



## Evolution of the **SPECIES** of Mobile Data Terminal

**A Taximeter Embedded in the Mirror**



## DUAL CPU

The Primary CPU is 400MHz Samsung and the ARM architecture allows this Device to supply a remarkable flexibility and efficiency in computing power, together with reduced power consumption.

The Secondary CPU AITP (Automotive Intensive Task Processor) supplies the necessary functionalities in the automotive field, like power management, Safe Shutdown, Wheel Pulses Odometer, Distance and Speed calculation, Wake-Up on Ring, Over-the-Air services for software and firmware updates.

The AITP is OTA programmable for remote automatic firmware upgrade, and is always powered ON; it can turn-ON and OFF the Device and all its peripherals.

## IDEAL FOR FLEET MANAGEMENT AND JOB DISPATCHING

The Device represents the state-of-the-art device for job dispatching and fleets management, an ALL-IN-ONE powerful and compact solution.

Its modem GPRS allows very reliable communication with operating headquarters. The vehicle can be located through the high performance GPS U-Blox 6 receiver with 50 channels, and compatible with the new European positioning system GALILEO.

Both GPS and GPRS modules can be powered ON and OFF regardless of Windows CE status.

A Hardware MUX Port is available which allows to send AT commands to the modem while the device is connected in GPRS, for example to request connection status, signal diagnostic and modem statistics. All the communication and tracking features are ensured by the AITP processor even when the Device is powered OFF: the GPS and GPRS modules are managed by the AITP both for power supply and for communications.

## CUSTOMIZABLE USER INTERFACE

The 4.3 inches 16:9 clear readable TFT Displays with 480x272 resolution allows to develop versatile and high accessible applications, thanks to the integrated TouchScreen controller, and to the 9 keys with integrated LEDs.

The Hardware Keys avoid consumption and damage of the Touch Screen under heavily usage operations.

The ambient light sensor allows to choose an optimal brightness of the display in any environmental light.

The power key is a Smart Power Button, completely programmable and used to perform several important tasks such as:

- normal press to start from System Disk
- long press to start from microSD Card
- long press to Shutdown CE safely

It can also be disabled or programmed to trigger Ghost Mode (fake shutdown).

## DOUBLE BOOT FEATURE

Through this powerful functionality is possible to restore and to update the entire system anytime, starting from user application up to the complete operating system and all the CPU firmwares.

The system is able to boot from two different disks:

- Flash Disk, used for applications and data;
- microSD for large data storage (large maps, images, movies, logs) and for service (system initialization or restore).

## STEALTH MODE

Stealth mode is a special operating mode in which the system is working but the display is OFF. This feature can be useful in several situations:

- Driver Control: System has also the wake up on ring feature, so at the central it is possible to remotely turn-ON the device (also in stealth mode so nobody can see that it is starting) in order to check vehicle position, internal audio listening and other data.
- Ghost Mode: It is possible to set the device so that after pressing the shut down button the system goes on stealth mode instead of turning OFF. This feature is useful if you want the device to remain always ON (it turns OFF only the display, reducing power consumption) or in an alarm situation.
- Alarm managing: If system is OFF and alarm button is pressed the system can be started in stealth mode, so nobody can see that the system starts. On this special start the system can be programmed for example to send an alarm message to the central, GPS position or also screenshots or audio.

## HIGH AVAILABILITY

The Device can withstand glitches at car start, or power loss problems thanks to the external UPS Battery system (option), that is automatically recharged. The AITP processor gives time to user applications and Windows to gracefully and safely close in case of sudden disconnection of the Main Power.

## INPUTS AND OUTPUTS

The Device supplies a wide range of communication channels with the external environment: two USB Host, one USB Device and up to 2 Serial Ports (232 or 485).

The special programmable digital inputs and outputs allow to control devices and read signals coming from generic external equipments.

