

# FSR HF RFID Reader

## User Manual

### FSR-H1

( UART , RS232 )



UART



RS232

## 1. Specification

Parameter	Min.	Typ.	Max.	Unit	Condition / Note
RF Frequency		13.56		MHz	
Power Supply	4.5	5	5.5	VDC	<b>Stability DC voltage</b>
Current Consumption		40	50	mA	@5V
RF Data Rate		26		Kbps	ISO15693-3
Host Interface					UART, RS232
Host Data Rate	9600		115,200	bps	6 step (Initial set 38400)
RF Power		100	200	mW	
Reading Range		8	12	Cm	@Card type tag
Visual Indicators					Optical 2 LED
Operating Temperature	0		80	°C	

Standard ISO15693 13.56MHz RFID TAG Read/Write

Standard ISO15693-3 protocol easy & useful

MCU : AVR ATmega8A 16MHz 8KB Flash (ATMEL)

## 2. Module Description



**Opposite**

MOLEX 5264-04

Pitch 2.5mm

5VIN RXD TXD GND

Pin 1 : DC 5V ( **Recommend stability DC voltage** )

FSR-H1 protocol DataSheet ( [fsrnd.com](http://fsrnd.com) / DataSheet last ver. download )

'GridCOM.exe' for Windows PC ( [fsrnd.com](http://fsrnd.com) / Demo SW download )

### ■ UART , RS232 cross connection

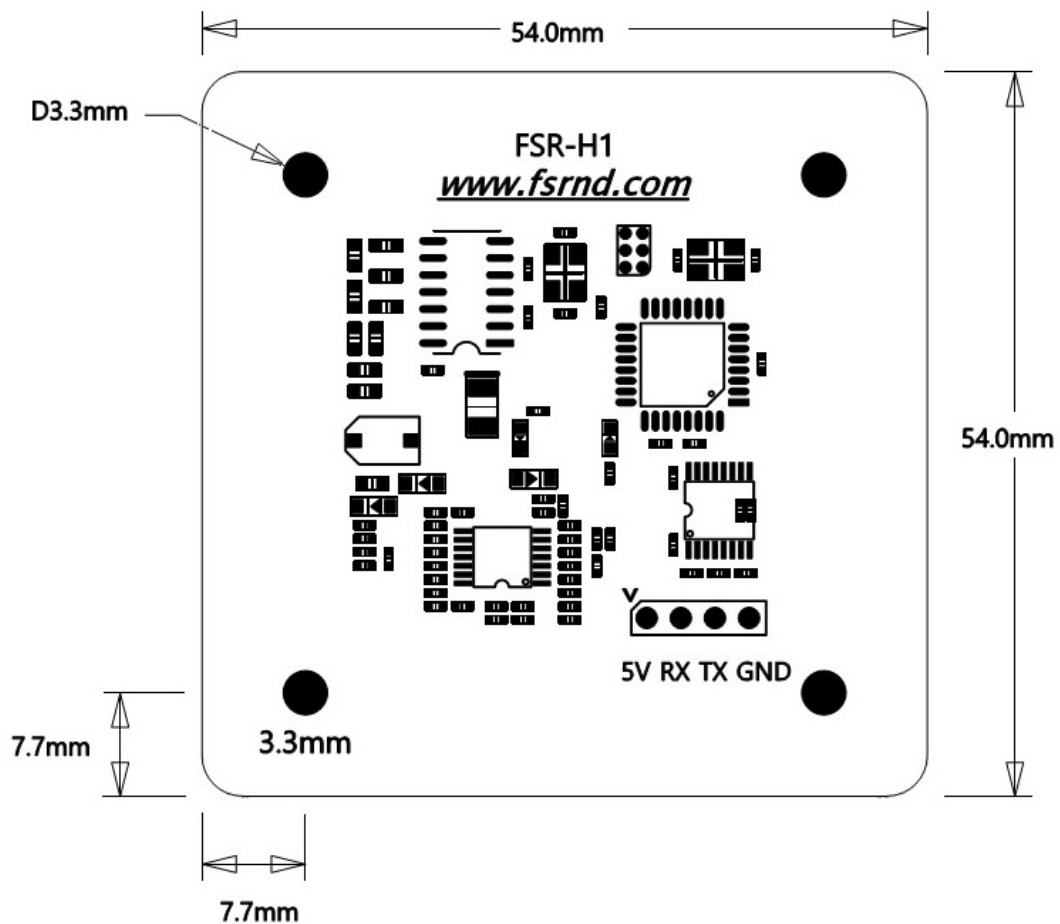
Reader pin 2(RXD) , 3(TXD) , 4(GND) → Master TXD , RXD , GND

Initial Baud Rate 38400 bps

### 3. Dimension

54 x 54 x 9.5 mm

Weight : 8g



## FSR-H1 Protocol (Ver.1.0)

Command	Request	Response	Description
Read	SF 0x06 0xA1 FN NB EF	SF NUM 0x1A FN NB UID BD EF	(UID)+(Block) read
		SF 0x05 0x1A FAILURE EF	
Write	SF NUM 0xA2 FN NB BD EF	SF 0x05 0x2A SUCC/FAIL EF	Block write
Lock Block	SF 0x05 0xA3 BN EF	SF 0x05 0x3A SUCC/FAIL EF	Lock block ( <b>one time</b> )
Go Start Mode	SF 0x04 0xB1 EF	SF 0x05 0x1B 0x01 EF	Return to start mode
RF ON/OFF	SF 0x05 0xC1 ON/OFF EF	SF 0x05 0x1C 0x01 EF	RF carrier On/Off   <b>STOP</b>
Reader Check	SF 0x04 0xC2 EF	SF 0x05 0x2C VER(0x01) EF	Reader Version acknowledge
Reader State	SF 0x04 0xC3 EF	SF 0x08 0x3C FN NB MD UO EF	MD (continue-00, once-01, cmd-02) UO (UID off-00, UID on-01)
Write AFI	SF 0x05 0xD1 AFI EF	SF 0x05 0x1D SUCC/FAIL EF	Undefined 1byte memory
Lock AFI	SF 0x04 0xD2 EF	SF 0x05 0x2D SUCC/FAIL EF	<b>Note</b> : Can not unlock!
Write DSFID	SF 0x05 0xD3 DSFID EF	SF 0x05 0x3D SUCC/FAIL EF	Undefined 1byte memory
Lock DSFID	SF 0x04 0xD4 EF	SF 0x05 0x4D SUCC/FAIL EF	<b>Note</b> : Can not unlock!
Get system information	SF 0x04 0xD5 EF	SF 0x12 0x5D IF UID DSFID AFI BSN NBB IMC EF	Tag information
		SF 0x05 0x5D FAILURE EF	
Get block security status	SF 0x06 0xD6 FN NB EF	SF NUM 0x6D FN NB BSS*NB EF	Block(4bytes) status : lock(1)/unlock(0) NB : 0x01 ~ 0x0F
		SF 0x05 0x6D FAILURE EF	
Save to EEPROM			
Set Baud Rate	SF 0x05 0xC4 BR EF	SF 0x05 0x4C SUCC/FAIL EF	9600~115200 bps (6 step)
Set Start Mode	SF 0x06 0xC5 MD UO EF	SF 0x05 0x5C SUCC/FAIL EF	MD (continue-00, once-01, cmd-02) UO (UID off-00, UID on-01)
Set Reading Block	SF 0x06 0xC6 FN NB EF	SF 0x05 0x6C SUCC/FAIL EF	Tag Block Memory (4bytes * NB)

TAG Output (Reading)	SF NUM 0x1A FN NB UID BD EF
<ul style="list-style-type: none"> <li>▶ When powered on, the reader is a start mode state. (User setting)</li> <li>▶ The number of read block : 0x00 ~ 0x1C ( if NB='0x00', output UID only)</li> <li>▶ TAG UID(Unique Identification) 8bytes</li> <li>▶ Incorrect command request is no response.</li> <li>▶ Address of TAG block supports up to 0x00 ~ 0x1B.</li> <li>▶ 1 block is 4 bytes. (4bytes * NB)</li> <li>▶ Read NUM Variable (NB*4+(8)+6)</li> <li>▶ Write NUM Variable (NB*4+6)</li> <li>▶ Lock Block 0x00 ~ 0x1B ( <b>Can not unlock! , Can not re-writing! , Reading only</b>)</li> <li>▶ RF ON/OFF is non-modulation signal (RF carrier only) → used for domestic and international certification.</li> <li>▶ TTL-5V UART or RS232 Baud Rate (6 step user setting / Initial set 38400) 9600, 14400, 19200, 38400, 57600, 115200 bps (Data8-Stop1-ParityNone)</li> </ul>	

SF	NUM	CMD	DATA	EF
0x33	Number of bytes	Command	Variable	0x99
Abbreviation				
Abbreviation		Value		Description
UID (Unique ID)		8bytes		The tag unique ID 8bytes
NUM (Number of bytes)		variable		Number of bytes (include SF, EF)
FN (First Block Number)		0x00 ~ 0x1B		First block number (1byte)
NB (Number of Block)		0x00 ~ 0x1C		Number of block (1byte)
BN (Block Number)		0x00 ~ 0x1B		Block number to lock (1byte)
BD (Block Data)		4bytes = 1block		Block data to write (4bytes)
UO (UID ON/OFF)		0x01 / 0x00		UID output On(1) / Off(0) (Initial value 0x01)
MD (Start mode select)		0x00(continue) / 0x01(once) / 0x02(cmd)		Initial value 0x00
SUCCESS / FAILURE		0x01 / 0x00		
ON / OFF		0x01 / 0x00		
NBB (Number of Byte in Block)		0x04		ISO15693 Standard
IMC (IC manufacturer Code)		0x04		NXP
AFI (Application Family Identifier)		1byte		Initial value 0x00
BSS (Block Security Status)		0x01(Locked) / 0x00(Unlock)		<b>Note :</b> Can not unlock!
DSFID (Data Storage Format Identifier)		1byte		Initial value 0x00
BSN (Block Size Number)		1byte		28blocks(0x1C), 112bytes
IF (Information Flag)		1byte		Reference ISO15693