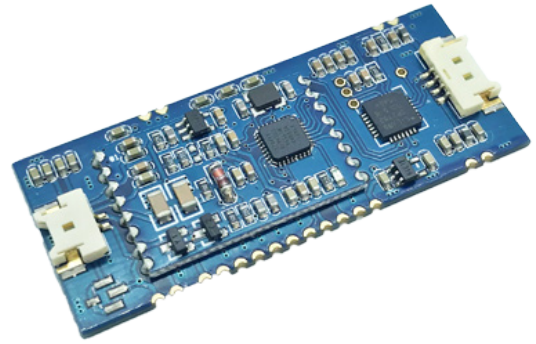


## LF EMBEDDED MODULE M890



### PRODUCT DESCRIPTION

The iDTRONIC LF Embedded Module M890 is a module series for short range applications. Thanks to its tiny size and single-face laying components layout, it allows for embedding in various applications and devices. Especially for access control or asset tracking solutions, is this LF module applicable.

The LF Embedded Module M890 is available in 125 kHz or 134.2 kHz RFID LF Frequency range. They also support read-only EM4100, EM4200 and TK4100. The module supports all functions of the Hitag family. It achieves reading ranges of up to 10 cm (depending on type of transponder).

The embedded RFID LF Embedded Module M890 features one external antenna port. iDTRONIC Professional RFID offers a wide choice of antennas suitable for any purpose.

The LF Embedded Module M890 is available with TTL, USB VCP or RS232 interface. In low power mode, the M890 modules consumes less than 1 mA.

iDTRONIC's hardware comes with a useful SDK for the development of controller, Linux or Windows based applications. Beside the documentation, command protocols and source codes, the SDK includes a Windows based demo application with full functionality over all supported LF RFID standards.

#### ▶ APPLICATIONS

- Asset Tracking
- Access Control
- Electronic Locks
- Personalization
- PC Log On

#### ▶ FEATURES

- Short Range Applications
- 3.3 ~ 5 V Power Supply
- RFID LF: 125 + 134.2 kHz
- 10 cm Reading Range
- TTL | RS232 | USB VCP

#### ▶ RFID OPTIONS

- Read & Write:  
Hitag-S 256, Hitag-S 2048, Hitag1
- Read Only:  
EM4100, EM4200, TK4100

## APPLICATION EXAMPLES

### ACCESS CONTROL



Due to its small dimensions and its wide-range of interfaces, the M890 module can be installed in all kinds of existing systems, locks, locking systems or devices.

Applications for personal or hotel card identification require a system that can authorize the right person for a specified access. The embedded module M890 can read these information reliably and securely. This increases security awareness against abusive and unauthorised access.

### ASSET TRACKING



Assets and small devices within working areas or workstations have to be organized properly. The LF Module Series offers the perfect solution for the application.

With its small dimensions and cutting edge micro-controller, it is embeddable in a wide range of tools or devices for production.

## TECHNICAL DATA

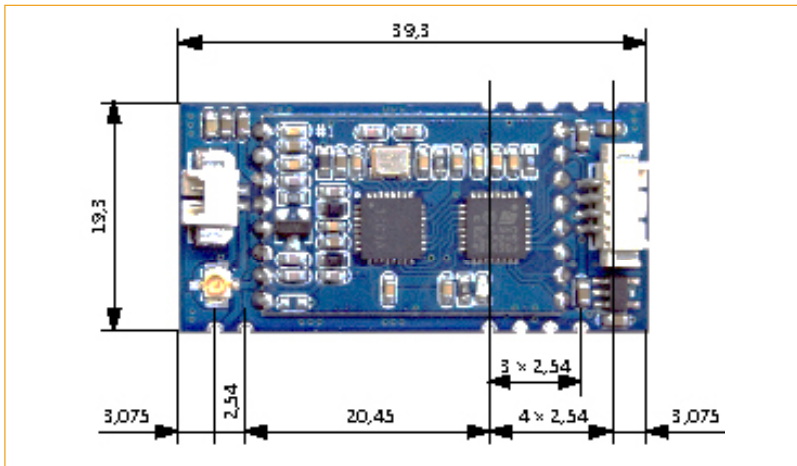
ELECTRICAL SPECIFICATIONS			
	TTL	USB	RS232
Power Supply	3.3 ~ 5 Vdc		
Power Consumption	< 45 mA	< 70 mA	< 60 mA
Operating Frequency	125 kHz + 134.2 kHz		
Reading Distance	up to 10 cm*		
Reader IC	Atmel Mega8A-MU		
RF TX Speed	5.2 kbs		
RF RX Speed	2 kbs   4 kbs   8 kbs		
Antenna	External*		
Baudrate	9600...115200 bit/s, default: 9600 bit/s		
Antenna Connector	Molex connector or stamp hole		
Antenna Inductivity	375 µH nominal value		
Interfaces	UART TTL	USB VCP	RS232
Connector	Molex Pico-Blade 53261 (PCB) 51021 (cable)	Molex Panel Mate 53780 (PCB) 51146 (cable)	Molex Panel Mate 53780 (PCB) 51146 (cable)
MECHANICAL SPECIFICATIONS			
	TTL	USB	RS232
Material	FR-4, Blue		
Dimensions	39.3 × 19.3 × 4.6 mm	53.5 × 22.2 × 5 mm	53.5 × 22.2 × 5 mm
Weight	4 g	5 g	5 g
Mounting Options	Soldering Pads (Suitable for SMD productions)		
ENVIRONMENTAL CONDITIONS			
Operating Temperature	-20 °C ... +80 °C		
Storage Temperature	-40 °C ... +85 °C		
Humidity	up to 95 %, non condensing		
MTBF	200'000 h		