# Technical Specifications

## MDT Section

### Display

Viewing area 4.3" diagonal  
WQVGA 480x272 Resolution  
Colour TFT LED Display with 256,000 Colours  
Display clearly viewable with 300 cd/m2  
Ambient Light Sensor with 32 Steps Automatic Regulation

### Touchscreen

Full Automotive Rugged Touchscreen with configurable touch areas.  
Extended Temperature Range  
Pencil / Finger Type

### CPUs

Primary CPU Samsung ARM 400MHz  
Secondary CPU M16 for Automotive Intensive Tasks

### Ram Memory

128MB RAM Memory

### Storage Memory

128MB capacity of Internal Flash Memory  
microSD HC (High Capacity compatible) socket

### Modem (two options)

**Option 1:** Class 3 4 Bands GSM/GPRS/EDGE: 850/900/1800/1900 Mhz, 5 Bands MTS/HSPA: 800/850/AWS1700/1900/2011 Mhz

**Option 2:** GSM / GPRS Class 10

Modem can be powered on when the terminal is off.

Wake-up on ring programmable features

Warm reset and cold reset (dedicated electronic circuit) available through API calls

2 Hardware RS232 Serial Ports available on the modem (Hardware MUX) allow both RAS and AT command from user applications

2 Sim Card slots with Software switcher available through API calls

Support international standard protocol (ETSI AT command set)

Supports RAS (Remote Access Service) dialup function

GPS / GPRS Rugged Combo antenna (option)

### GPS Receiver

Ublox 6 SuperSense Technology and Indoor Navigation, new generation GPS chipsets with improved precision and fast acquisition of position fix on start up and sleep mode

50 Channels, over 2 Million correlators, GALILEO Compatible

Antenna Monitor (Disconnection and Short Circuit Detection / Protection)

- Hot starts: < 1 s

- Warm starts: 29 s

- Cold starts: 29 s

Supports international NMEA standard format and proprietary UBX Binary protocol

Messages interval up to 5 Hz Frequency

Warm reset and cold reset (dedicated electronic circuit) available through API calls

Assisted GPS (A-GPS) available

GPS / GPRS Rugged Combo antenna (option)

### USB Ports

2 USB Host (with USB Support for Mouse and Keyboard)

1 USB Device (in case of use the number of Host will be 1)

### Hardware Keys

5 Lighted taximeter keys

### Power on key

1 Power On/Off button

### Serial Ports

2 External RS232 Serial Ports

2 RS232 Serial Ports available on embedded meter to connect 2G IU, Printer and Smart Roof sign (Option)

### I/O ports connection

5 Power Taximeter Output Ports

Ignition input

### Alarm and Security

Stealth Mode Controller (system ON display, audio and lightings off)

### Stealth Display Feature

Fully Programmable Stealth display mode, Screen saver mode and sleeping mode by:

- Power Button

- API

Enable Switching Off LCD without powering down MDT unit.

### Multimedia

Speaker and Microphone

Supports wave speaker volume control

API to be provided

Playback wave and speech files

### Boot

Dual Boot available from Flash Disk and microSDHC Card

Boot Time < 11 sec

Customizable Boot Up Splash Screen with End-User Logo

### Soft/Hard Reset

Soft Reset available by API calls



Hard Reset available by microSDHC Card (Factory default)

#### Safe Windows shutdown procedure.

Preshutdown notification

Disk Activity Signal Control

External UPS (option)

#### Operating System

Windows CE .NET 6.0 with ATL, MFC, .NET Compact Framework 3.5 and Digitax Framework

#### Development Tools

ActiveSync 4.5 (last version available) and USB debugging with ActiveSync support

Sample code for SDK in C++

Compact Framework 3.5 supported

Digitax Framework (Digitax Libraries): GPS, GPRS, I/O, Odometer, Taximeter, Hardware Keys, WatchDog, OTA, Windows Status, Stealth Mode Controller, Logs, Light Dimmer, Hardware Identification, Splash Screen, Alarm, Printer 3 Card Reader and Windows Status

Serial port driver and test tools

Digital I/O driver, API (DLL) and test tool

Read/Write Windows CE registry application and API to Supports permanent saving of system settings into registry

