
Component Object Model	x	x	x	x	x	x
COM	x	x	x	x	x	x
CoCreateGuid functionality for OLE32	x	x	x	x	x	x
COM Storage	x	x	x	x	x	x
DCOM	x	x	x	x	x	x
COM Storage	x	x	x	x	x	x
DCOM Remote Access	x	x	x	x	x	x
Minimal COM (No OLE Support)	x	x	x	x	x	x
CoCreateGuid functionality for OLE32	x	x	x	x	x	x
COM Storage	x	x	x	x	x	x
Speech Interface	x		x		x	
Speech API (SAPI) 5.0	x		x		x	
Microsoft English (US) Windows CE Speech Recognizer (available in 4.2 only)*			x		x	
Lightweight Directory Access Protocol (LDAP)	x	x	x	x	x	x

Client						
Message Queuing (MSMQ)	x	x	x	x	x	x
SOAP Reliable Messaging Protocol (SRMP)	x	x	x	x	x	x
MSMQ ActiveX Wrappers	x	x	x	x	x	x
Microsoft Foundation Classes (MFC)	x	x	x	x	x	x
Object Exchange Protocol (OBEX)	x	x	x	x	x	x
OBEX Server	x	x	x	x	x	x
OBEX Inbox	x	x	x	x	x	x
OBEX File Browser	x	x	x	x	x	x
OBEX Client	x	x	x	x	x	x
Pocket Outlook Object Model (POOM) API			x		x	
SOAP Toolkit	x	x	x	x	x	x
Client	x	x	x	x	x	x
Server	x	x	x	x	x	x
Standard SDK for Windows CE			x	x	x	x
.NET Compact Framework	x	x	x	x	x	x
OS Dependencies for .NET Compact Framework 2.0	x	x	x	x	x	x
Smart Device Authentication Utility	x	x	x	x	x	x
.NET Compact Framework 2.0	x	x	x	x	x	x
SQL Server CE 2.0 .NET Data Provider	x	x	x	x	x	x
SQL Server 2000 .NET Data Provider	x	x	x	x	x	x
SQL Server CE 2.0	x	x	x	x	x	x
XML	x	x	x	x	x	x
MSXML 3.0	x	x	x	x	x	x
XML Core Services and Document Object Model (DOM)	x	x	x	x	x	x
XML HTTP	x	x	x	x	x	x
XML Query Languages (XQL)	x	x	x	x	x	x
XML Stylesheet Language Transformations (XSLT)	x	x	x	x	x	x
XML SAX	x	x	x	x	x	x
XML Error Strings	x	x	x	x	x	x
XML Minimal Parser	x	x	x	x	x	x
Exchange Client	x		x		x	
APPLICATIONS - END USER						

ActiveSync			x		x	
File Sync	x	x	x	x	x	x
Inbox Sync			x		x	
Pocket Outlook Database Sync			x		x	
CAB File Installer/Uninstaller	x	x	x	x	x	x
File Viewers*					x	x
Microsoft Excel Viewer*					x	x
Microsoft Image Viewer*					x	x
Microsoft PDF Viewer*					x	x
Microsoft PowerPoint Viewer*					x	x
Microsoft Word Viewer*					x	x
FLASH Update Sample Application	x		x		x	
Games	x		x		x	
Freecell	x		x		x	
Solitaire	x		x		x	
Help*			x	x	x	x
Inbox			x		x	
Remote Desktop Connection			x	x	x	x
Remote Desktop Protocol (RDP)			x	x	x	x
User Interface Dialog Boxes			x	x	x	x
Smart Card Redirection			x	x	x	x
File Storage Redirection			x	x	x	x
Filtered File Storage Redirection			x	x	x	x
Cut/Copy/Paste Clipboard Redirection			x	x	x	x
Serial and Parallel Port Redirection			x	x	x	x
Audio Playback Redirection			x	x	x	x
Printer Redirection			x	x	x	x
Terminal Emulator	x	x	x	x	x	x
Windows Messenger			x		x	
WordPad			x		x	
CORE OS SERVICES						
Battery Driver	x	x	x	x	x	x
Display Support	x	x	x	x	x	x
Serial Port Support	x	x	x	x	x	x
Parallel Port Support	x	x	x	x	x	x
Internet Appliance (IABASE) Support	x		x		x	
Notification LED Support	x		x		x	

