Operation Manual (Model:WDR210)

Ver. 1.0 – 08/29/2017

1. Features and Applications

● This radar(Model: WDR210) operating at 24GHz ISM band, is released to be used for 2D position and movement detection.

● For vehicles it detects up to 50 m, which is robust to the environmental change such as light, ambient temperature, dust etc.

● User friendly designs such as small form factor and wired/wireless communication interfaces provides easy application of this device.

● In addition to 2D information of targets, it adopts a tracking algorithm to differentiate motions between natural and artificial motion, resulting in very low false alarms. This enables WDR210 good enough for the outdoor applications.

● The sensor is suitable for the energy saving application by motion detection.

2. Maximum Ratings

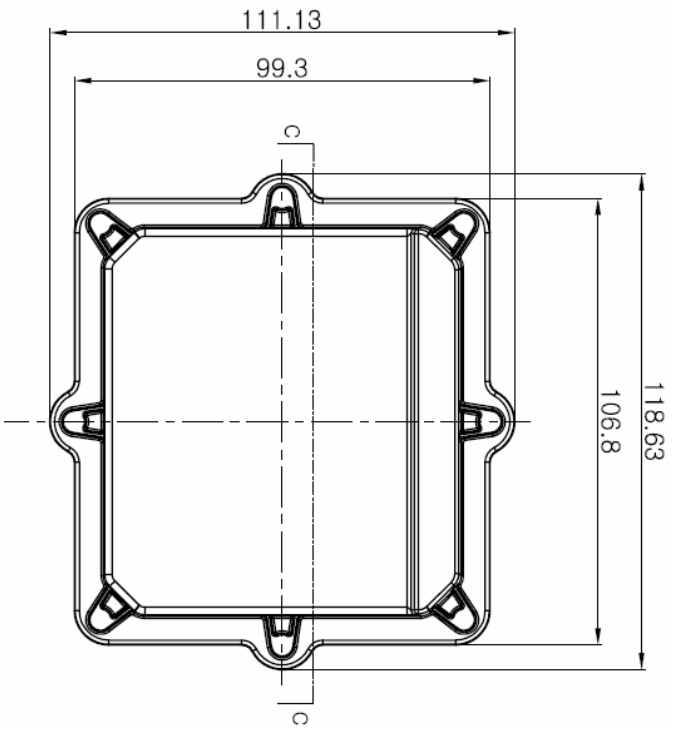
Parameter	Symbol	Rating	Unit
Supplied voltage	V_{DC}	+12	VDC
Operating temperature range	T_C	-40 to +85	℃
Storage temperature range	T_{STG}	-50 to +130	℃

3. Performance Characteristics

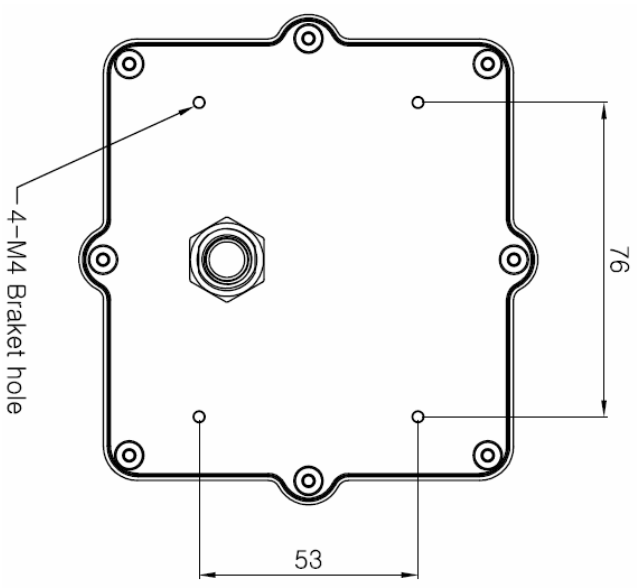
Parameter		Performance	Condition
Tx Frequency		24GHz ISM band	24.05~24.25GHz (EU/South Korea) 24.05~24.25 GHz (North America)
Output EIRP		18dBm max	adjustable
Detection	Range	30m/60m max	Human Body/Vehicles
	Range resolution	75cm 60cm	EU/South Korea North America
	Angle	150 ° / 60 °	Type A/Type B; horizontal
	Angle Resolution	+/- 5° max	
Data Update		7Hz max	
Size		108X118.2X36.4 mm^3	
Interface		UART	Opt.: CAN2.0 or RS485
Supply voltage		+12VDC	
Power Consumption		2W max	

