

Rdr23M - Rs485 Mifare OEM Reader with 2x16 characters LCD and keyboard

## Datasheet



## Features

- Fully supports Mifare<sup>®</sup> Classic 1kByte; Mifare<sup>®</sup> Classic 4kByte; Mifare<sup>®</sup> Ultralight cards and tags;
- Based on Philips MFRC500 chip – highly integrated ISO1443A reader IC.
- Up to 70mm reading range, depending on antenna and card;
- Serial communication channel (USART) 19200 bps, n, 8, 1 with easy to use binary protocol;
- Configurable RS-485 2-wires or RS-485 4-wires modes. Cascadable up to 32 devices;
- Convenient commands, some of them in transactional form, effectively performing group of operations
- Configurable encrypted serial communication;
- 3A over-current protected open-drain MOSFET output and over-voltage protected TTL input;
- 2 rows 16 characters dot-matrix LCD display with backlight and 6 keys;
- Indications – buzzer;
- Field proven design;
- DC 10V...16V supply voltage; 50 mA ... 150 mA current consumption, depending on the antenna;
- 104 x 72 x 30 mm;
- Full functionality at -25 °C ... +75 °C environment temperatures;

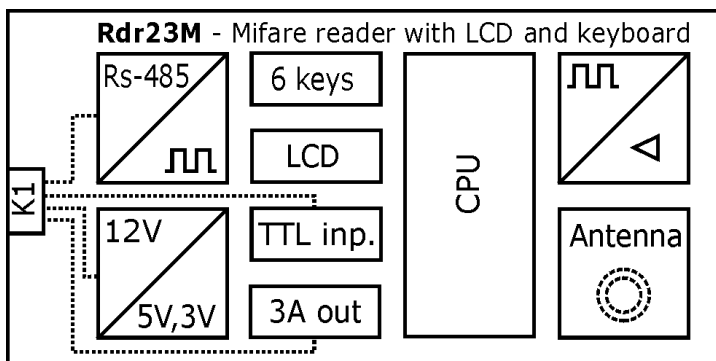
## Applications

- Smart ticketing for public transportation
- Access Control Systems
- Cashless Payment Systems
- Time and Attendance Systems
- Data Collection / Storage / Processing Systems

## General Description

The **Rdr23M** RS-485 Mifare<sup>®</sup> Reader is based on the popular Philips MFRC500 chip – highly integrated ISO1443A reader IC. It is an ideal choice for your system applications with Mifare Classic and Ultra - light Cards, because of its affordable price, small size, rich command set, and its support of standard binary communication protocol. Software development kit (SDK), including all necessary datasheets, application notes, example applications with full source codes, software drivers and dll, helps developers to easily integrate **Rdr23M** to the system.

