SAAT-T505 2.45GHz Series Active Tag User Manual

1 Product overview

SAAT-T505 series RFID active tags are working in the 2.405GHz-2.480GHz band in accordance with the requirements of the Telecommunications Authority in the public frequency band. The schematic diagram of the tags is as follows:

Table 1 SAAT-T505 series tags schematic diagram

Model	SAAT-T505	SAAT-T506	SAAT-T505E	SAAT-T505E-FB
Schematic diagram				

Among SAAT-T505, SAAT-T506, SAAT-T505E tags are general-purpose tags for common scenes; SAAT-T505E-FB tags are special for explosion-proof environment, which meet GB3836.1-2010 "Explosive Environment Part 1: General Requirements for Equipment", GB3836.4-2010 "Explosive Environment Part 4: Equipment Protected by Intrinsically Safe"i". They are anti-explosive. The explosion mark is ExibIICT4 Gb, which has passed the inspection by the National Explosion-proof Testing Center and obtained the explosion-proof certificate. It is suitable for areas 1, 2 and T1-T4 containing IIA-IIC explosive gas mixture.

1.1 Application

SAAT-T505 series active tags work in ISM 2.405GHz-2.480GHz band, with 2.48GHz operating frequency point, can realize long-distance data wireless communication with transmission power of -6dBm.

Among SAAT-T505 and SAAT-T506 tags have same shell. They adopt engineering plastic shell, flat-panel shape, light and thin, with a thickness of only 4.5 mm. The whole shell is welded by ultrasonic wave, and the waterproof grade reaches IP65. The installation method can be hoisting or gluing. They are mainly used for personnel management, positioning and asset monitoring. Inventory, etc.

SAAT-T505E active tag uses high-strength plastic material shell. The whole shell is welded once by ultrasonic wave. The waterproof grade can reach IP67. The installation mode is adhesive. It can be used for personnel positioning and asset management in harsh industrial environment.

SAAT-T505E-FB active tag uses exquisite shell. It is made of shaber DX02437 PC and has IP67

protection grade structure design. It meets the requirements of Ex IB IIC T4GB explosion protection grade. It can be used in application sites including oil and gas environment. It is mainly used for material management and positioning.

1.2 Model description

SAAT-T505 is a 2.4G active RFID tag. Its size is 85mm *55mm *4.5mm. SAAT-T505 is a general environment tag which only supports 2.4G communication function.

SAAT-T506 is a dual-frequency RFID tag, supporting 2.4G active high frequency tag card functions. Its size is 85mm *55mm *4.5mm. The 2.4G part can be used for personnel positioning and asset management.

SAAT-T505E 2.4G active tag with a size of 87mm*57mm*5mm and a protection level of IP67. It can be used for personnel positioning and asset management in harsh industrial environment and other situations where the protection level is high.

SAAT-T505E-FB 2.4G active tag with a size of 87mm*57mm*5mm. It meets the explosion-proof grade requirements of Ex IB IIC T4GB. It can be used in application sites including oil and gas environment. It is mainly used for personnel and asset management and positioning.

1.3 Working environment

A complete radio frequency identification data collection system, as shown in picture 1, is the primary prerequisite for the normal operation of SAAT-T505 series active tags.
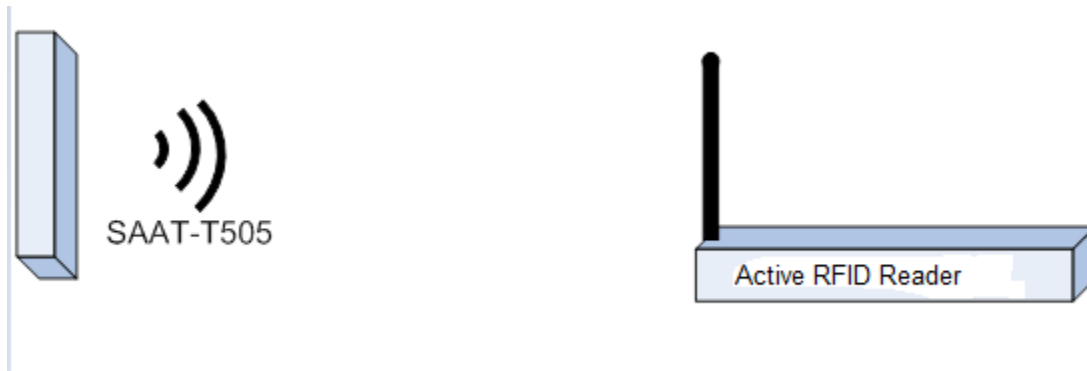
Picture   Typical RFID application system

