

**Multi-Media Validator  
(VAL2M)**

**Datasheet**



## 1. Introduction

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VAL2M is a validator for automatic fare collection (AFC) in public transport. It incorporates both a contactless smart card reader, enabling a unique flexibility in public transport ticketing.

VAL2M is based on a powerful digital media CPU with large memories, thus capable of running high level OS:

- 800 MHz ARM Cortex A8 CPU + Video DSP coprocessor,
- 256 Mbytes RAM,
- 512 Mbytes NAND Flash,
- 8 GBytes SD Flash memory.

VAL2M 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 VAL2M 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.

VAL2M has a plenty of communication channels, allowing easy integration of/to other systems.:

- 3 x UART (enables easy integration of printer, pin pad terminal, taxi meter, e.t.c ),
- GPRS,
- 2 x USB,
- CAN Bus,

VAL2M incorporates an EMV L1 & L2 certified contactless card and NFC reader:

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

VAL2M is a perfect choice for various types of AFC, e.g. for buses, subways, trams, taxis and other public transportation means.

## 2. Diagrams

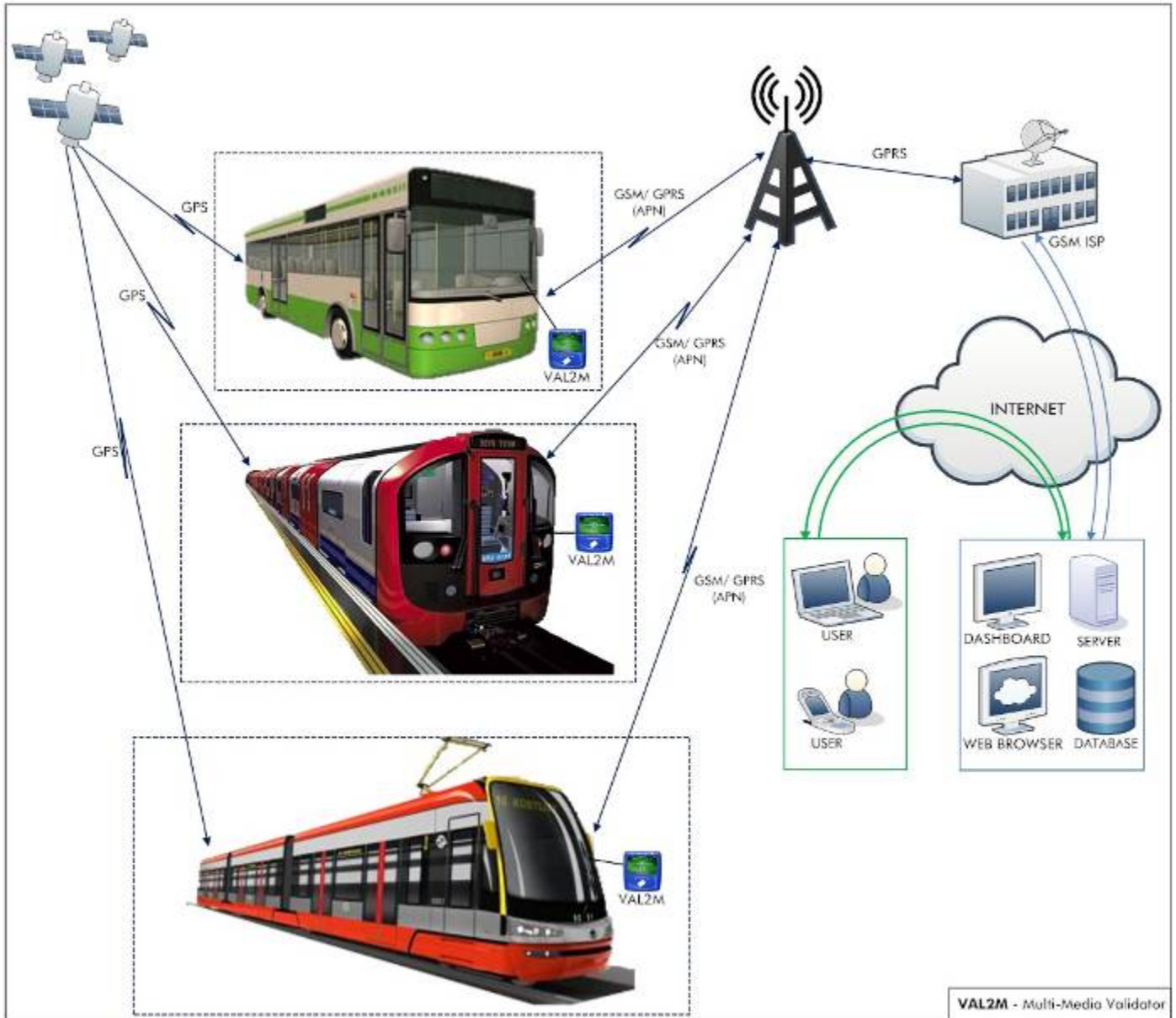


Fig 1: General Diagram

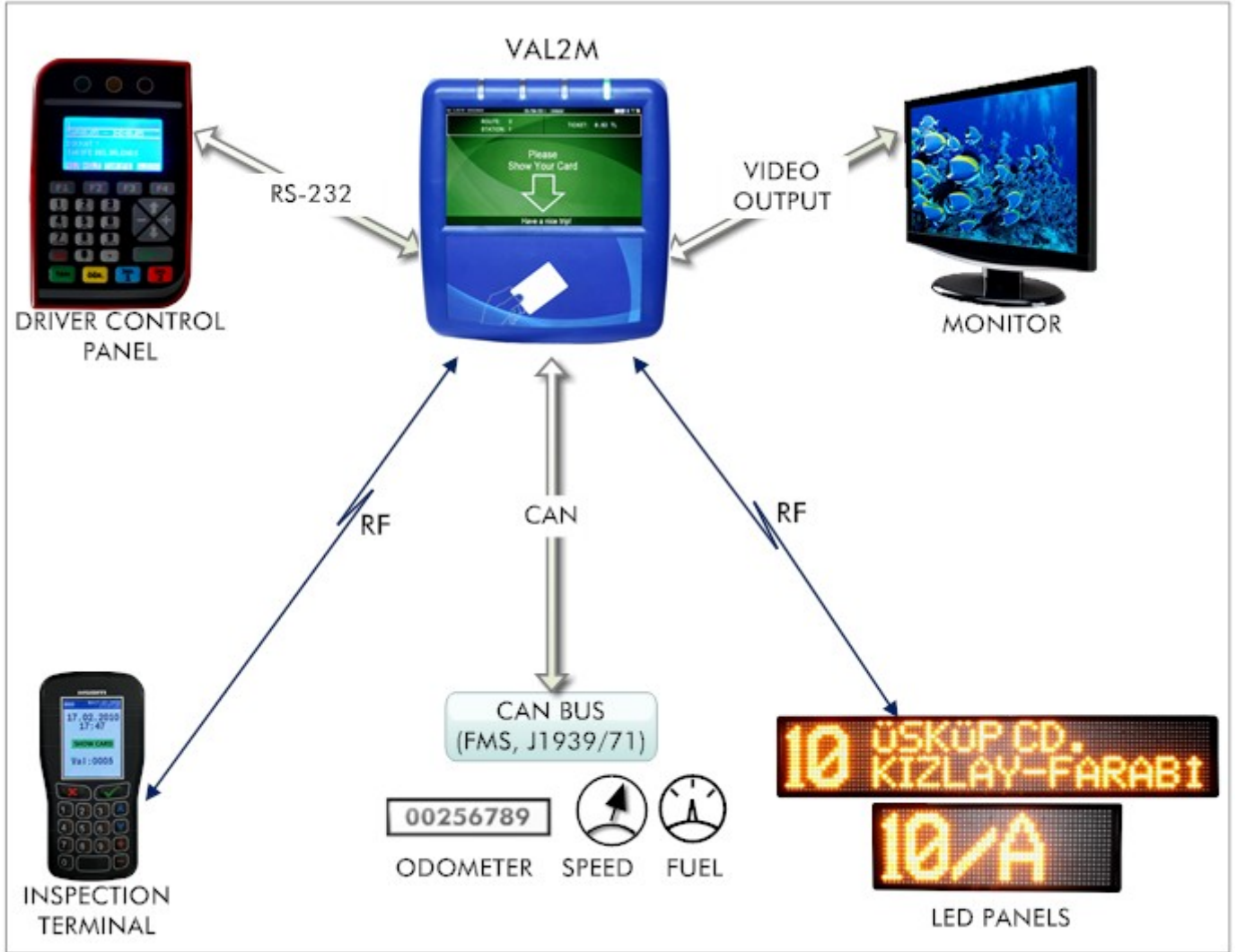


Fig 2: VAL2M System Diagram

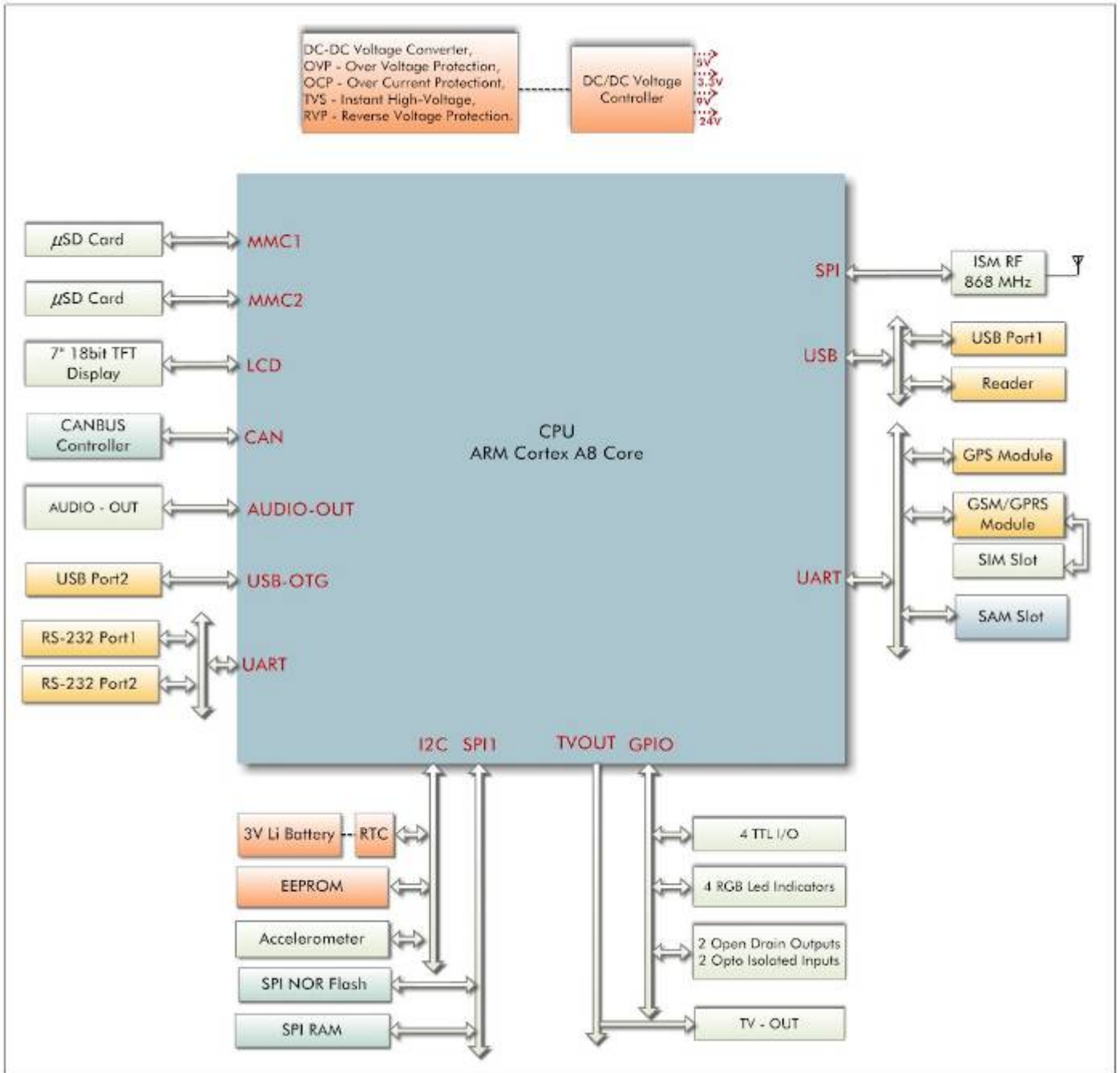


Fig 3: VAL2M Block Diagram

### 3. Technical Specifications

#### VAL2M

<b>OperatingSystem</b>	: Linux 2.6.3x
<b>CPU</b>	: 800 MHz ARM Cortex A8 Core + 430 MHz Video DSP
<b>Memory</b>	: 256 MB - DDR RAM, 512 MB - NAND Flash Memory, 8 GB - MicroSD Flash Memory, 64 KB - High Endurance EEP, 32 KB – battery backed up RAM, 4 MB – NOR Flash,
