

## Automatic Fare Collection Systems

### VALIDATOR (VAL95M)

### Datasheet



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## 1. Introduction

VAL95M 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.

VAL95M is based on a powerful CPU with large memories:

- 150 MHz ARM CORTEX M3,
- 8 Mbytes RAM,
- 8 Mbytes Flash,
- 2 GBytes SD Flash memory.

VAL95M has a rich set of user interface peripherals:

- 4.3" 18 bit colors TFT LCD with optional touch screen,
- High quality stereo sound and speech system,
- GPS receiver,
- RGB LED indicators.

VAL95M 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 ),
- 100 MB Ethernet,
- GPRS,
- 868 MHz ISM RF Transceiver,

VAL95M incorporates an EMV L1 & L2 compliant 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.

VAL95M is a perfect choice for various types of AFC, e.g. for buses, subways, trams, taxies and other public transportation means.

**2. Diagrams**

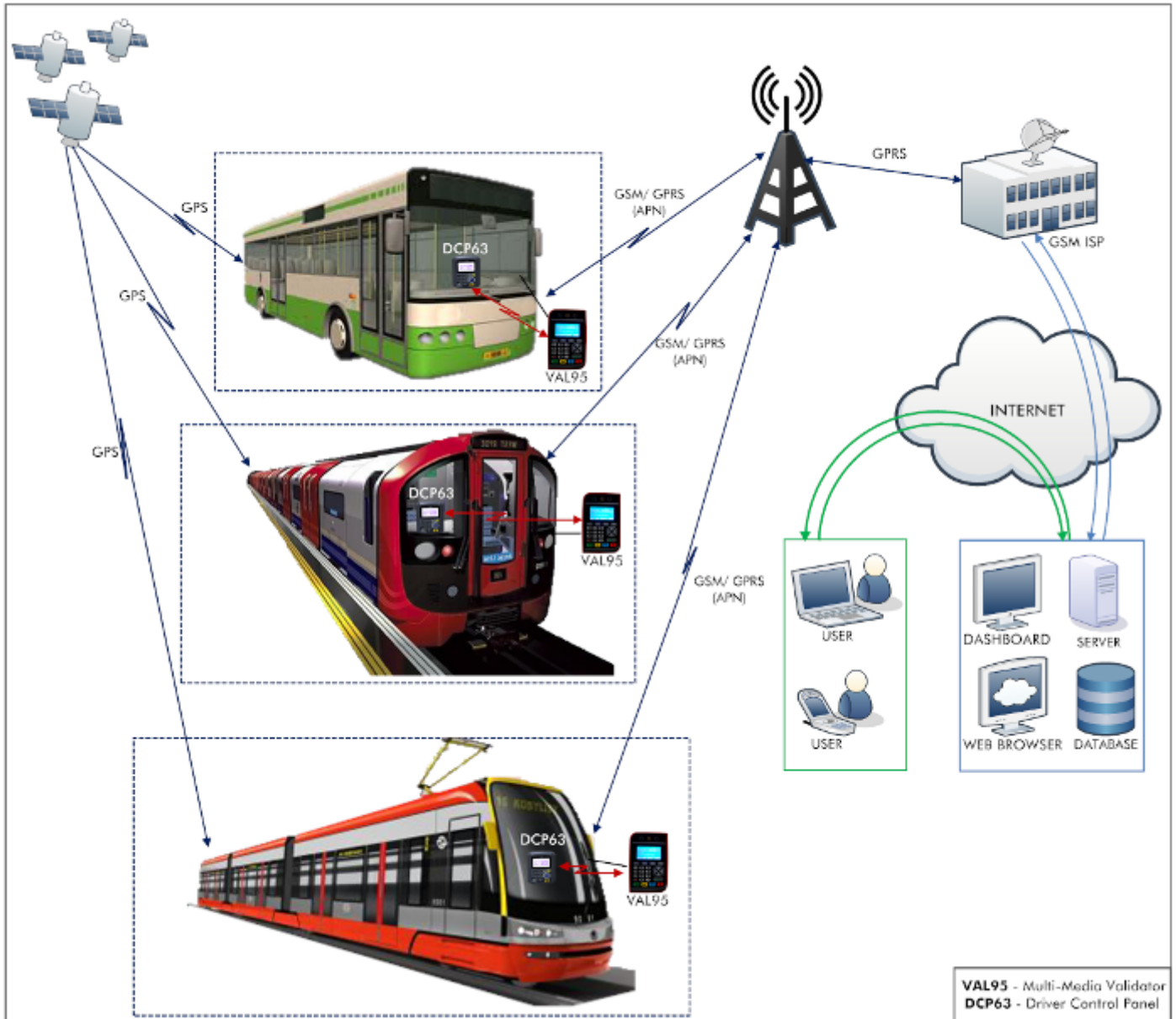


Fig 1: AFC System Diagram

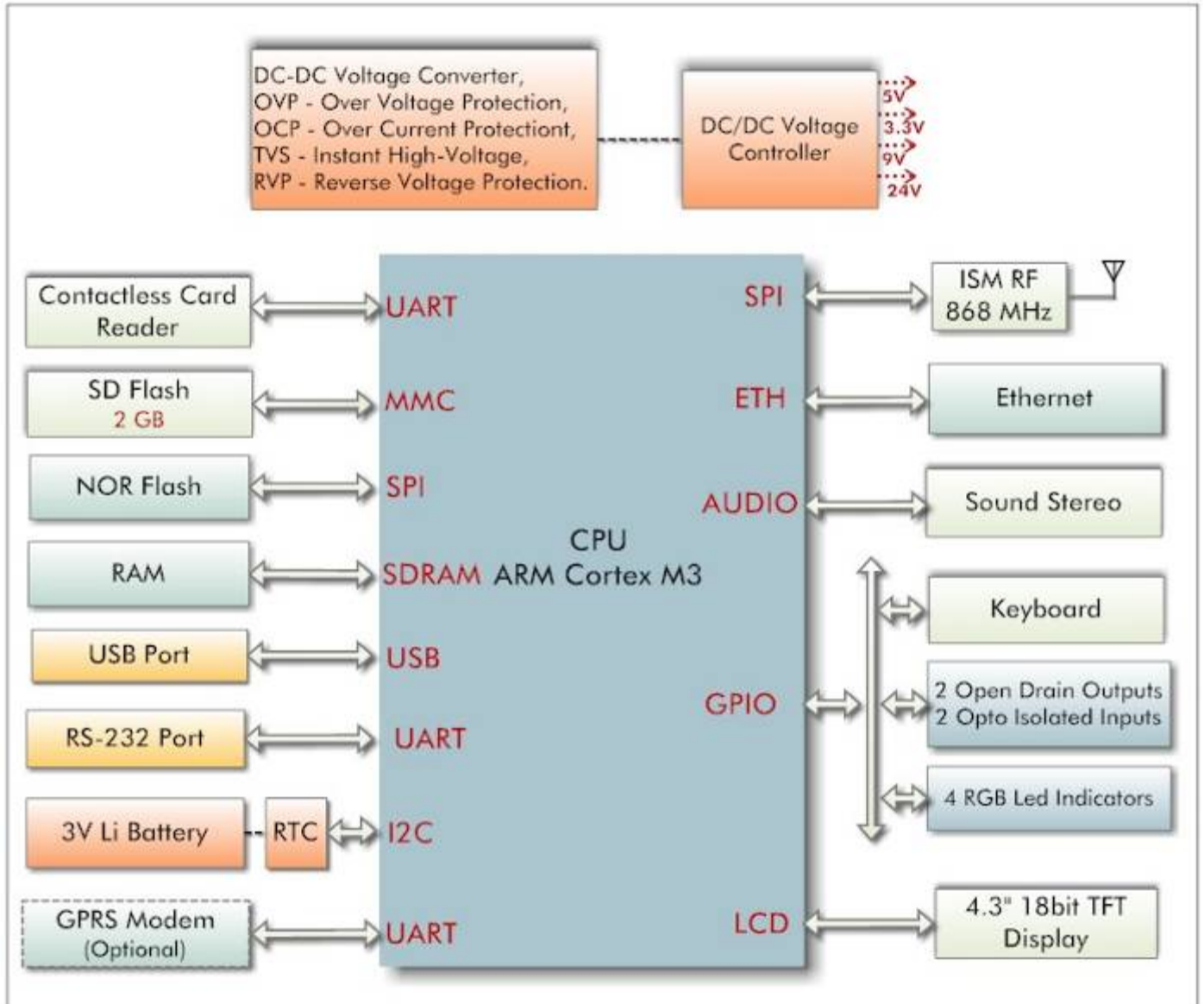


Fig 2: VAL95M Block Diagram

### 3. Technical Specifications

Peripheral	Description
<b>CPU</b>	: 150 MHz ARM CM3