\*READING DISTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS

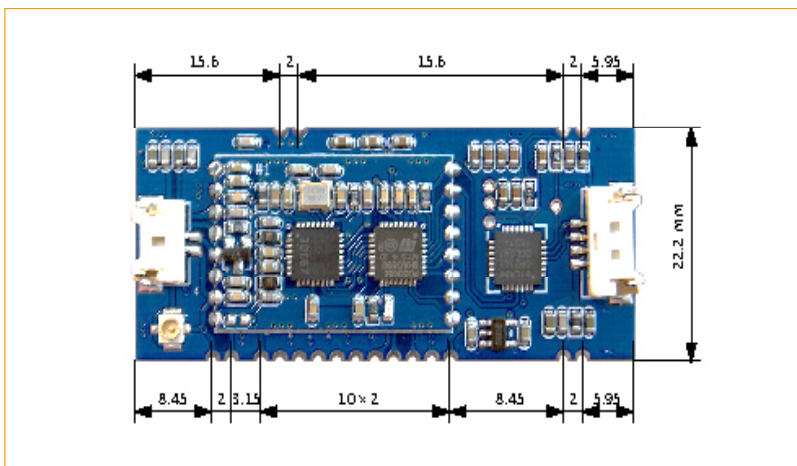
SUPPORTED STANDARDS   TAGS	
Read-only	EM4100, EM4200, TK4100
Read   Write	Hitag-S 256, Hitag-S 2048, Hitag1
SDK INFORMATION	
Supported OS by Silabs USB VCP Driver	Windows 7/8/8.1/10 (v10.1.8) Windows 7/8/8.1/10 (v6.7.6) Windows XP/Server 2003 Vista/7/8/8.1 (v6.7) Windows 2K (v6.3a) WinCE (5.0, 6.0) Macintosh OSX (v5.2.4) Linux (3.x.x., 2.6.x) Android 4.2
Supported Languages	C++, Binary command protocol
Demo Software	Windows
FIRMWARE COMMANDS	
System	Get_VersionNum Buzzer Control LED Control Set Antenna
Read-Only Data Tags	Get UID
Hitag 1, Hitag S	Request Select Quiet ReadPage WritePage LockPage
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	EN 60950-1:2014-08 EN 62369-1:2010-03 EN 50364:2010-11
RoHS	EC Guideline 2011/65/EU, 2015/863/EU
REACH	EC Guideline 2018/2005/EU
Certificates	FCC, CE

