Preliminary

HM-RDS201

Radar distance measuring component sensor

– Measurment Range：0.3m to 12m

– Communication Interface：RS-485

– Distance Resolution：1mm

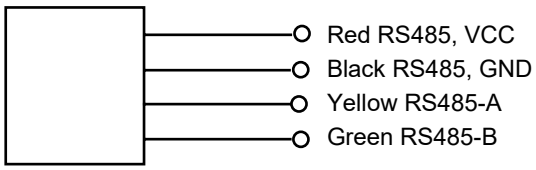
– Compact size：M30x35mm

– Supply：3.3V to 12V

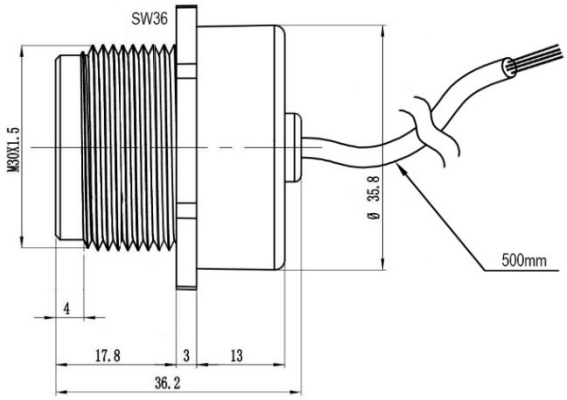
HM 2310

General data	
Measuring range	0.3...12m
Resolution	1mm
Frequency range	57...64G
Band width	7GHz
Transmitting power(EIRP)	10dBm
Aperture angle	~20°
Electrical data	
Voltage supply range	3.3...12VDC
Average Current consumption	< 35mA @5V
Short circuit protection	Yes
Mechanical data	
Housing size	M30x35mm
Threaded	M30x1,5
Housing material	PP
Cable	500mm
Operating temperature	-40…85°C
Storage temperature	-40…85°C
Communication interface RS-485	
Interface	String/Modbus
String part default serial connection settings	
Parametrs	Configuration
Baud rate	115200
Data bits	8
Parity	Even
Stop bits	1
Flow control	None

Wiring



Drawing



Packet format

Packet	dist=	10000	,	peak=	10000	\r\n
Description	The distance of target	The distance data（mm）		The amplitude of target		
Length	5Bytes	5Bytes	1Byte	5Bytes	5Bytes	2Bytes

Application commands

Command	**Description**
Distance Start\r\n	Start measuring distance
Distance Stop\r\n	Stop measuring distance
Set start=300,end=3500\r\n	Set measuring range(mm,setting range:start>300,end<12000)
Set gain=83%\r\n	Set radar gain(setting range:1%~99%)
Set profile=1\r\n	Set radar profile(profile=1,higher accuracy lower SNR;profile=2,lower accuracy higher SNR)
Set threshold=1500\r\n	Set radar threshold(Higher thresholds result in lower sensitivity)
Set average=85%\r\n	Set average(setting range:1%~99%，Higher averages, more stable data)
Set syt mode=0\r\n	Set output mode(0=string,1=modbus)
Set data output time=200\r\n	Set the output interval(ms,setting range:50~10000)
Set address=1\r\n	Set address(setting range:1~128,only valid while using modbus)

Modbus part

Holding Registers Read Request

Description	Device ID	Function	Register address	Register Quantity	CRC
Length	1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes
Example	01	03	00 00	00 03	05 CB

Holding Registers Read Response

Description	Device ID	Function	Data length	Data	CRC
Length	1 Byte	1 Byte	1 Byte	2*N Bytes	2 Bytes
Example	01	03	06	06 9C 07 46 00 01	D0 6E

* N=registers quantity

Input Registers Read Request

Description	Device ID	Function	Register address	Register Quantity	CRC
Length	1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes
Example	01	04	00 01	00 01	60 0A

Input Registers Read Response

Description	Device ID	Function	Data length	Data	CRC
Length	1 Byte	1 Byte	1 Byte	2*N Bytes	2 Bytes
Example	01	04	02	01 F4	B9 27

* N=registers quantity

Input Registers Write Request

Description	Device ID	Function	Register address	Register Quantity	Data length	Data	CRC
Length	1 Byte	1 Byte	2 Bytes	2 Bytes	1 Byte	2*N Bytes	2 Bytes
Example	01	10	00 01	00 01	02	01 F4	A7 96

* N=registers quantity

Input Registers Write Response

Description	Device ID	Function	Register address	Register Quantity	CRC
Length	1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes
Example	01	10	00 01	00 01	50 09

Register map

Holding Registers

Addr	Read/Write	Register name	Description
00	R	Distance	Distance in mm of target
01	R	Amplitude	Amplitude of target
02	R	Status	Current status of data 0x00: not stable data 0x01:stable data

Input Registers

Addr	Read/Write	Register name	Description
00	R/W	Device ID	Device ID.Can be set to 1~128
01	R/W	Range_start	Start range in mm of the measurement.Must lager than 300mm.
02	R/W	Range_end	End range in mm of the measurement.Must smaller than 12000mm.
03	R/W	Gain	Receiver gain.0~100 where 0 is the lowest gain and 100 the highest.
04	R/W	Profile_selection	0x01:higher accuracy lower SNR 0x02:lower accuracy higher SNR
05	R/W	Threshold	Higher thresholds results in lower sensitivity.It should not smaller than 1500