INFINITE

HF RFID Specification

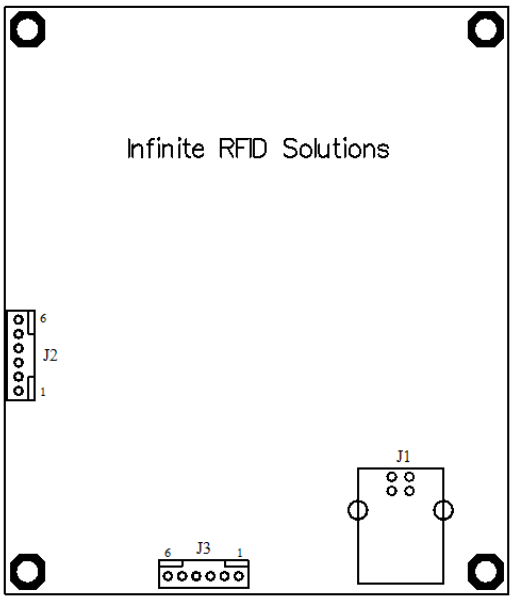
Power Supply	5Vdc (From USB)
Interface	USB to PC and RS-485 for long distance
Frequency	13.56 Mhz
Protocol	ISO14443A/B, ISO16593, ISO18000-3, Tag-it
Read/Write Distance	8 cm.
Power Output	100mW,200mW selectable by software
Indicator	LED and Beeper

Features :

- High Frequency 13.56MHz
- Reader/Writer ISO 15693
- Built-in Antenna, Read range up to 4 inch
- Integrated Pass/Fail Beeper
- USB Port power from Host PC
- USB Driver for Window XP(64bit), XP, server 2003, 2000, ME, 98,CE 4.2, Linux 2.4 and greater

Specification

Item	Specification
Operating Temperature	-40 ^{o}C to +85 ^{o}C
Storage Temperature	-40 ^{o}C to +125 ^{o}C
Operating Supply Voltage	+4.5 to +5.5 VDC
Operating Supply Current	260 mA
Communication Interface	USB 2.0 Full Speed compatible
Communication Parameters	115200 bps, 8 data bits, No parity, 1 stop bit
Dimensions	71 mm x 83 mm x 15 mm $\pm$ 1.5mm



Connector Pin Assignment

Connector J1

- USB Port

Connector J2

No	Signal	I/O	Contents	No	Signal	I/O	Contents
1	MCU_TX	O	Serial Transmit data	4	RF	-	Reserved for Future
2	MCU_RX	I	Serial Receive data	5	Vdd	-	Power (+3.3V)
3	RF	-	Reserved for Future	6	GND	-	Ground

Connector J3

No	Signal	I/O	Contents	No	Signal	I/O	Contents
1	GND	-	Ground	4	MCU_TX	O	Serial Transmit data
2	GND	-	Ground	5	MCU_RX	I	Serial Receive data
3	Vcc	-	Power (+5V)	6	RF	-	Reserved for Future

RFID Reader/Writer Protocol

Default Setting

Baud Rate	Data Bits	Start Bit	Stop Bit	Parity
115200	8	1	1	None

Protocol Format

Host -> Terminal

S T X	A D D R	C M D	L E N	DATA[0..N]	B C C	E O T

BCC = ADDR ^ CMD ^ LEN ^ DATA[0..N], where “^” is the “XOR”

Terminal -> Host

S T X	A D D R	C M D	STATUS	L E N	DATA[0..N]	B C C	E O T

BCC = ADDR ^ CMD ^ STATUS ^ LEN ^ DATA[0..N], where “^” is the “XOR”

Packet fields:

Field	Length	Description
STX	1	0x02, It is the starting of a data packet
ADDR	1	Device Address, only the device with matched address will response the received command packet.
CMD	1	The command field consists of one command byte.
LEN	2	Length of the data bytes in the packet.(Little Endian)
STATUS	1	Reply status from terminal to host. 0x00 Success 0x01 Command Error 0x02 No Tag Present 0x03 Read Error 0x04 Write Error 0x05 Block Locked 0x06 Invalid Block Address
DATA[0..N]	0..N	The Data Field is a stream of data with variable length, witch depends on the command.
BCC	1	Eight-bit block check sum. The calculation of the check sum includes all the bytes within the package but excludes the STX, EOT
EOT	1	0x04, It is indicates the END of a packet.