PNP Notifications	x	x	x	x	x	x
USB Host Support	x	x	x	x	x	x
USB Human Input Device (HID) Class Driver	x	x	x	x	x	x
USB HID Keyboard and Mouse	x	x	x	x	x	x
USB HID Keyboard Only	x	x	x	x	x	x
USB HID Mouse Only	x	x	x	x	x	x
USB Printer Class Driver	x	x	x	x	x	x
USB Storage Class Driver	x	x	x	x	x	x
USB Remote NDIS Class Driver	x	x	x	x	x	x
Debugging Tools	x		x		x	
Keyboard Test Application	x		x		x	
Touch Driver Test Application	x		x		x	
Remote Display Application	x		x		x	
Tiny Kernel Test Sample Application	x		x		x	
Toolhelp API	x	x	x	x	x	x
LMemDebug Memory Debugging Hooks	x		x		x	
Notification (Choose 1)	x		x		x	
UI based Notification	x		x		x	
Non UI based Notification	x		x		x	
Power Management (Choose 1)	x		x		x	
Power Management (Full)	x	x	x	x	x	x
Power Management (Minimal)	x		x		x	
Device Manager	x	x	x	x	x	x
Kernel Features	x	x	x	x	x	x
Target Control Support (Shell.exe)	x	x	x	x	x	x
Fiber API	x	x	x	x	x	x
FormatMessage API	x	x	x	x	x	x
Memory Mapped Files	x	x	x	x	x	x
Message Queue - Point-to-Point	x	x	x	x	x	x
COMMUNICATIONS SERVICES AND NETWORKING						
Networking Features	x	x	x	x	x	x
Domain Discovery	x	x	x	x	x	x
Extended DNS Querying and Update (DNSAPI)	x	x	x	x	x	x
Secure DDNS	x	x	x	x	x	x
Extensible Authentication Protocol	x	x	x	x	x	x
Firewall	x		x		x	

Internet Connection Sharing (ICS)	x	x	x	x	x	x
Gateway Logging	x	x	x	x	x	x
IPSec v4	x	x	x	x	x	x
NDIS Packet Capturing DLL	x		x		x	
NDIS User-mode I/O Driver	x	x	x	x	x	x
Network Bridging	x	x	x	x	x	x
Network Driver Architecture (NDIS)	x	x	x	x	x	x
Network Utilities (IpConfig, Ping, Route)	x	x	x	x	x	x
Reference Gateway User Interface	x		x		x	
Remote Configuration Framework	x		x		x	
TCP/IP	x	x	x	x	x	x
IP Helper API	x	x	x	x	x	x
TCP/IPv6	x	x	x	x	x	x
Universal Plug and Play (UPnP)	x	x	x	x	x	x
Control Point API	x	x	x	x	x	x
Device Host API	x	x	x	x	x	x
Device Host API (Minimal Subset)	x	x	x	x	x	x
Sample UPnP IGD Schema Implementation	x	x	x	x	x	x
UPnP Tools	x	x	x	x	x	x
UPnP Audio-Video DCP	x		x	x	x	x
AV Control Point API	x		x	x	x	x
AV Device API	x		x	x	x	x
AV Renderer Sample			x		x	
USB Flash Config Tool	x		x		x	
Windows Networking API/Redirector (SMB/CIFS)	x	x	x	x	x	x
Winsock Support	x	x	x	x	x	x
Networking - Local Area Network (LAN)	x	x	x	x	x	x
Native Wi-Fi WLAN Access Point Components	x	x	x	x	x	x
Native Wi-Fi WLAN STA	x	x	x	x	x	x
Wired Local Area Network (802.3, 802.5)	x	x	x	x	x	x
Wireless LAN (802.11) STA - Automatic Configuration and 802.1x	x	x	x	x	x	x
Networking - Personal Area Network (PAN)	x		x		x	

