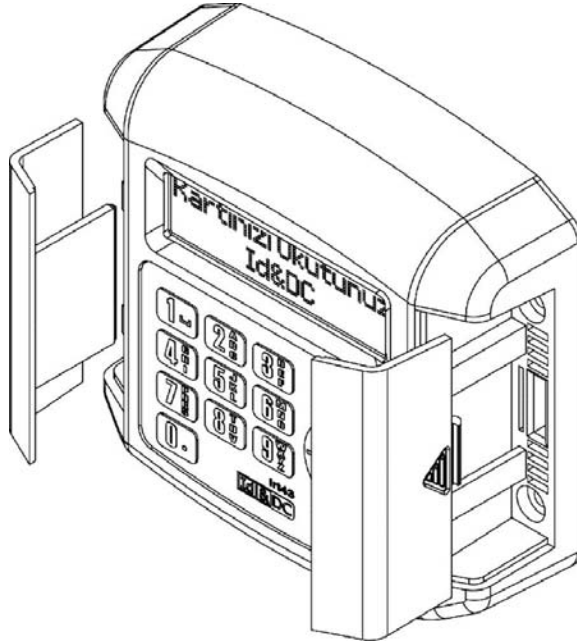


Irt44

Intelligent ISO14443A (Mifare) Reader with 2x16 characters LCD, Keyboard, UART and an Ethernet Communication

Datasheet



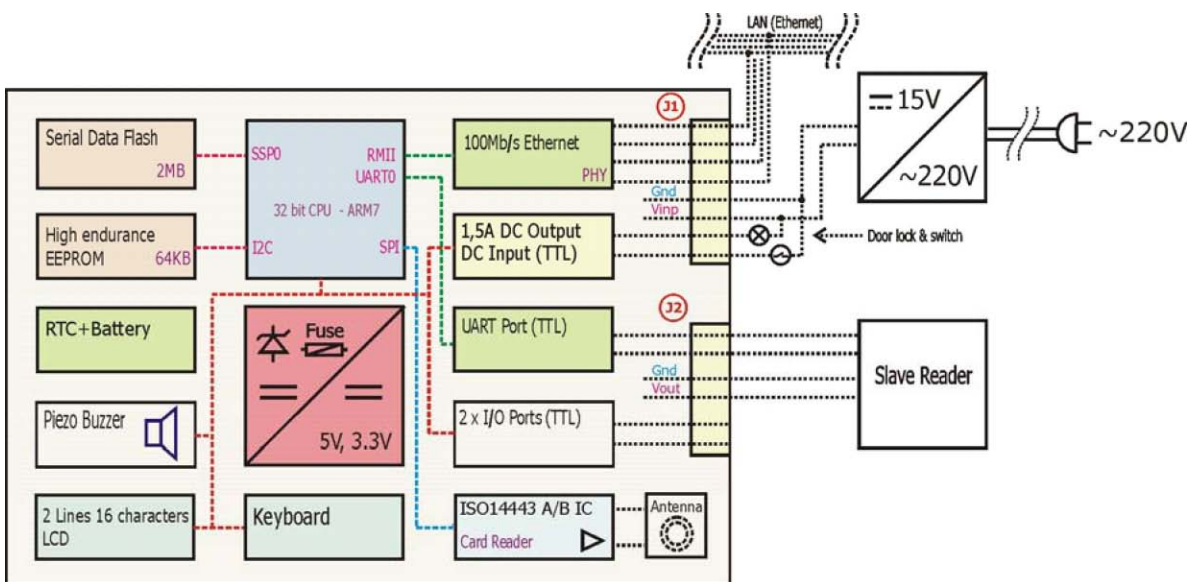
General description

Based on the popular NXP's ARM7 MCU LPC236x and the integrated ISO1443A reader IC - MFRC522, **Irt44** is an ideal choice for your system applications with contactless cards. Its affordable price, small size, rich command set, and support of standard tcp/ip communication protocol greatly helps building reliable systems. Additionally, software development kit (SDK), including all necessary datasheets, application notes, example applications with full source codes, software drivers and dll, helps developers to easily develop new products, which remarkably reduces Time To Market.

