VTT-1000

Vehicle Tracking Terminal

- 3.5” TFT LCD touch screen
- Embedded with ARM9 400MHz CPU
- Pre-installed Windows CE 6.0
- Built-in GSM/GPRS and antenna
- SiRF Star III 20-Channel GPS Receiver
- Supports On-Board Diagnostic (OBD)

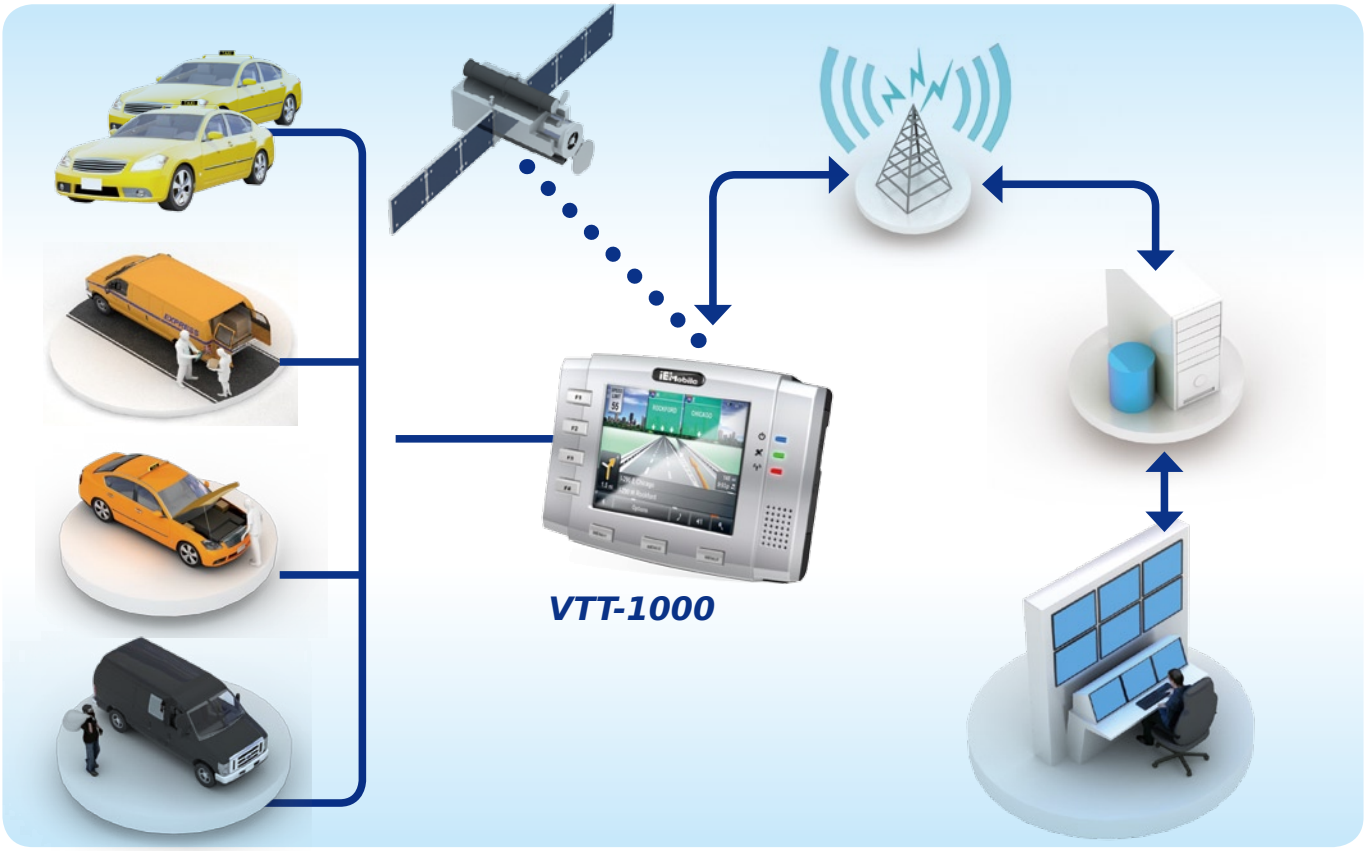
ARM

Windows CE.net

GPRS | Touchscreen | GPS | OBD-II | MicroSD | Fanless

