X-One Plus MDT

Mobile Data Terminal

WindowsEmbedded
Compact 7

X-One Plus MDT

Digitax AUTOMOTIVE ELECTRONICS

X-One Plus mdt

2 microSDHC Card with dual boot

Panic Button input

7" WVGA 800x480 TFT Led Display

Fanless Device with ARM CORTEX A8 iMX53 1GHz

8 - 32 V with Surge Protector

HSUPA Modem with 2 Sim Card slots

Windows Embedded Compact 7 with Digitax Framework 4.1

2 USB 2.0 1 USB 2.0 / OTG Host / Device

RGB analog video Camera input USB video Camera input

6 Lighted and Software programmable Hardware Buttons

Embedded Taximeter

Up to 11 serial ports

Bluetooth class 2

3 digital inputs Engine input 2 analog inputs External Mic input

Wi-Fi Connection

up to 8 power output External Speakers output

GSM Phone with Hands Free

Ethernet: 10/100 Mbps LAN Controller

DUAL CPU

Primary CPU Freescale ARM CORTEX A8 iMX 53 1 GHz processor Hw Graphic accelerator, open GL Hardware for 3D navigation and the ARM architecture allows this Device to supply a remarkable flexibility and efficiency in computing power, together with reduced power consumption. 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/EDGE (optionally also UMTS) allows very reliable communication with operating headquarters. The vehicle is located by 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.
An 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.

CUSTOMIZABLE USER INTERFACE

The 7 inches 16:9 clear readable TFT Displays with 800x480 resolution allow to develop versatile and high accessible applications, thanks also to the integrated TouchScreen controller, and to the 6 keys with LEDs available.
Hardware Keys avoid consumption and damage of Touch Screen for heavily used 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 microSDHC Card
- long press to Shutdown CE safely

Can be also 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 firmware.
The system is able to boot from two different disks:
- 2 microSDHC 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 but on 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 but on 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, that is automatically recharged.
The AITP processor gives time to user applications and Windows to close gracefully and safely 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 Hi-Speed USB 2.0 Host, one USB Device and up to 7 Serial Ports.
The special programmable digital inputs and outputs allow to control devices and read signals coming from generic external equipments.

RGB analog video Camera input, with Infra Red power management

Display

Viewing area 7" diagonal

Aspect Ratio 16:9

WVGA 800x480 Resolution

Colour TFT LED Display

Display clearly viewable with 350 cd/m2

Ambient Light Sensor with 32 Steps Automatic Regolation

Secondary Inetractive Display with independent content

Touchscreen

Automotive Full Rugged Pen/Finger Touchscreen.

Extended Temperature Range

CPUs

Fanless Device with Primary CPU Freescale ARM CORTEX A8 iMX 53 1 GHz processor Hw Graphic accelerator, hardware based open GL for 3D navigation

Secondary M16 CPU for Automotive Intensive Tasks

Ram Memory

512MB up to 1GB RAM Memory

Storage Memory

2 microSDHC up to 32 GB (High Capacity compatible) socket

Communication Modem

GSM/GPRS

GSM / GPRS Class 12 HSUPA Modem

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)

or HSUPA

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GPS Receiver

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

50 Channels, 2 Million correlators, GALILEO Compatible

Antenna Monitor (Disconnection and Short Circuit Detection / Protection)

- Hot starts: 1 s

- Warm starts: 26 s

- Position accuracy < 2.5m cep

Supports international NMEA standard format and proprietary UBX Binary protocol

Messages interval up to 5 Hz Frequency

Assisted GPS (A-GPS) available

GPS / GPRS Rugged Combo antenna (option)

Dead Reckoning (option)

USB Ports

2 USB 2.0 Host (with USB Support for Mouse and Keyboard) Hi-Speed

1 USB 2.0 / OTG Host / Device

Hardware Keys

6 Lighted and Software programmable Hardware Buttons

Power on key

1 Power On/Off button

Serial Ports

1 External Full Modem RS232 Port

2 External TX/RX RS232 / RS485 Port

4 External RS232 Serial Ports (option)

I/O ports connection

3 Digital Inputs

3 + 5 Power Output Ports

Dedicated Ignition input

2 Analog Ports input

External Speakers output

External Microphone input

Alarm and Security

Panic Button input / Emergency Switch input

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

RGB analog video Camera input, with Infra Red power management

Internal USB video Camera input, with Infra Red power management

Stealth Display Feature

Fully Programmable Stealth display mode, Screen saver mode and sleeping mode by Power Button - Hardware Keys - API

Enable Switching Off LCD without powering down MDT unit.

