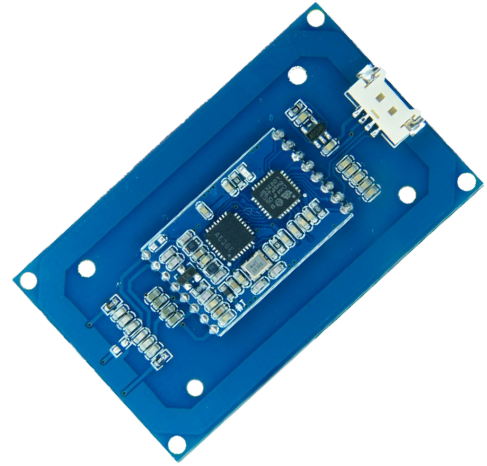# HF | NFC EMBEDDED READER

R835

PRODUCT DESCRIPTION

The iDTRONIC HF | NFC Embedded Reader R835 series is a high performance and low-cost reader series for the integration into vending machines, healthcare, medicine or EV chargers With its cutting edge microcontroller and latest HF transceiver technology, the reader series allows users to read and write almost any 13.56 MHz transponders. 5 different configurations are available which support the common RFID standards such as ISO14443A/B (T=CL), ISO15693, ISO18092 / ECMA-340 (NFC) and ISO 18000-3.

Thanks to its integrated antenna, the HF | NFC Embedded Reader R835 achieves reading ranges of up to 8 cm (depending on type of transponder).

Its serial based interfaces TTL and RS485 allows an easy and fast integration into existing electronics or a fast paced new development of high end identification applications. In addition, the USB und USB HID is available with an PC/SC interface for payment solutions.

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 HF RFID standards.

► APPLICATIONS

· **Identification Products**
· **Vending Machines**
· **EV Chargers**
· **Healthcare**
· **Payment**

► FEATURES

· **Reading Range up to 8 cm**
· **SDK and Windows based application are supplied**
· **Integrated Antenna**
· **TTL, RS485, USB, USB HID or PC/SC Connection**

► RFID OPTIONS

· ISO 14443 A/B
· ISO 15693
· NXP MIFARE®
· ISO 18092 | ECMA-340 (NFC)
· ISO 18000-3

iDTRONIC
PROFESSIONAL RFID

MEDICAL DEVICES

Inside the hospital room there are medical devices which are vital for the patient. These include ventilators, infusions or ECG devices. By integrating RFID readers, a wide variety of functionality may be implemented which help to increase patient safety and bring about a faster recovery.

These include, for example, automatic identification and authentication of consumables. On the other hand, it is possible to monitor which employee is operating the medical devices. Hierarchies may also be introduced for individual employees in order to avoid incorrect operation of the devices by medical personnel. The small embedded module may be easily and quickly integrated into a range of medical devices.

EV CHARGERS

One of the essential technologies for public charging infrastructure is RFID. Operators can use it to control operators can use it to control charging approval and payment processes, and ensure that only authorized persons use the charging stations, and that charging processes are billed according to the defined conditions. For charging stations in rented or for charging stations in rented or company buildings, a charging release can be useful if the operator wants to ensure that only authorized persons use the charging facility. Furthermore, the question often arises as to whether and how the electricity is to be is charged. With the integration of a suitable reader, such as the Embedded Reader R835 and the use of compatible RFID transponders transponders, such as charging cards or keyfobs, operators gain complete control and transparency over the use of their charging points.

TECHNICAL DATA

ELECTRICAL SPECIFICATIONS

Power Supply	3.3 ~ 5 Vdc
Power Consumption	< 150 mA, standby current < 1 mA (low power mode)
Operating Frequency	13.56 MHz
Reading Distance	up to 8 cm*
Antenna	integrated, 55 × 30 mm
Baudrate	9600 ... 115200 bit/s
Antenna Connector	U.FL
Interfaces	TTL (3.3 V output levels, input is not 5 V tolerant) RS485, USB, USB HID or PC/SC
Connector	Molex PanelMate 53780 (PCB) 51021 (cable)

MECHANICAL SPECIFICATIONS

Dimensions	58 × 34.5 × 4.5 mm
Weight	8 g
Material	FR-4, Blue
Mounting Option	Screwing