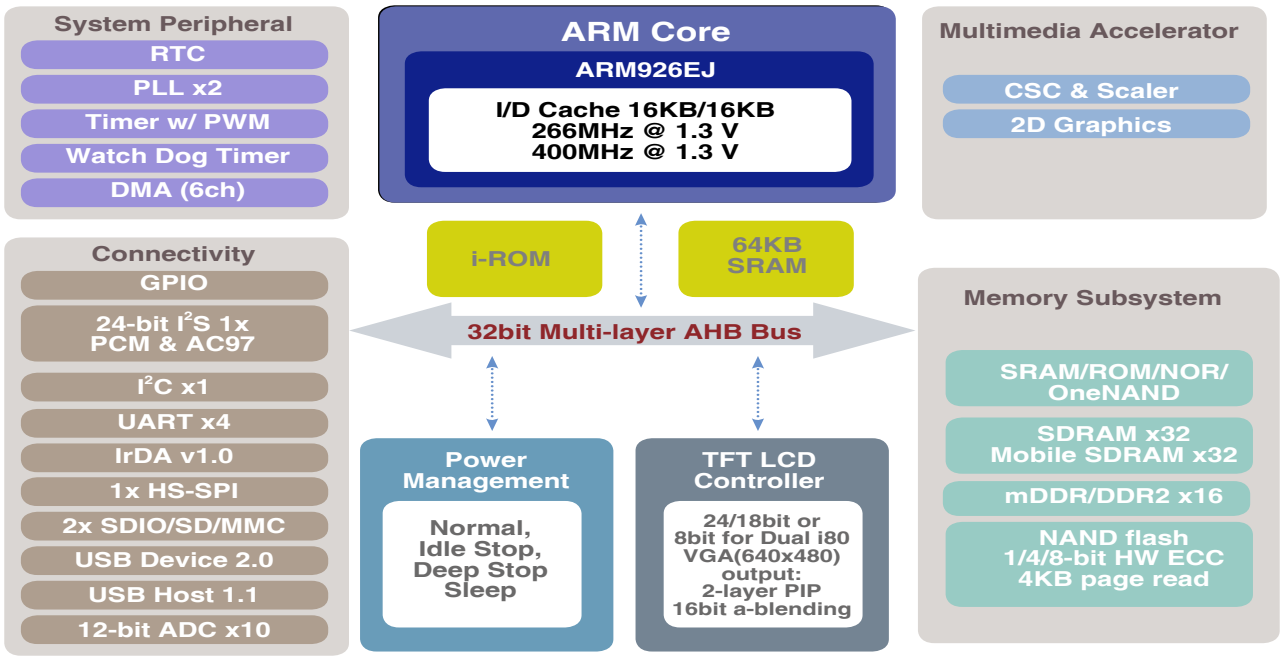
Applications

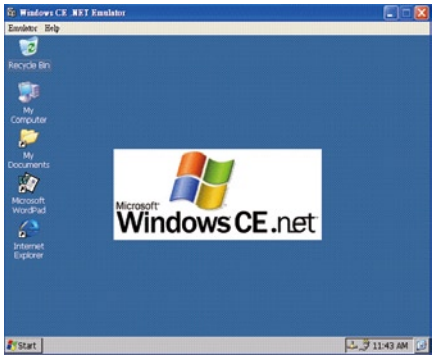
- Fleet Management System
- In-Vehicle Infotainment
- Voice over IP (VoIP) Communication
- Location-Based Services
- Real-time Vehicle Diagnostic
- Emergency and Security Services



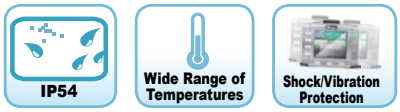
Compact, Rugged, High Performance, and Low Power Consumption

