ATOMO -10

ATOMO -10

☰	myAVL	✉ 12:34

👤 Dipendente	🚐 Veicolo	⏱ Turno	⥾ Linea	🔭 Corsa
Mario Rossi	AB4654 ✕	TV056546 ✕	LINEA 65 ✕	AB46548D ✕

① Park Arese	08:00	⏱ +3	👥16 👤12	☑
② Park Arese 2	08:10	⏱ –:–	👥11 👤15	☑
③ Via Circonvallazione R	08:20	⏱ –:–	👥12 👤14	☑
④ Piazza Santa Maria Nuova	08:30	⏱ –:–	👥14 👤10	☑

TERMINA CORSA

● PO OPEN   ● DISPLAY IN   ● DISPLAY LCD   ◉ 📶 ◎

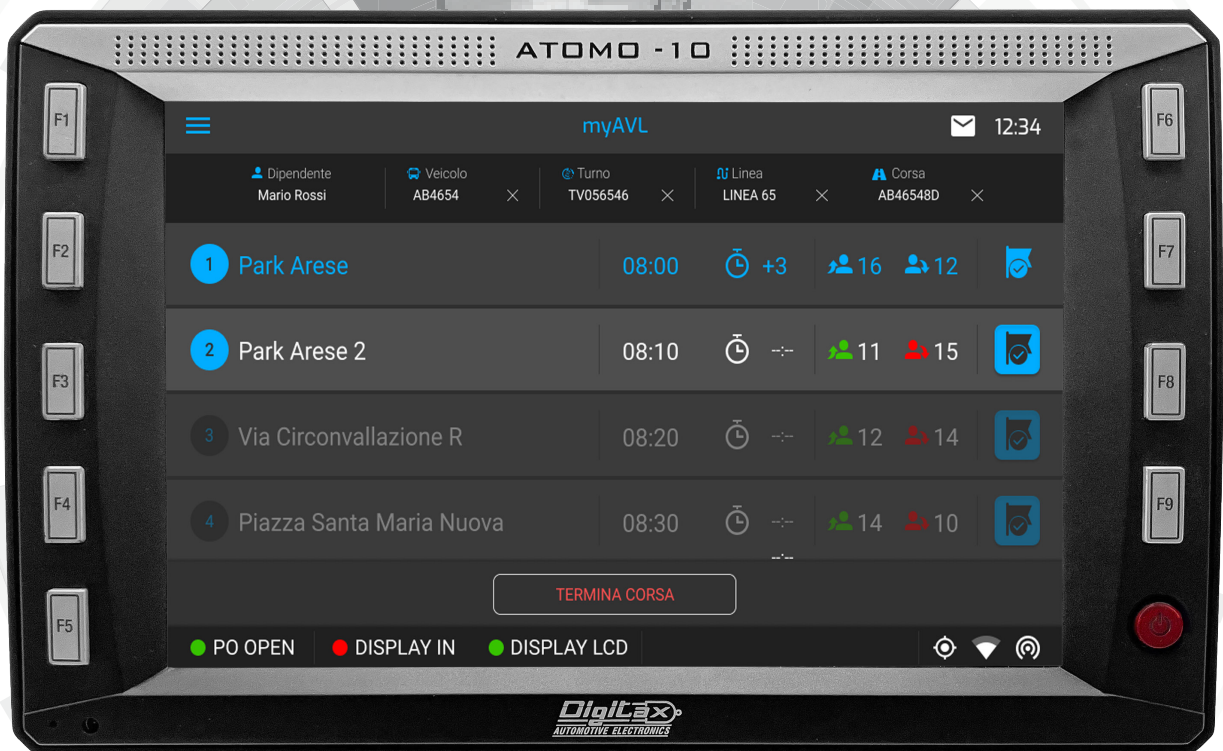F1 F2 F3 F4 F5 F6 F7 F8 F9

Digitax
AUTOMOTIVE ELECTRONICS

Digitax
AUTOMOTIVE ELECTRONICS

ATOMO -10

COMBINED AVM - TICKET VALIDATOR and PRINTER

ATOMO -10 MDT

The new ATOMO – 10 by Digitax is the solution for those companies and systems integrators who need to provide their customers with a professional, certified, flexible and modular Mobile Data Terminal (MDT) specifically designed to fulfill the requirements of applications like public transportation, fleets and special vehicles managements and many others.

ATOMO – 10 is available as a stand alone Mobile Data Terminal (ATOMO – 10 MDT) as well as a ALL IN ONE integrated system (ATOMO – 10 ETS) made of the stand alone device, one or more Ticket Validators and one Printer, all of them produced and provided directly by Digitax, to allow the maximum flexibility for new setups or exhisting installations updating. The use of standard communication protocols makes ATOMO – 10 MDT able to be interfaced also with any other manufacturers ticket validators and printers, when required.

ATOMO – 10 MDT is equipped with a revolutionary Android Platform On Module allowing the device to be upgraded at any time to the latest release of Android HW Platform, OS, network/modem, 4G and 5G, Wifi and Bluetooth.

Features like customisable user interface, navigation, job dispatching and many others are also available with ATOMO – 10 MDT while Digitax Ticket Validators are available both in onboard and remote configurations and with different skins (grey, yellow, green) on request.

ATOMO – 10 MDT is a Smart Mobile Data Terminal designed to acquire and process a huge number of different, in the format and complexity, inputs coming from the many different peripherals typically used in the applications where a MDT is requested.

In particular ATOMO – 10 MDT offers the possibility of interacting with passive peripherals, removing the need of any signal pre or post processing in specific devices or in the peripherals themselves. Smart pheripherals can be easily managed by ATOMO – 10 MDT as well.

The use of ATOMO – 10 MDT allows to place in one device, ATOMO -10 MDT itself, the total complexity and the criticalities of the whole architecture reducing the number of the smart components needed for the implementation of the integrated systems.
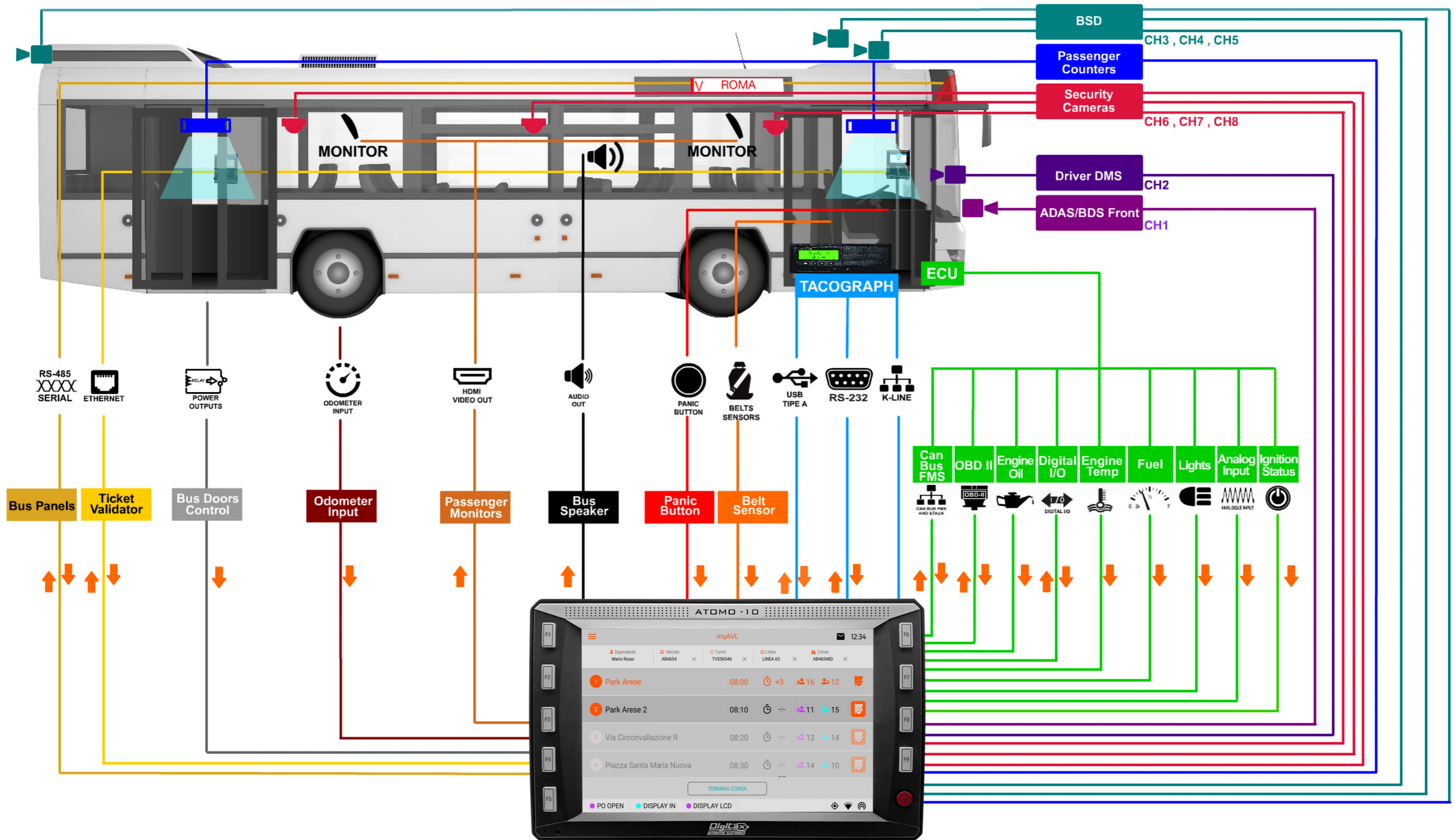
Many benfetis come from this revolutionaty approach like the cost reductions related to architecture installation, the easier defects detection, maintanance and assistance.

