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DRT43AI- Face recognition and NFC reader terminal

Web document



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1. Overview

DRT43AI is a high performance face recognition and NFC terminal based on a powerful CPU with an integrated AI coprocessor.

DRT43AI is capable of running high speed face recognition algorithms with anti-spoofing features, based on deep learning methods. For example, DRT43AI identifies a person among 100.000 recorded persons within only 500 milliseconds.

DRT43AI has two cameras, a 2MP RGB camera for daytime and a 2MP Infrared camera for nighttime use. DRT43AI integrates both white LEDs and IR illumination LEDs, providing high performance facial recognition even in no light conditions.

Additionally, DRT43AI incorporates an NFC reader + a SAM slot, allowing 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 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.

Thanks to its integrated HMI peripherals (LCD, speaker, touch screen) DRT43AI offers a convenient way for user interaction, in case necessary. DRT43AI integrates rich communication options, allowing for easy integration to other existing or new centralized systems.

DRT43AI 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. A great importance is given to the early self-diagnostics and remote monitoring capabilities, since the uninterruptable functionality is crucial for the mentioned systems. In case of a doubt for failure (out of range parameters, signaling for a potential future problem) DRT43AI generates alarms in two levels – warning and critical. All such events are logged to the local database and to the central control office respectively. 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 terminal. In other words, DRT43AI never stops working.

DRT43AI is housed in a special enclosure, manufactured from plastic material, highly resistive to vandalistic actions – impact, scratching, flaming. Instead of conventional mechanical buttons, prone to misuse, DRT43AI incorporates capacitive touch panel with special tempered, very durable front glass, capable of withstanding scratching. DRT43AI operates reliably even in harsh outdoor conditions down to -20C° and is IP65 rated for dust and water protection.

DRT43AI 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 terminal 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.

DRT43AI application software runs under a high level OS – Linux, with special countermeasures for unattended use. Along with the ready to use software, well documented development environment and SDK with reliable software libraries and modules are offered, allowing implementation of own software by the integrator companies. In case requested training is offered as well.

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2. Application areas

- Access control terminal with NFC reader and face recognition features.
- Driver display terminal in AFC

3. Specifications

OS	: Linux
CPU	: Quad Core, 1500 MHz
RAM	: 1GB/2GB DDR4 RAM
System memory	: 8GB eMMC 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
Data Security	: SAM Interface – 1 SAM slots
Display	: 24 bits, 800 x 480 pixels 4.3" TFT color LCD with white LED backlight
Touch Screen	:Capacitive Touch Screen
Audio	: 2W speaker
Indicators	: 2 x RGB LEDs
NFC Interface	: ISO14443A/B compliant, up to 6 cm reading distance
Communication	: 1 x 100 Mbps Ethernet : 1 x USB2.0 : 1 x UART - RS-232 : WiFi (802.11n) : BT 4.0
Cameras for Face Recognition	: 1 x 2MP RGB camera : 1 x 2MP IR camera : IR LED and white LED illumination
Digital Inputs	: 1 x digital input with optical isolation
Digital Outputs	: 1 x Digital Outputs (Over-current protected)
Sensors	: Ambient Light Sensor : Temperature sensor, measures cabinet temp.
Supply	: Operating Voltage: 9 ~ 36VDC, Max 7 Watt
Dimensions	: 150 x 110 x 30 mm
Operating t°	: -20 C° ... + 60 C°
IP grade	: IP65