Bluetooth	x		x		x	
Bluetooth Protocol Stack with Transport Driver Support	x		x		x	
Bluetooth Stack with Integrated CSR Chipset Driver	x		x		x	
Bluetooth Stack with Universal Loadable Driver	x		x		x	
Bluetooth Stack with Integrated SDIO Driver	x		x		x	
Bluetooth Stack with Integrated USB Driver	x		x		x	
Bluetooth Stack with Integrated UART Driver	x		x		x	
Bluetooth Profiles Support	x		x		x	
Bluetooth HS/HF and Audio Gateway Service	x		x		x	
Bluetooth LAP and Configuration Utility			x		x	
Bluetooth DUN Gateway	x		x		x	
Bluetooth PAN	x		x		x	
Bluetooth HID Device Support	x		x		x	
Bluetooth HID – Keyboard	x		x		x	
Bluetooth HID – Mouse	x		x		x	
IrDA	x		x		x	
Networking - Wide Area Network (WAN)	x	x	x	x	x	x
Dial Up Networking (RAS/PPP)	x	x	x	x	x	x
AutoDial	x	x	x	x	x	x
Standard Modem Support for Dial Up Networking	x	x	x	x	x	x
Point-to-Point Protocol over Ethernet (PPPoE)	x	x	x	x	x	x
Telephony API (TAPI 2.0)	x	x	x	x	x	x
Unimodem support	x	x	x	x	x	x
Virtual Private Networking	x	x	x	x	x	x
PPTP	x	x	x	x	x	x

L2TP/IPSec	x	x	x	x	x	x
Servers	x	x	x	x	x	x
Core Server Support	x	x	x	x	x	x
FTP Server	x		x		x	
File Server	x		x		x	
File Server Customizable UI	x		x		x	
Windows Peer-to-Peer Networking	x		x		x	
Peer Name Resolution Protocol (PNRP)	x		x		x	
Identity Manager	x		x		x	
Print Server	x		x		x	
RAS Server/PPTP Server (Incoming)			x		x	
Telnet Server	x		x		x	
Web Server (HTTPD)	x	x	x	x	x	x
Active Server Pages (ASP) Support	x	x	x	x	x	x
JScript 5.6	x	x	x	x	x	x
VBScript 5.6	x	x	x	x	x	x
Device Management ISAPI Extension	x	x	x	x	x	x
WebDAV Support	x	x	x	x	x	x
Web Server Administration ISAPI	x	x	x	x	x	x
Web Proxy	x		x		x	
Parental Controls	x		x		x	
Simple Network Time Protocol (SNTP)	x		x		x	
SNTP Server	x		x		x	
SNTP Client with DST	x		x		x	
SNTP Automatic Updates and Server Synchronization	x		x		x	
DEVICE MANAGEMENT						
Device Management Client	x		x		x	
Simple Network Management Protocol (SNMP)	x		x		x	
FILE SYSTEMS AND DATA STORE						
Compression	x	x	x	x	x	x
Database Support	x	x	x	x	x	x
File and Database Replication (Choose 1)	x		x		x	
Bit-based	x	x	x	x	x	x
Count-Based	x		x		x	
File System - Internal (Choose 1)	x		x		x	
RAM and ROM File System	x	x	x	x	x	x