- ☑ ANDROID 10
- ☑ CORTEX A7/A53 KRYO 360
- ☑ ADRENO 506/619
- ☑ OCTA-CORE 1.8 GHz

- ☑ BACKUP BATTERY
- ☑ 16:9 DISPLAY 10.1" 1K NITS
- ☑ EMBEDDED MNDVR
- ☑ 9-AXIS ACCELEROMETER

- ☑ RAM 2GB-4GB / STORAGE 16GB-64GB
- ☑ GPS
- ☑ 4G LTE
- ☑ BLUETOOTH 4.2

- ☑ WIFI 2.4GB/5G
- ☑ DIGITAX SDK

ATOMO -10 MDT

DIRECT INTERFACES

BSD — CH3 , CH4 , CH5

Passenger Counters

Security Cameras — CH6 , CH7 , CH8

Driver DMS — CH2

ADAS/BDS Front — CH1

ECU

TACOGRAPH

MONITOR

MONITOR

V ROMA

RS-485 XXXX SERIAL

ETHERNET

POWER OUTPUTS

ODOMETER INPUT

HDMI VIDEO OUT

AUDIO OUT

PANIC BUTTON

BELTS SENSORS

USB TIPE A

RS-232

K-LINE

Can Bus FMS — CAN BUS FMS AND STACK

OBD II — OBD-II

Engine Oil

Digital I/O — DIGITAL I/O

Engine Temp

Fuel — E B - F

Lights

Analog Input — ANALOGUE INPUT

Ignition Status

Bus Panels

Ticket Validator

Bus Doors Control

Odometer Input

Passenger Monitors

Bus Speaker

Panic Button

Belt Sensor

ATOMO -10

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| 👤 Dipendente Mario Rossi | 🚍 Veicolo AB4654 ✕ | ⏱ Turno TV056546 ✕ | 🚏 Linea LINEA 65 ✕ | 🚌 Corsa AB46548D ✕ |

1	Park Arese	08:00	⏱ +3	👥16	👥12	🔶
2	Park Arese 2	08:10	⏱ --	👥11	👥15	🔶
3	Via Circonvallazione R	08:20	⏱ --	👥12	👥14	🔶
4	Piazza Santa Maria Nuova	08:30	⏱ --	👥14	👥10	🔶

TERMINA CORSA

● PO OPEN   ● DISPLAY IN   ● DISPLAY LCD

F1 F2 F3 F4 F5 F6 F7 F8 F9

DigiTex

ATOMO -10 MDT

EMBEDDED HYBRID MNDVR -AI DMS and ADAS & BDS

An **additional and advanced feature** available with ATOMO -10 MDT is the **embedded hybrid** (it supports up to **8 HD 1080p cameras** and **4 IPC 4K analogic cameras)** **Mobile Network Digital Video Recorder (MNDVR)** with **Artificial Intelligence (AI) – Driver Monitor System (DMS), Advanced Driver Assistance System (ADAS) & Blind Spot Detection System (BDS)**. In particular being able of processing 12 video channels ATOMO -10 supports the full **360° ADAS & BDS** in addition to other security features. Being the MNDVR embedded in ATOMO – 10 it is granted the execution of any assigned task with the **maximum efficiency and redundancy**.
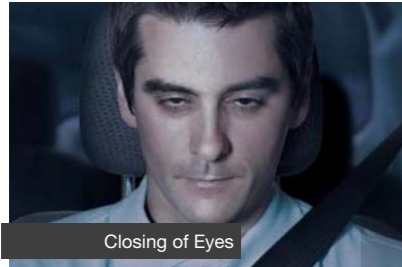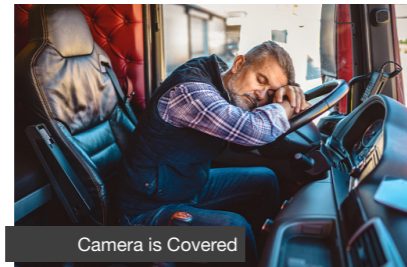
DMS FEATURES

Driver Yawning

Driver Distraction
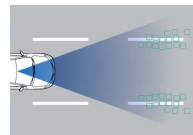

Driver Calling

Closing of Eyes

Camera is Covered

Driver Fatigue

ADAS & BDS FEATURES

Lane Departure Warning

Pedestrian Crossing Warning

Headway Monitoring Warning

360° ADAS Warning

Front Collision Warning

Blind Spot Warning

ATOMO -10 ETS

ALL IN ONE DEVICE

To match specific requests ATOMO – 10 MDT can be supplied with Digitax Printer and/or one or more than one Digitax Ticket Validators.
In particular an ALL IN ONE configuration made of ATOMO – 10 MDT, the Printer and one Ticket Validator by Digitax is available as ATOMO – 10 ETS.

1

Digitax Printer implements all the essential features for receipts, QR-code and forms printing and is available with ATOMO – 10 MDT only.

2

Digitax Ticket Validator (ATOMO – 5) can be fixed on the back of Digitax Printer or remoted in the vehicle. The Ticket Validator is equipped with a contactless reader, with payment capabilities on request, a professional NFC and barcode/QR scanner. A 1280×720 color TFT display shows messages and dynamic user informations. Digitax Ticket Validators are available with ATOMO – 10 MDT only.

2

1

ATOMO -10

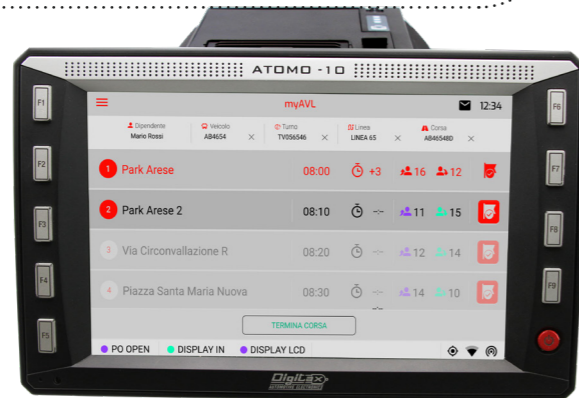## AVAILABLE CONFIGURATIONS

ATOMO – 10 MDT STAND ALONE

ALL IN ONE ATOMO – 10 ETS

ATOMO – 10 MDT and PRINTER

ATOMO – 10 MDT, PRINTER and REMOTE VALIDATORS

ATOMO -10 MDT

ADDITIONAL FEATURES

DUAL CPU

Primary CPU
The Quadcore or Octa-core, OS Android 9 - 10 and 11, LTE 4G Or LTE 5G allows remarkable flexibility and efficiency in computing power together with reduced power consumption.

SECONDARY CPU
The dedicated AITP (Automotive Intensive Task Processor) takes care of the functionalities requested by the automotive market: power management, Safe Shutdown, Wheel Pulses Odometer, Distance and Speed calculation, WakeUp on Ring, Over-the-Air services for software and firmware updates. The AITP is OTA programmable for remote automatic firmware and rates upgrade and it is always powered ON. The processor can switch-ON and OFF the device and the peripherals.

IDEAL FOR FLEET MANAGEMENT, AVM, TICKETING VALIDATOR, JOB DISPATCHING, SERVICE CERTIFICATION, NAVIGATION.

The device implements the latest technology to match any professional fleet and security application. It is a reliable, professional, compact, flexible, modular and automotive approved Mobile Data Terminal. The 4G LTE or 5G LTE modem allows very reliable communication with back-end servers.

CUSTOMIZABLE USER INTERFACE

The full HD 10.1" 1KNIT 16:9 TFT display allows to develop versatile and easily accessible applications thanks also to the integrated capacitive touchscreen controller and the 10 Function Keys with LEDs. The Function Keys, implementing the most used operations, allow to enhance the touchscreen life, while the optimal brightness of the display, in any light condition, is guaranteed by the ambient light sensor.
The ON/OFF Key is a Smart Power Button, fully programmable and used to perform more than one feature. It can also be disabled or programmed to trigger the Ghost Mode (fake shutdown).

STEALTH MODE

The Stealth mode is a special operating mode in which the system is working while the display and audio are switched off. This particular feature can be useful in many situations:
- Driver Monitoring: the device implements the "wake up on ring" feature to allow the Operating Central to remotely switch it ON, even in Stealth mode if necessary, to check the vehicle position, gather and/or record audio streams and other data.
- Ghost Mode: the device can be set to move to Stealth mode when switched OFF. This feature is particularly useful if the device is requested to remain always ON (only the display is switched OFF reducing power consumption) or in alarm state.
- Alarm managing: if the device is OFF and alarm button is pressed the system can start in Stealth mode hiding to anybody that it is active. With this special start the device can be programmed to send an alarm message, the GPS position or also screenshots or audio streams to the Operating Central.

