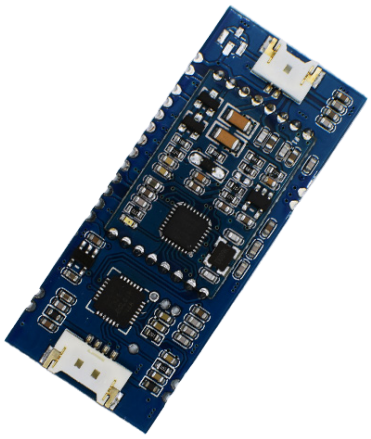
iDTRONIC
PROFESSIONAL RFID

HF | NFC EMBEDDED MODULE

M890



PRODUCT DESCRIPTION

The iDTRONIC HF | NFC Embedded Module M890 is a high performance reader series. Thanks to its tiny size and single-face laying components layout, it allows for embedding in various applications and devices.

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 ISO 14443A/B (T=CL), ISO 14443-4, ISO 15693 and ISO 18092 / ECMA-340 (NFC), ISO 18000-3.

The HF | NFC Embedded Module M890 features one external antenna port. iDTRONIC Professional RFID offers a wide choice of antennas suitable for any purpose. It achieves reading ranges of up to 10 cm (depending on type of transponder).

The HF | NFC Embedded Module M890 is available with TTL, USB VCP, USB HID, RS232/485 and PC/SC interface. In low power mode, the M890 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 HF RFID standards.

▶ APPLICATIONS

- Handhelds | Terminals
- Vending Machines
- Ticketing Systems
- Payment Systems
- Access Control
- E-Charging

▶ FEATURES

- Adopts ARM MCU Solution
- TTL | USB VCP | USB HID | RS232 | RS485 | PC/SC
- SMD Assembly Possible
- 3.3 ~ 5 V Power Supply

▶ RFID OPTIONS

- ISO 14443 A/B
- ISO 14443-4
- ISO 15693
- NXP MIFARE®
- ISO 18092 / ECMA-340 (NFC)
- ISO 18000-3

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

iDTRONIC
PROFESSIONAL RFID

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 read DESFire or MIFARE cards. The embedded module M890 reads these cards reliably and securely. This increases security awareness against abusive and unauthorised access.

PAYMENT SYSTEMS



Payment systems are more and more to be found nowadays. In large company canteens, this type of payment processing is used for employees.

The M890 module can be optimally embedded in existing cashless readers oder devices.

The employee can identify himself by means of its DESFire chip card. With the PSAM function it is possible to pay by NFC directly.

This increases the effectiveness and efficiency of the procedures within the cash area of the canteen.

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

iDTRONIC
PROFESSIONAL RFID

TECHNICAL DATA

ELECTRICAL SPECIFICATIONS	
Power Supply	3.3 ~ 5 Vdc
Power Consumption	< 100 mA, standby current < 1 mA (low power mode)
Operating Frequency	13.56 MHz
Reading Distance	up to 8 cm*
Antenna	external*
Baudrate	9600 ... 115200 bit/s
Antenna Connector	U.FL
Interfaces	TTL, USB VCP, USB HID**, RS232/485, PC/SC
PCB Connections	Soldering Pads (Suitable for SMD Production)

MECHANICAL SPECIFICATIONS	
Material	FR-4, Blue
Mounting Options	Soldering

ENVIRONMENTAL CONDITIONS	
Operating 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 by Silabs USB VCP Driver	Windows 7/8/8.1/10 Windows Server 2003/7/8/8.1 Windows 2K WinCE (5.0, 6.0) Macintosh OSX Linux (4.x.x., 2.6.x) Android 4.2
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 60950-1:2014-08 EN 62369-1:2010-03 EN 50364:2010-11
RED	2014/53/EU
RoHS 2	2011/65/EU
REACH	1907/2006
Certificates	FCC, CE, IC