ROM-only File System	x		x		x	
Registry Storage (Choose 1)	x		x		x	
Hive-based Registry	x	x	x	x	x	x
RAM-based Registry	x		x		x	
Storage Manager	x		x		x	
Binary Rom Image File System	x		x		x	
Storage Manager Control Panel Applet	x	x	x	x	x	x
EDB Database Engine	x		x		x	
Partition Driver	x	x	x	x	x	x
CD/UDFS File System	x	x	x	x	x	x
FAT File System	x	x	x	x	x	x
Transaction-Safe FAT File System (TFAT)	x		x		x	
System Password	x	x	x	x	x	x
FONTS						
Arial	x		x		x	
Arial (Subset 1_30)	x		x		x	
Arial Black	x		x		x	
Arial Bold	x		x		x	
Arial Bold Italic	x		x		x	
Arial Italic	x		x		x	
Comic Sans MS	x		x		x	
Comic Sans MS	x		x		x	
Comic Sans MS Bold	x		x		x	
Courier New	x		x		x	
Courier New (Subset 1_30)	x	x	x	x	x	x
Courier New Bold	x		x		x	
Courier New Bold Italic	x		x		x	
Courier New Italic	x		x		x	
Georgia	x		x		x	
Georgia	x		x		x	
Georgia Bold	x		x		x	
Georgia Bold Italic	x		x		x	
Georgia Italic	x		x		x	
Impact	x		x		x	
Kino	x		x		x	
MSLogo	x		x		x	
Symbol	x		x		x	

Tahoma	x		x		x	
Tahoma (Subset 1_07)	x	x	x	x	x	x
Tahoma Bold	x		x		x	
Times New Roman	x		x		x	
Times New Roman (Subset 1_30)	x		x		x	
Times New Roman Bold	x		x		x	
Times New Roman Bold Italic	x		x		x	
Times New Roman Italic	x		x		x	
Trebuchet MS	x		x		x	
Trebuchet MS	x		x		x	
Trebuchet MS Bold	x		x		x	
Trebuchet MS Bold Italic	x		x		x	
Trebuchet MS Italic	x		x		x	
Verdana	x		x		x	
Verdana	x		x		x	
Verdana Bold	x		x		x	
Verdana Bold Italic	x		x		x	
Verdana Italic	x		x		x	
Webdings	x		x		x	
Wingding	x	x	x	x	x	x
INTERNATIONAL						
Input Method Manager (IMM)	x	x	x	x	x	x
Locale Services (Choose 1)	x		x		x	
National Language Support (NLS)	x	x	x	x	x	x
English (US) National Language Support only	x		x		x	
Locale Specific Support	x		x		x	
Arabic	x		x		x	
Fonts	x		x		x	
Tahoma (subset 1_08)	x		x		x	
Tahoma Bold (subset 1_08)	x		x		x	
Arial (subset 1_08)	x		x		x	
Arial Bold (subset 1_08)	x		x		x	
Courier New (subset 1_08)	x		x		x	
Keyboard	x		x		x	
Arabic Keyboard (101)	x		x		x	
Chinese (Simplified)	x		x		x	
Agfa AC3 Font Compression	x		x		x	

Fonts	x		x		x	
SimSun & NSimSun (Choose 1)	x		x		x	
SimSun & NSimSun	x		x		x	
SimSun & NSimSun (Subset 2_20)	x		x		x	
SimSun & NSimSun (Subset 2_50)	x		x		x	
SimSun & NSimSun (Subset 2_60)	x		x		x	
SimSun & NSimSun (Subset 2_70)	x		x		x	
SimSun & NSimSun (Subset 2_80)	x		x		x	
SimSun & NSimSun (Subset 2_90)	x		x		x	
SC_Song	x		x		x	
GB18030 Data Converter	x		x		x	
Input Method Editor (Choose 1)	x		x		x	
MSPY 3.0 for Windows CE	x		x		x	
MSPY 3.0 for Windows CE Database (Choose 1)	x		x		x	
1.1 MB - Minimal Database	x		x		x	
1.3 MB - Compact Database	x		x		x	
1.7 MB - Standard Database	x		x		x	
Double Spelling (Shuang Pin) soft keyboard – Large	x		x		x	
Double Spelling (Shuang Pin) soft keyboard – Small	x		x		x	
Pocket IME	x		x		x	
Double Spelling (Shuang Pin) soft keyboard – Small	x		x		x	