Multimedia

Internal and external Speaker and Microphone

Supports wave speaker volume control

API provided

Playback wave and speech files

Boot

Dual Boot available from 2 microSDHC Card

Boot Time < 12 sec

Customizable Boot Up Splash Screen with End-User Logo

Soft/Hard Reset

Soft Reset available through HW switch

Soft Reset available through API calls

Hard Reset available through microSDHC Card (Factory default)

Connectivity

Ethernet: 10/100 Mbps LAN Controller

Wi-Fi Connection

Bluetooth class 2

Safe Windows shutdown procedure.

Preshutdown notification

Disk Activity Signal Control

External UPS (option)

Operating System

Windows Embedded Compact 7 with ATL, MFC, .NET Compact Framework 3.5 and Digitax Framework 4.1

Development Tools

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

SDK for Embedded Visual Studio 2008 / 2005

Sample code for SDK in C++

Compact Framework 3.5 supported

Digitax Framework 4.1 (Digitax Libraries): GPS, GPRS, VoiceCall, I/O, Odometer, Taximeter, Hardware Keys, WatchDog, OTA, Windows Status, Stealth Mode Controller, Logs, Backup And Restore, Light Dimmer, Hardware Identification, Splash Screen, Alarm, 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

Ping tool

Dialup network

GSM phone dialer

Support network protocol TCP/UDP, IP, PPP and others

Virtual keypad

Text file editor

Explorer

Text-To-Speech

Support 3rd party 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 included, 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 debugging and logging. Web based user interface (option)

Taximeter

Embedded 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, Micro SDHC, 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

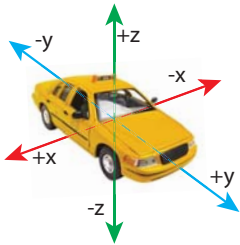204 mm x 120 mm x 35 mm (H x W x D)

Weight

545 g

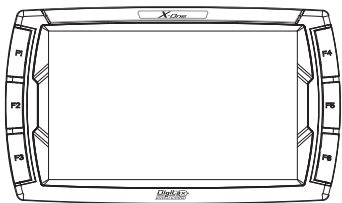## Input for RGB Infrared Onboard Security Camera

Security Camera

Taximeter Dispatch

Accelerometer

- **Odometer antitamper detection**
- **GPS antitamper detection**
- **Harsh turn, acceleration and brake detection**
- **Car tilt**

VGA out for extended desktop

Standard VGA Headrest / Monitor

VGA in   VGA in

Standard VGA Headrest / Monitor

VGA Output compatible with market headrest monitor for passengers information media (PIM) with independent content from driver mobile data terminal
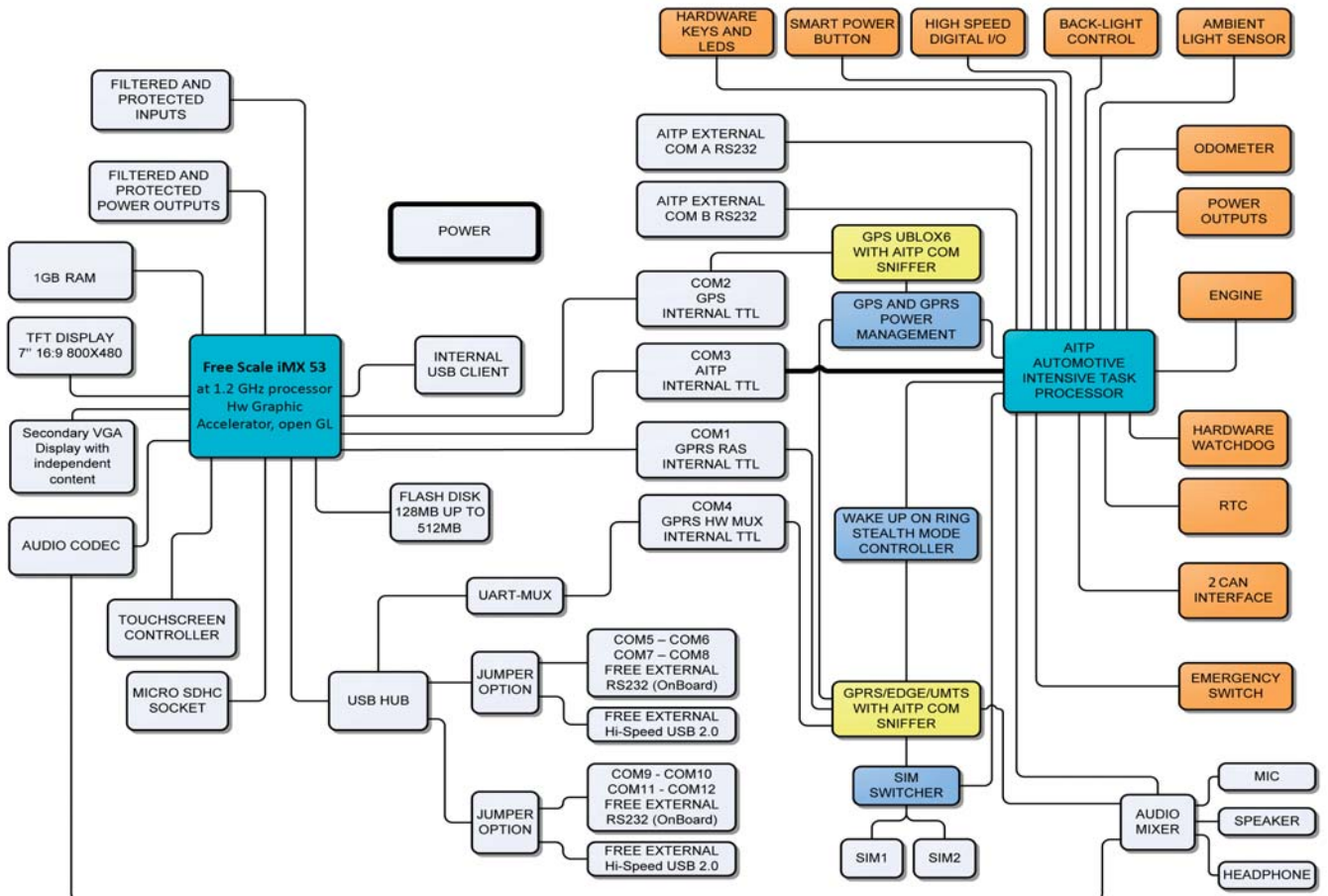
3 different taximeter window color sets