RELIABILITY
The device can withstand glitches, when starting the vehicle engine, and overvoltage up to 32V. It is also immune to ESD and EMC interferences. Thanks to the AITP processor user applications and Android OS can close safely in case of sudden disconnection of the main power.
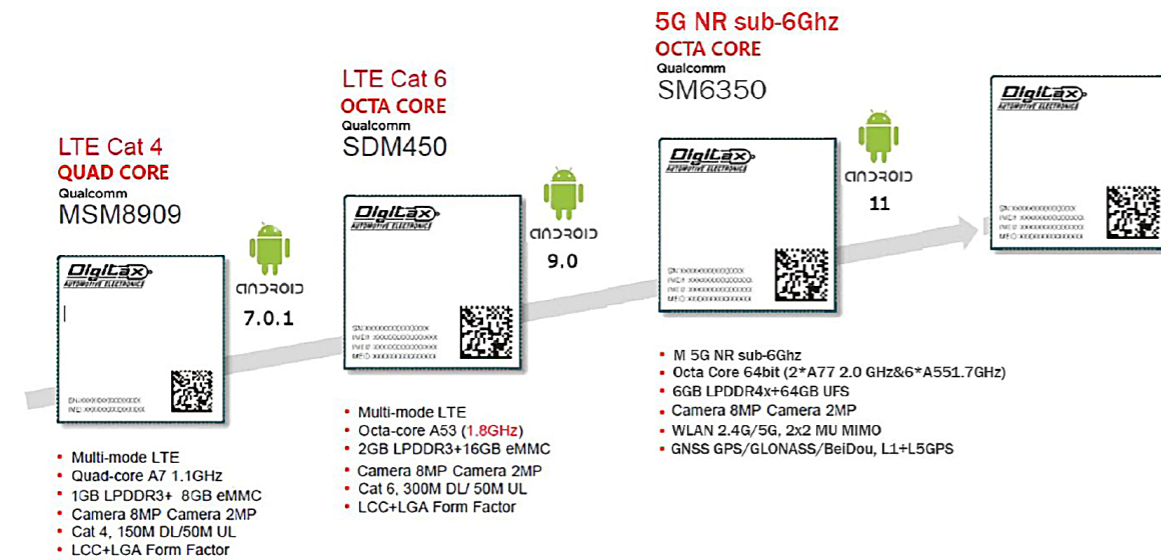
INPUTS AND OUTPUTS

A wide range of I/O channels are available: 3 Hi-Speed Host, 1 USB Client port and a total of 7 RS232 and RS485 serial ports. In particular the special programmable digital I/O allow to bidirectionally interact with external generic devices and equipments.

ADDITIONAL FEATURES

Available ANDROID PLATFORM configurations

- Qualcomm Quad Core MSM9809 CPU with 4G LTE CAT4 modem and Andorid 7.1.x Operating System
- Qualcomm Octa Core SDM450 CPU with 4G LTE CAT6 modem and Andorid 9.x/10.x Operating System
- Qualcomm Octa Core SM6350 CPU with 5G LTE 5G NR modem and Andorid 11.0x Operating System

LTE Cat 4
QUAD CORE
Qualcomm
MSM8909

CINDROID
7.0.1

- Multi-mode LTE
- Quad-core A7 1.1GHz
- 1GB LPDDR3+ 8GB eMMC
- Camera 8MP Camera 2MP
- Cat 4, 150M DL/50M UL
- LCC+LGA Form Factor

LTE Cat 6
OCTA CORE
Qualcomm
SDM450

CINDROID
9.0

- Multi-mode LTE
- Octa-core A53 (1.8GHz)
- 2GB LPDDR3+16GB eMMC
- Camera 8MP Camera 2MP
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor

5G NR sub-6Ghz
OCTA CORE
Qualcomm
SM6350

CINDROID
11

- M 5G NR sub-6Ghz
- Octa Core 64bit (2*A77 2.0 GHz&6*A551.7GHz)
- 6GB LPDDR4x+64GB UFS
- Camera 8MP Camera 2MP
- WLAN 2.4G/5G, 2x2 MU MIMO
- GNSS GPS/GLONASS/BeiDou, L1+L5GPS

FUTURE TECHNOLOGY

Digitax
AUTOMOTIVE ELECTRONICS

CPUs (Option 1)	Fanless Device with Primary CPU Qualcomm MSM8909 chipset, Quad-core ARM Cortex-A7 32-bit CPU @1.1GHz. Adreno 304 GPU.
GPU	OpenGL ES 3.02, OpenCL3, content security and reduced power consumption.
Secondary Intensive Task CPU Processor (AITP)	Secondary CPU The dedicated AITP (Automotive Intensive Task Processor) supplies the functionalities required by the automotive market 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 and tariff upgrade and is always powered ON. It can also switch ON and OFF the device and the peripherals.
Ram Memory	+2GB LPDDR3
Storage Solid State Hard Disk Memory	16GB EMMC
External SD	Up to 2T for external storage
Communication Modem 4G	LTE Cat 4 GSM / GPRS Class 12 HSUPA Modem with 300Mbit/s downlink and 50Mbit/s uplink data rates based on LTE network (max). 2 Sim Card slots Always online.
GPS Receiver	Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment.
Antennas	Internal GPS-WiFi-BT-LTE External GPS-WiFi-BT-LTE Rugged Combo antenna (option).
Multimedia	Audio: MP3, AAC+,eAAC, AMR-NB, -WB, G.711, WMA 9/10 Pro. Video: Encode:30fps 720P (H.264), 30fps WVGA (MPEG-4/VP8). Decoding:30fps 1080P (H.264/MPEG-4/VP8/H.265 DivX4/5/6), 30fps WVGA (H.263).
Connectivity	Wi-Fi Connection2.4G/5.8G, 802.11 a/b/g/n Bluetooth class 2BT2.1+EDR/3.0/4.1 LE.
Operating system	Android 7.1.x

ATOMO -10 MDT

OCTA CORE SYSTEM 4G FEATURES

CPUs (Option 2)	Fanless Device with Primary CPU Qualcomm SDM450 chipset, Octacore ARM Cortex-A53 64-bit CPU @1.8GHz. Adreno 506 GPU: OpenGL ES 3.02, OpenCL3, content security, and decreased power consumption
GPU	Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing
Secondary Intensive Task CPU Processor (AITP)	Secondary CPU The dedicated AITP (Automotive Intensive Task Processor) supplies the functionalities required by the automotive market 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 and tariff upgrade and is always powered ON. It can also switch ON and OFF the device and the peripherals.
Ram Memory	+2GB LPDDR
Storage Solid State Hard Disk Memory	16GB EMMC
External SD	Up to 256 GB for external storage.
Communication Modem 4G	LTE Cat 6 modem supporting 2 × 20 MHz carrier aggregation, with maximum download speed up to 300 Mbps. Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage. 2 Sim Card slots.
GPS Receiver	Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment.
Antennas	Internal GPS-WiFi-BT-LTE External GPS-WiFi-BT-LTE Rugged Combo antenna (option)
Multimedia	Audio: MP3, AAC+,eAAC, AMR-NB, -WB, G.711, WMA 9/10 Pro. Video: Encode:30fps 720P (H.264), 30fps WVGA (MPEG-4/VP8). Decode:30fps 1080P (H.264/MPEG-4/VP8/H.265 DivX4/5/6), 30fps WVGA (H.263).
Connectivity	Wi-Fi Connection2.4G/5.8G, 802.11 a/b/g/n Bluetooth class 2BT2.1+EDR/3.0/4.1 LE.
Operating system	Android 9.x/10.x

ATOMO -10 MDT

OCTA CORE SYSTEM 5G FEATURES

CPUs (Option 3)	Fanless Device with Primary CPU Octacore Qualcomm SM6350, Octa-core 64Bit ARM V8, KyroCPU560(2*A77 2.0GHz & 6*A55 1.7GHz)
GPU	Qualcomm® Adreno™ GPU 619and V66A 1.2GHz+Dual HVX
Secondary Intensive Task CPU Processor (AITP)	Secondary CPU The dedicated AITP (Automotive Intensive Task Processor) supplies the functionalities required by the automotive market 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 and tariff upgrade and is always powered ON. It can also switch ON and OFF the device and the peripherals.
Ram Memory	+4GB LPDDR4
Storage Solid State Hard Disk Memory	64GB EMMC
External SD	Up to 256 GB for external storage.
Communication Modem 5G	3GPP Rel.15 5G NR,sub-6 GHz 5G NR,256 QAM uplink/downlinkin sub-6 GHz,Rel.15 LTE multimode 2 Sim Card slots.
GPS Receiver	Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment.
Antennas	Internal GPS-WiFi-BT-LTE External GPS-WiFi-BT-LTE Rugged Combo antenna (option)
Multimedia	SupportVoLTEUltra HD voice call and SRVCC/CSFB fallbacktechnology. 24-bit/192kHz HD Music playback.
Connectivity	2.4G/5G, 2x2 MU MIMO, 802.11 a/b/g/n/ac BT2.1+EDR/3.0/4.1 LE/5.xBLE. Support a maximum of 10 ACL/BEL/SCO links.
Operating system	Android 11.x