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

*** HUMAN INTERFACE DEVICE*

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

iDTRONIC
PROFESSIONAL RFID

AVAILABLE VERSIONS

**READING DISTANCE DEPENDS ON TAG, ANTENNA AND ENVIRONMENTAL CONDITIONS*
*** HUMAN INTERFACE DEVICE*

	DESFIRE	ISO 18000-3	PSAM	HF	MIFARE
GENERAL SPECIFICATIONS					
Dimensions	22 × 42 × 3 mm (TTL) 22 × 53 × 5 mm (USB, RS232)	22 × 42 × 3 mm (TTL) 22 × 53 × 5 mm (USB, RS232)	22 × 42 × 3 mm	22 × 42 × 3 mm (TTL) 22 × 53 × 5 mm (USB, RS232)	22 × 42 × 3 mm (TTL) 22 × 53 × 5 mm (USB, RS232)
Weight	6 g (TTL) 7 g (USB, RS232)	6 g (TTL) 7 g (USB, RS232)	6 g	6 g (TTL) 7 g (USB, RS232/485)	6 g (TTL) 7 g (USB, RS232)
Power Supply	3.3 V ~ 5 Vdc	3.3 V ~ 5 Vdc	3.3 V ~ 5 Vdc	3.3 V ~ 5 Vdc	3.3 ~ 5 Vdc
Power Consumption	< 100 mA, standby current < 1 mA (low power mode)	< 100 mA, standby current < 1 mA (low power mode)	< 100 mA, standby current < 1 mA (low power mode)	< 100 mA, standby current < 1 mA (low power mode)	< 100 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	depending on external antenna*	depending on external antenna*	depending on external antenna*	depending on external antenna*	depending on external antenna*
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
Interface	TTL, USB VCP, USB HID**, RS232, PC/SC	TTL, USB VCP, USB HID**, RS232	TTL	TTL, USB VCP, RS232/485	TTL, USB VCP, RS232
Antenna	external*	external*	external*	external*	external*
Baudrate	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s	9600 ... 115200 bit/s
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®, MIFARE Ultralight® C, NTAG 21x Read UID only: Read UID only of all other ISO14443A RFID tags	Read/Write: MIFARE® Classic 1K / 4K, MIFARE Ultra-light®, MIFARE Ultra-light® 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	SRI4K, SRIX4K, AT88RF020, 66CL160S, SR176	SRI4K, SRIX4K, AT88RF020, 66CL160S, SR176	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)	EM4135, EM4043, EM4x33, EM4x35, I-Code SLI / SLIX, M24LR16/64, TI Tag-it HF-I, SRF55Vxx (my-d vicinity)	EM4135, EM4043, EM4x33, EM4x35, I-Code SLI / SLIX, M24LR16/64, TI Tag-it HF-I, SRF55Vxx (my-d vicinity)	EM4135, EM4043, EM4x33, EM4x35, I-Code SLI / SLIX, M24LR16/64, TI Tag-it HF-I, SRF55Vxx (my-d vicinity)	–
ISO 7816	PSAM T = 1 (optional)	–	PSAM T = 1 (optional)	–	–
ISO 18000-3M3 and compatible	–	I-Code ILT-M	–	–	–

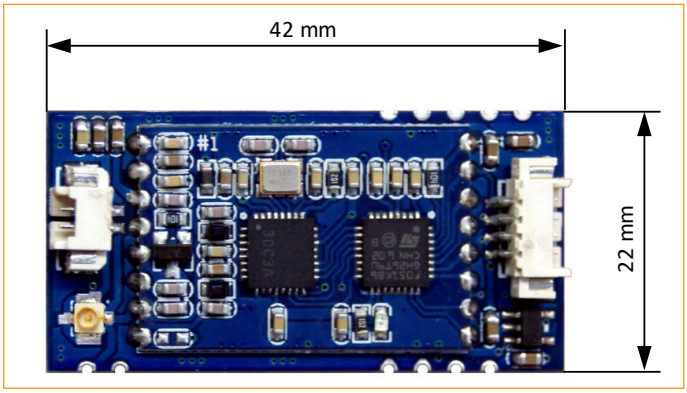
iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

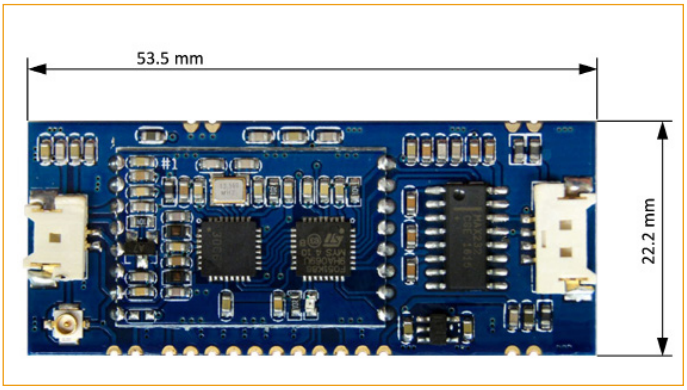
Subject to change without notice.
©2022 iDTRONIC GmbH

