

**Multi-Media Validator
(VAL4M)**

Datasheet



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1. Introduction

VAL4M is a validator for automatic fare collection (AFC) in public transport. It incorporates a contactless smart card reader, enabling a unique flexibility in public transport ticketing.

VAL4M is based on a powerful digital media CPU with large memories, thus capable of running high level OS:

- 1GHz ARM Cortex A8 CPU with video and graphic capabilities,
- 512 Mbytes DDR3 RAM,
- 256 MBbytes NAND Flash,
- 8 GBytes SD Flash memory.

VAL4M has a rich set of user interface peripherals:

- Large 7" 18 bit colors TFT LCD with optional touch screen,
- High quality stereo sound and speech system,
- Video output for connecting a separate screen,
- GPS receiver
- RGB LED indicators.

On the second screen VAL4M is capable of running GPS location based useful information or advertisement video files. Such rich multimedia features offer a high comfort to the riders along with a shortening of the boarding time.

VAL4M has a plenty of communication channels, allowing easy integration of/to other systems:

- 2 x UART (enables easy integration of printer, pin pad terminal, taxi meter, e.t.c),
- 3G/GPRS 7.2/5.7 Mbps, allows fast data exchange,
- WiFi 802.11b/g/n (optional)
- 2 x USB,
- CAN Bus,
- Ethernet 100 MBps

VAL4M incorporates an EMV L1 & L2 compliant contactless card and NFC reader:

- Supports all layers ISO14443A/B,
- Supports NFC ISO18092,
- Supports all Mifare type cards
 - Mifare Standard
 - Mifare Plus
 - Mifare Ultralight
 - Desfire
- Master Card's PayPass,
- Visa's payWave,
- e.t.c.

VAL4M is a perfect choice for various types of AFC, e.g. for buses, subways, trams, taxies and other public transportation means.