Digitax
AUTOMOTIVE ELECTRONICS

IP protection	IP65 waterproof <u>sealed</u>.
DISPLAY	Ergonomic and orientable 10.1" TFT IPS Normally black Transmissive Display with 1920x1200 pixel resolution (1280x800 QUAD) and 16.7M colors. Aspect Ratio 16:9. Display clearly viewable with 1000 cd/m2 (500 cd/m2 QUAD). Ambient Light Sensor with Automatic Regulation.
Touchscreen	Capacitive Touch screen. Extended Temperature Range. IK8
User Interaction	Operation with capacitive touchscreen or dedicated and programmable Function Keys (10 Keys).
USB Ports	UpTo 3 X USB Host (with USB Support for Mouse and Keyboard) Hi-Speed. 1 USB Device.
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	4 Digital Inputs. 3 + 5 Power Output Ports. Dedicated Ignition input. 2 Analog Ports input. External Speakers output. External Microphone input. Odometer input.
Can Bus	Can Bus Interface OBD-II OBD2-FMS-SAJ1708.
Alarm and Security	Panic Button input / Emergency Switch input. Stealth Mode Controller (system ON display, audio and lightings off).
Power on key	1 Smart Power On/Off button.
Connectivity	Ethernet: 10/100 Mbps LAN Controller. Witch 4 different switch ports.
Development Tools	Adb/Android Studio IDE with USB debugging support SDK for Android O.S. Serial port driver and test tools. Digital I/O driver.
OS Image Loader	Over The Air (OTA) OS image loader or microSDHC Card Image Loader.
Power Supply	8 - 32 V with Surge Protector.
Battery	Internal Battery Package (option) for controlled shutdown without any damage risk.
Operating Temperature	-20°C to 75°C
Humidity	Humidity up to 95% non-condensing.
Vibration	Vibration Sine wave, 10 ~ 500 ~ 10Hz, 1.5G, 0.37oct/min 3 axis, 1hour/axis.

The Digitax Printer has all the features required to print recipes, QR codes, and forms.
The Printer can be easily connected to a Digitax Mobile Data Terminal ATOMO - 10 and used in any automotive application. The Printer supports ESC/POS Commands and it is provided of communication I/O Ports and all the required connection for external device.

Printer features

Max printing speed	200mm/s
Sensor	Paper nearly and end paper sensor.
Endurance	100km printing length.
Interfaces	RS232 and USB communication interface.
Printing method	Thermal printing.
Number of dots	576 dots/line
Resolution	8 dots/mm
Paper entry width(mm)	80mm
Printing width(mm)	72mm
Paper roll diameter (mm)	80mm Max
Paper thickness (µm)	60-80
Max printing speed	250mm/s
Paper loading	Easy loading.
Paper end/black mark sensor	By photo interrupter.
Head temperature	By thermistor.
Character set	1 resident
Charactersize	12*24
Character per line(max)	48Max

ESC/POS	
Graphics	Variable width and offset, double width and height.
Front	GB18030/ASC standard.
Barcodes	11barcodes: normal and rotated 90°.
Barcodes type	UPC-A, UPC-E EAN8, EAN13, CODE39, I25, CODABAR, CODE128, CODE11, MSI.

The Digitax Validitator can be provided in a ALL IN ONE configuration together with ATOMO – 10 MDT and the Printer or remoted to be placed where needed in the vehicle. The Validator is equipped with a contactless reader with a payment module on request and a professional NFC and barcode/QR scanner. Messages and dynamic user information are shown on a 1280x720 color TFT display. The Validator is managed by and is provided together with ATOMO – 10 only.

QR scanner

Equipped with a smart and fast scanning engine the QR scanner include a camera taking picture of and decoding the barcode. This scanning engine works at 800MHz with an integrated highly performing decoder and it can decode 1D & 2D barcodes and OCR-B font very fast. The high quality CMOS camera is capable of 100 frames/s and the device can scan paper, LCD, mobile phones, computers, or PDAs in a very readable way.

CPU Processor	High performance embedded and low power 800MHz CPU.
Reading capability	Ultra-fast 100 fps CMOS image sensor enabling high speeding scanning of 1D and 2D barcodes and OCR fonts. Improved scanning of curved, wide, poorly printed and demaged barcodes.
Motion Immunity	Exceptional motion tolerance for moving targets.
	Improved scanning of curved, wide, poorly printed and damaged barcodes.
LIGHT SOURCE	Aiming green LED, warm white illumination LED.
SCAN METHOD	CMOS area sensor, 640 x 480 pixels, black and white.
SCAN RATE	Up to 100 fps.
READING PITCH ANGLE	-65 to 0°, 0 to +65°.
READING SKEW ANGLE	-65 to 0°, 0 to +65°.
READING TILT ANGLE	360°
MINIMUM RESOLUTION AT PCS 0.9	4 mil (0.1 mm).
MINIMUM PCS VALUE	0.9
FIELD OF VIEW	Horizontal: 38° Vertical: 28.9°.
DEPTH OF FIELD AT QR CODE	6.7 mil (0.169mm) 2.52 - 4.17 in (64 - 106 mm) 15 mil (0.381mm) 1.18 - 9.21 in (30 - 234 mm).
DEPTH OF FIELD AT CODE 39:	5 mil (0.127 mm) 2.05 - 4.96 in (52 - 126 mm) 10 mil (0.254 mm) 1.81 - 9.68 in (46 - 246 mm) 20 mil (0.508 mm) 2.36 - 18.35 in (60 - 466 mm).
BARCODE (1D):	JAN/UPC/EAN including add on, Codabar/NW-7, Code 11, Code 39, Code 93, Code 128, GS1-128 (EAN-128), GS1 DataBar (RSS), IATA, Industrial 2 of 5, Interleaved 2 of 5, ISBN-ISSN-ISMN, Matrix 2 of 5, MSI/Plessey, S-Code, Telepen, Tri-Optic, UK/ Plessey.
BARCODE (2D):	Aztec Code, Aztec Runes, Chinese Sensible Code, Codablock F, Composite Codes, Data Matrix (ECC200), DotCode, Passport MRZ (OCRB), Maxi Code (mode 2~5), MicroPDF417, Micro QR Code, PDF417, QR Code.
BARCODE (POSTAL CODES)	Chinese Post, Intelligent Mail Barcode, Korean Postal Authority Code, POSTNET.

The RFID Reader is equipped with a 13.56 MHz Proximity Read / Write device supporting transponders according to ISO 14443 Type A and Type B, ISO 15693, ISO 18000-3M3 as well as NFC devices according to ISO 18092.
The Reader Module is certifiable for applications like VDV-KA and ITSO. The 4 SAM sockets are tested according to EMVCo Contact Level 1.
The device can handle 4 different Sam modules; SoftCrypto and SAMCrypto High-Level-Functions offer a user friendly and fast interface for accessing encrypted data of mifare DESFire (EV0, Ev1), mifare PLUS and mifare Ultralight C.
It is possible to access also to newer chips such as mifare DESFire EV2 or NTAG 424 DNA via a secure communication channel.

Integrated RFID	ISO 15693, ISO 14443-A/-B, NFC (Near Field Communication) and Calypso compatible.
	Hi-level support SoftCrypto e SAMCrypto to handle crypt data smartcard MIFARE™ DESFire EV1, MIFARE™ PLUS e MIFARE™ Ultralight C.
Operating frequency	13.56 MHz
Transmitting power	450 mW
Antenna type	Internal embedded antenna.
LIGHT SOURCE	Aiming green LED, warm white illumination LED.
Smartcard interface	ISO 7816 – 4 SAM sockets (Id000 format). – T=0 and T=1 protocol. – Voltage categories A, B & C.
Reader modes	Polling-Mode, Scan-Mode.
Supported transponders	Mifare classic, mifare UltraLight, mifare DESFire, mifare PLUS, mifare UltraLight C, my-d move, JewelTM, FeliCa, NTAG, mifare / NTAG Ev2 Crypto Tag-It HFI, Fujitsu MB89R11x, STM24LRx, STMLRl2k, I-Code SLI / SLIX, I-Code ILT NFC Devices in Card Emulation Mode (Tag Type 1 ... 5), NFC Peer-to-Peer (P2P).
Radio approvals	Europe EN 300 330. North America FCC, IC.
EMC	EN 301 489, ISO 11452-2 / -4 (Functional status C).
SAM sockets	EMVCo Contact Level 1 (version 4.3).
Environment	WEEE – 2002/96/EC, RoHS – 2002/95/EC.

Open Payment Terminal

The Open Payment Terminal is a PCI PTS 5.1 certified terminal natively designed to meet national regulations and ensure the highest security standards for all open payments in the transport field. The module allows all the most known contactless payments methods: Visa, Mastercard, Amex, Discover, CUP, Interact, Flash, ApplePay, GooglePay among the others.

The Termoinal is able to manage all digital tickets:
- Closed-loop cards:
  - MIFARE® Classic (1 o 4 k)
  - MIFARE® Ultralight
  - Calypso
  - Desfire®
- NFC devices, contactless tickets.
- Mobile apps (through Bluetooth)... and others.