<b>Memory</b>	: 8 MB - DDR RAM, 8 MB - NOR Flash Memory, 2 MicroSD Flash Memory slot, 64 KB - High Endurance EEPROM, 32 KB – SPI SRAM,
<b>Communication</b>	: 2 x RS232, 100 Mbps Ethernet, GPRS, 868MHz ISM RF
<b>I/O</b>	: 2 Power MOSFET Open-Drain Outputs, 2 Optically Isolated Inputs,
<b>Compatible Cards</b>	: All ISO/IEC 1443A and ISO/IEC 1443B Contactless Communication Protocols, including: <ul style="list-style-type: none"><li>• Mifare 1k</li><li>• Mifare Ultralight</li><li>• Mifare Plus</li><li>• PayPass</li><li>• Paywave</li></ul>
<b>Card Readers</b>	: EMV L1 & L2 compliant contactless Card Reader,
<b>Keyboard</b>	: 6 x 6 membrane keyboard matrix.
<b>Display</b>	: 400 x 272 Dots, 18 bits, 4.3" TFT Color LCD,
<b>Indicators</b>	: 4 pcs. LEDs,
<b>Audio</b>	: 24 bits/32kHz Stereo, 2 x 2W Speaker,
<b>GPS</b>	: -165 dbm RF sensitivity (MT3329 chipset)
<b>RTC</b>	: With a battery back-up,
<b>Supply voltage</b>	: DC 28V ÷ DC 31V, OVP - Over Voltage Protections, OCP – Over Current Protections, TVS – Instant High Voltage, RVP – Reverse Voltage Protections.
<b>Operating t°</b>	: (-35 C° ÷ + 85 C°),
<b>Storage t°</b>	: (-55 C° ÷ +110 C°),
<b>Dimensions</b>	: 185 x 117 x 75 mm