

**OEM-LF1S-M900**  
**125/134.2 kHz OEM RFID Module**  
**Hardware Description**

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Contents

**1    Installation .....4**

    1.1    Introduction..... 4

    1.2    Key Features ..... 4

    1.3    Reference Documents ..... 4

**2    Installation .....5**

    2.1    Dimensions ..... 5

    2.2    Pinout ..... 5

    2.3    Antenna ..... 5

**3    Technical Data .....6**

## **1 Installation**

### **1.1 Introduction**

This module is able to read and write Hitag 1 and Hitag S type RFID tags and support to format Hitag S64/256/2048 tag as ID card or FDX-B, to make them for different applications in animal tags management, access control, Laundry Automation, etc.

Thanks to its tiny size and single-face laying components layout, it allows for embedding in various applications and devices.

### **1.2 Key Features**

- Frequency available with 125KHz, 134.2KHz
- 3.3...5 Vdc Power supply, UART-TTL interface
- Compatible with ISO11784, 11785 Standard
- Supports read/write tags HITAGS 64, HITAGS 256, HITAGS 2048
- Reads UID from read-only tags EM4100/4200, TK4100
- External antenna, reading range up to 5...7 cm

### **1.3 Reference Documents**

#### **Communication Protocol Description**

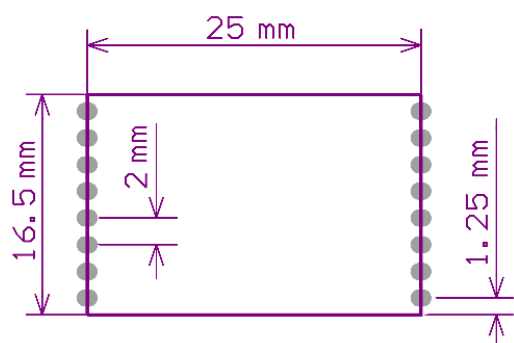
OEM-LF1S Hitag 1 & Hitag S Communication Protocol x.y EN.pdf

#### **Demo Software Manual**

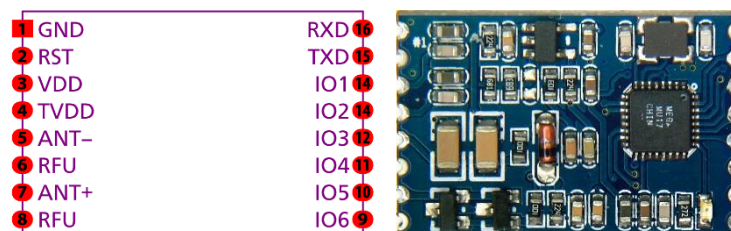
OEM-LF1S Demo Software Manual x.y EN.pdf

## 2 Installation

### 2.1 Dimensions



### 2.2 Pinout



Pin	Signal	IO Type	Description
1	GND	GND	GND, use this ground pin for power supply
2	RST	Input	Low Power Reset, connect 10 kOhm pull-up resistor to VDD
3	VDD	PWR	Power supply +3.3 Vdc for $\mu$ C
4	TVDD	TWR	Power supply for RF +3.3...5 Vdc
5	ANT-	RF Output	Use this pin and pin 7 for antenna connection
6	RFU	—	Reserved for future use
7	ANT+	RF Output	Use this pin and pin 5 for antenna connection
8	RFU	—	Reserved for future use
9	IO6	Output	External LED
10	IO5	Output	External LED
11	IO4	Output	A group of IOs used for control full colour RGB LED, active low, open collector
12	IO3	Output	
13	IO2	Output	
14	IO1	Output	External Buzzer
15	TxD	Output	UART TxD
16	RxD	Input	UART RxD

### 2.3 Antenna

The antenna should be an inductivity of 375  $\mu$ H nominal value. The size of the reader antenna should match the size of the RFID data tag for maximum read/write range.

#### OEM LF Antenna 33.6 × 23.6 × 2.6 mm

Inductivity: 375  $\mu$ H  
 Antenna cable: 10 cm length  
 Connector: 2 pin Molex PicoBlade 51021  
 Order code: OEM-LF-A910

### 3 Technical Data

Electrical Specifications	
Power Supply	3.3 Vdc for the $\mu$ C on Pin VDD 3.3...5 Vdc for the RF on Pin TVDD
Power Consumption	< 45 mA
Operating Frequency	125 kHz, oder code: OEM-LF-M900-TTI-125 134.2 kHz, on request, MOQ: 50 units
Baudrate	9600...115200 bit/s, default: 9600 bit/s
Antenna	External, 375 $\mu$ H nominal inductivity
Reader IC	Atmel Mega8A-MU
RF TX Speed	5.2 kbs
RF RX Speed	2, 4, 8 kbs
Interfaces	TTL, 3.3 V output levels, the input is not 5 V tolerant!
Maximum Output Current	Max 25 mA on each single output, max 80 mA in total.

Mechanical Specifications	
Dimensions	25 × 16.5 × 2.2 mm
Weight	3 g
Material	FR4, blue

Environmental Conditions	
Operating Temperature	-20 °C ... +80 °C
Storage Temperature	-40 °C ... +85 °C
Humidity	up to 95 %, non condensing
MTBF	200'000 h

Supported Standards / Tags	
Read-only	EM4100, EM4200, TK4100
ISO/IEC 11784/11785	Hitag-S 64, Hitag-S 256, Hitag-S 2048

Applicable Standards	
EMC	EN 301489-1:2012-04 (v1.9.21) EN 301489-3:2013-12 (V1.6.1)
Radio Regulation	EN 300330-1:2015-08 (V1.8.1) EN 300330-2:2015-08 (V1.6.1)
Safety	EC 62368-1:2018-10 (V3.0, valid as of 2020-12-20)
RoHS 2	EC Guideline 2011/65/EU and amendment 2015/863/EU, updated by 2017/2102/EU EN 50581:2012 (valid till 2024-07-07) EN 63000:2018
REACH	EU Guideline 1907/2006, updated by 2020/171/EU

SDK Information	
Supported OS	Windows XP, Vista, 7, 8, 8.1, 10
Supported Languages	Binary command protocol
Demo Software	Windows

Other functions and details to be continued and upgraded.