Based on the very powerful processor TETRA by Telium, the terminal it is able to handle all kinds of future ticketing media and new transport applications.

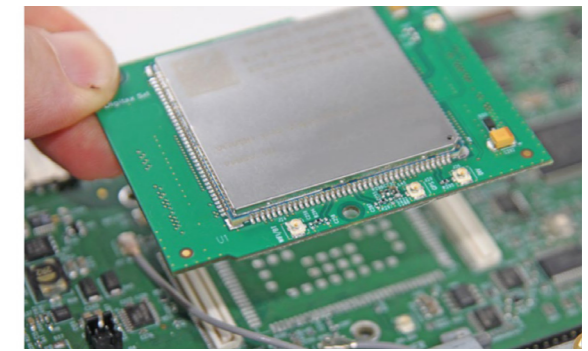| Processor / OS	Cortex A5 - Telium TETRA.
Memory	512 MB Flash, 512 MB RAM MicroSD up to 32GB.
SAM	4xSAM ID-000 ISO 7816 (High Speed protocol).
Contactless reader	EMV Level 1 / ISO 14443 A/B/B' ISO 18 092 (reader mode).
User interface	RVB backlighted landing zone. 4 RVB LEDs.
Audio	Buzzer Monotone. Polyphonic sound with external loudspeakers.
Security	PCI PTS 5.1 certified.
Operation conditions	Relative humidity: 95% non-condensing at 40°C External temperature range: -20°C to +70°C (-4°F to 158°F) for consumer product. External temperature range: -20°C to +55°C (-4°F to 131°F) for transportation (automotive, railways) product.

User Display

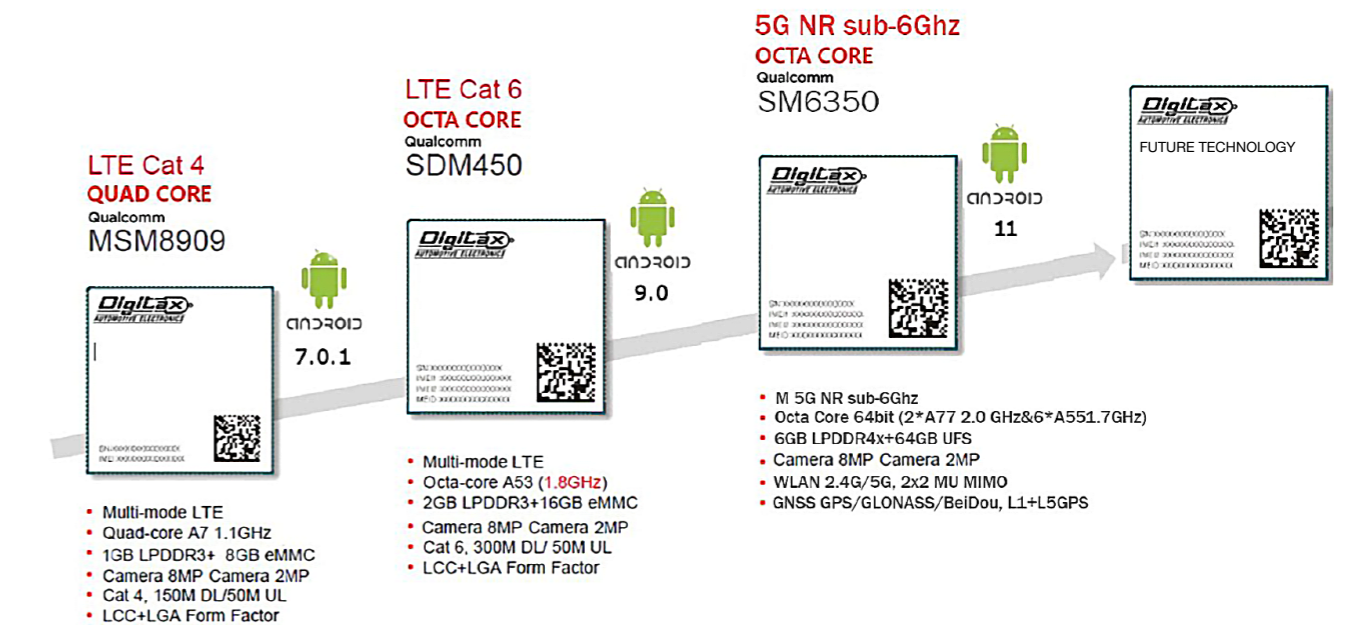A dedicate 1280x720 TFT color display with touchscreen shows messages and dynamic user information.

Viewing area	5" diagonal.
Resolution	1280x720
Colours	TFT LED Display with 1,67 M colors
Luminosity	Display clearly viewable with 1000 cd/m2.
Touchscreen	Automotive Full Rugged Pen/Finger Touchscreen. Extended Temperature Range. IK9
Sofware	Display contents are dynamically updatable by MDT through a dedicated API and Communication Interface.

Upgradable Android Platform

Digitax ATOMO – 10 MDT can be equipped, on request, with the full Android Platform On Module. With this option the CPU can be updated to the latest features and O.S, Modem/network, WiFi, Bluetooth releases. This unique feature allows to keep the MDT updated and tuned as per eventual future requirements.

Currently they are available 3 different chip-sets Platform: QUAD Core, OCTA Core and OCTA Core with 5G NR Modem. The next step will be Digitax providing new platforms with AI features, increased computational power, newer and updated OS and peripherals.

LTE Cat 4
QUAD CORE
Qualcomm
MSM8909
- Multi-mode LTE
- Quad-core A7 1.1GHz
- 1GB LPDDR3+ 8GB eMMC
- Camera 8MP Camera 2MP
- Cat 4, 150M DL/50M UL
- LCC+LGA Form Factor

ANDROID 7.0.1

LTE Cat 6
OCTA CORE
Qualcomm
SDM450
- Multi-mode LTE
- Octa-core A53 (1.8GHz)
- 2GB LPDDR3+16GB eMMC
- Camera 8MP Camera 2MP
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor

ANDROID 9.0

5G NR sub-6Ghz
OCTA CORE
Qualcomm
SM6350
- M 5G NR sub-6Ghz
- Octa Core 64bit (2*A77 2.0 GHz&6*A551.7GHz)
- 6GB LPDDR4x+64GB UFS
- Camera 8MP Camera 2MP
- WLAN 2.4G/5G, 2x2 MU MIMO
- GNSS GPS/GLONASS/BeiDou, L1+L5GPS

ANDROID 11

FUTURE TECHNOLOGY

Digitax QUAD-CORE System-on-chip Module

CPU
•MSM8909, QUALCUMM Quad-core A7, up to 1.1GHz

Memory
•1GB LPDDR3 + 8GB eMMC
•Option 2GB LPDDR3 + 16GB eMMC

OS
•Android 7.1

WLAN
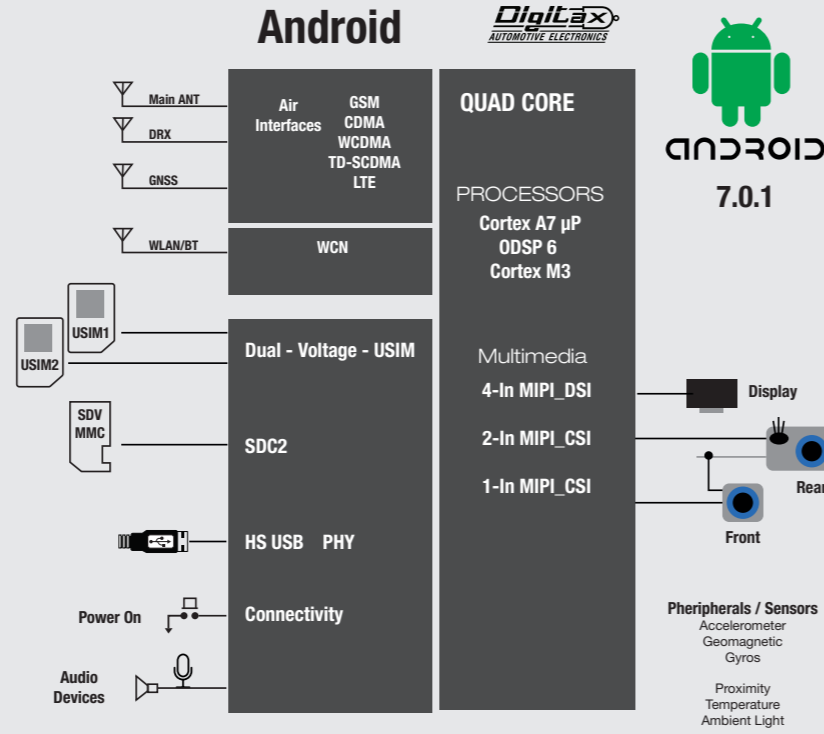•2.4G/5G, 802.11 a/b/g/n
•150Mbps, STA/AP/P2P