MECHANICAL VIEW

TTL

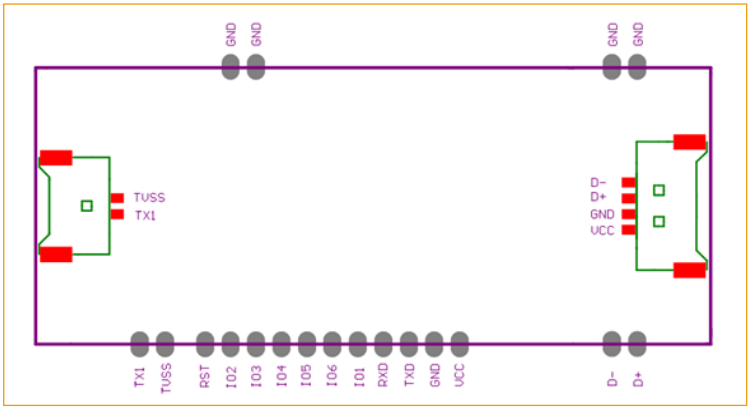


RS232/485, USB VCP + HID, PC/SC



PIN LAYOUT

USB VCP + HID, PC/SC

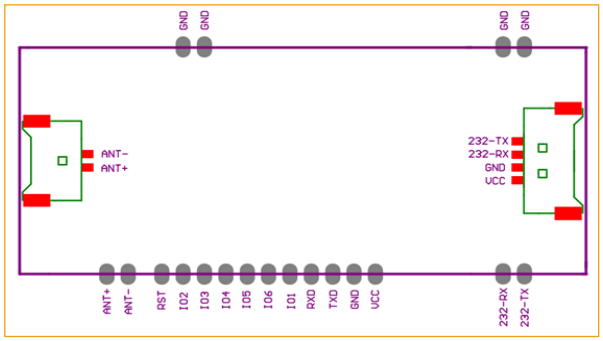


MOLEX CONNECTOR		
SIGNAL	**IO TYPE**	**DESCRIPTION**
D-	Output	USB D-
D+	Input	USB D+
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
TVSS	Output	External antenna
TX1	Output	External antenna

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

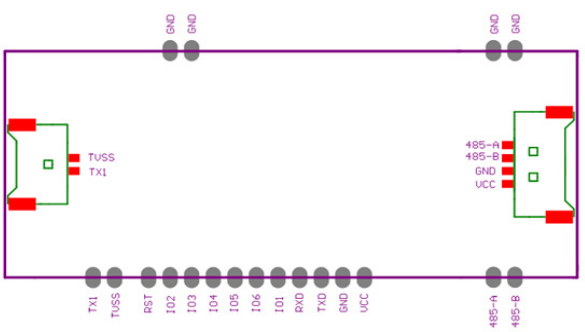
Subject to change without notice.
©2022 iDTRONIC GmbH

RS-232



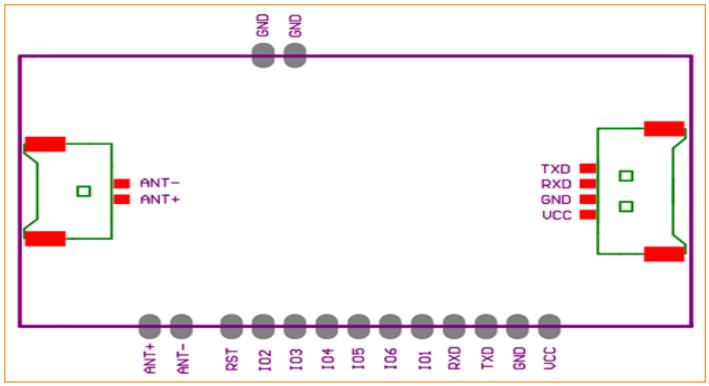
MOLEX CONNECTOR		
SIGNAL	**IO TYPE**	**DESCRIPTION**
RS232-TX	Output	UART TX (RS232 Level)
RS232-RX	Input	UART RX (RS232 Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	Output	External antenna
ANT +	Output	External antenna

RS-485



MOLEX CONNECTOR		
SIGNAL	**IO TYPE**	**DESCRIPTION**
RS485-A	Bus	UART A (RS485 Level)
RS485-B	Bus	UART B (RS485 Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	Output	External antenna
ANT +	Output	External antenna

