



SIL Radar Technology Inc.



Non-contact physiological signal detector SSR2D1P14AAPBXXC



Smart Pig Raising Management Systems

NEW VERSION

Standard Products

Version: A1

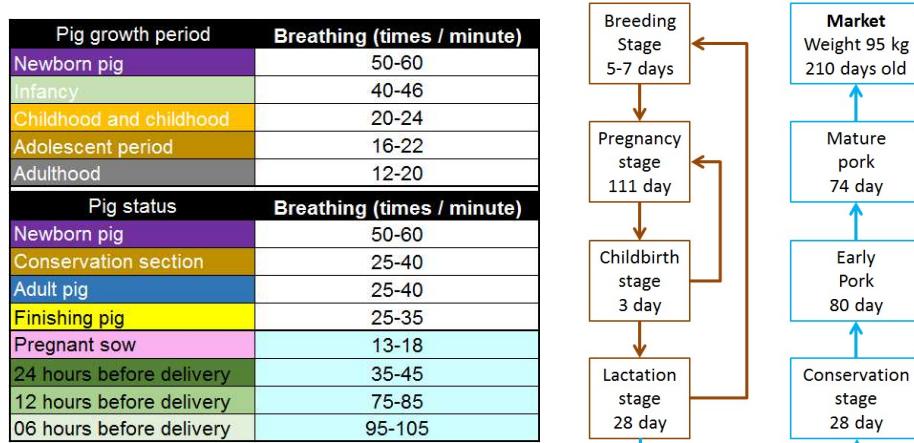
Date 2019-04-24



Overview

SSR2D1P14AAPBXXC is a non-contact physiological signal detection system. The respiratory rate of pigs was measured with an accuracy of 10%, and the measurement distance was 1.0M. Pig growth period and pregnancy state breathing table see (Figure 1). The detection frequency band of the radar device frequency operates in the 2.4~2.5 GHz ISM band. It is used on the SIL radar sensor with a power of 1/100 WIFI. The SIL Radar device can be used with thermal imaging devices to detect animal health and behavior. The unit is designed to meet the standard f ANSI / AAMIES60601-1 and IEC / EN60601-1 3rd editions and meets international medical standards (2 x MOPP).

(Figure 1)→





Switch and interface

1. Power input: 80~264VAC/47~63Hz; 0.75A/115VAC ;0.5A/230VAC
2. Power switch: O=OFF, I=ON
3. Communication port: RJ45 *2. Support 10/100 Mbps
4. Antenna connector: 3.5mm SMA (1M Coaxial Cable)



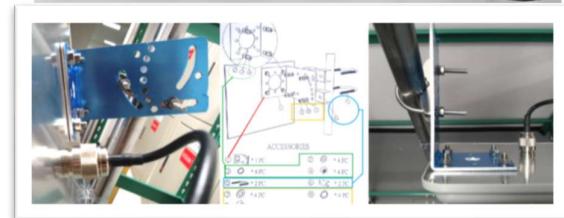
System details

1. Equipment system (IP65 enclosure)* 1
2. Antenna 14dBi * 1
3. Antenna clip * 1
4. Coaxial cable (1m)* 1
5. Power cord (1.5 m)* 1

Antenna installation ➔

Precautions

1. Reduce the effects of electromagnetic waves, please use them properly.
2. The use of low-power RF motors shall not affect flight safety, if interference is found, it shall be immediately deactivated.
3. All parts must be replaced by trained and qualified technicians
4. This instrument may not be modified without the consent of the original manufacturer.

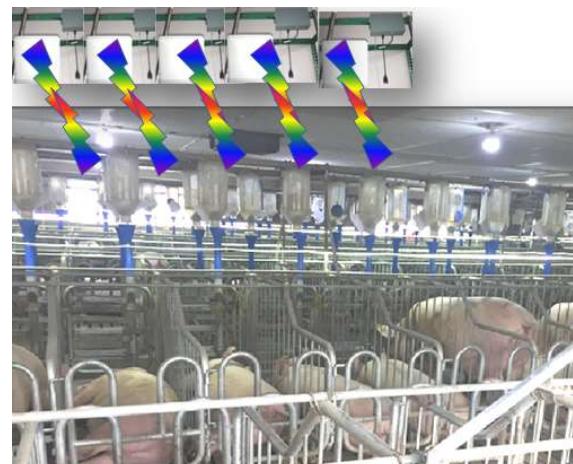


Description function principle

An oscillator transmits signals through the antenna unit. Then the biological reflection signal is injected back into the oscillator make it injection locking state, and the reflected signal has a Doppler shift characteristic. At this time, the output signal of the oscillator can be amplified by the simple frequency demodulation, and the Doppler frequency shift signal can be amplified and the phase noise can be removed.