Applications

- Cashless Payment Systems
- Access Control Systems
- Time and Attendance Systems
- Data Collection / Storage / Processing Systems

Block diagram and typical connection diagram



Technical specifications

- Based on a MCU with ARM7 CPU core, capable of performing 75 MIPS;
- Fully supports ISO1443A/B contactless protocol;
- Additionally supports all types of Mfiare cards (1kByte, 4kByte, Ultralight, DesFire);
- Up to 70mm reading range, depending on antenna and card;
- 100 Mb/sec full duplex Ethernet communication port;
- Serial communication channel (UART), enabling connection of a slave reader;
- 2 MBytes of high speed flash memory, where card read transactions and other event logs could be stored;
- 64 KBytes of high endurance EEP, enabling storage of a frequently changing data;
- Real Time Clock;
- 1.5 A over-current protected open-drain MOSFET output;
- Over-voltage protected TTL input;
- 2 rows 16 characters dot-matrix LCD display with adjustable backlight and contrast

- Keyboard (5x5 matrix);
- Indications – buzzer;
- Field proven design;
- DC 10V...16V supply voltage; 50 mA ... 150 mA current consumption, depending on the antenna;
- 112 x 105 x 35 mm;
- Full functionality at -25 °C ... +75 °C environment temperatures;

Functional specifications, when used as an access control terminal

- Card Authorization Concepts
 - White List.** The cards are authorized using their unique serial numbers (ID). Each card must be registered in the terminal's memory, along with its other properties. We call that Card Record. The cards, being a subject of de-authorization, must be erased from the relevant list. Thus, on each successful card read, the white list is scanned in order to check if its ID matches with any of the existing items. On success, taking in account the other considerations, that were stored in the authorization record list along with the ID, a transaction is taking in place, in accordance with the application requirements (recording, beeping, relay switching, notifying on the LCD ...) A drawback of this approach is that the card records will occupy redundantly memory on each terminal. Also implementation of distributed or partially distributed systems becomes difficult;
 - Black List.** The card embodies the whole information, concerning the identification and the other authorization rights. Obviously, when any information, written on the card, when issued or later, has to be cancelled or changed, the card presence requirement appears. This drawback can be avoided using a "black list" approach, where prior to checking of authorizations, that have been read from the card, the black list is scanned if contains the relevant card ID. On match, further proceedings are stopped.
 - Black List & White List.** This approach is a combination of a both above mentioned approaches.
- Card Record Format
 - ID;
 - Configuration;
 - Name;
 - Door access rights;
 - Timed access rights;
 - Debit Counters;
 - Credit Counters;
 - Bonus;
 - RFU;
- Timed Access - The terminal has sets of intervals, each with its own code, which could be attached individually to each person, separately for each day of month or day of week. On a card read, this code is retrieved from the relevant card record for the relevant day, and if the current time is within or not in any of mentioned code's interval, accordingly the access is granted or not.
- Anti Pass Back - Prevents a user entering an area by using their card and passing that card back to another person to use. In the white list mode, this feature can be enabled or disabled for each person individually or for all of them. In the black list mode this feature is defined on card issuance. Furthermore, each terminal has a list of terminal addresses, which are compared with the address of the terminal, where the corresponding person has performed his transaction. This address is retrieved from the card, having that on each transaction the last record, along with saving to the terminal's buffer, is saved also on the card. Thus, if enabled for a given card, assuming that remaining considerations has taken place, after retrieving the previous transaction record from the card, the parsed address is compared against the above mentioned list. Accordingly, the access is granted or not.

- **Communication**
 - Our communication stack allows easy configuration of distributed, centralized or mixed systems;
 - Tcp/Ip, udp, http, ftp: all are reliably supported and if necessary, could be simultaneously used;
 - Convenient and fully documented protocol;
 - A rich set of commands, that facilitates the development, implementation and further servicing;
- **Off-line operation** - Up to 65 000 transactions recording capacity;
- **Configuration**
 - User friendly web based menu-driven setup, which allows easy configuration of the terminal;
 - A lot of parameters, concerning the LAN communication; the terminal’s behavior; the slave terminal’s behavior, enabling easy adaptation to the needed configuration;
 - Ability to choose a profile among several available predefined profiles, or create an own one;
 - Numerous events, that could bet set to trigger accordingly alarms;

Cable description

J1 – Interface Cable		
Wire Color	Signal	Description
White (or gray)	Vcc	Supply voltage + (+10V ... 16V)
Brown	Gnd	Supply voltage - (0V, ground)
Yellow	Tx-	Transmit Data + (Ethernet 100BaseT signal)
Green	Tx+	Transmit Data
Red	Rx-	Receive Data +
Black	Rx+	Receive Data
Orange	Inp	TTL input (internally pulled up to +5V)
Blue	Out	MOSFET transistor output (drain)

J2 – Interface Cable			
No	Wire Color	Signal	Description
1	White (or gray)	Vcc	Supply voltage + (+10V ... 16V)
2	Brown	Gnd	Supply voltage - (0V, ground)
3	Yellow	Tx	Transmit (UART TTL level)
4	Green	Rx	Receive (UART TTL level)
5	Orange	I/O	TTL input / output
6	Blue	I/O	TTL input / output

Mechanical drawings