2. Diagrams

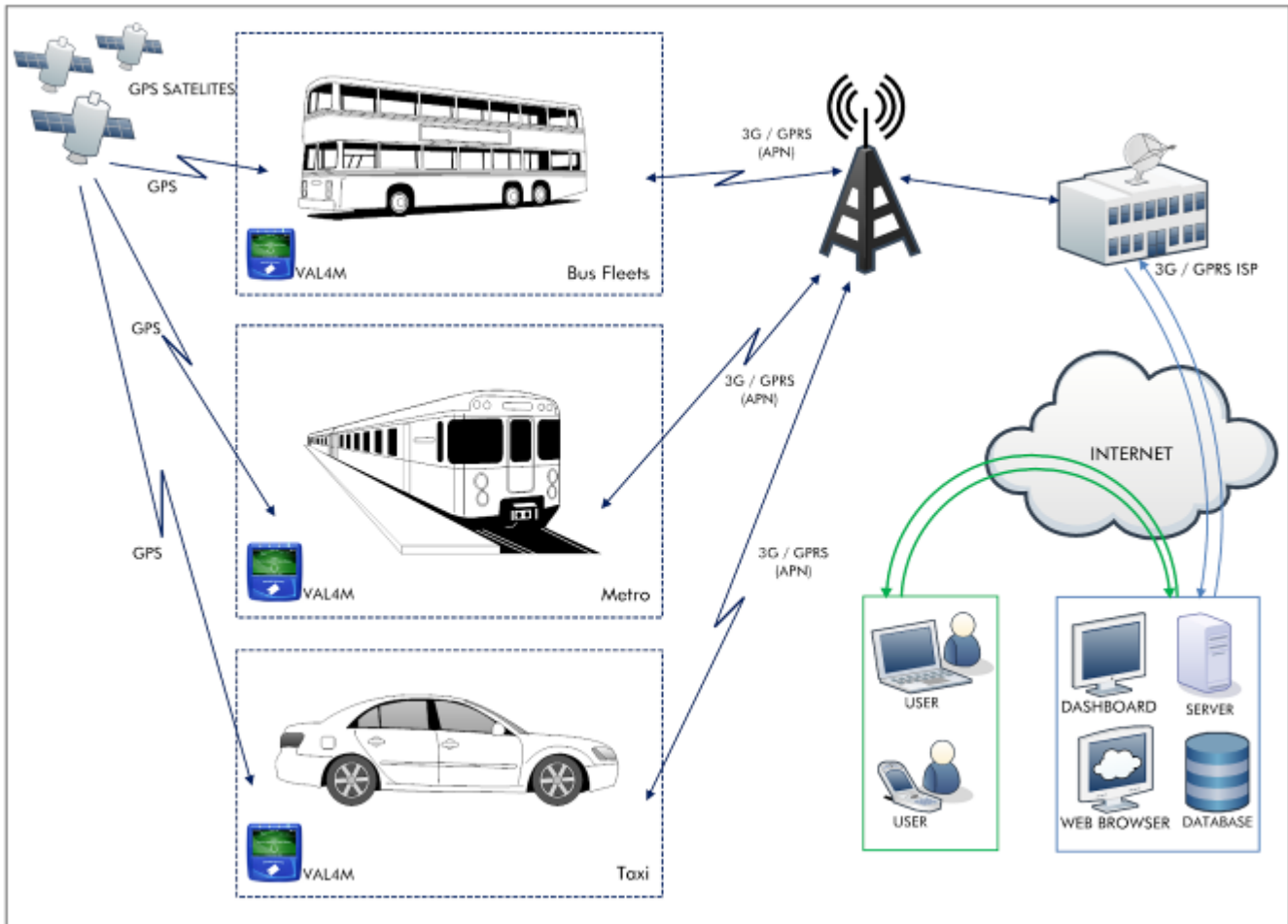


Fig 1: General AFC Diagram



Fig 2: In vehicle AFC equipment diagram

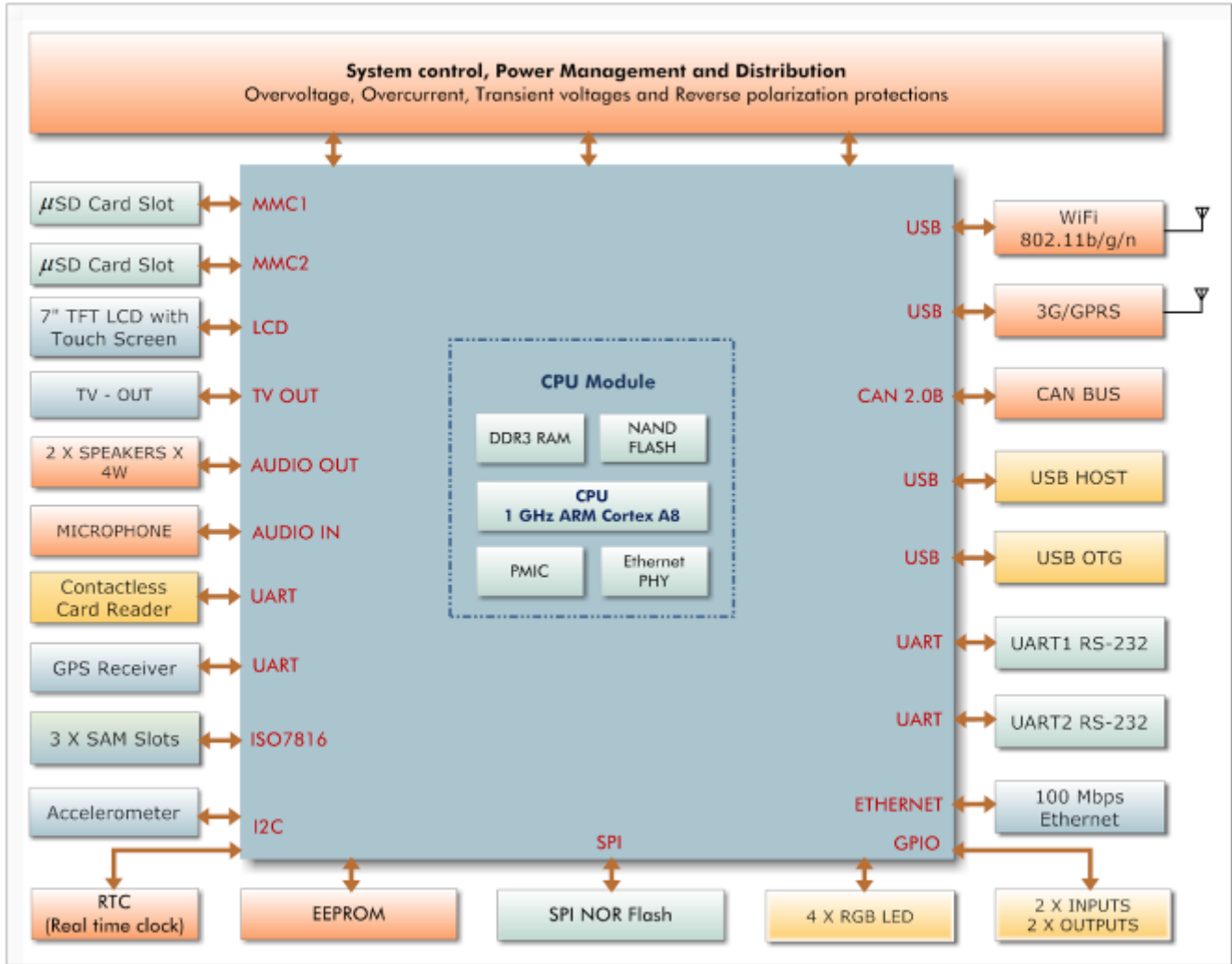


Fig 3: VAL4M Block Diagram

3. Technical Specifications

VAL4M

OperatingSystem	: Linux 2.6.3x
CPU	: 1000 MHz ARM Cortex A8 (iMX535)
Memory	: 512 MB – DDR3 RAM, 256 MB - NAND Flash Memory, 2 x MicroSD Flash Memory slots, 64 KB - High Endurance EEP, 8 MB – NOR Flash,
Communication	: 3G/GPRS 7.2/5.7 Mbps (optional), 2 x UART, 2 x USB 2.0, CAN 2.0B Bus, 100 Mbps Ethernet WiFi 802.11b/g/n (optional)
GPS	: -165 dbm RF sensitivity
I/O	: 2 Power MOSFET Open-Drain Outputs, 2 Optically Isolated Inputs,
Card Reader	: EMV compliant NFC and contactless card reader - ISO14443A/B & ISO18092,
Security	: 3 SAM Slots,
Video Output	: Composite Video Output (optional),
Display	: 7" TFT, 800 x 480 Dots, 18 bit color depth, resistive touch screen
Indicators	: 4 pcs. RGB LEDs,
Sound	: 24 bits/48kHz Stereo, 2 x 4W Speaker,
RTC	: With a battery back-up (3V CR2450-Li Battery),
Accelerometer	: 3-axis, 13-bit, up to ±16 g,
Supply voltage	: DC 11V ÷ DC 32V, OVP - Over Voltage Protections, OCP – Over Current Protections, RVP – Reverse Voltage Protections.
Operating t°	: (-25 C° ÷ + 85 C°),
Storage t°	: (-55 C° ÷ +110 C°),
Dimensions	: 224.5 x 204.50 x 90.44

4. Mechanical Drawings

