

SIM7300

User Manual

Rev 1



Beijing Xinlian Chuangzhan
Electronic Technology Co., LTD
Tel: (+86) 010-62153842/62153840
<http://www.silion.com.cn>

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1. A revision history

The file number	The version number	Artificial person / The modifier	Proposed/revised date	Change the reason	Change the content
	V1.0		2021-10-16	The initial release	No

2. Product introduction

8-port module SIM7300 is a high-performance UHF 8-port RFID read-write module developed by the core Technology team based on IMPINJ new-generation RF chip E710. It is designed to meet the requirements of new retail, unmanned retail, RFID smart cabinet, RFID bookshelf and other applications that need to connect multiple antennas at the same time. The SIM7300 module provides eight SMA antenna interfaces and supports rf output up to 33dBm. It can quickly read multiple labels and is the preferred choice for equipment in asset management, unmanned retail and new retail industries.

3. Product features

IMPINJ new generation E710 ULTRA high frequency radio reader chip, high sensitivity, wide reading range, low power consumption, strong performance.

Fast reading speed, stable reading, multi-label anti-collision ability, long reading distance, using 8dBi antenna, the reading distance is more than 12 meters, multi-label reading speed, up to 900 / second.

High-speed 8 antenna polling mode, the polling time of each antenna can be set separately, the 8 antennas can be set different RF output power, reading range is wider, more applicable scenarios.

Module support label RSSI detection, support antenna connection status detection, support working temperature detection, a variety of data detection is more convenient for users to use efficiently; The module can work stably in the ambient temperature of -20°C to +50°C, support stably in the ambient humidity of 5%-95%, efficient and stable performance, can be applied to a variety of harsh working environment.

4. Electrical characteristics

parameter	conditions	min	type	max	unit
Frequency					
Frequency range	According Customization	840		960	MHz
Frequency step value	According Customization		250/500		KHz
output					
output power		5		33	dBm
Output power accuracy			+/- 1		dB
Flatness of output power			+/- 0.2		dB
Channel segregation			32		dB
label					
Reception sensitivity			-88		dBm
Inventory label peak speed			900		tag/s

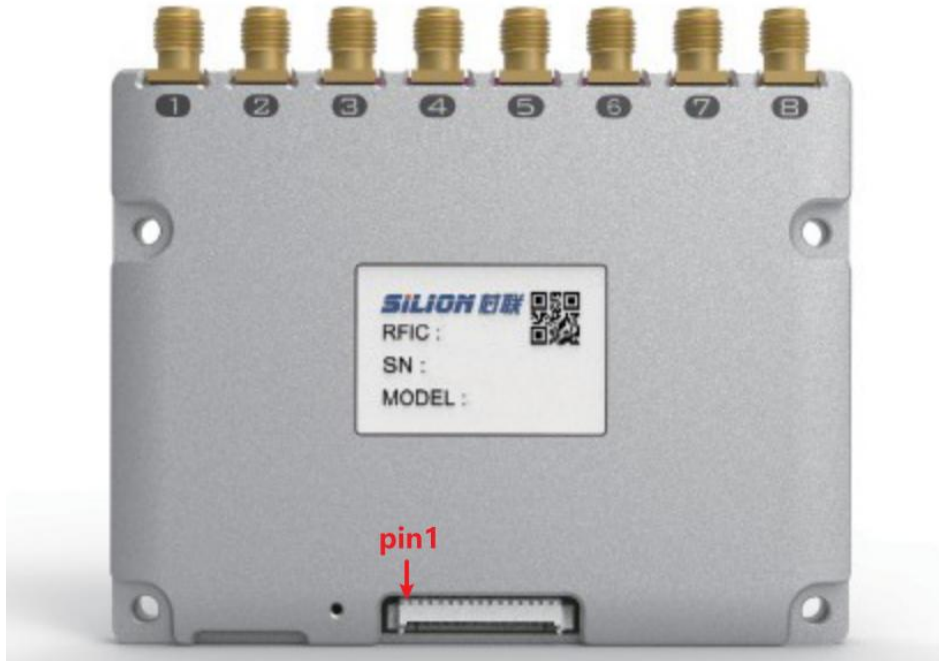
Label cache	96 bit EPC		1000		tag
Logic level					
VIL, Input Low Voltage		-0.5		0.8	V
VIH, Input High Voltage		2		Vdd+0.5	V
Temperature range					
Storage temperature		-40		85	°C
Working temperature		-20		50	°C
The input power					
The power supply voltage		4.75	5.0	5.25	V
Can make model			40		mA
Standby mode			120		mA
Read the card model	P _{out} =33dBm, 50 Ω Load		1700		mA