BT
•BT 2.1 + EDR/3.0/4.1 LE /BT4.2
•Support a maximum of 10 ACL/BEL/SCO links

GNSS
•GPS/BeiDou/GLONASS, or GPS/BeiDou/Galileo

Modem
•LTE4G - 3GPP Release 10 compliant

Android — Android 7.0.1

Main ANT / DRX / GNSS / WLAN/BT

Air Interfaces: GSM CDMA WCDMA TD-SCDMA LTE

WCN

USIM1 / USIM2

Dual - Voltage - USIM

SDV MMC

SDC2

HS USB   PHY

Power On — Connectivity

Audio Devices

QUAD CORE

PROCESSORS
Cortex A7 µP
ODSP 6
Cortex M3

Multimedia
4-In MIPI_DSI
2-In MIPI_CSI
1-In MIPI_CSI

Display / Rear / Front

Pheripherals / Sensors
Accelerometer
Geomagnetic
Gyros
Proximity
Temperature
Ambient Light

Digitax OCTA-CORE LTE System-on-chip Module

Digitax OCTA Core LTE Modem

CPU
•Octocore: Qualcomm SDM450, Octa-core ARM Cortex-A53 64-bit CPU @1.8GHz

GPU
•Qualcomm Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing

Memory
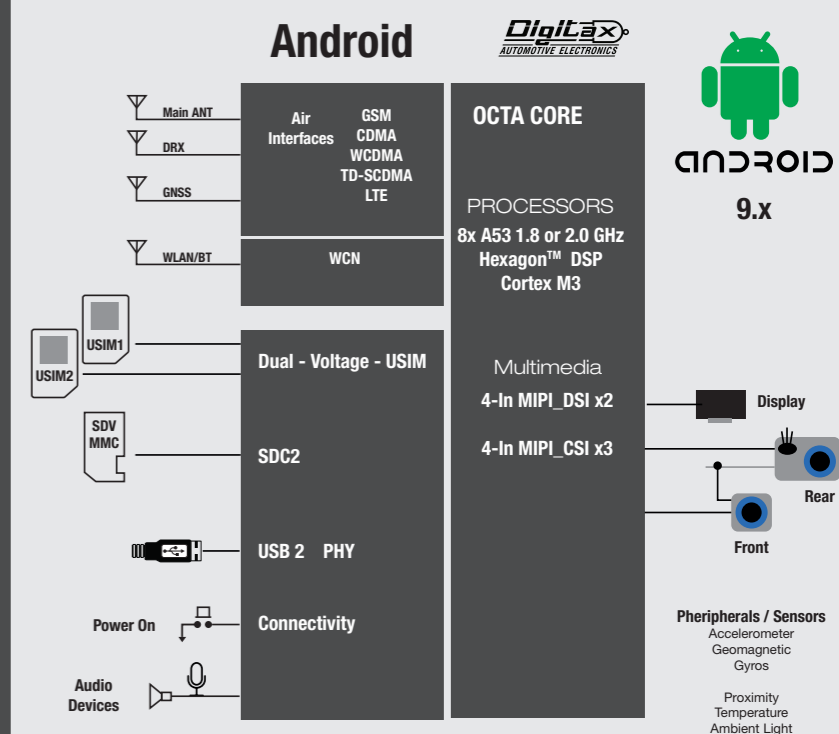•2GB LPDDR3 + 16GB eMMC

OS
•Android 9X

WLAN
•2.4G/5GHz, 802.11 a/b/g/n/ac, 433Mbps, STA/AP/P2P

BT
•BT2.1+EDR/ 3.0/ 4.1LE/ 4.2LE
•Support a maximumof 10 ACL/BEL/SCO links

GNSS
•GPS/BeiDou/GLONASS, or GPS/BeiDou/Galileo

Android — Android 9.x

Main ANT / DRX / GNSS / WLAN/BT

Air Interfaces: GSM CDMA WCDMA TD-SCDMA LTE

WCN

USIM1 / USIM2

Dual - Voltage - USIM

SDV MMC

SDC2

USB 2   PHY

Power On — Connectivity

Audio Devices

OCTA CORE

PROCESSORS
8x A53 1.8 or 2.0 GHz
Hexagon™ DSP
Cortex M3

Multimedia
4-In MIPI_DSI x2
4-In MIPI_CSI x3

Display / Rear / Front

Pheripherals / Sensors
Accelerometer
Geomagnetic
Gyros
Proximity
Temperature
Ambient Light

Digitax QUAD-CORE

•4-lane MIPI_DSI, 1.5Gbps/lane, HD (720P) @60fps
•Support MIPI to RGB, MIPI to LVDS and MIPI to HDMI

Option Camera
• 2 embedded cameras: 1 X 8mp 1 X 2mp 4-lane MIPI_CSI, 1.5Gbps/lane, 1 ISP, Bayer/YUV format

Touch panel
•Capacitive-screen, I2C controls

Audio   Analog channels:
•Two inputs: MIC1, MIC2
•Three outputs: speaker, earpiece, headphone

Video
•Encode: 720P (H.264) @30fps; WVGA (MPEG-4/VP8) @30fps
•Decode: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @30fps; WVGA (H.263) @30fps

USB 2.0 Device
•High Speed, 480Mbps
•Support USB 2.0 OTG, USB OTG+Chargeand USB to Ethernet functions

(U)SIM
•2 SIM online, support 1.8/3V (U)SIM cards, with (U) SIM card detection function; DSDS supported

4G LTE — Smart LTE Cat.4 Module Max. 150Mbps (DL) Max. 50Mbps (UL)

3G HSPA+ — Max. 42Mbps (DL) Max. 5.76Mbps (UL)

LCC — LCC Package

Android 5.1

Powerful Multimedia Function

GPS+GLONASS +BeiDou

USB 2.0 High Speed Interface

USB Drivers

AT — Quectel Enhanced AT Commands

Digitax OCTA Core LTE

Modem
•LTE4G - Partial 3GPP Release 12 compliant

LCM
•Support dual LCDs for independent display: dual 4-lane MIPI_DSI; WUXGA(1920*1200) @60fps
•Wi-Fi display: 1080P 30fps (UBWC)

Camera
•3 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane
•Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane)

Touch panel
•2, Capacitive-screen, I2C controls

Audio   Analog channels:
•Two inputs: MIC1, MIC2
•Three outputs: speaker, earpiece, headphone

Video
•Video encoding and decoding: up to 1080P @60fps
•Video encoding and decoding: up to 4K at 30fps

USB
•USB 2.0 Compliant,Type-C,USB OTG + Charge

(U)SIM
•2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported

ARM Cortex-A53 64-bit Processor (Octa-core)

Qualcomm® Adreno™ 506 GPU

Android

4G LTE — Cat 6 Max 300Mbps (DL) Max 50Mbps (UL)

IEEE 802.11 a/b/g/n/ac

BT4.2 (BR/EDR+BLE)

GPS+GLONASS+ BeiDou

Powerful Multimedia Function

LGA LCC — LCC+LGA Package

Digitax OCTA-CORE 5G/LTE 5G NR sub-6Ghz System-on-chip Module

Digitax OCTA-CORE 5G/LTE 5G NR sub-6Ghz

CPU
•Octocore: Qualcomm SM6350, Octa-core 64Bit ARM V8, Kyro CPU560(2*A77 2.0GHz & 6*A55 1.7GHz)

GPU
•Qualcomm Adreno™ GPU 619and V66A 1.2GHz+Dual HVX

Memory
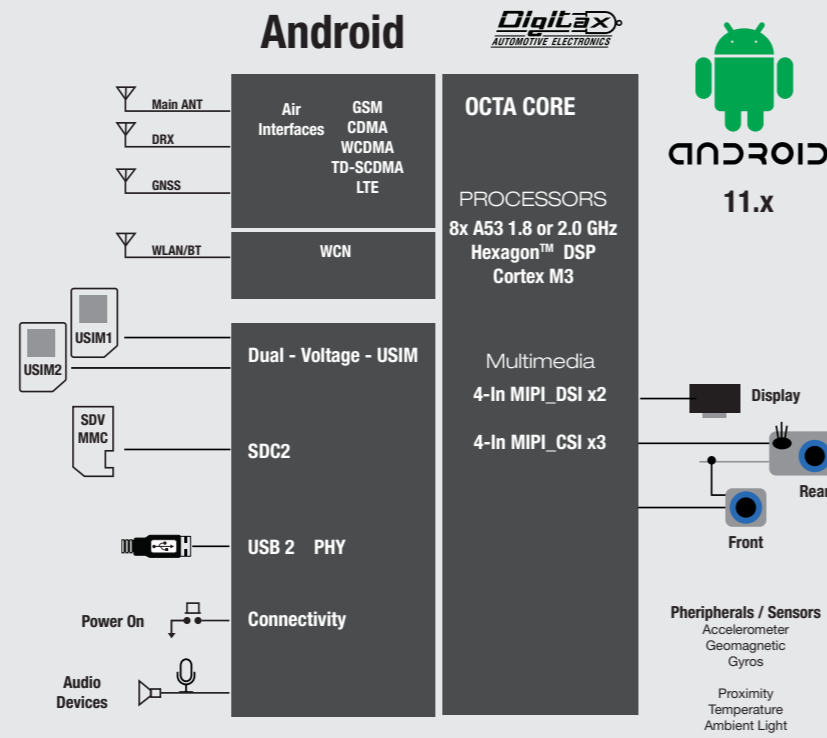•4GB LPDDR4 + 64GB eMMC

OS
•Android 11X

WLAN
• 2.4G/5G, 2x2 MU MIMO, 802.11 a/b/g/n/ac

BT
• BT2.1+EDR/3.0/4.1 LE/5.xBLE
•Support a maximumof 10 ACL/BEL/SCO links

GNSS
• GPS/GLONASS/BeiDou, L1+L5GPS
•Support dual LCDs for independent display: dual 4-lane MIPI_DSI; WUXGA(1920*1200) @60fps
•Wi-Fi display: 1080P 30fps (UBWC)