1.4 Explosion-proof precautions (only for SAAT-T505E-FB)

SAAT-T505E-FB active tag meets the Ex IB IIC T4GB grade standard stipulated in GB3836.4-2010 standard and can be used in explosive gas environment. The following matters should be paid attention to in use:

1)   It is forbidden to disassemble the tag by self in any way.

2)   It is not allowed to replace the components or structures that affect the explosion-proof

performance, to avoid affecting the explosion-proof performance.

3) The tag is not allowed to be installed and used in non-permissible situations.

2 Performance

2.1 Function

SAAT-T505 series tags main functions are 2.45GHz active RFID tags conforming to the public band standard stipulated by the Telecommunications Authority. The main functions of SAAT-T505 series active tags are as follows:

1) Supported working frequency band is 2.405G-2.480G, factory default set is 2.48GHz.
2) Communication conforms to Aerospace Innotech Active Communication Protocol Standard.
3) Low voltage detection, battery low voltage alarm function.
4) The tag has the ability to work for a long time and its working life is not less than 5 years (related to operation mode and transmitting power).
5) 0.5/second send battery voltage status and tag information.

2.2 Main technical indicator

2.1.1 General requirements

1) Work temperature: -20℃～+50℃
2) Storage temperature: -30℃～+60℃
3) Working humidity: 5%～95%（25℃）
4) Operation Voltage: DC 2.4V～3.0V
5) Batter: DC 3.0V/850mAh ,CP224248 Non-replaceable soft-packed lithium batteries
6) Work current: Standby<3uA; transmit<12mA; Average <10uA

2.1.2 Technical indicator

1) Frequency accuracy: ±20ppm
2) Maximum transmit power: -6dBm
3) Reading range: more than 50m（Open area）
4) IP rate: IP65（SAAT-T505, SAAT-T506）
    　　　　IP67（SAAT-T505E,SAAT-T505E-FB）
5) Explosion-proof grade: Ex ib IIC T4 Gb（Only use for SAAT-T505E-FB）

3 Structural feature

SAAT-T505 2.45GHz series active tag shell adopts plastic injection moulding structure, which is divided into two parts: upper and lower boxes. SAAT-T505, SAAT-T506 and SAAT-T505E three tags shell

materials adopt common PC engineering plastics. The SAAT-T505E-FB tag shell material uses plastic material of type DX02437. The surface resistivity of the material is less than 109 ohms. It meets the explosion-proof requirements. Among them, SAAT-T505 and SAAT-T506 are uniform structure appearance. SAAT-T505E and SAAT-T505E-FB shell have the same structure and different material. SAAT-T505E shell color is white and SAAT-T505E-FB is black.