TTL



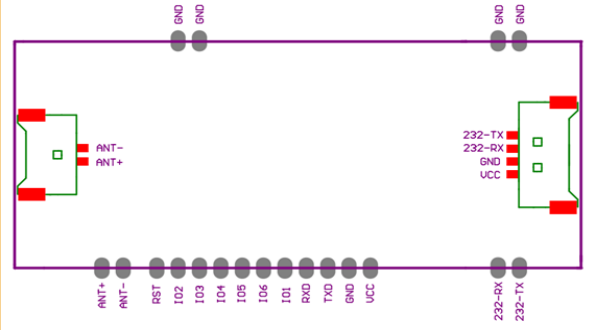
MOLEX CONNECTOR		
SIGNAL	**IO TYPE**	**DESCRIPTION**
TXD	Output	UART TX (TTL Level)
RXD	Input	UART RX (TTL Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	/	External antenna
ANT +	/	External antenna

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

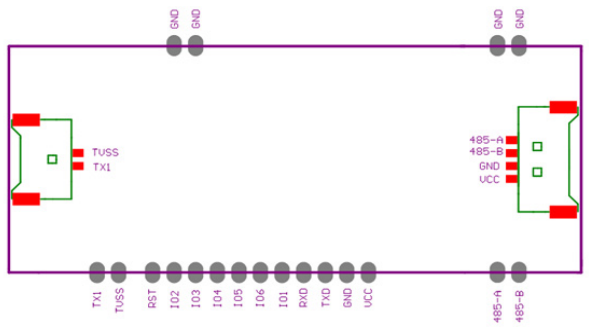
RS-232



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

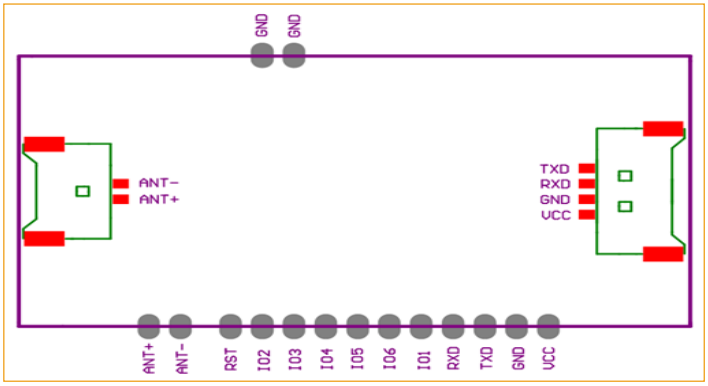
RS-485



MOLEX CONNECTOR

SIGNAL	IO TYPE	DESCRIPTION
RS485-A	Bus	UART A (RS485 Level)
RS485-B	Bus	UART B (RS485 Level)
VCC	Power	DC 3.3 V ~ 5 V
GND	GND/Power	GND
ANT -	Output	External antenna
ANT +	Output	External antenna

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 -	/	External antenna
ANT +	/	External antenna

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

Subject to change without notice.
©2022 iDTRONIC GmbH

ORDER CODES

VERSIONS	ORDER CODES
DESFIRE	
HF | NFC Embedded Module M890 DESFire - TTL	OEM-DES-M890-TTL
HF | NFC Embedded Module M890 DESFire - USB VCP	OEM-DES-M890-USB
HF | NFC Embedded Module M890 DESFire - USB HID	OEM-DES-M890-HID
HF | NFC Embedded Module M890 DESFire - RS232	OEM-DES-M890-RS232
HF | NFC Embedded Module M890 DESFire - PC/SC	OEM-DES-M890-PCSC
PSAM	
HF | NFC Embedded Module M890 PSAM - TTL	OEM-PSAM-M890-TTL
ISO 18000-3	
HF | NFC Embedded Module M890 ISO 18000-3 - TTL	OEM-DES-M890-TTL-18/3
HF | NFC Embedded Module M890 ISO 18000-3 - USB VCP	OEM-DES-M890-USB-18/3
HF | NFC Embedded Module M890 ISO 18000-3 - USB HID	OEM-DES-M890-USB-HID-18/3
HF | NFC Embedded Module M890 ISO 18000-3 - RS232	OEM-DES-M890-RS232-18/3
HF	
HF | NFC Embedded Module M890 HF - TTL	OEM-HF-M890-TTL

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

Subject to change without notice.
©2022 iDTRONIC GmbH

iDTRONIC
PROFESSIONAL RFID



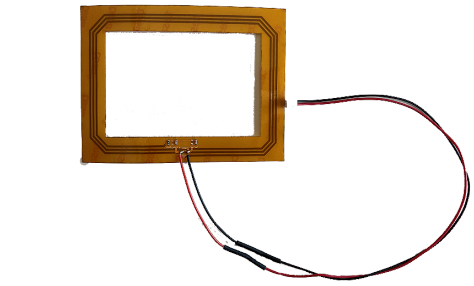
HF | MF | DESFIRE
EMBEDDED ANTENNAS

PRODUCT DESCRIPTION

The HF Embedded Antennas were designed for HF frequency areas. They are perfect for integration into mobile devices, self-checkout systems or mobile terminals.