- ARM926EJ core with built-in 2D Graphics Accelerator





- Pre-installed Windows CE 6.0 R3
- Waterproof Front Panel LCD Display
- IP54 Compliant Dustproof Housing
- -20°C ~ 70°C Wide Operating Temperature
- Shock and Vibration Protection in Vehicle Environment



Global Positioning System (GPS) Receiver

Specifications	
Chipset	SiRF Star III, GSC3f/LPx (Digital, RF in a single package)
Frequency	L1, 1575.42 MHz
Channels	20 parallel
C/A Code	1023 MHz
Chipset TTFF	Reacquisition: Less than 1s Hot start: Less than 1s @ open sky Warm start: Less than 35s @ open sky Cold start: Less than 35s @ open sky
Accuracy	Position: Within 10m for 90% Velocity: 0.1m/s
Interface Protocol	1. NMEA 0183 ver 3.0, GGA, GSA, GSV, RMC, 4800bps 2. SiRF Protocol 57600bps, 8 data bits, no parity, 1 stop bits
LNA	15dB Gain.(Typ.) LNA only enable by LPX series
Internal Memory	Flash type on 4MB
TCXO	16.369 MHz
Trickle Power Mode	Duty cycle ≦34%. (Variable) Default: Disable (Option: Enable)

GSM/GPRS Telecommunication

VTT-1000 is equipped with a Cinterion (formerly Siemens) MC55i was wireless module and built-in antenna for machine-to-machine (M2M) communication over GPRS. The MC55i is awarded full type approval and certified by global carriers and operators. It is optimized with quad-band technology for worldwide roaming.

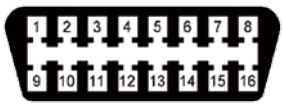
- Quad-Band GSM 850/900/1800/1900 MHz
- GPRS multi-slot class 10
- GSM phase 2/2+ compliant
- TCP/IP stack access via AT commands
- Internet Services: TCP, UDP, HTTP, FTP, SMTP, POP3
- Control via AT commands
  (Hayes 3GPP TS 27.007, TS 27.005)
- SIM Application Toolkit
- Specification for GPRS data transmission:
  - GPRS class 10: max. 86 kbps (DL)
  - Mobile station class B
  - PBCCH support
  - Coding schemes CS 1-4

In-Vehicle Communication

- Almost all of the automobiles produced today are required by law to provide an interface for the connection of diagnostic test equipment.The VTT-1000 provides a connection to vehicle On-Board Diagnostics (OBD) port (OBD-II connector)and supports the most common data transfer protocols and standards in use today.

Protocols and Standards

SAE J1850 PWM (41.6 kbaud)
SAE J1850 VPW (10.4 kbaud)
ISO 9141-2 (5 baud init)
ISO 14230-4 KWP (5 baud init)
ISO 14230-4 KWP (fast init)
ISO 15765-4 CAN (11 bit ID,500 kbaud)
ISO 15765-4 CAN (29 bit ID,500 kbaud)
ISO 15765-4 CAN (11 bit ID,250 kbaud)
ISO 15765-4 CAN (29 bit ID,250 kbaud)
SAE J1939 CAN (29 bit ID,250* kbaud)



OBD-II Connector

VTT-1000 connector

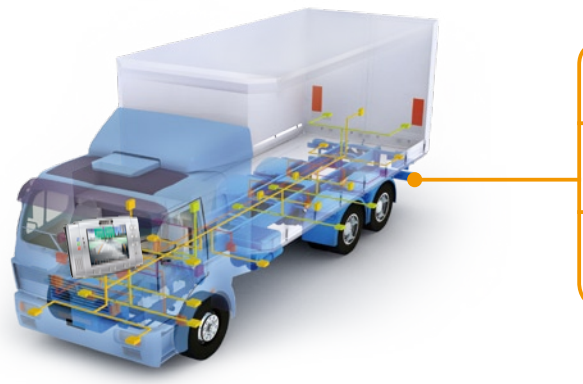
- In addition to traditional applications for diagnostic trouble code readers and automotive scan tools, emerging applications such as Location-based Services (LBS) and Fleet Management System (FMS) have started to combine OBD with GPS and telecommunication technology, making remote real-time diagnostics available.

