

Dijital Tanıma Sistemleri

VAL70 – NFC, QR and Face Recognition AFC Validator

“Uncheatable”

Web document



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1. Overview

VAL70 is a state-of-the-art AI based validator for automatic fare collection (AFC) systems in public transport and offers a convenient way for cashless payment in busses, trams, metro, etc. transportation vehicles. The validator incorporates an EMV compliant NFC reader, dual cameras for high-performance facial recognition and high performance QR scanner that provides unmatched flexibility in public transport ticketing. In addition, VAL70 efficiently reduces revenue leaks through biometric verification of personalized electronic tickets without violating personal data protection laws.

VAL70 provides advanced communication interfaces such as Ethernet port, LTE/3G/GPRS, Wi-Fi, Bluetooth, USB ports, RS-232. It also integrates a GNSS (GPS+GLONASS) receiver, allowing for flexible distance-based payment schemes.

VAL70 has a rich set of user interfaces:

- 7 inch IPS LCD display and a capacitive touch panel with a scratch-resistant, tempered, highly durable front glass.
- Four RGB LEDs
- 24 bit audio over 4W speaker

VAL70 has two cameras: a 2MP RGB camera for daytime and a 2MP Infrared camera for nighttime use. VAL70 integrates both white LEDs and IR illumination LEDs, providing high performance facial recognition even in no light conditions.

VAL70 allows for keeping person's face template on a contactless card (or NFC-enabled phone) in an encrypted fashion and by this respecting the well-known information privacy terms. Upon detection of a human face, a pre-personalized electronic ticket (either a contactless card or NFC-enabled phone) is requested to be tapped. Then, the AI-based face recognition software decides whether the person's face and the face defined on the card match or not. In a result, VAL70 dramatically reduces revenue leaks through biometric verification of personalized electronic tickets without violating personal data protection laws.

VAL70 incorporates a system control MCU - high speed, deterministic microcontroller, taking care of all high speed hardware events, which otherwise could not be kept under control with the means of the main application CPU. The mentioned MCU also provides hardware watchdog function, ie: if for some reason the main CPU gets stuck, the MCU will automatically detect it and restart the validator. In other words, VA70 never stops working.

VAL70 is rated IP54 for dust and water protection. Special countermeasures have been taken to prevent the negative impact of vibrations. All connectors are automotive type, i.e. with a latch, avoiding undesired accidental disconnections. The validator comes with metal brackets that support a pole mount.

VAL70 is designed and manufactured in full compliance with ISO9001:2008 and ISO9002 quality and manufacturing standards. The product is provided with certificates for EMC, EMI, environmental tests (vibrations, impact, ingress, temperature). Each validator is being exposed to 2 hours accelerated thorough tests - electromagnetic shocks, mechanical impacts, vibrations and temperature deviations. 24 hours long test of the above mentioned are carried out for 1% of the whole manufactured party.

2. Application areas

AFC (Automated Fare Collection) cashless payment validator

3. Specifications

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|------------------------------|---|
| OS | : Linux |
| CPU | : ARM Cortex, Quad Core, 1500 MHz |
| RAM | : 2GBDDR4 RAM |
| System memory | : 8GB e-MMC Flash Memory |
| SD Card support | : 1 slot supporting up to 64 GB micro SD cards |
| Real Time Clock | : With Li backup battery, 10 years maintenance free |
| Display | : 24 bits, 1024 x 600 pixels 7.0" color IPS LCD with white LED backlight |
| Touch Screen | :Capacitive Touch Screen |
| Sound | : 24 bits, 4W speaker |
| Indicators | : 4 x RGB LEDs |
| NFC Interface | : EMV compliant |
| QR & Barcode | : High performance QR Scanner |
| Data Security | : SAM Interface – 4 SAM slots |
| Cameras for Face Recognition | : 1 x 2MP RGB camera : 1 x 2MP IR camera : IR LED and white LED illumination |
| Communication | : 100 Mbps Ethernet : 2 x USB2.0 : 2 x UART - RS-232 / RS-485 : LTE/3G/GPRS (LTE Class 4) : Wi-Fi (802.11n) : BT 5.0 |
| GPS | : GPS & GLONASS receiver |
| Digital Inputs | : 1 x ignition input : 1 x digital input with optical isolation |
| Digital Outputs | : 2 x Digital Outputs (Over-current protected) |
| Sensors | : Ambient Light Sensor : Temperature sensor, measures cabinet temp. |
| Supply | : Operating Voltage: 9 ~ 36VDC, Max 15 Watt |
| Dimensions | : 310 x 159 x 95 mm |
| Operating t° | : -20 C° ... + 55 C° |
| IP grade | : IP54 |