FM24-NP100 microwave range radar

Instruction manual

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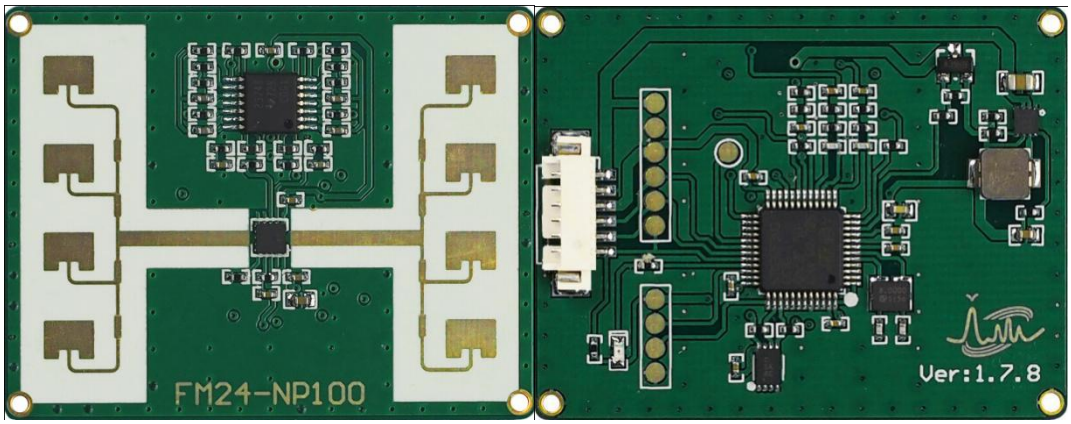
Product profile

Microwave range radar is an electronic sensor which can measure distance to objects by transmitting and receiving radio waves. Compared with other types of range sensors, it's smaller,lighter, with penetrability (which can break through smoke, dust, thin non-metallic materials, etc.), and can detect multiple targets.

FM24-NP100 is a K band mm wave range radar, on which receiving and transmitting antenna was isolated.The operational principle of the radar is to measure distance to objects by calculating time difference between transmitting signals and receiving signals ,and adopts mode of frequency modulation continuous wave(FMCW).

FM24-NP100 integrates signal processing units of microwave radar,the user can obtain distance to objects by UART.For multiple targets detection and other measurement requirements,we can change working mode to obtain distance spectrum information for further process.We also can develop special solutions upon customer request.

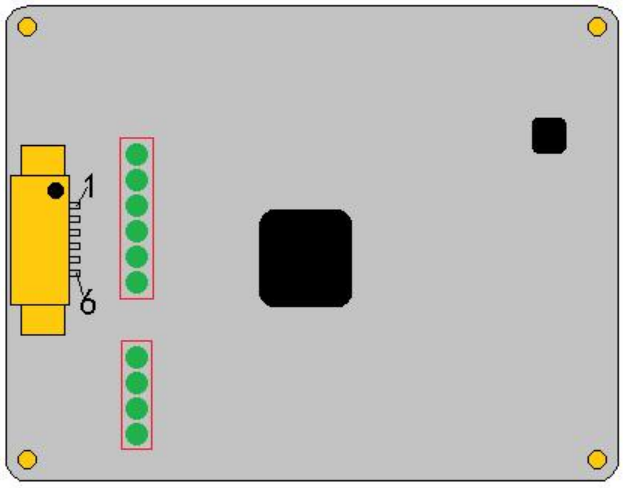
FM24-NP100 microwave range radar has UART interface,baud rate 57600bit/s,logic level 3.3V TTL,can easily communicate with PC or other MCU to shorten development cycle for customers.



Specifications

Parameter	MIN	TYP	MAX	UNITS
Tuning Frequency	24.000		24.250	GHz
TX power Eirp	0	6	10	dBm
Modulation type		FMCW		
Range-measurement range	0.5		20	m
Range-measurement accuracy	-0.1		+0.1	m
Range resolution		0.01		m
Antenna pattern HOR		78(-3db)		deg
Antenna pattern VER		23(-3db)		deg
Supply voltage	4	5	8	V(DC)
Power consumption		400		mW
Updating rate		10		Hz
Storage temperature	-40		+85	℃
Operating temperature	0		+70	℃
Weight		8		g
Dimensions		44*34*5		mm

Wire harness



PIN	Definition
1	POWER IN. Range 4v-8v DC , Drive Current >100mA
2	Ground(GND)。
3	Auxiliary power output. Range 3.3V, Drive Current Max 100mA.
4	UART signal output(TX)， to output information of distance or distance spectrum.baud rate 57600bit/s.
5	UART signal input(RX).The interface function reserved.
6	Work mode option. Can output range data when interface not connected,and output range and spectrum data when grounded(GND).

Communication protocol

Data output with two types of protocols,will output range and spectrum data when PIN 6 grounded （GNC),including frame header,range data,spectrum data and end frame,format as follows:

0xff,0xff,0xff,0x**,0x**,0x##...0x##,0x00,0x00,0x00

The first three 0xff is frame header, then the first 0x** is 8 high byte of 16 bits distance data , second 0x** is 8 low byte of range data.Total 16 bits binary data indicates distance to targets,unit is cm.

The first 0x## is the first spectral line range of distance spectral line, then the second spectral line range,and so on,total 126 spectral lines.Spectral line range is 1-44.The spectral lines can be used for multiple targets identification process and the other functions.The last 3 0x00 is end frame.

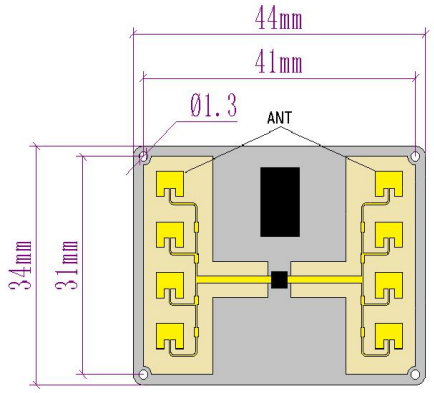
Only output distance data when in no connection mode,format as follows:

0xff,0xff,0xff,0x**,0x**,0x00,0x00,0x00

The first three 0xff is frame header, then the first 0x** is 8 high byte of 16 bits distance data , second 0x** is 8 low byte of range data.Total 16 bits binary data indicates distance to targets,unit is cm. The following three 0x00 is end frame.

Communication format of COM with 1 start bit, 8 data bits, 1 stop bit, no parity check.

Installation size



PCB thickness 1.2mm。