Software controllable Warm Restart and test tool

GPRS modem driver and test tool

GPS driver and test tool

Speaker and MIC test tool, wave playback and voice recorder

Contactless / NFC reader driver and test tool

Backlight control API and test tools

Dialup network

GSM phone dialer

Support network protocol TCP/UDP, IP, PPP

Virtual keypad

Text file editor

Explorer

#### Text-To-Speech

Support 3rd party Native Text-To-Speech

#### Software Navigation

Support 3rd party map application and navigation software with SDK

#### System diagnostic tools

On Field Test (OFT) OnBoard Diagnostic Utilities (option), with Customizable CheckList to make tests of GPS Fix, GPS Antenna, GPRS Connectivity and Base Station Signal Quality, Odometer, Ignition, Panic Button, TouchScreen calibration, Hardware Keys, Ambient Light Sensor, Device version, OS Version, AITP Version, Taximeter, UPS and Battery Status, Roof Light, Navigation Software

All On Field Tests and enrolling features can be used during first installation and swap of devices.

#### OS Image Loader

Over The Air (OTA) OS image loader or microSDHC Card Image Loader

#### System Update Fleet Management

Professional OTA (Over The Air) CLIENT allows the update of the whole Operating System and all the CPUs Firmware (option).

Professional OTA (Over The Air) SERVER with vehicles enrolling, group management and selective update, remote logging. Web based user interface (option)

#### Wireless Connections

National Semiconductor LMX9838 Bluetooth (option)

Complete Bluetooth 2.0 Stack including

#### Taximeter

Embedded Hardware Taximeter  
Full Firmware and TARIF OTA Programmable

#### Power Supply

8 - 32 V with Surge Protector

#### Battery

External UPS Battery Package, Standard Battery Pack 1 hour (option)

#### Mounting

All the External Connectors, Accessible slots (such as SIM Card, microSDHC, USB, etc.) and Screws are Sealed

#### Operating Temperature

-20°C to 70°C

#### Humidity

Humidity up to 95% non-condensing.

#### Vibration

Vibration Sine wave, 10 ~ 500 ~ 10Hz, 1.5G, 0.37oct/min 3 axis, 1hour/axis.

#### Dust Ingress Protection

All connectors covers sealed, no open holes

#### Dimension

285 mm x 90 mm x 27 mm (W x H x D)

#### Weight

450 g

## TAXIMETER Section

### Dimensions

Width: 28 cm.

Height: 8,5 cm.

Depth: 2,5 cm.

### Weight

Gr. 350 ca.

### Displays

Fare counter:

6 Digits Red High-Luminosity Led

Extra counter:

5 Digits Red High-Luminosity Led

Illuminated Front Text

1 Digit tariff index

### Power Supply

From 8,5 to 16 Volts

### Temperature

From -15 to 70 °C.

### Relative Humidity

95%

### Mechanical Strength

3 g

### Distance Unit

From 10 cm. to 6553 meters

Step 10 cm.

### Waiting Time Unit

From 0,1 sec. to 6553

Step 0,1 sec.

### Totalizator Mode

Dataflash 1Mb

- 45 + 45 Statistic Memory

- 12 x 45 Monthly Statistic

- 50 x 45 Statistics for each Driver

### Tariff Structure

63 Smart and fully independent Tariffs

+8 Night Tariffs

+8 Holiday Tariffs

+4 Autofare Tariffs

+4 Autidistance Tariffs

Tariff Choice

### Manual

Radio

Automatic at pre-programmed:

- Distance(s)

- Time(s)

- Date(s)

- Fare(s)

- Amount(s)

### Tariff Program Change

Manual by Key

Via Radio

By Programmer

By Chip Card

By Infrared Programmer

### Peripheral Connections

Printer

Magnetic Card Reader

Chip Card Reader/Writer

Infrared Passenger Sensor

Mobile Data Terminal

Modem

Cellular Phone

### Communications Ports

Internal COM1 and COM2 RS232 +/- 12 Volts STD

4 Input/Output TTL level

### Communications Protocols

GMSI

Mobilstar

RomaNet

Telecom It. (Upgradable)

### Operative Firmware

Upgradable firmware on Flash

### Transducer

Mechanical Hall Effect or Internal adapter for electronic speedometer up to 100.000 l/km

### Power Outputs

1 Roof Light 25 Watts

4 Programmable power outputs 5 Watts





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