Digitax OCTA-CORE 5G/LTE 5G NR sub-6Ghz

Modem
• 3GPP Rel.15 5G NR,sub-6 GHz 5G NR,256 QAM up-link/downlink in sub-6 GHz,Rel.15 LTE multimode

LCM
• FHD+ 10 bit, 60/90/120 Hz support, One 4-lane DSI, D-PHY 1.2, C-PHY 1.0   DisplayPort support over USB Type-C

Camera
•3 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane
•Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane)

Touch panel
•2, Capacitive-screen, I2C controls

Audio   Analog channels:
•Two inputs: MIC1, MIC2
•Three outputs: speaker, earpiece, headphone

Video
Support VoLTE Ultra HD voice call and SRVCC/CSFB fallback technology
24-bit/192kHz HD Music playback
Video codec 4K30 decode+1080p30 encode

USB
•USB 2.0 Compliant,Type-C,USB OTG + Charge

(U)SIM
•2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported

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Android

Digitax AUTOMOTIVE ELECTRONICS

ANDROID 11.x

- Main ANT
- DRX
- GNSS
- WLAN/BT

Air Interfaces: GSM, CDMA, WCDMA, TD-SCDMA, LTE

WCN

USIM1 / USIM2

SDV MMC

OCTA CORE

PROCESSORS
8x A53 1.8 or 2.0 GHz
Hexagon™ DSP
Cortex M3

Dual - Voltage - USIM

SDC2

USB 2   PHY

Connectivity

Power On

Audio Devices

Multimedia
4-In MIPI_DSI x2
4-In MIPI_CSI x3

Display
Rear
Front

Pheripherals / Sensors
Accelerometer
Geomagnetic
Gyros
Proximity
Temperature
Ambient Light

Qualcomm 8 核 Kryo360

Adreno™ GPU 619

Android 11

L 4x4 MIMO
L 1x1 MIMO

5G sub-6GHz SA/NSA

2x2 MIMO ax ready

L1+L5 GPS

V66A 1.2GHz +2x HVX

AI

LGA 封装

Module Memory
Module Memory size could be customizable.Currently these are available options:

Module	Memory (LPDDR3 + eMMC)					
	1GB + 8GB	2GB + 16GB	3GB + 32GB	4GB + 32GB	6GB + 64GB	8GB + 128GB
QUAD-CORE	Y	Y	N	N	N	N
OCTA-CORE	N	Y	Option	Option	Option	
OCTA-CORE 5G	N	N	N	N	Y	Option

Modules CPU comparison

Module	CPUs					
	Application	Modem	RPM	GPU	Audio DSP	Video
QUAD-CORE	Cortex-A 7. Quad core 1.1 GHz. 32bit, 512 KB L2 cache	QDSP6V5, 691 .2 MHZ . 768 kB L2 caches	Cortex-M3	Adreno 304@409.6 MHz	Share with modem	Venus 310 266MHz
OCTA-CORE	Cortex-A53, Octa core, 64bit 4X1 .8GHz, 512 KB L2 cache 4X1 .8GHz, 512 KB L2 cache	Hexagon DSP V56850 MHz 768 kB l2 caches	Cortex-M3	Adreno 506@600 MHz, 64bit	Hexagon DSP V56 850 MHz 768 kB l2 caches	Venus333
OCTA-CORE 5G	CPU adopts 8nm FinFET with 64bit ARM VS core, Kyro CPU 560 (2 * A77 2.0 GHz&6 * A551.7 GHz) with Adreno GPU 619 and V66A 1.2GHz+Dual HVX	Support 5G NR sub-6Ghz, DL 4x4 MIMO SA/NSA mode and UL 2x2 MIMOSA mode	Cortex-M3	Adreno GPU 619 and V66A 1.2GHz+ Dual HVX	24-bit/192 kHz HD Music playback	Support 4K @30fps video recording and playback

Video

Module	VIDEO		
	HW performance	HW codec	SW codec
QUAD-CORE	Decoder. 1080P@30fps, 20 bps Encoder. 720P@30fps, 14 bps Encoder HFR: 800x480@60fps, 4Mbps Maximum 244800 macro block/s FWVGA@30fps de+FWVGA@30fps en	Decoder. H.264 BP/MP/HP, VP8, HEVC Main Encoder. H.264 BP/MP	Decoder. MPEG-4 SP/ASP, H263 PO, DivX 4.x, 5.x, 6.x, XVID Encoder: PEG-4 SP, H.263 PO
OCTA-CORE	Decoder. 1080P@60fps, 60 bps Encoder. 1080P@60fps, 60 bps Encoder HFR: 720P@120fps, 60 bps Maximum 972000 macro block/s 1080P@60fps de+1080P@30fps en	Decoder. HEVCIH.264NC-1/ PEG-4/DivX/H2631 PEG-2NP8NP9 Encoder: HEVC/H.264/MPEG-4/H263NP8	
OCTA-CORE 5G	4K30 decode+1080p30 encode	Video codec codec:Decode 4K@30fps 10 10-bitbit: Encode 4K@30fps 8 8-bitbit: 4K@30 playback+1080P@30 encode	

Modem

Module	Modem							
	3GPP Rei	GERAN	WCDMA	TDSCDMA	COMA	1×EV-DO	LTE-FDD	LTE-TDD
QUAD-CORE	Full conform R10 Partly support R1 1	GSM/GPRS/ EDGE EDGE Multi Slot Class 33 DL-236 Kbps UL-59.2 Kbps	HSDPA-CAT24 HSUPA-CAT6 DL-42.2 Mbps UL -5. 76 Mbps	HSDPA-Cat 24 HSUPA-Cat 6 DL-4.2 Mbps UL-2.2 Mbps	1 x-Advanced DL-307.2 Kbps UL-307.2 Kbps	DL-3.1 Mbps UL-1.8 Mbps	Cat4 DL-150 Mbps UL-50 Mbps	Cat4 DL-130 Mbps UL-35 Mbps
OCTA-CORE	Full conform R10 Partly support R12	GSM/GPRS/ EDGE EDGE Multi Slot Class 33 DL-236 Kbps UL-59.2 Kbps	DC-HSD-PACAT29 DC-HSUPACAT8 DL-84 Mbps UL-11 Mbps	HSDPA-Cat 24 HSUPA-Cat6 DL-4.2 Mbps UL-2.2 Mbps	1x-Advanced DL-307.2 Kbps UL-307.2 Kbps	DL-3.1 Mbps UL-1.8 Mbps	Cat6 DL-300 Mbps UL-50 Mbps	Cat6 DL-265 Mbps UL-35 Mbps
OCTA-CORE 5G	3GPP Rel.15 5G NR	Rel.15 LTE multimode modem						

WI-FI

Module	WIFI				
	WIFI Chipset	Band & Protocol	2*2 MIMO	WIFI Display	Mode
QUAD-CORE	WCN36608	2.4G&5G 802. 11 a/b/g/n, 150Mbps	N	N	STA I AP(32) & Wifi direct Wifi probe
OCTA-CORE	WCN3680	2.4G&5G 802. 11 a/b/g/n/ac, 433Mbps	N	FHD(1920x1080)@ 30fps Both host&device	STA I AP(32) & Wifi direct Wifi probe
OCTA-CORE 5G	WCN3680B	2.4G/5G, 2x2 MU MIMO, 802.11 a/b/g/n/ac axready	Y		

Bluetooth

Module	BT		
	BT Chipset	Protocol	Profiles
QUAD-CORE	WCN 3660B	BT3.x BT4.2/LE(Android 7)	FTP 1.1, HDP 1.0 , HID 1.0 - Hos, OPP 1.1. PAN 1.0, SAP 1.1 . AVRCP 1.3 , BLE GATT Client/Server, A2DP 1.2 - SRC/SNK HFP 1.6 - AG/HS, MAP 1.0 - MSE/MCE PBAP 1.0 - PSE/PCE, AVRCP 1.5 - Target, DUN 1.1 HID 1.0 - Client, HOGP 1.0, OPP 1.2, Dual-HFP, OBEX over L2CAP, AVRCP 1.5- Controller. BR/EDR Secure Connections, Dual Mode Topology, BLE Peripheral Mode, Multi-HFP HFP 1.7, Dual A2DP Handoff
OCTA-CORE	WCN 3680	BT3.x BT4.2/LE	
OCTA-CORE 5G	4K30 decode+1080p30 encode	BT2.1+EDR/3.0/4.1 LE/5.x BLE	

GNSS

Module	Memory (LPDDR3 + eMMC)						
	GPS	Beidou	GLONASS	Galileo	QZSS	SBAS	Note
QUAD-CORE	Y	Y	Y	Y	N	N	▶GPS Beidou and GLONASS or ▶GPS Beidou and Galileo
OCTA-CORE	Y	Y	Y	Y	N	N	
OCTA-CORE 5G	Y	Y	Y	Y	N	N	