<b>Communication</b>	: GPRS Class10, Quad Band, 3 x UART RS232, 2 x USB 2.0, CAN Bus,
<b>GPS</b>	: -165 dbm RF sensitivity (MT3329 chipset)
<b>I/O</b>	: 2 Power MOSFET Open-Drain Outputs, 2 Optically Isolated Inputs,
<b>Card Reader</b>	: contactless card reader - ISO14443A/B & ISO18092,
<b>Data Encryption</b>	: SAM Slot,
<b>Video Output</b>	: Composite Video Output,
<b>Display</b>	: 7" TFT, 800 x 480 Dots, 18 bit color depth,
<b>Indicators</b>	: 4 pcs. RGB LEDs,
<b>Sound</b>	: 20 bits/32kHz Stereo, 2 x 4W Speaker,
<b>RTC</b>	: With a battery back-up (3V CR2450-Li Battery),
<b>Accelerometer</b>	: 3-axis, 13-bit, up to ±16 g,
<b>Supply voltage</b>	: DC 28V ÷ DC 32V, OVP - Over Voltage Protections, OCP – Over Current Protections, RVP – Reverse Voltage Protections.
<b>Operating t°</b>	: (-15 C° ÷ + 85 C°),
<b>Storage t°</b>	: (-55 C° ÷ +110 C°),
<b>Dimensions</b>	: 224.5 x 204.50 x 90.44