Supported OBD-II Connector Pins

OBD-II Pin	VTT Pin	Description
1		Manufacturer discretion. GM: J2411 GMLAN/SWC/ Single-Wire CAN.
2		Bus positive line of SAE-J1850 PWM and SAE-1850 VPW
3		Ford DCL(+) Argentina, Brazil (pre OBD-II) 1997-2000, USA, Europe, etc. Chrysler CCD Bus(+)
4		Chassis ground
5		Signal ground
6		CAN high (ISO 15765-4 and SAE-J2284)
7		K line of ISO 9141-2 and ISO 14230-4
8		-
9		-
10		Bus negative line of SAE-J1850 PWM only (not SAE-1850 VPW)
11		Ford DCL(-) Argentina, Brazil (pre OBD-II) 1997-2000, USA, Europe, etc. Chrysler CCD Bus(-)
12		-
13		-
14		CAN low (ISO 15765-4 and SAE-J2284)
15		L line of ISO 9141-2 and ISO 14230-4
16		Battery voltage

Built-in Sensors and I/O

VTT-1000 includes built-in temperature sensor, G-sensor, E-compass, and digital I/O to provide advanced vehicle monitoring and control applications. For example:



- Issues a warning and shut down the system when unauthorized entry is detected or system temperature reaches an unsafe level.
- An automatic emergency call will be initiated when airbag deployment is detected.
- When the G-Sensor detects a sudden brake or acceleration, system begins to log critical vehicle data, navigation data, and real-time picture or video.
- Real-time navigation and position logging

Software Development Kits (SDK) and Built-in Software

- In addition to Windows CE SDK,the VTT-1000 SDK contains a library of easy to use API's for application software development
  - **Detect function key status (F1 ~ F4, and Menu1 ~ Menu3) and to program user interface applications**
  - **Read temperature sensor data to monitor vehicle ambient temperature**
  - **Read G-sensor data to monitor vehicle status**
  - **Read E-compass data to log or display directions**
  - **Open OBD-II port and read OBD-II PIDs (P-codes)**

OBD-II PIDs are defined by SAE J1979. The expected response for each PID is given along with information on how to translate the response into meaningful data.Information such as:

- •Vehicle speed
- •Engine RPM
- •Total fuel used (litre since life time)
- •High resolution vehicle distance
- •Engine coolant temperature
- •Vehicle ambient temperature
- •Tachograph information
- •Total engine hours (h)
- •Fuel level (0–100 %)
- •Fuel pressure
- •Fuel system status
- •DTC (Diagnostic Trouble Code)
- •Calculated engine load
- •Intake air temperature
- •Throttle position
- •Accelerator pedal position (0–100 %)
- •Axle weight (kg)
- •Oxygen sensors and status
- •Clutch switch (on/off)
- •Brake switch (on/off)
- •Cruise control (on/off)
- •PTO (Status/Mode)

- The VTT-1000 SDK also provides free demo fleet management software, IEI FMS. This software is based on client/server architecture. Server-side software is contained in the bundled CD and can be installed on a Windows desktop PC. Client-side software (VTT-1000 Runtime) is pre-installed in each VTT-1000. IEI FMS demonstrates the most basic function of fleet management software with the ability to gather, store, process, monitor, report on and export information.