Command

Read UID [CMD 0x01]

Data Frame

Command

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Response

All UID (8 * n Bytes)

UID[0]								...	UID[n]							
UID[0][0]	UID[0][1]	UID[0][2]	UID[0][3]	UID[0][4]	UID[0][5]	UID[0][6]	UID[0][7]	...	UID[n][0]	UID[n][1]	UID[n][2]	UID[n][3]	UID[n][4]	UID[n][5]	UID[n][6]	UID[n][7]

Ex.

Host -> Terminal

S T X	ADDR	CMD	LEN[BL]	LEN[BH]	B C C	E O T
0x02	0x01	0x01	0x00	0x00	0x00	0x04

Terminal -> Host

S T X	ADDR	CMD	STATUS	LEN[BL]	LEN[BH]	UID[0][0]	UID[0][1]	UID[0][2]	UID[0][3]	UID[0][4]	UID[0][5]	UID[0][6]	UID[0][7]	B C C	E O T
0x02	0x01	0x01	0x00	0x08	0x00	0xE0	0xC7	0xC4	0xCE	0x73	0x35	0x19	0x90	0xEA	0x04

Read Data [CMD 0x03]

Data Frame

Command

UID (8 Bytes)

Start Address (2 Bytes)

Length (2 Bytes)

UID								Start Address		Length	
UID[0]	UID[1]	UID[2]	UID[3]	UID[4]	UID[5]	UID[6]	UID[7]	BL	BH	BL	BH

Response

Data (n Bytes)

Data			
D[0]	D[1]	…	D[n]

Ex.

Sample Card Data

ADDR	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	…
DATA	0x31	0x32	0x33	0x34	0x35	0x36	0x37	0x38	0x39	0x30	…

Host -> Terminal

Read data 5 bytes for address 0x0002

STX	ADDR	CMD	LEN[BL]	LEN[BH]	UID								Start Address		L e n g t h		BCC	EOT
0x02	0x01	0x03	0x0C	0x00	0xE0	0xC7	0xC4	0xCE	0x73	0x35	0x19	0x90	0x02	0x00	0x05	0x00	0xEB	0x04

Terminal -> Host

S T X	ADDR	CMD	STATUS	LEN[BL]	LEN[BH]	DATA[0]	DATA[1]	DATA[2]	DATA[3]	DATA[4]	B C C	E O T
0x02	0x01	0x03	0x00	0x05	0x00	0x33	0x34	0x35	0x36	0x37	0x34	0x04

Write Data [CMD 0x10]

Data Frame

Command

UID (8 Bytes)

Start Address (2 Bytes)

Length (2 Bytes)

Data (1 – length Bytes)

UID								Start Address		Length		Data			
UID[0]	UID[1]	UID[2]	UID[3]	UID[4]	UID[5]	UID[6]	UID[7]	BL	BH	BL	BH	DATA[0]	DATA[1]	...	DATA[n]

Response

Number of byte written (2 Bytes)

Byte Written	
BL	BH

Ex.

Host -> Terminal

Write data 4 bytes to address 0x0003

STX	ADDR	CMD	LEN[BL]	LEN[BH]	UID								Start Address		Length		DATA				BCC	EOT
0x02	0x01	0x10	0x10	0x00	0xE0	0xC7	0xC4	0xCE	0x73	0x35	0x19	0x90	0x03	0x00	0x04	0x00	0x31	0x32	0x33	0x34	0xE0	0x04

Terminal -> Host

S T X	ADDR	CMD	STATUS	LEN[BL]	LEN[BH]	Byte Written		B C C	E O T
0x02	0x01	0x10	0x00	0x02	0x00	0x04	0x00	0x17	0x04

Beep [CMD 0x20]

Data Frame

Command

Beep Type (1 Byte)

0x00 Short Beep 1 time

0x01 Short Beep 2 time

0x02 Long Beep 1 time

Response

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Ex.

Host -> Terminal

S T X	ADDR	CMD	LEN[BL]	LEN[BH]	Beep Type	B C C	E O T
0x02	0x01	0x20	0x01	0x00	0x00	0x20	0x04

Terminal -> Host

S T X	ADDR	CMD	STATUS	LEN[BL]	LEN[BH]	B C C	E O T
0x02	0x01	0x20	0x00	0x00	0x00	0x21	0x04