The HF Embedded antennas are available in 7 different sizes. This makes them individually applicable in different systems and solutions. Optionally, they are available with U.FL or 2-pin Molex connector.

We offer these HF embedded antennas as on or off metal version. In addition we offer customer specific adjustments to the antennas. We can develop completely new antennas for you. Also, we provide FLEX PCB Antennas. These flexible antennas can be used for curved or angular surfaces.





▶ APPLICATIONS

- Ticketing
- Payment
- Access Control
- Mobile Terminals

▶ FEATURES

- Supports HF: 13.56 MHz
- 7 different Sizes
- 50 Ohms
- U.FL or 2-pin Molex

▶ RFID OPTIONS

- HF | MF | DESFire

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

iDTRONIC
PROFESSIONAL RFID

TECHNICAL DATA

A910



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 20 × 30 mm
Operating Temperature	-10 °C to +55 °C

A911



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 20 × 40 mm
Operating Temperature	-10 °C to +55 °C

A912



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 35 × 50 mm
Operating Temperature	-10 °C to +55 °C

A913



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 80 × 80 mm
Operating Temperature	-10 °C to +55 °C

A914



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 60 × 80 mm
Operating Temperature	-10 °C to 55 °C

A915



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 45 × 86 mm
Operating Temperature	-10 °C to +55 °C

A916



PRODUCT SPECIFICATIONS	
Product Description	PCB Antenna for HF frequency
Operating Frequency	13.56 MHz
Impedance	50 Ohms
RF Connector	U.FL or MOLEX PicoBlade 53261 (PCB conn.) 51021 (cable conn.)
Dimensions	Antenna: 49 × 55 mm
Operating Temperature	-10 °C to +55 °C

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

RFIDCanada
Automating Identification

Subject to change without notice.
©2022 iDTRONIC GmbH

ORDER CODES

VERSIONS	ORDER CODES
A910: 20 × 30 mm - M8 U.FL	OEM-HF-M8-A910-UFL
A910: 20 × 30 mm - M8 U.FL with cable	OEM-HF-M8-A910-UFL-C
A910: 20 × 30 mm - 2-pin Molex	OEM-HF-M8-A910-MO
A911: 20 × 40 mm - M8 U.FL	OEM-HF-M8-A911-UFL
A911: 20 × 40 mm - M8 U.FL with cable	OEM-HF-M8-A911-UFL-C
A911: 20 × 40 mm - 2-pin Molex	OEM-HF-M8-A911-MO
A912: 35 × 50 mm - M8 U.FL	OEM-HF-M8-A912-UFL
A912: 35 × 50 mm - M8 U.FL with cable	OEM-HF-M8-A912-UFL-C
A912: 35 × 50 mm - 2-pin Molex	OEM-HF-M8-A912-MO
A913: 80 × 80 mm - M8 U.FL	OEM-HF-M8-A913-UFL
A913: 80 × 80 mm - M8 U.FL with cable	OEM-HF-M8-A913-UFL-C
A913: 80 × 80 mm - 2-pin Molex	OEM-HF-M8-A913-MO
A914: 60 × 80 mm - M8 U.FL	OEM-HF-M8-A914-UFL
A914: 60 × 80 mm - M8 U.FL with cable	OEM-HF-M8-A914-UFL-C
A914: 60 × 80 mm - 2-pin Molex	OEM-HF-M8-A914-MO
A915: 45 × 86 mm - M8 U.FL	OEM-HF-M8-A915-UFL
A915: 45 × 86 mm - M8 U.FL with cable	OEM-HF-M8-A915-UFL-C
A915: 45 × 86 mm - 2-pin Molex	OEM-HF-M8-A915-MO
A916: 49 × 55 mm - M8 U.FL	OEM-HF-M8-A916-UFL
A916: 49 × 55 mm - M8 U.FL with cable	OEM-HF-M8-A916-UFL-C
A916: 49 × 55 mm - 2-pin Molex	OEM-HF-M8-A916-MO

iDTRONIC GmbH
Ludwig-Reichling-Straße 4
67059 Ludwigshafen
GERMANY

Phone: 1 905 513 8919
Email: sales@rfidcanada.com
Web: www.rfidcanada.com

Subject to change without notice.
©2022 iDTRONIC GmbH