The current will vary depending on the load antenna.

Absolute maximum rated parameter

parameter	rating
power supply voltage	+5.25V
Digital I/O Voltage to GND	3.3V
Working temperature	-20 ~ +50°C
Storage temperature	-40 ~ +85°C

5. Pin configuration and function description



The serial number	define
1	GND
2	GND
3	VCC +5V \pm 0.25V
4	VCC +5V \pm 0.25V
5	GPI01 (OUT1)
6	GPI02 (OUT2)
7	GPI03 (IN1)
8	GPI04 (IN2)
9	RXD (DATA INPUT, TTLlevel)
10	TXD (DATA OUTPUT, TTLlevel)
11	NC
12	NC
13	NC
14	SHUTDOWN (Low level enable, high level power off, high level should be greater than VCC-0.3V)
15	nRST (Reset, low level reset)

6. The application of information

The input power

A tantalum capacitor of 100~470uF is recommended for the VCC port to be filtered to reduce the power traction caused by the rapid opening and closing of the power amplifier during RF transmission. The 0.1uF and 100pF capacitors filter out the power ripple in different frequency bands respectively.

Enable or reset

With built-in pull-down resistance, the module is powered on when low level is connected or suspended, and the module is powered off when high level is connected (the high level should be greater than VCC-0.3V).

NRST reset, built-in pull-up to 3.3V resistance, reset when low power.

GPIO interface

Input:

Logic low < 0.8V minimum 0V

Logic high > Maximum 2 V to 3.3 V

Output:

Logic Low maximum 0.4V

Logic High has a minimum of 2.9V and a maximum of 3.3V

The maximum output current of the I/o port is 5mA.