Chinese (Traditional)	x		x		x	
Agfa AC3 Font Compression	x		x		x	
Fonts	x		x		x	
MingLiU & PMingLiU (Choose 1)	x		x		x	
MingLiU & PMingLiU	x		x		x	
MingLiU & PMingLiU (Subset 2_70)	x		x		x	
MingLiU & PMingLiU (Subset 2_80)	x		x		x	
MingLiU & PMingLiU (Subset 2_90)	x		x		x	
MS Ming	x		x		x	
Input Method Editor	x		x		x	
Pocket IME	x		x		x	
Input Methods	x		x		x	
Input by Radical (Chang Jei)	x		x		x	
Handwriting Recognizer Engine (HWX)			x		x	
MboxCHT HWX Sample UI			x		x	
Phonetic Input (Bopomofo)	x		x		x	
English (Worldwide)	x		x		x	
Input Methods	x		x		x	
Handwriting Recognizer Engine (HWX)			x		x	
English (U.S.)	x		x		x	
Input Methods	x		x		x	
Transcriber Handwriting Recognition Application			x		x	
French	x		x		x	
Input Methods	x		x		x	
Transcriber Handwriting Recognition Application			x		x	
German	x		x		x	
Input Methods	x		x		x	
Transcriber Handwriting			x		x	

Recognition Application						
Hebrew	x		x		x	
Fonts	x		x		x	
Tahoma (subset 1_08)	x		x		x	
Arial (subset 1_08)	x		x		x	
Tahoma Bold (subset 1_08)	x		x		x	
Arial Bold (subset 1_08)	x		x		x	
Courier New (subset 1_08)	x		x		x	
Keyboard	x		x		x	
Hebrew Keyboard	x		x		x	
Indic	x		x		x	
Hindi	x		x		x	
Fonts	x		x		x	
Mangal	x		x		x	
Keyboard	x		x		x	
Hindi Traditional Keyboard	x		x		x	
Marathi	x		x		x	
Fonts	x		x		x	
Mangal	x		x		x	
Keyboard	x		x		x	
Marathi Keyboard	x		x		x	
Punjabi	x		x		x	
Fonts	x		x		x	
Raavi	x		x		x	
Keyboard	x		x		x	
Punjabi Keyboard	x		x		x	
Telugu	x		x		x	
Fonts	x		x		x	
Gautami	x		x		x	
Keyboard	x		x		x	
Telugu Keyboard	x		x		x	
Gujarati	x		x		x	
Fonts	x		x		x	
Shruti	x		x		x	
Keyboard	x		x		x	
Gujarati Keyboard	x		x		x	

Kannada	x		x		x	
Fonts	x		x		x	
Tunga	x		x		x	
Keyboard	x		x		x	
Kannada Keyboard	x		x		x	
Tamil	x		x		x	
Fonts	x		x		x	
Latha	x		x		x	
Keyboard	x		x		x	
Tamil Keyboard	x		x		x	
Japanese	x		x		x	
Agfa AC3 Font Compression	x		x		x	
Fonts	x		x		x	
MS Gothic (Choose 1)	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic (Subset 1_50)	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic (Subset 1_60)	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic (Subset 1_80)	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic (Subset 1_90)	x		x		x	
MS Gothic & MS PGothic & MS UI Gothic (Subset 1_70)	x		x		x	
MS Gothic & MS PGothic (Subset 30)	x		x		x	
MS Gothic & MS PGothic (Subset 30_1_19)	x		x		x	
MS Mincho & MS PMincho	x		x		x	
Input Method Editor (Choose 1)	x		x		x	

IME 3.1	x		x		x	
IME 3.1 Database (Choose 1)	x		x		x	
Standard Database	x		x		x	
Compact Database	x		x		x	
Optional UI Components	x		x		x	
Dictionary Tool	x		x		x	
Properties Dialog Box	x		x		x	
Advanced Settings Dialog Box (Landscape mode only)	x		x		x	
System Tray Icon Manager	x		x		x	
Pocket IME (Choose Additional Databases)	x		x		x	
Name/Place Database	x		x		x	
Supplemental Database	x		x		x	
Test IME	x		x		x	
Input Methods	x		x		x	
All Characters List	x		x		x	
Handwriting Recognizer Engine (HWX)			x		x	
Character Auto Complete – HWX Sample UI			x		x	
Multibox HWX Sample UI			x		x	
Kana Soft Keyboard	x		x		x	
Romaji/English Soft Keyboard	x		x		x	
Search by Radical	x		x		x	
Search by Stroke	x		x		x	
Korean	x		x		x	
Agfa AC3 Font Compression	x		x		x	
Fonts	x		x		x	
Gulim (GL_CE)	x		x		x	
Gulim & GulimChe (Choose 1)	x		x		x	
Gulim & GulimChe (Subset 1_30)	x		x		x	
Gulim & GulimChe (Subset	x		x		x	

1_40)						
Gulim & GulimChe (Subset 1_50)	x		x		x	
Gulim & GulimChe (Subset 1_60)	x		x		x	
Input Method Editor	x		x		x	
IME 97	x		x		x	
Input Methods	x		x		x	
Handwriting Recognizer Engine (HWX)			x		x	
MboxKOR HWX Sample UI			x		x	
Korean Soft Keyboard Sample	x		x		x	
Thai	x		x		x	
Fonts	x		x		x	
Tahoma (subset 1_08)	x		x		x	
Keyboard	x		x		x	
Thai Kedmanee Keyboard	x		x		x	
Multilingual User Interface (MUI)	x		x		x	
Unicode Script Processor for Complex Scripts	x		x		x	
Internet Client Services						
Browser Application			x	x	x	x
Internet Explorer 6.0 for Windows CE - Standard Components			x	x	x	x
Internet Explorer 6.0 Sample Browser			x	x	x	x
TV-Style Navigation Components			x		x	
Pocket Internet Explorer			x		x	
Internet Explorer 6.0 for Windows CE Components				x		x
Internet Explorer Browser Control Host			x	x	x	x
Internet Explorer HTML/DHTML API			x	x	x	x
Internet Explorer HTML Application			x	x	x	x
Filter and Translation			x	x	x	x
Internet Explorer Plug-in Image Decoder API			x	x	x	x
Internet Explorer PNG Image Decoder			x	x	x	x
Internet Explorer Theme Library			x	x	x	x

Internet Explorer Multiple-Language Base API	x		x	x	x	x
Internet Explorer Multiple-Language Full API			x	x	x	x
Optional Charset/Encoding in registry			x	x	x	x
Internet Explorer RPC Support			x	x	x	x
Internet Explorer TV-Style Navigation			x		x	
Fixed-Width Layout			x		x	
Directional Tabbing			x		x	
Disable Vertical Scroll Bar and Events			x		x	
Customizable Font Range			x		x	
URL Moniker Services	x		x	x	x	x
Windows Internet Services	x		x	x	x	x
Passport SSI 1.4 Authentication	x		x	x	x	x
Platform for Privacy Preferences (P3P)	x		x	x	x	x
XML Data Islands	x		x	x	x	x
XML MIME Viewer	x		x	x	x	x
Pocket Internet Explorer HTML View (WEBVIEW)			x		x	
Internet Options Control Panel			x	x	x	x
Scripting	x	x	x	x	x	x
JScript 5.6	x	x	x	x	x	x
Script Authoring (Jscript)	x	x	x	x	x	x
Script Encode (Jscript)	x	x	x	x	x	x
VBScript 5.6	x	x	x	x	x	x
Script Authoring (VBScript)	x	x	x	x	x	x
Script Encode (VBScript)	x	x	x	x	x	x
MsgBox and InputBox support	x	x	x	x	x	x
GRAPHICS AND MULTIMEDIA TECHNOLOGIES						
Graphics	x		x		x	
Raster Fonts Support	x		x		x	
V1 Font Compatibility	x		x		x	
Alphablend API (GDI version)	x		x		x	
Gradient Fill Support	x	x	x	x	x	x
Multiple Monitor Support	x		x		x	
Imaging	x	x	x	x	x	x
Still Image Codec Support (Encode and Decode)	x	x	x	x	x	x