IEI FMS Architecture

■ Server-side Screen Shot

■ Client-side Screen Shot

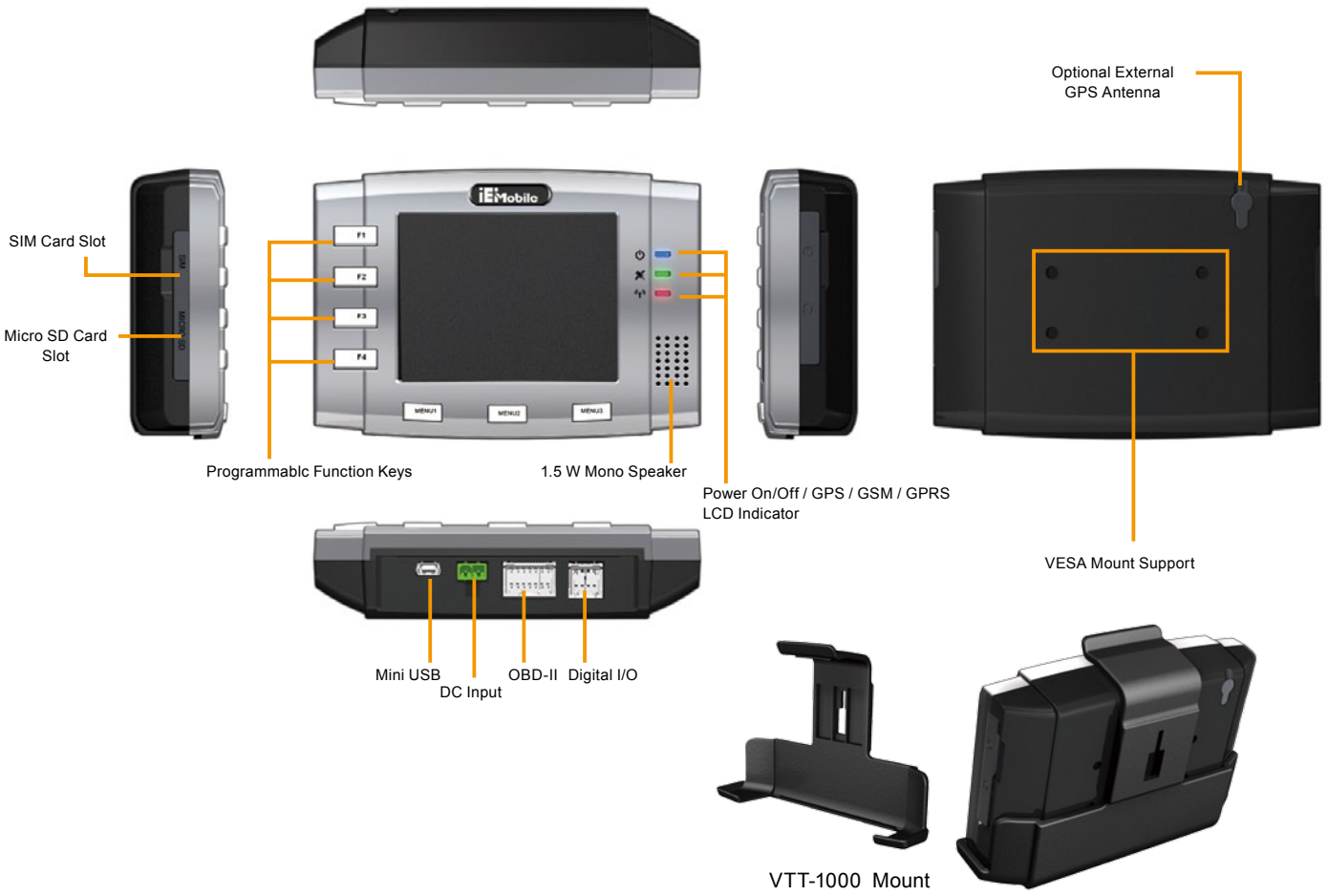
OEM Built-in Optional 3rd Party Navigation Software (May Require MOQ and NRE Depending On Project Base)