Outline Dimensions (mm)

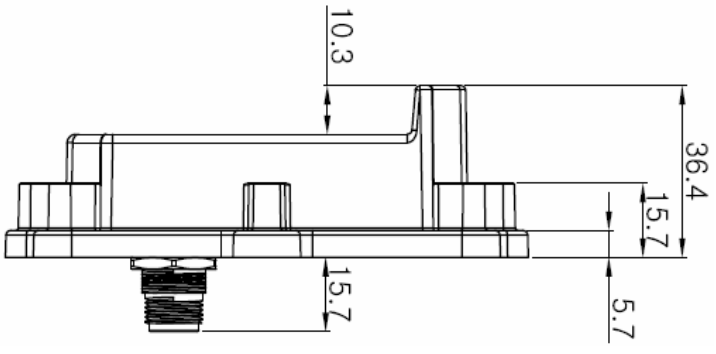
Top View

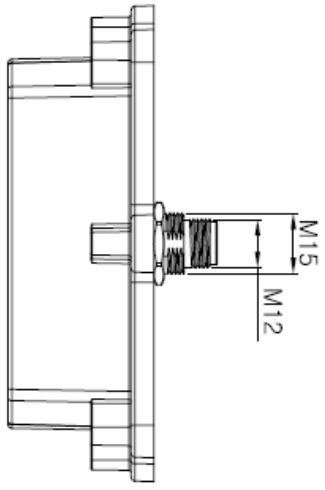


Bottom View



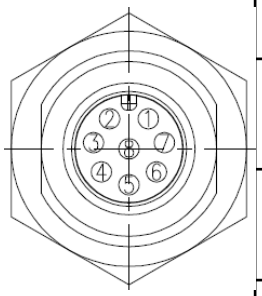
Side View





5. Set Functions

5.1. 2MT3005-X08200 Connector Pin Configuration

Type	Pin#	Function	Description	Wire Color
	1	VDC	+12VDC Input	Block
	2	GND	Ground	Brown
	3	RS485-B	CAN H or UART_TX(opt.)	Green
	4	RS485-A	CAN L or UART_RX(opt.)	Yellow
	5	NC	Internal Use Only	Grey
	6	NC	Internal Use Only	White
	7	NC	Internal Use Only	Blue
	8	GPIO	3.3V Digital Output (“H” for detection)	Red

5.2. Serial Communication

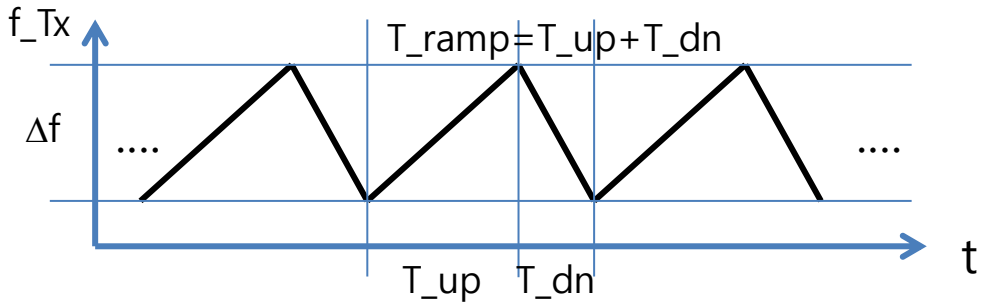
Baud rate = 115200bps, Parity = none, Data bits = 8bit, Stop = 1bit (UART/CAN2.0/RS485)

5.3.1. Master→WDR210 (2-byte)

Function	DATA(MSB - LSB)			Note	
Set Tx Power	0X5A5A (RS485)	0X01	0X{value}	{value}= 0*~7, 0 max, 1dB power decrease per 1 increase	
Set Tx Ramp Type		0X02	0X{value}	{value} =1*~5 (See description below)	
Tx Off		0X03	0X{value}	{value} = 1 → Tx Off otherwise → Tx On	
Raw Data/ Report Detection/ Report Setting Values		0X04	0X{value}	{value} = 01	Raw data
				{value} =02*	Report Detection(short)
				{value} =03	Report Detection(long)
				{value} =04	Report Setting Values
				All are one-time report except “Report detection” (continuous report)	