Still Image Decoders	x	x	x	x	x	x
PNG Decoder	x	x	x	x	x	x
BMP Decoder	x	x	x	x	x	x
GIF Decoder	x	x	x	x	x	x
ICO Decoder	x	x	x	x	x	x
JPG Decoder	x	x	x	x	x	x
Still Image Encoders	x	x	x	x	x	x
GIF Encoder	x	x	x	x	x	x
BMP Encoder	x	x	x	x	x	x
JPG Encoder	x	x	x	x	x	x
PNG Encoder	x	x	x	x	x	x
Direct3D Mobile	x	x	x	x	x	x
DirectDraw	x	x	x	x	x	x
Audio	x	x	x	x	x	x
Audio Compression Manager	x	x	x	x	x	x
GSM 6.10 Codec	x	x	x	x	x	x
MSFilter Codec	x	x	x	x	x	x
Waveform Audio	x	x	x	x	x	x
Media	x		x		x	
Streaming Media Playback (requires WMP application)			x		x	
WMA and MP3 Local Playback	x		x		x	
WMA and MP3 Streaming (requires WMP application)			x		x	
Digital Rights Management	x		x		x	
Digital Rights Management (DRM)	x		x		x	
DRM for Portable Devices	x		x		x	
DRM License Acquisition OCX	x		x		x	
DirectShow	x	x	x	x	x	x
DirectShow Core	x	x	x	x	x	x
DirectShow Display	x	x	x	x	x	x
DirectShow Error Messages	x	x	x	x	x	x
DMO Wrapper Filter	x	x	x	x	x	x
ACM Wrapper Filter	x	x	x	x	x	x
Media Formats	x	x	x	x	x	x
AVI Filter	x	x	x	x	x	x
MPEG-1 Parser/Splitter	x	x	x	x	x	x

Audio Codecs and Renderers	x		x		x	
G.711 Audio Codec	x	x	x	x	x	x
GSM 6.10 Audio Codec	x	x	x	x	x	x
IMA ADPCM Audio Codec	x	x	x	x	x	x
MP3 Codec	x		x		x	
MPEG-1 Layer 1 and 2 Audio Codec	x	x	x	x	x	x
MS ADPCM Audio Codec	x	x	x	x	x	x
Waveform Audio Renderer	x	x	x	x	x	x
WMA Codec	x	x	x	x	x	x
WMA Voice Codec	x	x	x	x	x	x
Wave/AIFF/au/snd File Parser	x	x	x	x	x	x
Video Codecs and Renderers	x	x	x	x	x	x
DirectShow Video Renderer	x	x	x	x	x	x
MPEG-1 Video Codec	x	x	x	x	x	x
MS RLE Video Codec	x	x	x	x	x	x
Overlay Mixer	x	x	x	x	x	x
Video/Image Compression Manager	x	x	x	x	x	x
WMV/MPEG-4 Video Codec	x	x	x	x	x	x
DVD-Video	x		x		x	
DVD-Video	x		x		x	
DVD-Video Samples	x		x		x	
Windows Media Player			x	x	x	x
Windows Media Player			x	x	x	x
Windows Media Player OCX			x	x	x	x
Windows Media Technologies	x		x	x	x	x
ASX v1 and M3U File Support	x		x	x	x	x
ASX v2 File Support	x		x	x	x	x
ASX v3 File Support	x		x	x	x	x
Windows Media Multicast and Multi-Bit Rate	x		x	x	x	x
NSC File Support	x		x	x	x	x
Windows Media Streaming from Local Storage	x		x	x	x	x
Windows Media Streaming over HTTP	x		x	x	x	x