Because of the signal has small bandwidth of the injection locking operation, most of the channel noise can be filtered and the signal-to-noise ratio for boosting the frequency shift exceeds 100dB.

It is very suitable for detecting the weak vital signs of life in the Life Detector. Such as breathing, heartbeat, pulse, etc.



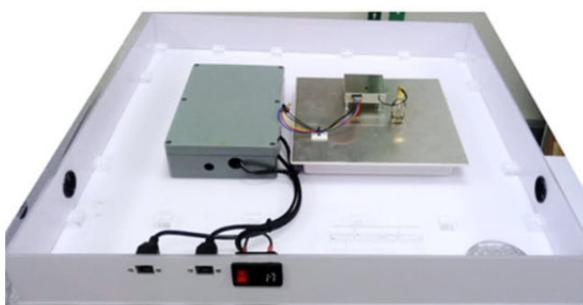


SIL Radar Technology Inc.

Non-contact physiological signal detector

SSR2D1P14ACHBHXC

W:600 X L:600 X H:76 mm



Dustproof / Waterproof / Fireproof



NEW VERSION

Standard Products

Version: A2

Date 2019-04-21

Table of Contents

- 1 Overview
2. Product Features
3. Input terminal definition
4. System block diagram
5. Mechanical chart
6. Installation instructions (effective antenna detection range)
7. Precautions



1. Overview

SSR2D1P14ACHBHXC is a Non-contact Physiological Signal Detector system to detect human heart rate and respiratory rate simultaneously with working distance up to 2.5M(depending on Athena design).

The detection of heart rate and respiratory rate is applying for SIL Radar sensor working at 2.4GHz ISM frequency by 1/100 WIFI power level. The SIL Radar technology is also for detecting human and animal's trace and at the location.

Power design meets the standard of ANSI/AAMIES60601-1 and IEC/EN60601-1 Version 3 to meet International medical standards (2 x MOPP).

Product Features

Immediacy

The All-in-one system can obtain human's 3 major physiological signals from one device in a short period. The entire system reduce out-of-synchronization problem for 3 major signals from different devices, as well as the complexity to set up 3 different devices in one location. It helps the care staffs in the nursing organization to raise their efficiency and immediacy to give the first aids to patients in danger conditions.

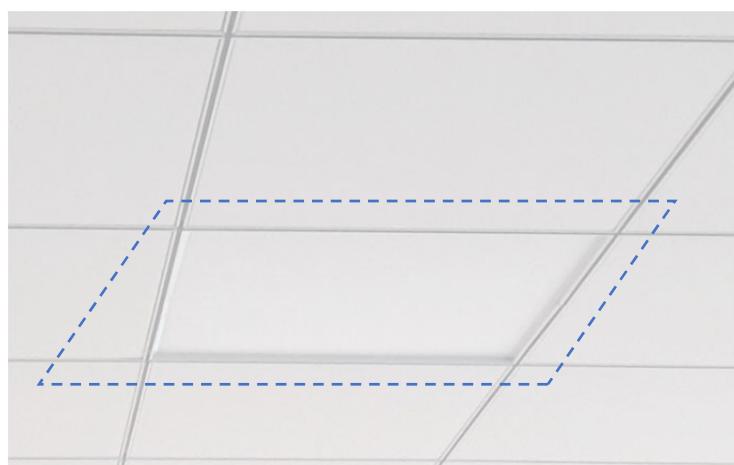
Sensitivity & Accuracy

The system outputs ultimate sensitivity by detecting only 1mm vibration from human physiological signals. For any living body, it detects directly the heart rate and respiratory rate for accuracy approximately 90%. The error value of respiratory rate is ± 3 R.R and of heart rate is ± 7 bpm. To detect if any presence of living body takes no longer than 30 seconds (living body arrives in 15 seconds and departures in 30 seconds at signal range).

System Expandability

The system has a built-in high-speed Ethernet interface that automatically detects and adjusts the 10/100Mbps connection rate. Transmission rate up to 1Gbps. Compatible with IEEE802.3, IEEE802.3u, IEEE802.3x, IEEE 802.3az EEE standards. Easy to install and play.