* Default setting(can be changed according to application region)

Note : No change occurs when out of range data is received



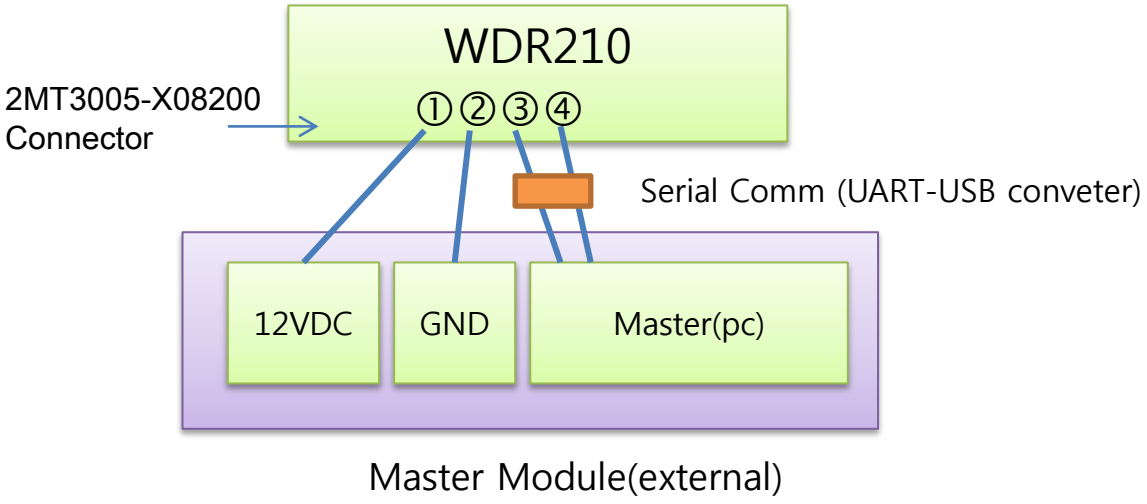
Fct.	MSB byte	LSB byte	T_up [us]	T_dn [us]	Δf [MHz]
Set Tx Ramp Type	0X02	1	60	15	75 (80)
		2			200 (140)
		3			200 (145)
		4*			200 (148)
		5			250 (195)

5.3.2. WDR210→Master

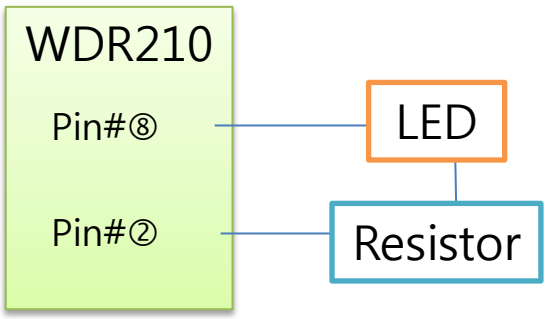
See AN210-1 for the details of “Raw Data/Report Detection/Report Setting Values”

6. Product wiring

6.1. General Wiring Method



6.2. Wiring for operation test(an example)



7. Installation-Professional Installation Guide

✓ **Please read this entire manual carefully and refer to section # 2, 3, 5, and 6 in this manual regarding position, direction and angle selection process.**

Considering antenna as eyes and then approximately selecting the coverage. (If there is any difficulty in installation, send us the document and/or photograph, then we will help you to selection.)

✓ **Confirming your selection**

① Set to maximum Tx power (refer “5.3.1” of this manual)
② Check your coverage selection.
③ Check your wiring.(refer “6 Product Wiring”)
④ Wait about 2 seconds after power on.
⑤ Check the blind spots. – If not enough change the direction and/or sensitivity.

For more information and trouble shooting, please contact your local distributor or websit: http://www.wooriro.com/english/company/05.asp

ESD-INFORMATION

This Wooriro sensor is sensitive to damage from ESD. Normal precautions as usually applied to ESD sensitive devices are sufficient when handling the device. Touching the signal output pins has to be avoided at any time before soldering or plugging the device into a motherboard.

APPROVAL

Wooriro Standard Product. Changes will not be notified as long as there is no influence on form, fit and within this datasheet specified function of the product.
This Data Sheet contains the technical specifications of the described product. All previous versions of this Data Sheet are no longer valid.

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.