The antenna connection

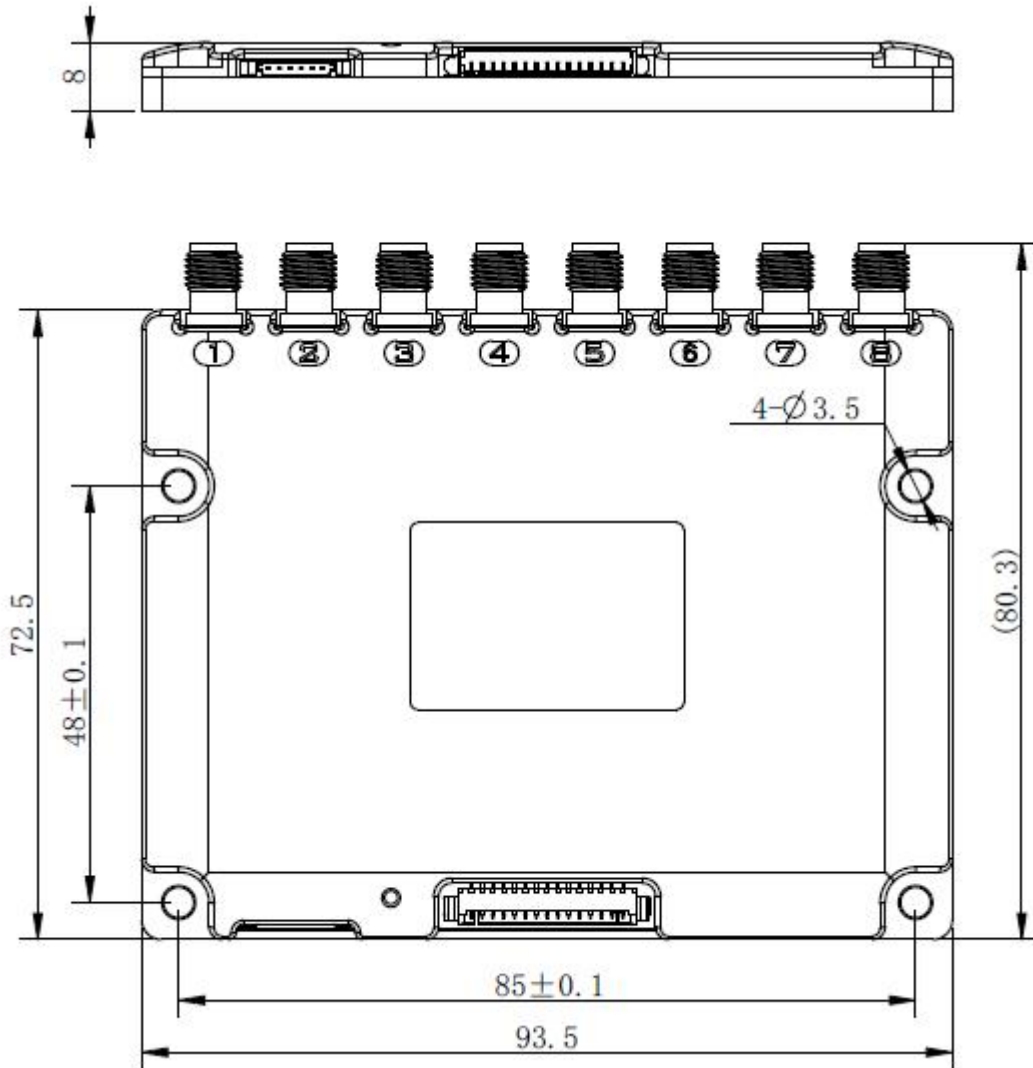
The output impedance of the antenna port is 50 ohm, and the recommended standing wave ratio of the antenna is less than 1.5. Better standing wave ratio of the antenna can get better card reading effect.

Communication interface (RXD/TXD)

Communication interfaces RXD and TXD are TTL levels. The default baud rate is 115200bps

7. Physical properties

Product size: 93.5mm*80.3mm*8mm



weight: 116g

8 Peripheral Design Requirement

FCC STATEMENT

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

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 or more 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 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 20mm between the radiator & your body.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247 & 15.207 & 15.209

2.3 Specific operational use conditions

Operation Frequency:902.75~927.25MHz

Number of Channel:50 Channels

Modulation Type:ASK

Antenna Type:Polarized antenna

Antenna Gain(Peak):4.99 dBi (Provided by customer)

The module can be used for mobile or portable applications with a maximum 4.99dBi antenna. The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212. Because the module has shielding cover, it is a unrestricted module.

2.5 Trace antenna designs

Not applicable. The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc.

2.6 RF exposure considerations

The module must be installed in the host equipment such that at least 20cm is maintained between the antenna and users' body; and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.7 Antennas

Antenna Specification are as follows:

Antenna Type:Polarized antenna

Antenna Gain(Peak):4.99 dBi (Provided by customer)

This device is intended only for host manufacturers under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna;

The module shall be only used with the External antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID 2AQ9M-SIM7300 With their finished product.

2.9 Information on test modes and additional testing requirements

Operation Frequency:902.75~927.25MHz

Number of Channel:50 Channels

Modulation Type:ASK

Antenna Type:Polarized antenna

Antenna Gain(Peak):4.99 dBi (Provided by customer)

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is **only** FCC authorized for FCC Part 15 Subpart C 15.247 & 15.207 & 15.209 and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

2.5 Information on test modes and additional testing requirements

Operation Frequency:902.75~927.25MHz

Number of Channel:50 Channels

Modulation Type:ASK

Antenna Type:Polarized antenna

Antenna Gain(Peak):4.99 dBi (Provided by customer)

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8.2 Additional testing Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification .If the grantee markets their product as being Part 15 Subpart B compliant(when it also contains unintentional - radiator digital circuit y), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed .