# RF320 RFID Reader Module

RF20 Series Extension Board

■ INTRODUCTION

The RF320 series is an economical choice for high performance proximity reader module, featuring low power consumption, small dimensions and optimal reading range that has been designed specifically for OEM applications. The RF320 series offers a good reading.

Range at 5 volts which makes it a perfect choice for access control implementation and other various applications.

This unit supports different communication interfaces, including USB HID, RS232, Serial TTL, Wiegand and ABA TK2 that makes it easy to implement and upgrade with existing installation.

RF320 Series
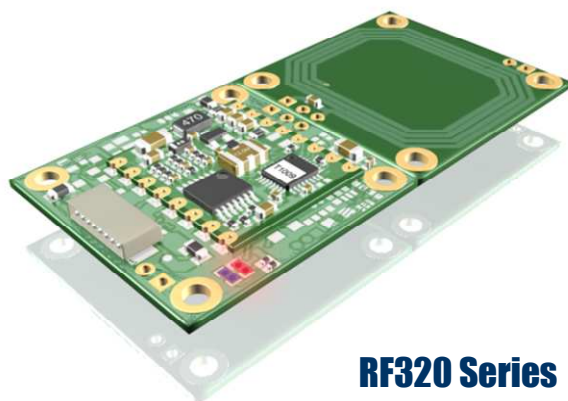
■ FEATURES

- Mafire or Felica Card 13.56 MHz read only.
- Output interface includes USB HID Keyboard, RS232, Serial TTL, MSR ABA TK2 and Wiegand.
- Wide operation voltage range (3.3V~ 5V).
- Reading distance: 2~5 cm.
- Support In-System Programming and Self Firmware Update.

■ SPECIFICATIONS

OPERATING

Transmit Frequency	13.56MHz standard.
Transponder	ISO14443A Card Read Only.
Reading Distance	2~5 cm with Mifare 1K /4K /Ultra Light Card.
Interface	USB HID /RS232 / Serial TTL/ MSR ABA TK2/ Wiegand.

ELECTRICAL

Power Input	3.3 to 5 VDC. Linear supply recommended.
Current Requirement	50mA @5VDC.

MECHANICAL

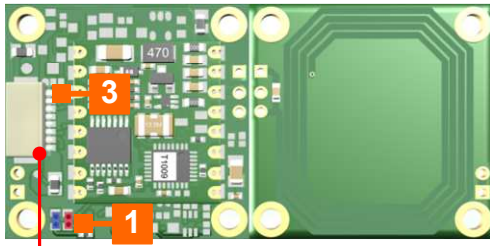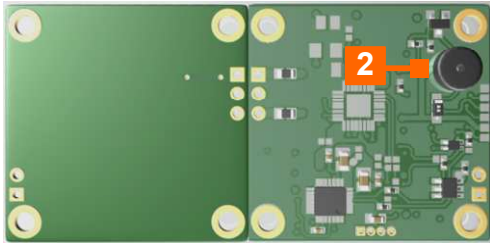|	
Dimensions	Length: 60 mm / Width: 30 mm / Height: 8 mm for RF320R/L/HK-00/01 Series. Length: 30 mm / Width: 30 mm / Height: 14.5 mm for RF320R/L/HK-10 Series.
Weight	10 gm.

ENVIRONMENTAL

Temperature	Operation : 0 ℃ to 55 ℃. Storage : -10 ℃ to 65 ℃.
Humidity	Operation : 10 % to 90 % noncondensing. Storage : Up to 100% noncondensing.

■ TERMINAL / INDICATOR DESCRIPTIONS

PIN1

1 LED Indicator

Blue	Red	Description
Off	On	Standby
On	On	Read OK
Off	On	ISP Mode

2 Sound Indicator

Buzzer	Description
Bi-	Read OK
Other	Software Control

3 8 Pin Terminal

Pin	Signal	In/Out	Description
1	VCC	P	Power 3.3-5 Volts
2	D- / TX	I/O	USB HID Differential Pair & RS232 Transmission.
3	D+ / RX	I/O	USB HID Differential Pair & RS232 Reception.
4	GND	P	Ground for Power Return
5	SD	-	Shield
6	DATA / W0	I/O	Magstripe Data & Wiegand Data 0
7	CLK / W1	I/O	Magstripe Clock & Wiegand Data 1
8	CP	I/O	Card Present Output

■ CONNECTION

RF320 Wiring Diagram

PC — VCC, D-/TX, D+/RX, GND — RF320 Series
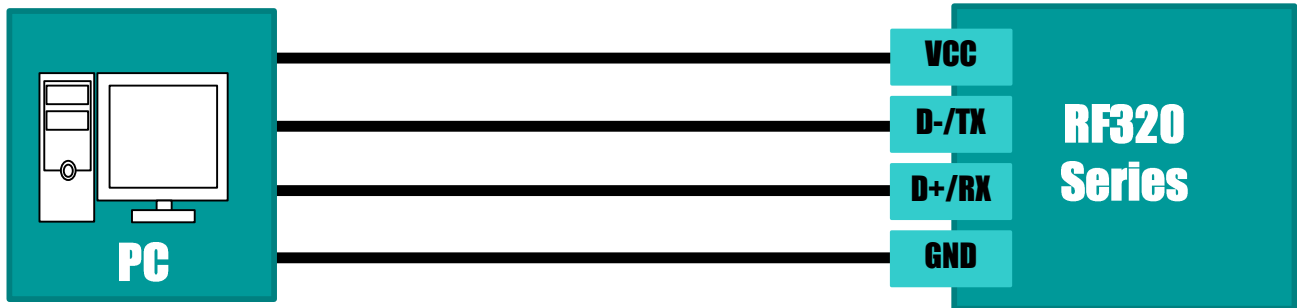
Item / Pin#	RF320HK-00 (USB HID)	RF320R-00 (RS232)	RF320L-00 (Serial TTL)	RF320M-00 (ABA TK2)	RF320W-00 (Wiegand)
1	DC +5V	DC +5V	DC +5V	DC +5V	DC +5V
2	D-	TXD	TXD	TXD	TXD
3	D+	RXD	RXD	RXD	RXD
4	GND	GND	GND	GND	GND
5	Shield	Shield	Shield	Shield	Shield
6	-	-	-	Data	Wiegand0
7	-	-	-	Clock	Wiegand1
8	-	-	-	CP	-

■ OUTPUT FORMAT

Data Structure (Serial ASCII)

Baud Rate : 19200,N,8,1

STX(02 HEX)	DATA(10 HEX CHARACTERS)	CR	LF	ETX(03 HEX)

The start character is factory defined as a 'STX' (02 HEX). This is followed by 10 Hex characters of data. The CR\LF characters serve to bring the received screen text back to the left hand side and on the line below after the data bytes have been sent. The 'ETX' (03 HEX) character denotes the end of the current transmission.

Data Structure (Magstripe Emulation , ABA Track 2)

Speed : Simulated to 40 IPS (Inch per Second)

10 LEADING ZEROS	SS	DATA (14 DIGITS)	ES	LRC	10 TRAILING ZEROS

The 10 leading zeros prepare the receiving unit to accept the data. The data is 14 digits long. SS is the Start Sentinel consisting of 1101. ES is the End Sentinel consisting of 1111. LRC is the Longitudinal Redundancy Check character. Lastly there are 10 trailing zeros. Magstripe 8 digits and 6 digits are available for special request.

The hexadecimal data from the card is first converted to a denary string before transmission. For example, a card containing the hexadecimal data (12345678AB) will be converted to denary and sent as denary 00078187493547 (14 digits).

The calculation is performed as follows.

$1*16^9 + 2*16^8 + 3*16^7 + 4*16^6 + 5*16^5 + 6*16^4 + 7*16^3 + 8*16^2 + 10*16^1 + 11*16^0 = 78187493547$ (Note: A=10; B=11)

Data Structure (Wiegand Format-26 Bit)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
P	S	S	S	S	S	S	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	P
P	E	E	E	E	E	E	E	E	E	E	E	E													
													O	O	O	O	O	O	O	O	O	O	O	O	P
SUMMED FOR EVEN PARITY (E)													SUMMED FOR ODD PARITY (O)												

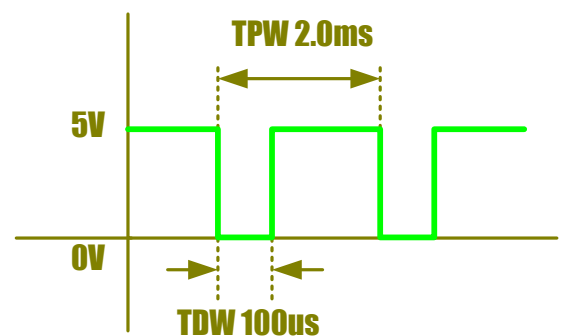Note :
P : Parity (Even or Odd) Start Bit and Stop Bit
S : Site Bits from Card or Reader
C : Card Data
Wiegand Data Timing Specification
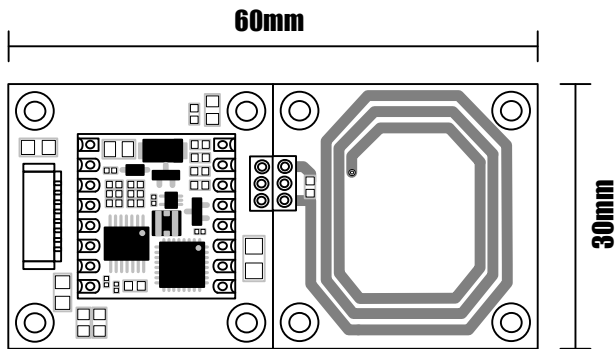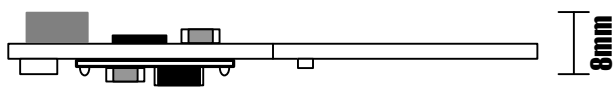Pulse Interval (TPW) =2.0mS +/- 5%
Pulse Width (TDW) =100uS +/- 5%

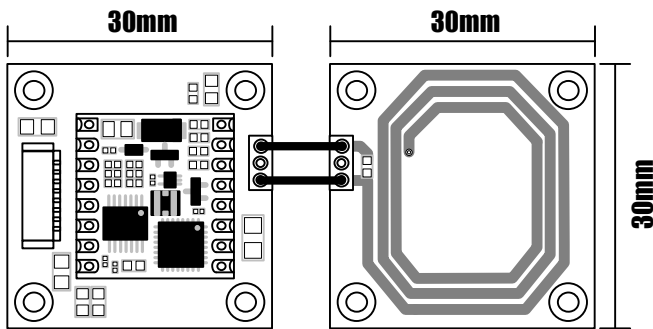# ■ Information

EXTERNAL DIMENSION	ORDERING INFORMATION

EXTERNAL DIMENSION

RF320R/L/HK-00/01 Series

60mm

30mm

Top View

8mm

Left View

RF320R/L/HK-30 Series

30mm   30mm

30mm

Top View

8mm

Left View

RF320R/L/HK-10 Series

30mm

2mm

30mm

Top View

14.5mm
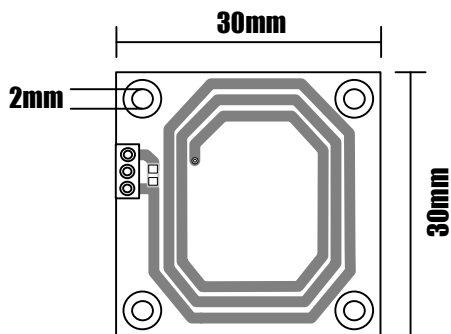
Left View

ORDERING INFORMATION

RF320X-XX

R : RS-232
L : TTL
HK : USB HID
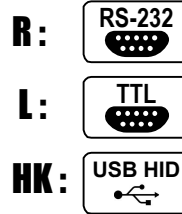
00: Without Buzzer
01: With Buzzer
30: Antenna Separately
10: Antenna Overlap

RF320 Series

13.56MHz   DC +5V   LED STATUS

19200,N,8,1   Mifare Read Only   GNET VER 1.2
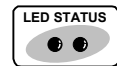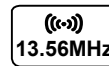
PART NO	BUZZER	INTERFACE	DIMENSION
RF320HK-00	X	USB HID	30*60*6.3mm
RF320L-00	X	TTL232	30*60*6.3mm
RF320R-00	X	RS232	30*60*6.3mm
RF320HK-01	O	USB HID	30*60*8mm
RF320L-01	O	TTL232	30*60*8mm
RF320R-01	O	RS232	30*60*8mm
RF320HK-30	O	USB HID	-
RF320L-30	O	TTL232	-
RF320R-30	O	RS232	-
RF320HK-10	O	USB HID	30*30*14.5mm
RF320L-10	O	TTL232	30*30*14.5mm
RF320R-10	O	RS232	30*30*14.5mm
RF320W-00	O	Wiegand	30*60*8mm
RF320M-00	O	TK2 ABA	30*60*8mm

RF320-30 is customzied item. The distance between antenna board and PCB is according to customer's requirement. The value of capacitance matching needs to be adjusted by the sales.

CAUTION:

The crossed out wheeled bin label that can be found on your product indicates that this product should not be disposed of via the normal household waste stream.

To prevent possible harm to the environment or human health please separate this product from other waste streams to en-sure that it can be recycled in an environmentally sound manner.

For more details on available collection facilities please contact your local government office or the retailer where you purchased this product.

This information only applies to customers in the European Union.

For other countries, please contact your local government to investigate the possibility of recycling your product.