Actual installation





2. Product Specification

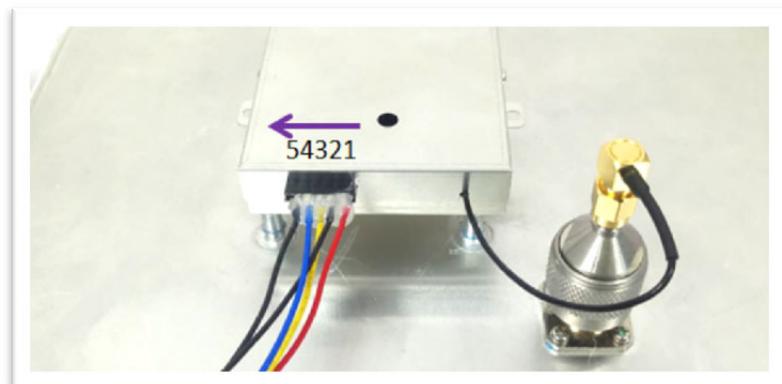
Item	Specification
Frequency range	2439MHz~2460MHz
Athena Interface	3.5MM SMA *1
PCBA Emission Power	3±2 dBm
Antenna Gain	14dBi
Communication Interface	RJ45 connector // TCP/IP(for data transfer) *2
Display Interface	HDMI
Operating Voltage/Noise	80~264VAC//47~63Hz; 0.75A/115VAC ;0.5A/230VAC
Operating Current 110V AC	150mA (16.5W)
Operating Temperature	0°C ~ 70°C
Dimension(WxLxH)	600 x 600 x 75mm
Weight	4.5 Kg ± 300g

2.1 SIL Radar Module Pin Define

Pin pitch: 1"/ 2.54mm

Dimension: 55 × 55 × 7.5 mm (±0.2mm)

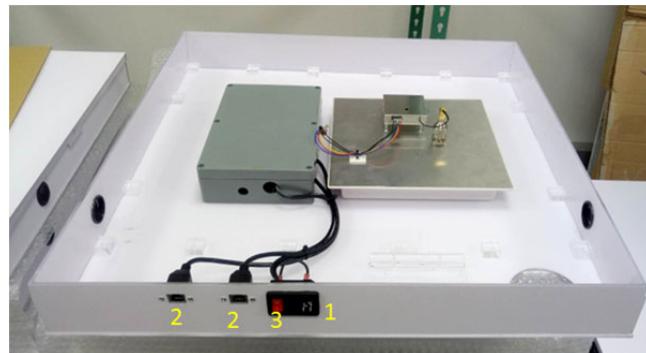
Pin#	Description	In/Out	Comment
1	Vcc	POWER	supply voltage (+12 V)
2	GND	POWER	Analog Ground
3	I2C-SDA	I/O	Digital Signal
4	I2C-SCK	I/O	Digital Signal
5	GND	POWER	Analog Ground
NOTE			





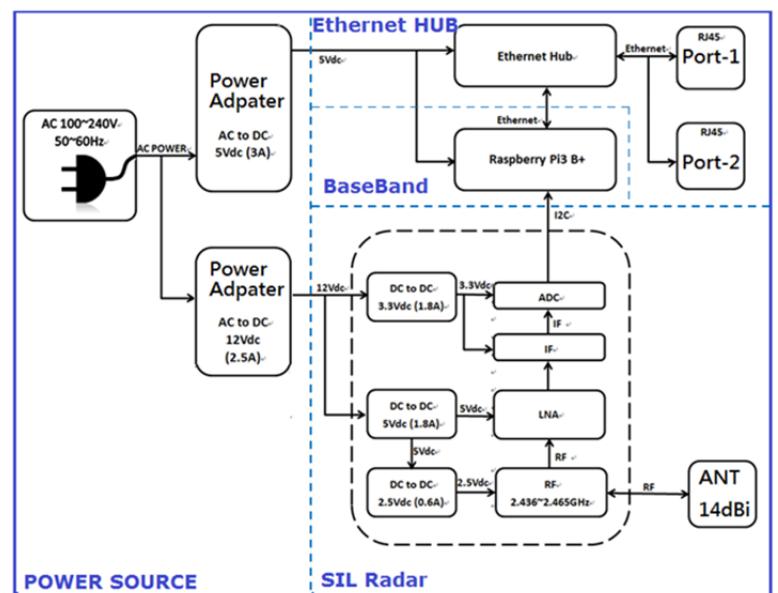
3. Input Terminals

1. Power Input: 80~264VAC//47~63Hz; 0.75A/115VAC ; 0.5A/230VAC
2. RJ45 Connector: Support 10/100 Mbps LAN Network
3. Power Switch