4 different taximeter window positions

Rugged Touchscreen

Block Diagram

FILTERED AND PROTECTED INPUTS

FILTERED AND PROTECTED POWER OUTPUTS

1GB RAM

TFT DISPLAY 7" 16:9 800X480

Secondary VGA Display with independent content

AUDIO CODEC

TOUCHSCREEN CONTROLLER

MICRO SDHC SOCKET

Free Scale iMX 53 at 1.2 GHz processor Hw Graphic Accelerator, open GL

POWER

INTERNAL USB CLIENT

FLASH DISK 128MB UP TO 512MB

UART-MUX

USB HUB

JUMPER OPTION

JUMPER OPTION

COM5 – COM6 COM7 – COM8 FREE EXTERNAL RS232 (OnBoard)

FREE EXTERNAL Hi-Speed USB 2.0

COM9 - COM10 COM11 - COM12 FREE EXTERNAL RS232 (OnBoard)

FREE EXTERNAL Hi-Speed USB 2.0

HARDWARE KEYS AND LEDS

SMART POWER BUTTON

HIGH SPEED DIGITAL I/O

BACK-LIGHT CONTROL

AMBIENT LIGHT SENSOR

AITP EXTERNAL COM A RS232

AITP EXTERNAL COM B RS232

COM2 GPS INTERNAL TTL

COM3 AITP INTERNAL TTL

COM1 GPRS RAS INTERNAL TTL

COM4 GPRS HW MUX INTERNAL TTL

GPS UBLOX6 WITH AITP COM SNIFFER

GPS AND GPRS POWER MANAGEMENT

WAKE UP ON RING STEALTH MODE CONTROLLER

GPRS/EDGE/UMTS WITH AITP COM SNIFFER

SIM SWITCHER

SIM1

SIM2

AITP AUTOMOTIVE INTENSIVE TASK PROCESSOR

ODOMETER

POWER OUTPUTS

ENGINE

HARDWARE WATCHDOG

RTC

2 CAN INTERFACE

EMERGENCY SWITCH

MIC

SPEAKER

HEADPHONE

AUDIO MIXER

X-One Plus MDT

OPERATIVE SYSTEM AND DEVELOPMENT TOOLS

Windows Embedded Compact 7 Operative System and Compact Framework 3.5 combined with the complete Digitax Framework 4.1 allow the developers to create their applications and their services with the maximum simplicity and in very reduced time.

WINDOWS STATUS	ALARM	CARD READER	LIGHT DIMMER	GPS	GSM/GPRS	HARDWARE IDENTIFICATION	HARDWARE KEYS
INPUT OUTPUT	ODOMETER	STEALTH MODE CONTROLLER	HARDWARE WATCHDOG	BACKUP AND RESTORE	LOG	OVER THE AIR UPDATE	SPLASH SCREEN

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