3.1 Dimension
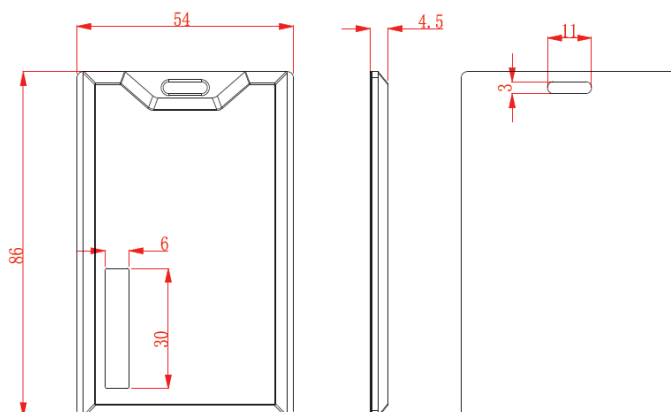
Picture   SAAT-T505 & SAAT-T506 tag dimensional sketch
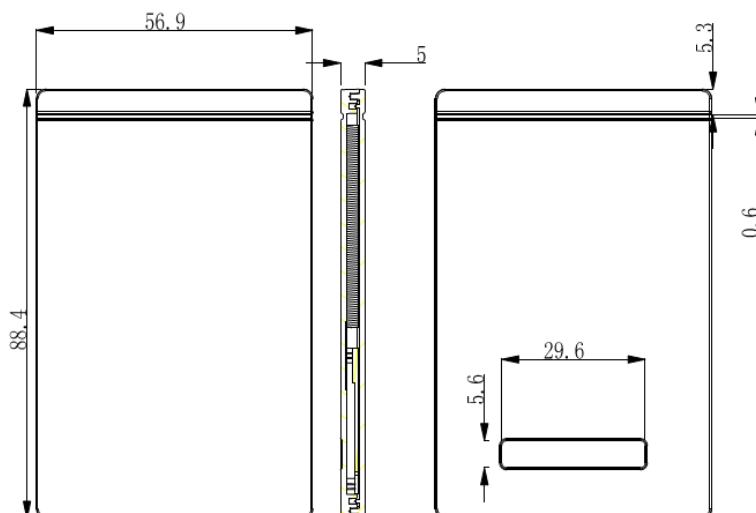
Picture SAAT-T505E & SAAT-T505E-FB tag dimensional sketch

3.2 Volume and weight

SAAT-T505E,SAAT-T505E-FB tag size is 85mm × 55mm × 4.5mm, weight is: 30g

SAAT-T505E,SAAT-T505E-FB tag size is 87mm×57mm×5mm, weight : 35g

3.2 Nameplate description（Only for SAAT-T505E-FB）

SAAT-T505E-FB active tag meets the requirements of ExibIICT4Gb explosion-proof grade. The nameplate description is shown in picture 4.

Picture SAAT-T505E-FB tag nameplate sketch

3.4 Software interface

SAAT-T505 2.45GHz series active tag software interface conforms to the standard of "Aerospace Innotech Air Interface Protocol".

4 Installation and test

Before installing SAAT-T505 series active tags, please read this chapter carefully.

4.1 Installation environment

Before installing SAAT-T505 series active tag, pls check the products carefully. If there is a shortage of damages, please contact and replace them in time.

4.2 Select installation position

Installation of SAAT-T505 series active tags have the following requirements:

1. Can not be installed on the metal surface, the front of the tag can not have a shield that has an impact on the wireless signal.

2. The tag faces the reader that needs to be received.

4.3 Active tag debug

SAAT-T505 series active tag tests include: reading tag test and reading range test.。

4.4 Reading tag test

Use the reader to read the tag information, confirm the solitary power information and tag ID.

4.5 Reading range test

The reading range test is used to test tag reading range. Reading distance test can be done from

near to far, or from far to near.

5　Use and operate

The reader is used to read tag, and the specific operation process can be referred to the user manual of the reader.

6　Day-to-day maintenance

Tag maintenance includes the following two aspects:

1. Check installation for looseness.
2. Use reader to read and confirm tag power regularly.

7　Tag fault and maintenance

Common faulty: Received information indicates low power

Please contact our company for further processing.

8　Package instructions

SAAT-T505 series active tags are packaged in cutter card format, and can also be customized according to customer requirements.

9　Transport and storage

9.1 Transportation requirement

SAAT-T505 series of active tags meet the requirements of relevant standards such as highway, railway, air and sea transport.

Attention in transportation: It must be guaranteed not to be eroded by severe collision, rain, chemical corrosive drugs and harmful gases.

9.2 Storage requirement

SAAT-T505 series active tags long-term storage shall have the following conditions:

Environmental temperature: 0℃~+50℃

Relative humidity: ≤80%

No sharp temperature changes, no acid and other harmful gases in the surrounding air.

10 After-sale service

When users encounter unsolvable problems when using the active tags, please contact our customer service center.

FCC 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.
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 t which the receiver is connected.
•Consult the dealer or an experienced radio/TV technician for help.
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Contact:

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