Windows Media Streaming over MMS	x		x	x	x	x
SECURITY						
Authentication Services (SSPI)	x	x	x	x	x	x
NTLM	x	x	x	x	x	x
Kerberos	x	x	x	x	x	x
Schannel (SSL/TLS)	x	x	x	x	x	x
Cryptography Services (CryptoAPI 1.0) with High Encryption Provider	x	x	x	x	x	x
Certificates (CryptoAPI 2.0)	x	x	x	x	x	x
Cryptographic Messaging (PKCS#7)	x	x	x	x	x	x
Personal Information Exchange Standard (PKCS #12)	x	x	x	x	x	x
Diffie-Hellman/DSS Provider	x		x		x	
Smart Card Encryption Provider	x		x		x	
Local Authentication Sub-System	x		x		x	
Password Local Authentication Plug-in	x		x		x	
Microsoft Certificate Enrollment Tool Sample	x		x		x	
Credential Manager	x	x	x	x	x	x
SHELL AND USER INTERFACE						
Graphics, Windowing and Events	x	x	x	x	x	x
Minimal GWES Configuration	x	x	x	x	x	x
Minimal GDI Configuration	x	x	x	x	x	x
Minimal Input Configuration	x	x	x	x	x	x
Minimal Window Manager Configuration	x	x	x	x	x	x
Shell			x		x	
Graphical Shell (Choose 1)			x		x	
Standard Shell	x	x	x	x	x	x
Windows Thin Client Shell			x		x	
AYGShell API Set			x	x	x	x
Command Shell	x	x	x	x	x	x
Console Window	x	x	x	x	x	x
Command Processor	x	x	x	x	x	x
User Interface	x	x	x	x	x	x
Accessibility	x	x	x	x	x	x

Common Dialog Support	x	x	x	x	x	x
Controls Option B	x		x		x	
Control Panel Applets	x	x	x	x	x	x
Customizable UI	x	x	x	x	x	x
Windows XP-like Sample Skin	x	x	x	x	x	x
Menu Tool Tip	x	x	x	x	x	x
Mouse	x	x	x	x	x	x
Network User Interface	x	x	x	x	x	x
Overlapping Menus	x	x	x	x	x	x
Software Input Panel	x	x	x	x	x	x
Software-based Input Panel Driver	x	x	x	x	x	x
Software-based Input Panel (SIP) (Choose 1 or more)	x	x	x	x	x	x
SIP for Small Screens	x	x	x	x	x	x
SIP for Large Screens	x	x	x	x	x	x
Touch Screen (Stylus)	x	x	x	x	x	x
Quarter VGA Resources - Portrait Mode	x		x		x	
Common Controls	x	x	x	x	x	x
Animation Control	x	x	x	x	x	x
Common Control	x	x	x	x	x	x
Windows CE Error Reporting	x		x		x	
Error Report Generator	x		x		x	
Report Upload Client	x		x		x	
Report Upload Client User Interface	x		x		x	
Error Report Transfer Driver	x		x		x	
Error Reporting Control Panel	x		x		x	
VOICE OVER IP PHONE SERVICES						
Phone IME	x		x		x	
PC Authentication	x		x		x	
Telephony User Interface	x		x		x	
VoIP Application Interface Layer (VAIL)	x		x		x	
VAIL Database Store	x		x		x	
Phone Provisioner	x		x		x	
Reference Media Manager	x		x		x	
Real-time Communications (RTC) Client API	x		x		x	
SIREN/G.722.1 Codecs	x		x		x	