PapaGo

With maps of the USA, Europe, Singapore, or South Africa

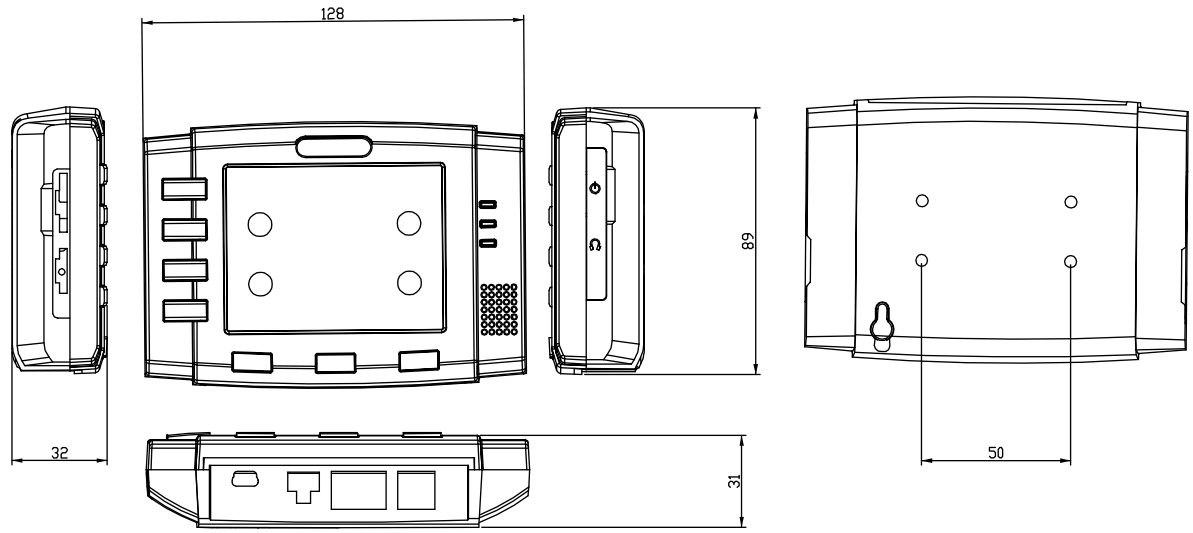
Lingtu

With map of China



VTT-1000

Dimensions (Unit : mm)



Specifications

Model	VTT-1000	
Display	LCD Size	3.5" TFT-LCD
	Brightness(cd/m²)	450 cd/m²
	Max Resolution	400 x 240 Pixels QVGA
	Viewing Angle	50/55/60/60 Deg.
	Touch Screen	4-Wire Resistive Type Touch
System	CPU	Samsung® S3C2416 ARM9 400 MHz
	Operation System	Microsoft® Windows® CE 6.0
	Memory	128 MB DDR2 133 MHz On-board
	Storage	256 MB NAND FLASH Micro SD Card Slot
	DataRate	GSM/GPRS
	GPS	GPS w/Internal Antenna
Multimedia	Audio	1 x Line-out 1 x 1.5 W Speaker
LED indicators & Buttons	Indicators	Power/GPS/2.5G Status LED
	Hot Key	7 x Programmeable Keys, Power Button, Reset Button
I/O Interface	USB	1 x Mini USB1.1
	Serial	1 x OBD-II
	Digital I/O	2 Inputs / 2 Outputs
Power	Cigarette Lighter Power	Cigarette Lighter Power Cable DC 9~36 V
	Power Adapter	12 V@1.5 A@18 W
Environment	Operating Temperature	-20˚C to +70˚C
	Storage Temperature	-30˚C to +80˚C
	Humidity	5%~95% Non-Condensing
	Drop Survival	1 M
	Environmental Protection	Front Panel IP54 compliant (Water,dust and splash resistant)
	Certification	CE/FCC/CCC/E-MARK
Physical Characteristics	Dimensions (LxWxH) (mm)	128 x 89 x 32
	Net Weight	177 g

Ordering Information

Part Number	Description
VTT-1000-T35A/128MB-R10	3.5" 450cd/m² QVGA fanless Vehicle Computer with ARM S3C2416X40-Y640 400MHz CPU, 128MB SDRAM, GSM/GPRS, OBD-II, GPS, RoHs

Packing List

Item	Part Number	Q'ty
Serial Communication Cable	32016-000300-100-RS	1
OBD-II Cable	32016-000400-100-RS	1
GPS Antenna	32502-000200-100-RS	1
Cigarette Lighter Power Cable	32002-003300-100-RS	1
AC Adapter	63040-010018-000-RS	1

Note: Accessories supply depend on ordering model

Optional Accessory List

Item	Part Number	Description
Vesa Bracket	VTT-1000-MT01-R10	VTT-1000 VESA 20 x 50 Mount kit

GPS Antenna

Cigarette Lighter Power Cable

OBD-II Cable

Serial communication cable