ENVIRONMENTAL CONDITIONS

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

SDK INFORMATION

Supported OS	Windows 7, 8, 8.1, 10
Supported Languages	C++, Binary command protocol
Demo Software	Windows

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 62369-1:2010-03 EN 50364:2010-11
RED	2014/53/EU
RoHS 2	EC Guideline 2011/65/EU and amendment 2015/863 EN 50581:2012 (valid till 2024-07-07) EN 63000:2018
REACH	EU Guideline 1907/2006, updated by 2020/171/EU
Certificates	FCC, CE, IC**

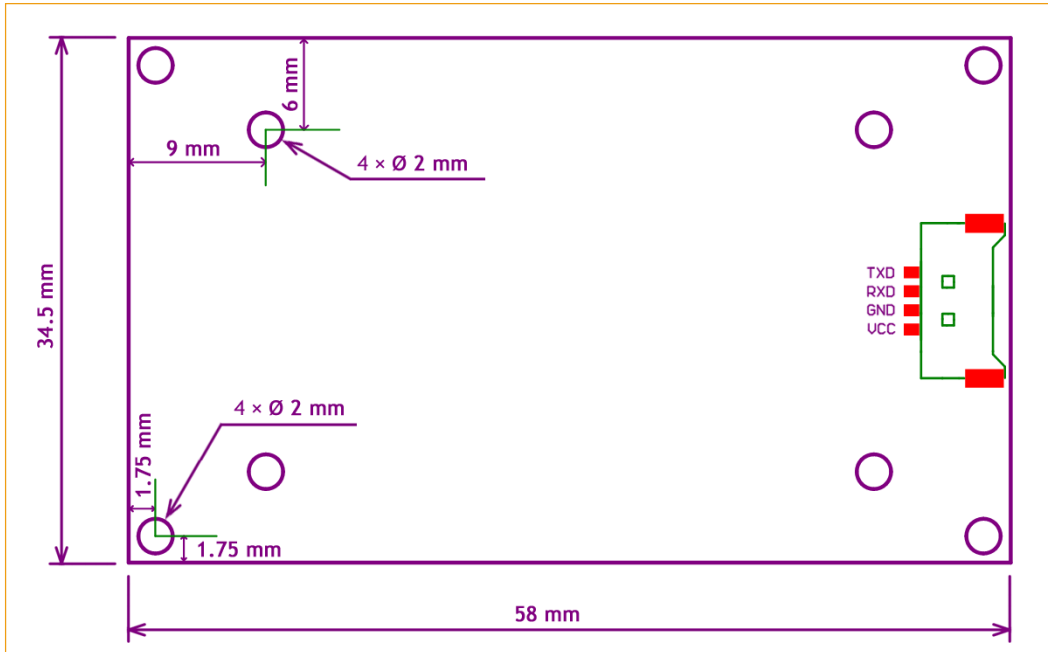*READING DISCTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS.*

AVAILABLE VERSIONS

*READING DISCTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS.