## MECHANICAL VIEW

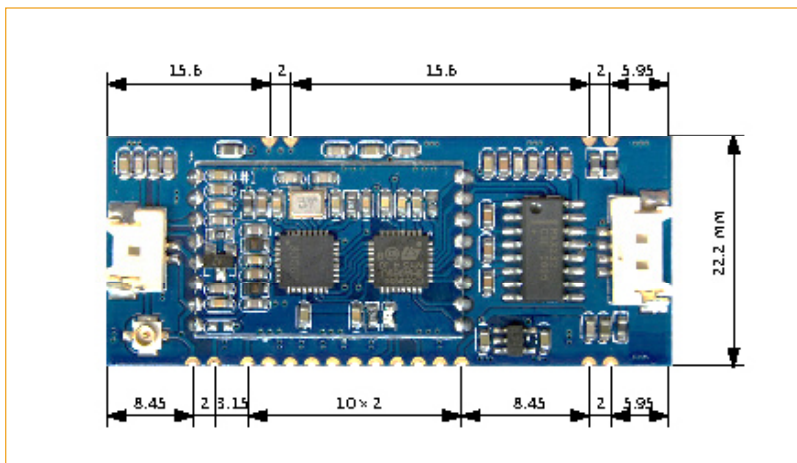
### TTL



### USB VCP

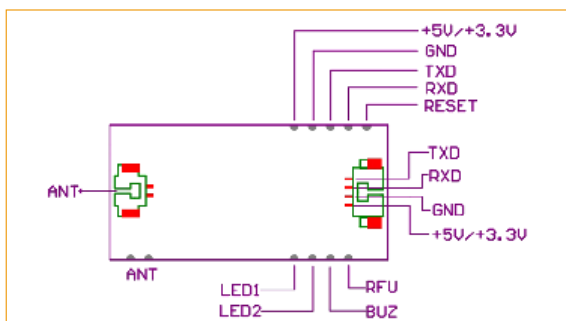


### RS232



## PIN LAYOUT

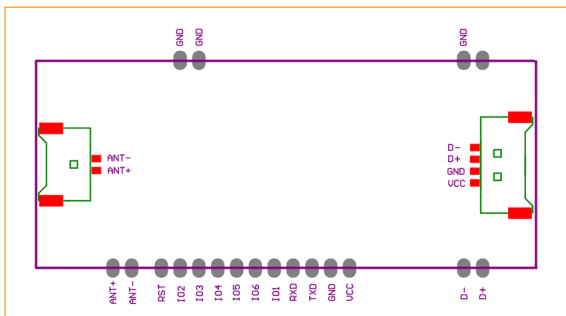
### TTL



### MOLEX CONNECTOR

SIGNAL	IO TYPE	DESCRIPTION
TXD	Output	UART TX (TTL Level)
RXD	Input	UART RX (TTL Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	Output	External antenna
ANT +	Output	External antenna

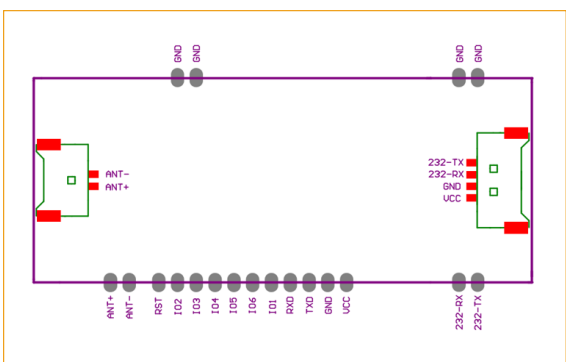
### USB



### MOLEX CONNECTOR

SIGNAL	IO TYPE	DESCRIPTION
D-	Output	USB D-
D+	Input	USB D+
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
TVSS	Output	External antenna
TX1	Output	External antenna

### RS232



### MOLEX CONNECTOR

SIGNAL	IO TYPE	DESCRIPTION
RS232-TX	Output	UART TX (RS232 Level)
RS232-RX	Input	UART RX (RS232 Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	Output	External antenna
ANT +	Output	External antenna

## CONNECTIONS

STAMP-HOLES			
	SIGNAL	IO TYPE	DESCRIPTION
	ANT +	Output	External antenna
	ANT -	Output	External antenna
	RST	Input	Lower power reset
	IO2	Output	A group of IO used for control full color RGB Light
	IO3	Output	
	IO4	Output	
	IO5	Output	External LED
	IO6	Output	External LED
	IO1	Output	External Buzzer
	RXD	Input	-
	TXD	Output	-
	GND	GND/Power	GND
	VCC	Power	DC 3.3 V ~ 5 V
TTL	TXD	Input	UART TX (TTL Level)
	RXD	Output	UART RX (TTL Level)
USB	D-	Input	USB D-
	D+	Output	USB D+
RS232	RS232-RX	Input	UART RX (RS232 Level)
	RS232-TX	Output	UART TX (RS232 Level)

## ORDER CODES

VERSIONS	ORDER CODES
<b>TTL</b>	
LF Embedded Module M890 - TTL: 125 kHz	OEM-LF-M890-TTL-125
LF Embedded Module M890 - TTL: 134.2 kHz	On Request: MOQ – 50 Units
<b>USB</b>	
LF Embedded Module M890 - USB: 125 kHz	OEM-LF-M890-USB-125
LF Embedded Module M890 - USB: 134.2 kHz	On Request: MOQ – 50 Units
<b>RS232</b>	
LF Embedded Module M890 - RS232: 125 kHz	OEM-LF-M890-RS232-125
LF Embedded Module M890 - RS232: 134.2 kHz	On Request: MOQ – 50 Units