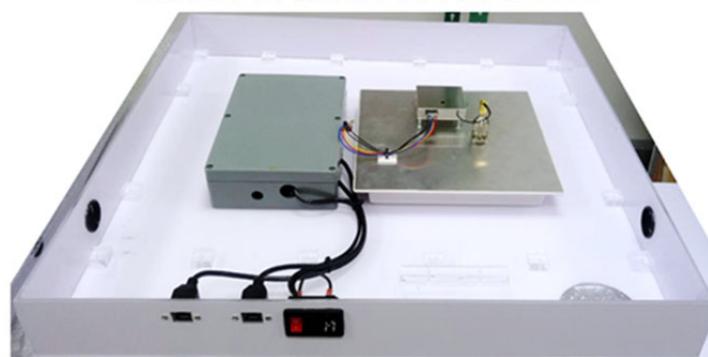
4. System block diagram

1. Power Source
2. SIL Radar Module
3. Base Band
4. Ethernet HUB 5 ports 10/100Mbps
5. Antenna(Gain 14 dBi°)



5. Mechanical chart (UNIT: mm)

W:600 X L:600 X H:76 mm





6. Installation Notes

Radar antenna effective detection area (green block on the right)

Centering on the shuifen point (best position point)

The effective detection range is:

Each side of the shuifen point is 15 cm,
and the head is extended to 25 cm.

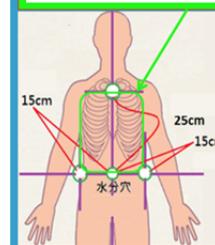
As shown on the →

Use the shuifen point as the origin
to divide the effective detection range

The position of the shuifen point is at a
thumb wide position above the navel



Antenna effective detection



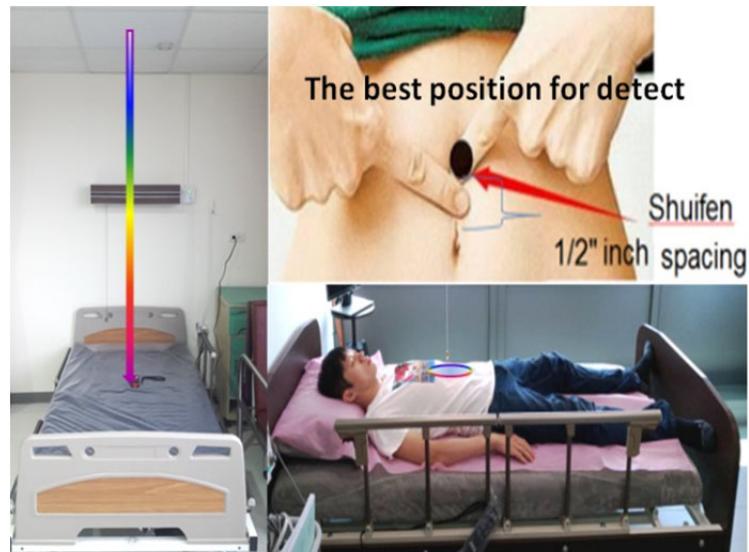
Left & Right side of
the shuifen point
is 15 cm,
and the head
is extended to 25 cm



Radar installation requirements description

When the subject is lying on the bed, the radiation center of the radar antenna needs to be the best position for the water hole of the person.

As shown below



7. Precautions

1. Reduce the effects of electromagnetic waves, please use them properly
2. Avoid measurement and error caused by conversation and eating during measurement
3. The installation distance between the two devices must be one meter
4. There should be no obstacle isolation between the person to be tested and the device.
5. All parts must be replaced by trained and qualified technicians
6. This instrument may not be modified without the consent of the original manufacturer.

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.

SIL, Taiwan

Tel. +886-2-8512-3222

Fax. +886-2-8512-1898

Date of release: June 2019



Federal Communication Commission Interference Statement

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: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

SIL, Taiwan

Tel. +886-2-8512-3222

Fax. +886-2-8512-1898

Date of release: June 2019