	DESFIRE	ISO 18000-3	PSAM	HF	MIFARE
GENERAL SPECIFICATIONS					
Dimensions	58 × 34.5 × 4.5 mm	58 × 34.5 × 4.5 mm	58 × 34.5 × 4.5 mm	58 × 34.5 × 4.5 mm	58 × 34.5 × 4.5 mm
Weight	8 g	8 g	8 g	8 g	8 g
Power Supply	3.3 ~ 5 Vdc	3.3 ~ 5 Vdc	3.3 V ~ 5 Vdc	3.3 V ~ 5 Vdc	3.3 ~ 5 Vdc
Power Consumption	< 150 mA, standby current < 1 mA (low power mode)	< 150 mA, standby current < 1 mA (low power mode)	< 150 mA, standby current < 1 mA (low power mode)	< 150 mA, standby current < 1 mA (low power mode)	< 150 mA, standby current < 1 mA (low power mode)
Operating Frequency	13.56 MHz	13.56 MHz	13.56 MHz	13.56 MHz	13.56 MHz
Reading Distance	up to 8 cm*	up to 8 cm*	up to 8 cm*	up to 8 cm*	up to 8 cm*
RT FX Speed	up to 848 kBd	up to 848 kBd	up to 848 kBd	up to 848 kBd	up to 848 kBd
Reader IC	NXP CLRC663	NXP CLRC663	NXP CLRC663	NXP CLRC663	NXP CV520
Interfaces	TTL, RS485, USB, PC/SC	TTL	TTL	TTL	TTL
Antenna	integrated, nominal size: 55 × 30 mm	integrated, nominal size: 55 × 30 mm	integrated, nominal size: 55 × 30 mm	integrated, nominal size: 55 × 30 mm	integrated, nominal size: 55 × 30 mm
Baudrate	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s
Connector	Molex PanelMate 53780 (PCB) 51021 (cable)	Molex PanelMate 53780 (PCB) 51021 (cable)	Molex PanelMate 53780 (PCB) 51021 (cable)	Molex PanelMate 53780 (PCB) 51021 (cable)	Molex PanelMate 53780 (PCB) 51021 (cable)
SUPPORTED STANDARDS | TAGS					
ISO 14443A and compatible	Read/Write: MIFARE® Classic Mini /1K /4K, MIFARE Ultralight®, MIFARE Ultralight® C, MIFARE Ultralight® Nano, MIFARE® DESFire® EV1, MIFARE® DESFire® Light, MIFARE® Smart MX, MIFARE® Plus S / X, MIFARE® Pro X, NTAG 21x, NTAG 424 Read UID only: Read UID only of all other ISO14443A RFID tags	Read/Write: MIFARE® Classic Mini / 1K /4K, MIFARE Ultralight®, MIFARE Ultralight® C, MIFARE® DESFire® EV1, MIFARE® Smart MX, MIFARE® Plus S / X, MIFARE® Pro X, NTAG 21x Read UID only of all other ISO14443A RFID tags	Read/Write: MIFARE® Classic 1K /4K, MIFARE Ultralight®, MIFARE Ultralight® C, MIFARE® DESFire® EV1, MIFARE® Smart MX, MIFARE® Plus S / X, MIFARE® Pro X, NTAG 21x Read UID only: Read UID only of all other ISO14443A RFID tags	Read/Write: MIFARE® Classic 1K /4K, MIFARE Ultralight®, Ultralight® C, NTAG 21x Read UID only: Read UID only of all other ISO14443A RFID tags	Read/Write: MIFARE® Classic 1K /4K, MIFARE® Ultralight®, Ultralight® C, NTAG 21x Read UID only: Read UID only of all other ISO14443A RFID tags
ISO 14443 B and compatible			SRI4K, SRIX4K, AT88RF020, 66CL160S, SR176		–
ISO 15693 and compatible			EM4135, EM4043, EM4x33, EM4x35, I-Code SLI/SLIX/DNA, M24LR16/64, TI Tag-it HF-I, SRF55Vxx (my-d vicinity)		–
ISO 7816	–	–	PSAM T=1	–	–
ISO 18000-3M3 and compatible	–	I-Code ILT-M	–	–	–

PIN LAYOUT

PIN	SIGNAL	IO TYPE	DESCRIPTION
1	Data	Output	UART TxD (yellow) up to 3.3 V, USB -
2	Data	Input	UART RxD (green) up to 3.3 V, USB +
3	GND	PWR	Power supply GND (black)
4	+5 V/+3.3 V	PWR	Power supply +5 or 3.3 VDC (red)

ORDER CODES

VERSIONS	ORDER CODES
DESFIRE	
HF | NFC Embedded Reader R835 - DESFire TTL	OEM-DES-R835-TTL
HF | NFC Embedded Reader R835 - DESFire RS485	OEM-DES-R835-RS485
HF | NFC Embedded Reader R835 - DESFire USB	OEM-DES-R835-USB
HF | NFC Embedded Reader R835 - DESFire USB HID	OEM-DES-R835-USB-HID
HF | NFC Embedded Reader R835 - DESFire PC/SC	OEM-DES-R835-PCSC
ACCESSORIES	
HF | NFC Embedded Reader R835 - Connecting Cable M8	OEM-HF-M8-CC
HF | NFC Embedded Reader R835 - Converter TTL | USB 5 V	OEM-HF-M8-CONV-5V