## Block Diagram



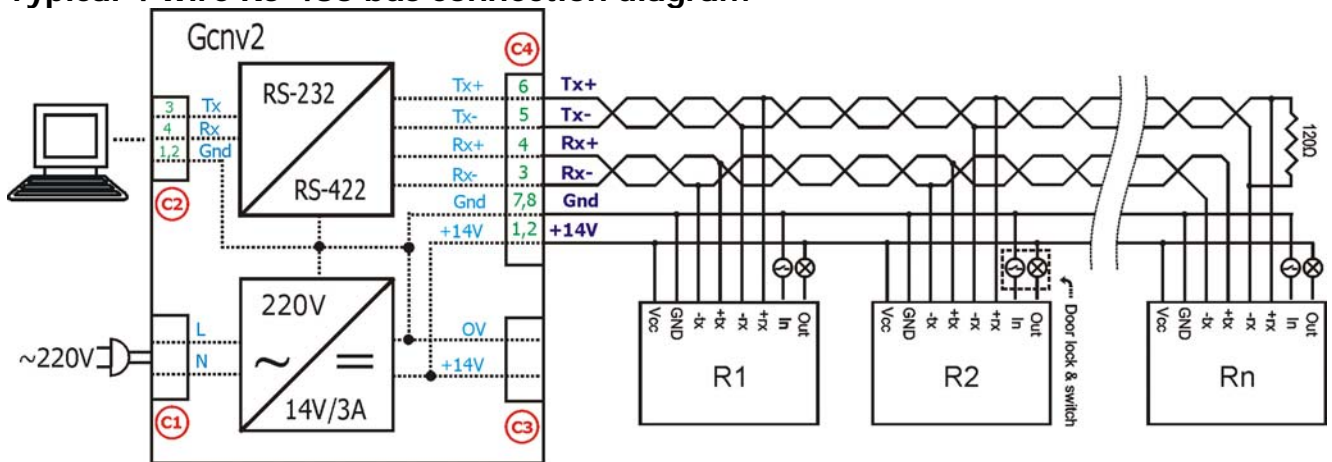
## Cable description

K1 – 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-	In Rs-485 4-wires mode – <b>tx-</b> ; in Rs-485 2-wires mode – <b>not used</b>
4	Green	Tx+	In Rs-485 4-wires mode – <b>tx+</b> ; in Rs-485 2-wires mode – <b>not used</b>
5	Red	Rx-	In Rs-485 4-wires mode – <b>rx-</b> ; in Rs-485 2-wires mode – <b>B</b>
6	Black	Rx+	In Rs-485 4-wires mode – <b>rx+</b> ; in Rs-485 2-wires mode – <b>A</b>
7	Orange	Inp	TTL input (internally pulled up to +5V)
8	Blue	Out	MOSFET transistor output (drain)

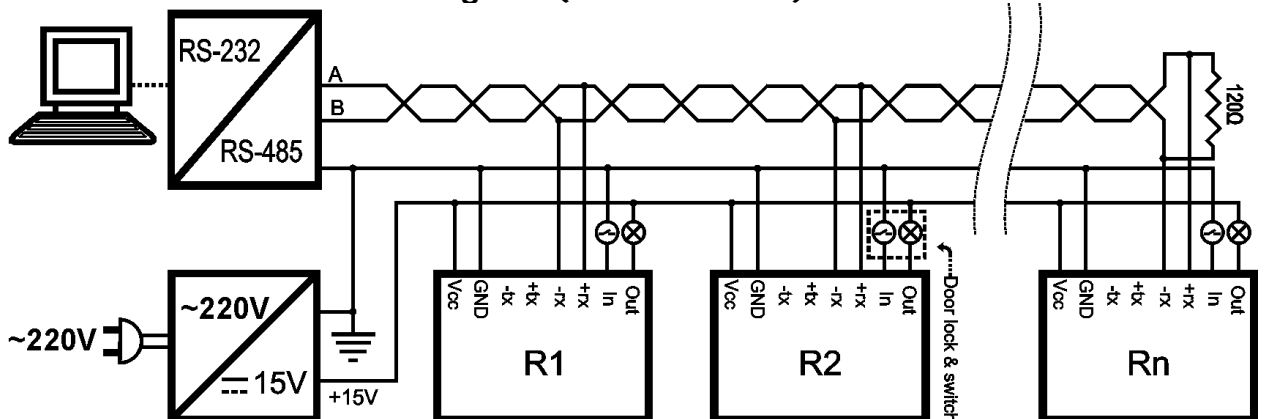
**Technical specifications**

Communication specifications	
Communication	Serial RS-485 (selectable - 2 or 4 wires): 19200 bps, n, 8, 1
Comm. Protocol	Binary multi-drop, XOR CRC checked frames
Comm. Encryption	On request. (32 bit, challenge-response)
CPU	8 bit MCU with 16kBytes flash memory, 9 MIPS throughput
Software Updates	With programmer or through reader's own serial port
Reader specifications	
Operating frequency	13.56 MHz
Supported Tags (Cards)	ISO14443A (Mifare Standard 1kByte, 4 kB, Ultra light)
Reading Distance	Up to 100 mm, depending on card (or tag)
Mifare operations	Full Mifare functionality (encrypted read, write, value increment, decrement, ...)
Electrical specifications	
Supply voltage	DC +10V ... +16V
Current consumption	Max. 100 mA / 16V
Max. output voltage	DC +40V
Max. output current	DC 3.5 A
Input Voltage levels	TTL compatible voltage levels (-0.5V ... 6.5V)
Rs-485 voltage levels	-9V...+9V (all Rs485 wires are ESD protected with TVS-transient voltage suppressors)
Mechanical and environmental specifications	
Dimensions	104 x 72 x 30 mm
Weight	0.3 kg
Temperature Range	-20 °C ÷ +80 °C

**Typical 4 wire Rs-485 bus connection diagram**



**Typical Rs-485 bus connection diagram (2 wire Rs-485)**



**Mechanical drawings**