Features are subject to change without notice
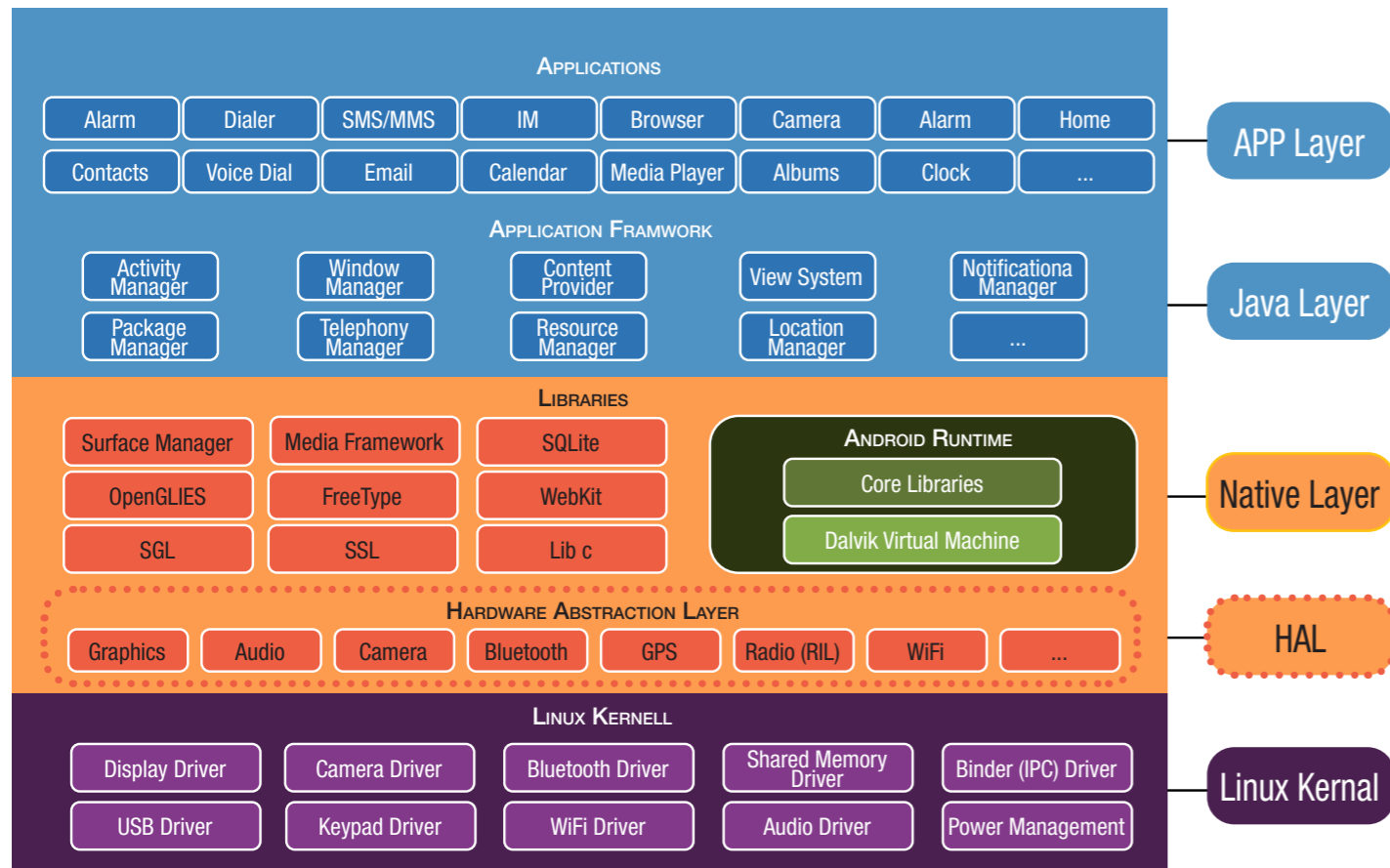
Software customization
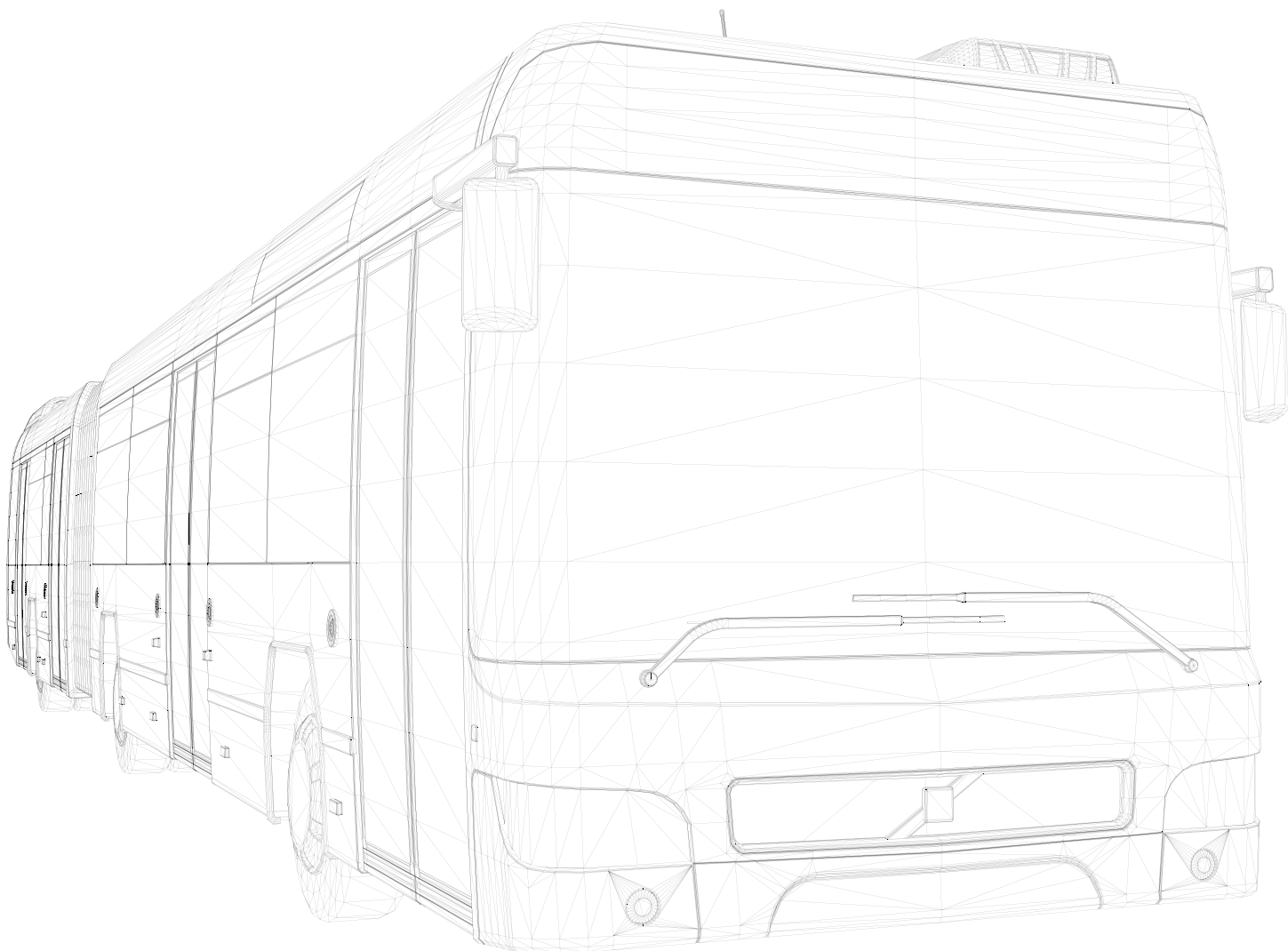
Software customization

Digitax R&D Team can customize and keep updated every System software module.

Together with the technical support, Digitax also provides Libraries, Code Samples and anything is required to let the customers to develop customized and proprietary applications by their own.

Digitax will provide technical support

APPLICATIONS

Alarm	Dialer	SMS/MMS	IM	Browser	Camera	Alarm	Home
Contacts	Voice Dial	Email	Calendar	Media Player	Albums	Clock	...

APP Layer

APPLICATION FRAMWORK

Activity Manager	Window Manager	Content Provider	View System	Notificationa Manager
Package Manager	Telephony Manager	Resource Manager	Location Manager	...

Java Layer

LIBRARIES

Surface Manager	Media Framework	SQLite
OpenGLIES	FreeType	WebKit
SGL	SSL	Lib c

ANDROID RUNTIME
- Core Libraries
- Dalvik Virtual Machine

Native Layer

HARDWARE ABSTRACTION LAYER

Graphics	Audio	Camera	Bluetooth	GPS	Radio (RIL)	WiFi	...

HAL

LINUX KERNELL

Display Driver	Camera Driver	Bluetooth Driver	Shared Memory Driver	Binder (IPC) Driver
USB Driver	Keypad Driver	WiFi Driver	Audio Driver	Power Management

Linux Kernal

Notes

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